



**Second Marine Stewardship Council  
Annual Surveillance Report  
Alaska Salmon Fisheries**

Certificate No.: MML-F-017

**Moody Marine Ltd.**  
October 2010

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## GENERAL INFORMATION

**Scope against which the surveillance is undertaken:** Marine Stewardship Council (MSC) Principles and Criteria for Sustainable Fishing as applied to the Alaska Salmon Fisheries managed by the Alaska State Department of Fish and Game within the following 16 units:

1. Southeast Drift Gillnet
2. Bristol Bay Gillnet
3. Southeast Purse Seine
4. Yukon River Gillnet and Fish Wheel
5. Southeast/Yakutat Troll
6. Kuskokwim
7. Yakutat Set Gillnet
8. Kotzebue
9. Prince William Sound Seine and Gillnet
10. Norton Sound
11. Copper/Bering District Gillnet
12. Kodiak
13. Lower Cook Inlet Seine and Gillnet
14. Chignik
15. Upper Cook Inlet Gillnet
16. Peninsula/Aleutian Island

**Species:** Chinook salmon (*Oncorhynchus tshawytscha*)

Chum salmon (*Oncorhynchus keta*)

Coho salmon (*Oncorhynchus kisutch*)

Pink salmon (*Oncorhynchus gorbuscha*)

Sockeye salmon (*Oncorhynchus nerka*).

**Area:** Alaska

**Method of capture:** Drift net, seine, troll, set gillnet, drift gillnet, gillnet, fishwheel

<b>Date of Surveillance Visit:</b>	<b>27<sup>th</sup> – 28<sup>th</sup> May 2010</b>			
<b>Initial Certification</b>	<b>Date: 30<sup>th</sup> October 2007</b>		<b>Certificate Ref: MM-FC-017</b>	
<b>Surveillance stage</b>	<b>1<sup>st</sup></b>	<b>2<sup>nd</sup></b>	<b>3<sup>rd</sup></b>	<b>4<sup>th</sup></b>
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## INTRODUCTION

This report contains the findings of the second annual surveillance audit of this fishery, i.e. for the reporting period 30<sup>th</sup> October 2008 – 29<sup>th</sup> October 2009. With the agreement of the MSC this audit was delayed owing to the Alaska Department of Fish and Game (ADF&G) declaring their desire to relinquish the role of client and the need to take into account the time necessary to confirm a new client. On 18<sup>th</sup> February 2010, the ADF&G formally withdrew as the client and the Alaska Fisheries Development Foundation Incorporated (AFDF) were confirmed as the new client. In so doing, the AFDF committed to undertake the full responsibilities and requirements of a MSC certified fishery client, including the adoption of the original action plan which sets out how the Conditions of Certification will be met within the lifetime of the certificate - 5 years from the date of certification, i.e. 30<sup>th</sup> October 2007 – 29<sup>th</sup> October 2012.

Accordingly, most findings of this second annual surveillance report relate to compliance with the Conditions of Certification set out in the original certification report and the activities intended to meet the Conditions that were described in the action plan. As Conditions are closed out (i.e. actions are completed), the assessment focus on the overall ongoing operation of the fishery in relation to the MSC Principles and Criteria.

For each Condition, the report sets out the requirements of the original Condition, the original assessment scoring guideposts and the scoring commentary (identified as ‘Activity assessed’ in the table on pages 43-186 in this report). These identify the areas in which the fishery was determined to perform below the level required by the MSC standard during the 2007 re-certification assessment, and the required actions to address them.

For the 2008/09 audit, and according to the terms of the Action Plan, the client has provided a progress report and information on the work undertaken to date; further information was provided during the audit visit. This progress report and associated information has been evaluated by the Moody Marine Ltd assessment team against: the commitments made in the Action Plan; the intent of the original Condition; and, the original scoring indicator, guideposts and commentary and is also set out as ‘Observations’ and ‘Conclusion’ in the table on pages 43-186.

The influence of any overall legislative and management changes in the fishery have also been taken into consideration.

The remaining Conditions are summarised in an Appendix to this report along with their associated details, so that the issue associated with the Condition, the on-going activity to meet each Condition, and the expected timeline for closing the Conditions is provided.

## SUMMARY OF THE 2008 SALMON FISHING SEASON

At the request of Moody Marine the following summary of the 2008 salmon fishing season has been provided by the AFDF in order to provide an up to date overview of the Alaska commercial salmon fishery.

### BACKGROUND

The Alaska commercial salmon fishery was first certified under the MSC standard as well managed and sustainable in 2000 as a single unit of certification. Certification of the Alaska salmon fishery still comprises the largest project under the MSC programme, examining over 400 stocks of salmon spread over the entire state of Alaska. During the re-certification process, completed in October of 2007, the initial single certification unit was divided into 16 discrete fishery certification units that generally correspond to the major commercial salmon fisheries within the state (See Table 1).

**Table 1:** The 16 fishery certification units, gear types employed to harvest salmon, and target salmon species in each unit.

Units	Regulatory Area	Gear	Target Species				
			Chinook	Sockeye	Coho	Pink	Chum
1	Southeast	Drift Gillnet	X	X	X	X	X
2	Southeast	Seine	X	X	X	X	X
3	Southeast/Yakutat	Troll	X		X		
4	Yakutat Set	Gillnet	X	X	X	X	
5	Prince William Sound	Seine, Gillnet		X		X	X
6	Copper/Bering Districts	Drift Gillnet	X	X	X		
7	Lower Cook Inlet	Seine, Set Gillnet		X		X	X
8	Upper Cook Inlet	Gillnet	X	X	X	X	X
9	Bristol Bay	Gillnet	X	X	X		X
10	Yukon River	Gillnet, Fish Wheel	X		X		X
11	Kuskokwim	Gillnet	X	X	X		X
12	Kotzebue	Set Gillnet					X
13	Norton Sound	Gillnet	X		X	X	X
14	Kodiak	Seine, Gillnet		X	X	X	X
15	Chignik	Seine		X	X	X	X
16	Peninsula/Aleutian	Seine, Gillnet		X	X	X	X

Management of the Alaska commercial salmon fisheries is organized on a regional basis with state-wide functions like hatchery permitting and the Gene Conservation Laboratory housed in the headquarters unit. There are four regional salmon management regions with management responsibility for multiple fishery certification units in each region. Management of fishery certification units 1-4 is conducted in the Southeast Fishery Management Region; units 5-9 are managed by the Central Fishery Management Region; units 10-13 are managed by the Arctic-Yukon-Kuskokwim Fishery Management Region; and units 14-16 are managed by the Westward Fishery Management Region.

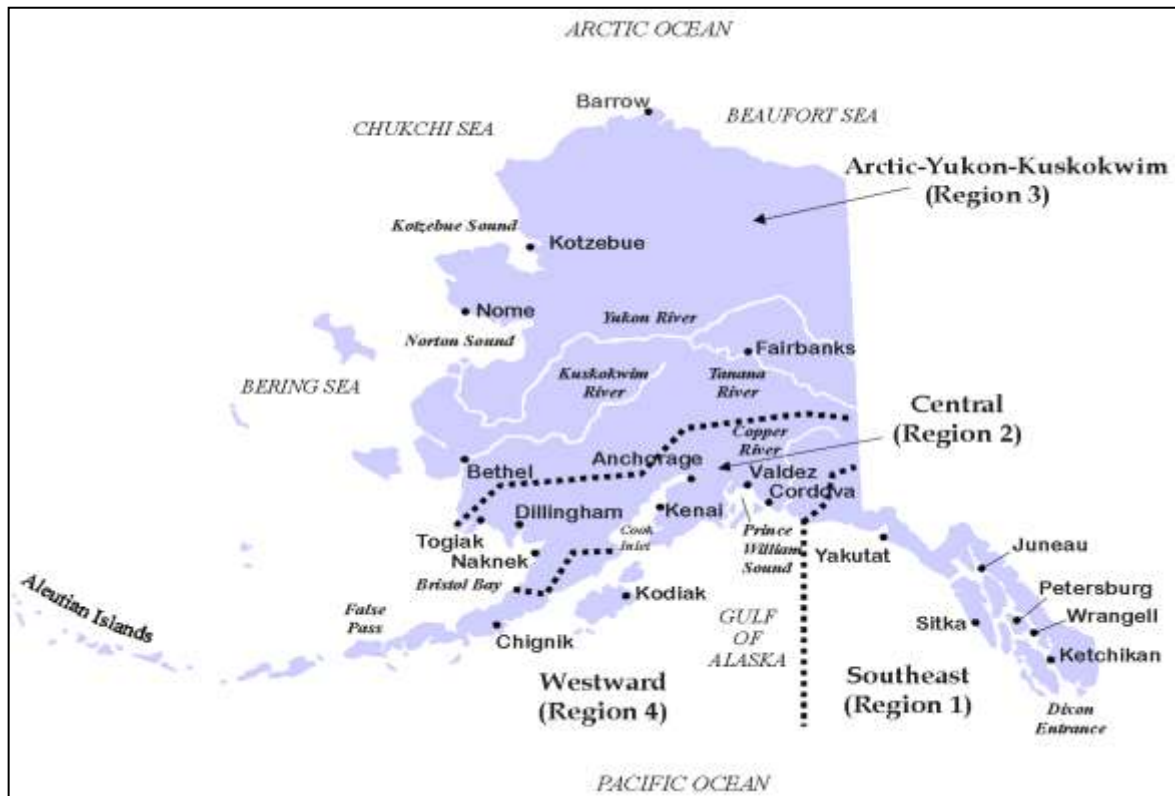
Each region has a number of area offices where the salmon managers, who are assigned the in-season responsibility for management over salmon fisheries, are stationed (See Figure 1). Area level commercial salmon managers with the ADF&G have full authority to open and close fisheries based on the information available to them and their professional judgment. This provides fishery managers with the most current information from stock assessment projects and from the fishing grounds and enables quick decisions to be made amid the rapidly changing salmon returns. This is a critically important aspect of the Alaska salmon management system, and is unique among all salmon management programs in North America. At both the regional and area level, fishery managers are supported by research staff.

A compilation of 2008 regional salmon harvests, average weights, prices, and ex-vessel values can be found at:

<http://www.cf.ADF&G.state.ak.us/geninfo/finfish/salmon/catchval/blusheet/08exvesl.php>

Maps identifying the salmon fishing districts within each region may be found at:

[http://www.cf.ADF&G.state.ak.us/geninfo/finfish/salmon/maps/map\\_home.php](http://www.cf.ADF&G.state.ak.us/geninfo/finfish/salmon/maps/map_home.php)



**Figure 1:** The salmon management regions of the Division of Commercial Fisheries.

## **SOUTHEAST ALASKA AND YAKUTAT REGION (Fishery Certification Units 1-4)**

Region I salmon harvests totalled 28.0 million salmon and 162 million pounds in 2008 (Tables 2, 3, and 4). The ex-vessel value as initially reported on fish tickets was \$117 million; however this value will be increased based on final reports from buyers and processors. Harvest was down substantially from 58.6 million fish in 2007, but value was up slightly from \$99 million in 2007



and \$95 million in 2006 due to strong prices. Cumulative all-gear commercial harvest included 241,000 Chinook, 422,000 sockeye, 2.4 million coho, 9.0 million chum, and 16.0 million pink salmon. The proportional harvest by species included 1% Chinook, 2% sockeye, 8% coho, 32% chum, and 57% pink salmon. Landings were made by 1,853 limited entry permit holders in 2008, which represents a slight decrease in effort from the prior year.

### **Pink Salmon**

The 2008 pink salmon harvest of 16.0 million was somewhat better than the 11.7 million harvest of 2006, but below the long-term average since statehood of 29.6 million and well below the most recent 10-year average harvest of 46.7 million. The pre-season ADF&G harvest forecast for 2008 was 19 million fish. The Southeast purse seine fishery provided 89% of this harvest—14.3 million pinks. Following a strong harvest of 44.9 million pink salmon in 2007, the 2008 season harvest was weak, and similar to 2006. July harvests in 2008 were low, with fewer than 1.0 million harvested by the end of the month. Northern Inside area runs were a failure. Harvests for the northern inside were limited to 400,000, the lowest since 1974, and the escapement for this area was the lowest since 1976. August harvests to Southern Southeast areas and to Northern Outside areas were well below the recent 10-year averages but escapement targets for these areas were within the escapement goal ranges. Pink salmon averaged 3.7 pounds and prices in the purse seine fishery averaged \$0.28 per pound. Pink salmon harvests are initially estimated at \$16.5 million in ex-vessel value.

### **Chum Salmon**

Total commercial chum salmon harvests were 9.0 million in 2008. The harvest was 78% of the recent 10-year average harvest. The major portions of this harvest included 3.2 million (36%) in purse seine fisheries, 3.0 million (33%) in hatchery cost recovery harvests, and 2.6 million (29%) in drift gillnet fisheries. A total of 67% of chum salmon harvests took place in terminal areas in either cost recovery or common property terminal area fisheries. A large portion of chum salmon harvests in the region result from hatchery production, including harvest outside of terminal areas as hatchery returns pass through traditional fisheries. The regional chum salmon harvest of 9.0 million was 88% of the projected return of around 10.25 million, based largely on forecasts by hatchery operators. Wild summer chum salmon escapements, based on newly-established sustainable escapement goal thresholds, were below goals for Southern Southeast Alaska and Northern Southeast Inside waters, but above goal in Northern Southeast Outside waters. Fall chum salmon escapements were generally good, with large returns to the Chilkat River. The total weight of landings and the combined ex-vessel value of chum salmon harvests in the region dominated other species. Based on fish tickets, harvests were worth an initial \$50.1 million based on a total of 77.6 million pounds landed and prices around \$0.67 per pound.

### **Sockeye Salmon**

The sockeye harvest was only 422,000 fish, and harvests were very poor throughout the region. In a historical context this was the lowest harvest since 1975, when 245,000 fish were harvested. Prior to that, the only lower harvests were from the period from 1878 to 1888. Harvests included 265,000 fish (63%) from the drift gillnet fisheries, 74,000 fish (18%) from the purse seine fisheries, and 35,000 fish (8%) from the Yakutat set net fisheries. It is thought that poor sockeye harvests are related to poor pink salmon harvests in 2006, and poor chum salmon harvests in 2007 were due to the similar ocean entry timing of the dominant year classes. Sockeye escapement goals were not met for 11 out of 13 stocks, and the 2 stocks that were within the escapement goal range also had poor returns. Sockeye salmon contributed \$3.6 million to regional ex-vessel value, with price in the drift gillnet fisheries averaging \$1.37 per pound.

## **Coho Salmon**

Regional harvest of coho salmon was 2.4 million fish in 2008. This harvest was between the long-term average harvest since statehood of 2.1 million fish and the recent 10-year average harvest of 2.8 million fish. Troll fisheries harvested 1.3 million coho (63%), followed by drift gillnet (14%), purse seine (9%), and Yakutat set net (7%). Coho escapement goals were met or exceeded for most monitored systems around the region in 2008. The initial fish ticket value of coho harvests was \$28.6 million, around 25% of the regional total value. Troll fisheries received an average of \$1.95 per pound for coho in 2008.

## **Chinook Salmon**

Regional Chinook harvest included 236,000 large fish for the October 1, 2007 to September 30, 2008 catch accounting year. The ex-vessel value of this harvest is estimated at \$17.9 million, similar to both the 2006 and 2007 seasons. As harvests have declined each year from a peak of 484,000 fish in 2004, prices have increased. Troll prices for Chinook averaged \$6.23 per pound for the year. Proportionate harvests by gear included 61% by troll, 17% by hatchery operators, and 13% by drift gillnet fisheries. In 2008 the all-gear treaty Chinook quota for Southeast Alaska was 170,000 fish based on the coastwide Chinook model under the Pacific Salmon Treaty. Quota allocations included 125,400 fish to troll fisheries, 7,300 fish to purse seine fisheries, 5,900 fish to drift and set gillnet fisheries, and 31,350 fish to sport fisheries. Also under the Pacific Salmon Treaty, directed fisheries targeting Stikine River Chinook took place in District 8 to harvest a U.S. Allowable Catch of 9,150 fish based on a harvest sharing agreement with Canada. There was no directed fishery on the Taku River in 2008 due to low forecast returns. Chinook harvests included 36,600 fish in spring troll fisheries, 30,300 fish in hatchery terminal area fisheries, and 41,700 fish in hatchery cost recovery fisheries based on Chinook returns to Alaskan hatchery programmes.

**Table 2:** Preliminary 2008 Southeast Region commercial salmon harvests, by fishing area and species in thousands of fish.

<b>Fishery</b>	<b>Chinook<sup>a</sup></b>	<b>Sockeye</b>	<b>Coho</b>	<b>Pink</b>	<b>Chum</b>	<b>Total<sup>b c</sup></b>
Total Purse Seine	16	74	218	14,304	3,208	17,821
Southern Purse Seine <sup>d</sup> Total	8	69	190	12,323	883	13,472
Southern Purse Seine Traditional	1	67	187	12,293	672	13,221
Southern Purse Seine Hatchery Terminal	7	2	3	30	210	252
Northern Purse Seine <sup>e</sup> Total	8	6	28	1,981	2,326	4,349
Northern Purse Seine Traditional	0	4	19	1,796	258	2,076
Northern Purse Seine Hatchery Terminal	8	2	9	186	2,068	2,273
Total Drift Gillnet	29	265	337	561	2,589	3,784
Tree Point	2	34	96	271	240	643
Prince of Wales	1	31	116	90	102	341
Stikine	13	36	34	18	82	185
Taku-Snettisham	2	117	37	90	774	1,020
Lynn Canal	0	35	46	11	606	698
Drift Gillnet Hatchery Terminal	11	13	7	80	785	897
Set Gillnet	1	35	154	65	1	256
Total Troll	147	1	1,292	28	61	1,529
Hand Troll Total	14	0	82	2	1	99
Hand Troll Traditional	7	0	81	1	0	90
Hand Troll Hatchery Terminal	3		1	0	0	4
Hand Troll Experimental	5	0	0	0	0	5
Power Troll <sup>f</sup> Total	132	1	1,210	27	60	1,429
Power Troll Traditional	99	1	1,190	25	55	1,370
Power Troll Hatchery Terminal	1	0	19	0	0	20
Power Troll Experimental	32	0	1	1	5	40
Total Annette Island Reservation	1	6	37	926	153	1,123
Annette Island Purse Seine	0	2	7	626	22	658
Annette Island Drift Gillnet	1	4	29	300	131	464
Total Annette Island Troll	0		1	0		1
Annette Island Hand Troll	0		1	0		1
Annette Island Power Troll	0					0
Hatchery Cost Recovery	42	40	321	96	2,981	3,479
Southeast Region Total	236	422	2,361	15,987	9,001	28,010
Miscellaneous <sup>g</sup>	1	1	1	6	9	18
Southern SE Area Totals	75	176	926	13,638	2,221	17,039
Northern SE Area Totals	155	211	1,243	2,283	6,780	10,673
Yakutat Area Totals	6	35	192	65	1	299

<sup>a</sup> Chinook adults, not jacks are reported.

<sup>b</sup> Missing data indicates no harvest, and zeros indicate harvest activity <1,000.

<sup>c</sup> Columns may not total exactly due to rounding error.

<sup>d</sup> Districts 101–108. Traditional fishery.

<sup>e</sup> Districts 109–114. Traditional fishery.

<sup>f</sup> Catch accounting period for the 2008 Chinook salmon season goes from October 1, 2007 through September 30, 2008.

<sup>g</sup> Includes salmon that were confiscated, caught in sportfish derbies, or commercial test fisheries, and sold.

## **CENTRAL REGION (fishery certification units 5-9)**

### **Preliminary 2008 Prince William Sound Salmon Season Summary**

The 2008 Prince William Sound Area commercial salmon harvest was 49.3 million fish, comprised of 42.4 million pink, 1.3 million sockeye, 5.1 million chum, 551,000 coho, and 12,000 Chinook salmon. The 2008 harvest was composed of 41.0 million (83%) commercial common property fishery (CPF), and 8.3 million (17%) hatchery cost recovery fish.

### **Gillnet Fisheries**

#### **Copper River District**

The commercial salmon fishing season in the Copper River District began on Thursday, May 15. In accordance with modifications made to the Copper River King Salmon Management Plan, (5 AAC 24.361) at the December 2005 Board of Fisheries meeting, there was only one period per week during statistical weeks 20 and 21 when commercial fishing was permitted inside of the barrier islands as defined in 5 AAC 24.350(1)(B). The 2008 sockeye salmon harvest of 321,000 ranked as the fourth smallest since 1970, and was about half the forecasted harvest of 742,166. The preliminary harvest composition was 299,000 (93%) wild sockeye, 21,700 (7%) Gulkana Hatchery sockeye, and 74 (<1%) Main Bay Hatchery sockeye salmon. The harvest of 11,500 Chinook salmon was well below the previous 10-year average harvest of 43,059 fish and the pre-season forecast of 46,908. The coho salmon commercial harvest of 202,000 was below the previous 10-year average harvest of 285,221 fish and the pre-season forecast of 288,013. The 2008 in river goal for salmon passing the Miles Lake sonar site was set at 597,600 to 791,000 fish. The 2008 sonar escapement estimate was 718,344 fish.

#### **Bering River District**

Opening in early June, the Bering River District is managed concurrently with the Copper River District. The 2008 harvest of 1,200 sockeye salmon was far below the recent 10-year average of 19,000. The coho salmon harvest of 40,400 fell below the 10-year harvest average of 45,400 coho salmon.

#### **Coghill District (Drift Gillnet)**

The commercial common property harvest of chum salmon in the Coghill District was 2.3 million fish: 2,308,000 by drift gillnet gear and 9,000 by purse seine gear. Prince William Sound Aquaculture Corporation (PWSAC) harvested 641,000 chum salmon for corporate cost recovery. The Coghill Lake sockeye salmon escapement of 29,296 fish was within the sustainable escapement goal (SEG) range of 20,000 to 40,000 fish. The total commercial common property harvest of sockeye salmon in the Coghill District was 179,000 fish, of which 127,000 fish were of enhanced stock Main Bay Hatchery origin and 51,000 fish were of wild stock origin. The majority of the sockeye salmon, 178,000 fish, were harvested by the drift gillnet fleet. The coho salmon harvest of 117,000 fish fell below the PWSAC preseason harvest forecast of 125,300 enhanced fish. The majority (81,000 fish) were harvested by the drift gillnet fleet. Additionally, the purse seine fleet harvested 37,000 coho salmon. A small portion of the Coghill District coho salmon harvest was likely of wild stock origin.

## **Eshamy District**

The Eshamy District sockeye salmon harvest was composed of 6,500 (~1%) harvested for hatchery broodstock, 162,000 (22%) set gillnet fish and 561,000 (77%) drift gillnet fish. The department's preseason forecast for Eshamy Lake was 84,000 wild sockeye salmon. The harvest of 654,000 Main Bay Hatchery sockeye salmon in the Eshamy District was below the preseason forecast of 929,000 fish. The PWSAC did not harvest any Main Bay Hatchery sockeye salmon for cost recovery. The sockeye salmon escapement to Eshamy Lake was 18,495 fish when the weir was removed on August 28. This was within the anticipated range of escapement of 16,932 to 33,865 fish for that date based on the biological escapement goal (BEG).

## **Unakwik District**

The Unakwik District CPF harvest of 389 fish was taken exclusively by the drift gillnet fleet. This harvest was far below the 10-year average of 8,810 fish and the preseason harvest forecast of 8,594 sockeye salmon.

## **Purse Seine Fisheries**

### **Chum Salmon**

The 2008 enhanced chum salmon CPF harvest in Prince William Sound was 4.2 million fish, which was 1.5 million fish above the CPF preseason forecast. The 2008 chum salmon purse seine CPF harvest of 1.8 million fish was composed of approximately 4% wild fish and 96% hatchery fish. The predominant areas for purse seine harvest of enhanced chum salmon were the Port Chalmers Subdistrict and the Armin F. Koernig Hatchery terminal harvest area (1.2 million fish) and special harvest area (511,000 fish). The Coghill District had a purse seine harvest of 9,000 chum salmon and a drift gillnet harvest of 2.3 million chum salmon. In-season wild chum salmon aerial survey escapement estimates were below cumulative anticipated levels in all but the Coghill and Northwestern districts. The 2008 total Prince William Sound wild stock chum salmon escapement of 203,000 fish in districts with SEGs (211,000 fish in all districts) was more than double the SEG lower bound of 91,000 fish.

The 2008 chum salmon total run forecast for Prince William Sound was 3.8 million fish. The majority of the forecast, 3.4 million fish (88%), were of PWSAC hatchery origin. PWSAC forecasted a run of 2.3 million chum salmon to Wally Noerenberg Hatchery, 787,000 fish to Port Chalmers, and 309,000 fish to Armin F. Koernig Hatchery. Approximately 640,000 chum salmon (28%) out of the forecast 2.3 million Wally Noerenberg Hatchery run were required for corporate cost recovery. All Port Chalmers and Armin F. Koernig Hatchery chum salmon were available for harvest in the purse seine CPF. Based on the department's wild chum salmon forecast of 446,000 fish, there was a potential CPF harvest of 246,000 wild chum salmon.

### **Pink Salmon**

The 2008 harvest of 42.4 million pink salmon, composed of approximately 3% wild fish and 97% hatchery fish, was the second largest even-year Prince William Sound pink salmon harvest on record. The overall harvest by gear type was 33.7 million by purse seine, 20,000 by set gillnet, 960,000 by drift gillnet, and 7.7 million (4.2 million VFDA and 3.5 million PWSAC) for hatchery cost recovery and broodstock. The aquaculture association contributions to the enhanced pink salmon harvest were 33% VFDA and 67% PWSAC. VFDA cost recovery and broodstock harvest was approximately 28% of the total pink salmon run to the Solomon Gulch Hatchery. PWSAC cost recovery and broodstock harvest was approximately 13% of the total pink salmon run to PWSAC hatcheries.

The 2008 preseason forecast for the pink salmon harvest in Prince William Sound was 29.5 million fish. This estimate included 3.5 million wild stock fish, 9.8 million Valdez Fisheries Development Association (VFDA) hatchery fish, and 16.2 million PWSAC hatchery fish. Approximately 3.5 million pink salmon (30%) of the projected 16.2 million pink salmon returning to the PWSAC hatcheries were anticipated to be needed for cost recovery and broodstock. The remaining 12.7 million PWSAC fish would be available for CPF harvest. Approximately 5.0 million pink salmon (51%) of the projected 9.8 million pink salmon returning to the VFDA Hatchery were anticipated to be needed for cost recovery and broodstock. The remaining 4.8 million VFDA fish would be available for CPF harvest. A total harvest of 1.5 million wild stock pink salmon was forecasted for CPF leaving 2.0 million pink salmon for escapement.

Despite limited fishing opportunity outside of hatchery subdistricts, in-season wild pink salmon aerial survey escapement estimates were below cumulative anticipated levels in all but Coghill and Northwestern districts. The 2008 total Prince William Sound wild stock pink salmon escapement of 862,000 was below the even-year SEG lower bound of 1.3 million fish, and was the lowest escapement since 1992. The preliminary Prince William Sound wild stock pink salmon harvest of 1.4 million fish, 140,000 below the 2008 commercial harvest forecast midpoint estimate, was the third lowest wild stock harvest contribution by number (second lowest by percent of total harvest) in the last 30 years. The ratio of enhanced pink salmon to wild pink salmon in the 2008 commercial common property harvest was 32:1.

### **Coho Salmon**

The purse seine fleet harvested 158,000 coho salmon in the Eastern District. The majority of these coho salmon were assumed to be VFDA stock. The purse seine fleet also harvested 37,000 coho salmon in the Coghill District (the majority assumed to be PWSAC enhanced stock). VFDA harvested a total of 24,230 coho salmon, of which 1,460 fish were utilized for brood, 420 fish were given away, and 22,360 fish were sold.

The 2008 VFDA coho salmon run was anticipated to be 211,000 fish. A total of 2,000 salmon were anticipated to be needed to meet VFDA broodstock objectives.

### **Lower Cook Inlet**

The 2008 Lower Cook Inlet all-species commercial salmon harvest of just over 1.092 million fish was the third lowest during the past decade, representing slightly more than 60% of the recent 10-year average of 1.786 million fish. The overall harvest failed to achieve the cumulative preseason forecast of 1.252 million fish, in large part due to much smaller than anticipated harvests of natural runs of pink salmon. Nonetheless, the sockeye harvest of 407,600 was the third highest in the last decade and exceeded the recent 10-year average of 310,600 by over 30%. The chum harvest of 175,700 was the second highest since 1988 and was almost triple the recent 10-year average of 63,300. Increased prices paid for salmon this season yielded an estimated ex-vessel value of approximately \$3.96 million, making the value of the 2008 Lower Cook Inlet harvest the highest since 1988 and the fourth highest since statehood.

For the third consecutive season, Lower Cook Inlet commercial salmon harvests in 2008 were not dominated by hatchery and enhanced fish production. This is primarily because no pink salmon returned to the Tutka Hatchery facility, where operations were suspended after 2004, and also because the minimal pink return to Port Graham Hatchery did not contribute to commercial catches. Hatchery production did contribute to sockeye catches, with approximately 40% of the Lower Cook Inlet sockeye salmon harvest attributed to lake stocking and fertilization projects. Most of these projects were originally begun by ADF&G, but are currently maintained by Cook

Inlet Aquaculture Association. These projects were conducted at Leisure and Hazel Lakes in the Southern District, Kirschner Lake in the Kamishak Bay District, and Bear Lake in the Eastern District. Two newer sockeye salmon enhancement projects in the Southern District, one conducted by the Port Graham Hatchery Corporation in Port Graham and the other undertaken by Cook Inlet Aquaculture Association in Tutka Bay, contributed an additional 10% to Lower Cook Inlet catches. Virtually all fish from these projects were utilized for hatchery cost recovery. The proportion of the Lower Cook Inlet salmon harvest utilized for hatchery cost recovery in 2008 (8.5%) was significantly less than the historical average normally taken by Cook Inlet Aquaculture Association and Port Graham Hatchery Corporation to support the stocking and hatchery programs. Hatchery harvest in 2008 generated approximately 14% of the ex-vessel value of the 2008 Lower Cook Inlet salmon fishery.

### **Sockeye Salmon**

The 2008 sockeye catch of 407,600 fish accounted for about 37% of the Lower Cook Inlet commercial salmon harvest in total numbers of fish, yet provided approximately 70% of the ex-vessel value of the entire salmon fishery this season. The 2008 Lower Cook Inlet commercial sockeye harvest was characterized by much weaker than expected returns to key enhanced systems at Leisure and Hazel Lakes (Southern District), Bear Lake (Eastern District), and Kirschner Lake (Kamishak Bay District). In contrast, natural sockeye returns within the management area ranged from good to outstanding, with 4 of 5 major systems achieving or exceeding their respective SEGs. The fifth system fell slightly short of its SEG based on aerial surveillance, but video escapement counts showed more escapement than estimated aurally.

Two additional systems with both natural and enhanced production also attained their respective desired inriver returns. Of particular note was the formerly enhanced system of Chenik Lake, located in the Kamishak Bay District on the west side of Lower Cook Inlet, where the sockeye return this season was one of the best on record. The resulting 2008 commercial catch in nearby waters totaled over 171,000 fish, which was over 2.5 times the average catch for that area during the previous 4 seasons. Stocking of Chenik Lake was discontinued after the 1996 season, thus all present production is considered natural, and this season's return was estimated at approximately 182,500 sockeyes, continuing a 6-year trend of excellent returns to the system.

### **Pink Salmon**

Natural returns of pink salmon, usually the dominant species in numbers of commercially harvested salmon in Lower Cook Inlet, were considered variable this year. For the first time in many seasons, Lower Cook Inlet catches of pink salmon were entirely the result of natural production. The numerous and fairly liberal openings to target these natural stocks produced overall catches totaling nearly 506,000 fish. The 2008 harvest figure is only about 36% of the most recent 10-year average and represents the second lowest catch of this species during that timeframe, primarily due to the lack of hatchery production. Pink salmon SEGs were achieved at virtually all monitored systems in the management area.

### **Chum Salmon**

For the eighth year out of the past 9 seasons, Lower Cook Inlet chum salmon returns were relatively strong, producing a harvest of nearly 176,000 fish, the second highest catch for the species in that area since 1988. Interestingly, the majority of this season's chum harvest occurred in Port Dick of Lower Cook Inlet's Outer District, not normally a prominent area for catches of this species, rather than Kamishak Bay which has historically dominated catches. The catch of 87,500 chums in Port Dick was the highest catch for that area since 1981, even greater than that of the strong 1988 season. Kamishak Bay catches this season totaled slightly more than 73,000

chums, considered very good. Escapements into most Lower Cook Inlet chum systems were sufficient to achieve goals, with the exception of McNeil River, where the escapement fell short of its established goal range for the 14th time in the last 19 years.

### **Coho Salmon**

The coho salmon resource is not extensive in the Lower Cook Inlet management area, and as a result this species rarely attains commercial prominence. The commercial harvest of approximately 3,000 coho salmon in 2008 was the lowest since 1977 and was only about one-quarter of the recent 10-year average for this species. The Eastern District accounted for around 55% of the area-wide coho harvest. This district frequently produces the bulk of the Lower Cook Inlet coho catches because of the Seward Silver Salmon Derby and Cook Inlet Aquaculture Association hatchery cost recovery at Bear Lake. The remainder of the Lower Cook Inlet commercial coho catch was split between seiners (24%) and set gillnetters (20%) in the Southern District. One aerial survey was flown specifically for coho salmon this season, indicating good escapement into Clearwater Slough, the major coho salmon index stream at the head of Kachemak Bay in the Southern District.

### **Chinook Salmon**

The 2008 harvest of Chinook salmon, not normally a commercially important species in Lower Cook Inlet, totaled fewer than 200 fish, or less than 20% of the average during the last decade and the lowest catch since 1975. Virtually all of the catch came from the Southern District, with the majority taken in Tutka Bay Subdistrict. Set gillnetters accounted for 79% of the Southern District Chinook catch, with purse seiners taking the remaining 21%.

### **Upper Cook Inlet**

The 2008 Upper Cook Inlet commercial harvest of 2.8 million salmon is approximately 1.5 million fish below the average long-term harvest (Table 1). While all 5 species of Pacific salmon are present in Upper Cook Inlet, the primary focus of the commercial fishery is sockeye salmon. Sockeye salmon escapement goals are monitored in 6 systems in Upper Cook Inlet. In 2008, 2 were within, 2 were below, and 2 were over the goal ranges.

### **Sockeye Salmon**

The preseason forecast for the 2008 season projected a run of 5.6 million sockeye salmon, with a harvest estimate (sport, personal use and commercial) of 3.9 million fish. The total run to the Kenai River, generally the largest producer in Upper Cook Inlet, was forecasted to be 3.1 million fish. This resulted in managing for an inriver sonar goal range in the Kenai River of 750,000 to 950,000 fish. Two regularly scheduled fishing periods plus up to 51 hours of additional fishing time in the Upper Subdistrict set gillnet fishery were allowed with this run size under the abundance-based escapement goal for the Kenai River. In addition, this run strength mandated 2 closed periods (windows) per week, a 24- and a 36-hour period in the Upper Subdistrict set gillnet fishery.

While the fishing season opens in most of Upper Cook Inlet in mid to late June, participation and harvests remain fairly low until about July 4. In 2008, harvests in the Central District were relatively low through July 12 for a return forecast at the level of 5.6 million; however winds and tides will sometimes have this effect. After July 12, the harvest from each fishing period was approximately one-half of that expected. Beginning July 20, indications from the Offshore Test Fish Program, coupled with harvests and escapements to date, began to indicate the return was not going to be as strong as forecast. On July 24, the run estimate from the Offshore Test Fish



Program indicated that the run was going to be not only well below forecast but below 2.0 million, triggering a different escapement goal of 650,000 to 850,000 fish and different management parameters.

The commercial fishery targeting Kenai Stocks in the Upper Subdistrict and Central District drift gillnet fishery was closed at the end of the July 24 fishing period and remained closed for the remainder of the year due to lagging sockeye passage to the Kenai River. Even with these actions to conserve Kenai Sockeye, the inriver goal was not achieved. On August 1, the department assessed the total Kenai River sockeye salmon run to be between 1.85 and 1.91 million fish. With this in-season assessment, the inriver escapement goal for the Kenai River became 650,000 to 850,000 fish. The final inriver sonar count in the Kenai River was 614,946 sockeye salmon, slightly below the lower end of the inriver goal range for a run of fewer than 2.0 million. The total Upper Cook Inlet run in 2008 was approximately 4 days early and much weaker than forecast.

Postseason assessments of run strength by river system indicate a run to the Kenai River of 2.1 million fish. While there is significant error associated with this estimate it dictates an escapement goal range of 750,000 to 950,000 fish meaning the escapement in 2008 was approximately 135,000 below the lower end of the escapement goal.

The Upper Cook Inlet commercial harvest of 2.3 million fish was significantly below the preseason forecast harvest estimate of 3.9 million and the ninth lowest harvest since 1980. The total run of 4.0 million sockeye salmon to Upper Cook Inlet was 29% less than the preseason forecast. Returns to all systems were significantly less than forecasted, with the largest disparity on the Kenai River, where the run was approximately 1.0 million fish less than forecast.

Sockeye salmon prices at the beginning of the season were approximately \$1.20 per pound. The total ex-vessel value in Upper Cook Inlet for sockeye salmon was approximately \$18.0 million, which was 92.5% of the total Upper Cook Inlet ex-vessel value.

### **Coho Salmon**

The 2008 coho salmon harvest of 166,475 fish was slightly below the recent 10-year average harvest of 188,000 and approximately half of the 1966 to 2007 long-term average coho salmon harvest of 316,000 fish. Commercial coho salmon harvests in 2008 were likely reduced because of attempts to achieve the Yentna Sockeye escapement goal using area restrictions of the drift fleet, closure of several periods in the Northern District set gillnet fishery, and an early closure in the drift fishery and Upper Subdistrict set gillnet on July 24 for much of the remaining season.

The coho salmon run in 2008 was judged to be above average. Commercial coho salmon harvests in Upper Cook Inlet during the 1980s and early 1990s were much higher than the long-term average due to good coho salmon production and strong sockeye salmon returns to Upper Cook Inlet, which resulted in more fishing time in the Central District. Since 1996, Board of Fisheries regulations have reduced fishing time for the drift fleet in the Central District and eliminated additional fishing time directed at coho salmon surpluses in the Northern District, Kalgin Island and Upper Subdistricts of the Central District, which has resulted in marked reductions in the commercial harvest.

The only significant coho salmon return to Upper Cook Inlet with an escapement goal is the Little Susitna River. In 2008, the final escapement count of 18,485 fish was slightly below the upper end of the escapement goal range of 19,200 fish. The ex-vessel value of coho salmon to the commercial fishery was approximately \$700,000 or 3.6% of the total ex-vessel value in Upper Cook Inlet.

## **Pink Salmon**

Approximately 168,000 pink salmon were harvested in 2008. This figure is 75% of the recent 10-year average pink salmon harvest of 187,000 fish and about one-third of the average harvest of 490,000 fish since 1966. Pink salmon harvests were impacted by the restrictions implemented for Yentna River sockeye salmon and the early termination of the Upper Subdistrict set gillnet fishery. Pink salmon escapements are not monitored in Upper Cook Inlet to an appreciable degree; however, it appears that escapements to most river systems were very good. Prices paid for pink salmon ranged from \$0.10 to \$0.35 per pound, resulting in an ex-vessel value for this species of \$150,000, less than 1% of the total ex-vessel value.

## **Chum Salmon**

The 2008 harvest of 51,301 chum salmon was well below the long-term average harvest of approximately 500,000 fish. The 2008 chum salmon harvest was approximately 50% less than the recent 10-year average harvest of 120,000 fish. Much of this reduction in harvest was the result of reduced fishing time in traditional fishing areas, primarily by the drift fleet, due to sockeye salmon concerns in Northern Cook Inlet. Following the flood of 1986 through the mid 1990s, chum salmon production in much of Southcentral Alaska was poor. Since the mid-1990s, chum salmon production has increased. Chum salmon runs to most of Cook Inlet in 2008 were good by recent standards. The ex-vessel value of chum salmon to the commercial fishery was approximately \$150,000, or less than 1% of the total value.

## **Chinook Salmon**

The 2008 harvest of 12,917 Chinook salmon is 25% below both the long- and short-term average harvests of 16,200 fish. The two fisheries where Chinook salmon are harvested in appreciable numbers in Upper Cook Inlet are set gillnet fisheries in the Northern District King Salmon Fishery and in the Upper Subdistrict of the Central District. After experiencing a significant downturn in the early to mid-1990s, Northern District Chinook salmon stocks rebounded and were relatively strong for the next 10 years. However, in 2008, the Deshka River Chinook salmon run, generally the largest run in the region was below average, failing to meet its escapement goal. To conserve Chinook salmon, one of the five allowable king salmon periods was closed. The first regular sockeye period on June 26 was also closed in the Northern District. Harvests in the Northern District fishery remain well below the harvest cap of 12,500 fish due to reduced participation and regulatory closures of the highest producing fishing sites located north of the Theodore River. The 2008 harvest in the Northern District of 4,000 fish is about 1,600 higher than the recent 10-year average harvest of 2,400 fish. This is most likely due to changes made by the Board of Fisheries in 2005 that lengthened the fishing periods from 6 hours to 12 hours on each Monday. In 2008, the commercial harvest of 7,000 Chinook salmon in the Upper Subdistrict set gillnet fishery was about 75% of the average harvest since 1966 when harvest records were available. Late-run Kenai River Chinook salmon runs have been relatively stable and escapement objectives have been consistently achieved or exceeded. Beginning in 1999, a 24-hour closed period per week was mandated for the set gillnet fishery in the Upper Subdistrict. Since that time, longer closed periods of 36 hours, or 2 shorter closed periods each week, a 24- and a 36-hour closed period, have also been adopted into regulation. The stated purpose of these closed periods is to pass fish into the inriver recreational fishery for the weekends. However, when large numbers of sockeye salmon pass into the Kenai and Kasilof Rivers during closed windows, allowable fishing time is maximized when fewer sockeye salmon are moving into Upper Cook Inlet in an attempt to keep sockeye salmon goals within their ranges. This may result in increased Chinook salmon harvest in the set gillnet fishery. In 2008, the ex-vessel value for Chinook salmon was \$461,000 which is approximately 2.4% of the total ex-vessel value.

## **Bristol Bay**

The 2008 inshore Bristol Bay sockeye salmon run of approximately 40.4 million fish ranks 21st since statehood and the preliminary catch of 27.7 million fish ranks 17th since statehood. This year's total inshore run was 9% above the 20-year average (1988 to 2007) of 37.0 million and was slightly higher than the preseason forecast of 40.3 million fish. The Nushagak District came in slightly under forecast, while Ugashik District came in significantly (55%) under forecast. The following districts were above forecast: Togiak (14%), Naknek/Kvichak (8%), and Egegik (18%). The commercial harvest of sockeye salmon was 15% below the 31.4 million preseason forecast. Bay wide total escapement was nearly 12.7 million fish.

Approximately 24,000 Chinook salmon were harvested in Bristol Bay in 2008. This is 36% of the average harvest for the last 20 years and significantly below the preseason expected harvest of 85,000 fish. The chum salmon harvest of approximately 1.2 million is nearly half the 2006 or 2007 harvest; however, it is above the 20-year average of 1.0 million fish. The coho salmon harvest of approximately 90,000 is also close to the 20-year average of 98,000 fish. The pink salmon harvest of approximately 280,000 is above the 20-year average of 240,000 fish. The recent trend of lower pink and coho harvests have more to do with market demand than with stock status.

The 2008 harvest of all salmon species in Bristol Bay was approximately 29.3 million fish. To derive a preliminary estimate of the ex-vessel value of the fishery, the figures listed in Table 5 were used. These figures represent a rough estimate since the contribution of future price adjustments, loyalty bonuses, and differential prices for refrigerated versus non-refrigerated fish were not included. The calculated preliminary ex-vessel value of the 2008 Bristol Bay salmon fisheries is approximately \$113.3 million, which is 91% of the 20-year average, and ranks 11th over that same period.

## **Sockeye Salmon**

The 2008 inshore sockeye salmon run of 40.4 million was only slightly higher than the preseason forecast of 40.3 million fish.

The main concerns for the 2008 season were processor capacity and the potential delayed run due in part to the late spring break-up. Early indications from the Togiak herring fishery and the cold spring temperatures suggested the run could be 1 or 2 days behind schedule. With a projected harvest of 31.4 million sockeye, the department planned to allow more fishing time early in the run. Most districts were fishing daily by June 26 with catches increasing at manageable levels through June 29. By June 30, daily harvest had increased to over 1.2 million fish and the first action to suspend or limit catch was imposed. With the July 1 harvest of 1.5 million fish, additional suspensions or limits were imposed by a few companies. On July 2, 2.6 million fish were harvested followed by another 2.0 million fish on July 3. By the evening of July 3, 12 companies issued some level of limits or suspensions, and company restrictions continued over the next several days. By July 8, most limits were higher than what permit holders could catch. By July 16, daily catch rates dropped to levels under 500,000 fish and permit holders began to put their boats up for the season. The total harvest was less than forecast, but the inshore run was very close to forecast. For the first time since 1995 the Naknek River and Egegik River Special Harvest Areas were not opened.

## **Chinook Salmon**

Chinook salmon harvests in Bristol Bay districts were below average in every district. As in most areas of the state, the Chinook run to the bay in 2008 was extremely late. There were 2 directed

Chinook fishing periods in the Nushagak District with 10 fish harvested in the first period and less than 500 in the second period. The fishery remained closed until management switched to sockeye salmon due to the increasing abundance of that species. Chinook salmon catch and escapement increased in late June. Approximately 18,000 Chinook were harvested during the directed sockeye fishery, with the majority harvested between June 28 and July 2. The final Chinook escapement of 96,700 fish is above the inriver goal of 75,000 fish established in the Nushagak Mulchatna King Salmon Management Plan and exceeded the SEG range. Runs of Chinook salmon to all districts were below average and exhibited late run timing.

### **Chum Salmon**

The total Bristol Bay chum salmon harvest in 2008 was approximately 1.2 million fish. All districts produced harvests above their 20-year average. As in 2007, the Nushagak District had the largest chum harvest of nearly 550,000 fish.

### **Pink Salmon**

Pink salmon have strong runs during even years in Bristol Bay. In 2008, approximately 258,000 pinks were harvested on the Westside of Bristol Bay, and less than 20,000 were harvested from the combined 3 districts on the Eastside.

### **Coho Salmon**

The Bay wide harvest of approximately 90,000 coho salmon was 9% below the recent 20-year average of 98,000 fish. Based on available information it appears the 2008 coho run was slightly early, weak, and compressed in most districts. In the Nushagak District, the main producer for coho in the Bay, the run was strong and lasted past the middle of August. In other districts coho arrived in late July in moderate numbers, but declined in mid-August. In some districts, harvest was limited by market availability.

**Table 3:** Preliminary 2008 Central Region commercial salmon harvests, by fishing area and species, in thousands of fish.

Fishing Area	Species					Total
	Chinook	Sockeye	Coho	Pink	Chum	
Purse Seine						
Eastern	0	1	158	10,830	21	11,009
Northern	0	1	1	8,547	39	8,588
Coghill	0	1	37	6,585	9	6,632
Northwestern						
Southwestern	0	62	7	7,549	517	8,135
Montague	0	10	0	216	1,234	1,460
Southeastern						
Unakwik						
Drift Gillnet						
Bering River	0	1	40	0	0	42
Copper River	11	321	202	1	1	537
Unakwik	0	0	0	1	0	1
Coghill	0	178	81	854	2,308	3,421
Eshamy	0	561	2	103	251	918
Set Gillnet						
Eshamy	0	162	0	20	54	237
Hatchery c	0	0	23	7,639	641	8,303
Misc. Prince William Sound d	1	3	1	7	0	10
Prince William Sound Total	12	1,301	551	42,354	5,076	49,294
Southern District	0	132	1	10	2	145
Kamishak District	0	184	0	28	73	285
Outer District	0	2	0	468	101	571
Eastern District	0	90	2	0	0	92
Lower Cook Inlet Total	0	408	3	506	176	1,090
Central District	9	2,345	130	165	49	2,698
Northern District	4	26	42	4	2	78
Upper Cook Inlet Total	13	2,372	172	169	50	2,776
Naknek-Kvichak District	1	10,440	6	18	183	10,650
Nushagak District	19	6,886	68	138	541	7,651
Egegik District	0	7,430	13	1	65	7,510
Ugashik District	1	2,349	1	0	111	2,461
Togiak District	3	651	2	121	302	1,078
Bristol Bay Total	25	27,756	90	278	1,202	29,351
Central Region Total	50	31,837	816	43,307	6,504	82,514

Note: Missing data indicates no harvest and zeros indicate harvest activity but <1,000.

Note: Columns may not total exactly due to rounding.

Note: Modified 1/30/2009.

<sup>a</sup> Totals include discarded sockeye, coho, pink and chum salmon.

<sup>b</sup> Does not include salmon taken for home use as reported on fish tickets.

<sup>c</sup> Hatchery sales for operating expenses. Includes meal production/roe salvage sales, processor discards. Excludes post egg-take roe sales at hatcheries.

<sup>d</sup> Some of these fish were donations landed by Coghill District and Copper River District drift gillnet permit holders.

## **ARCTIC-YUKON-KUSKOKWIM REGION (Fishery Certification Units 10-13)**

Arctic-Yukon-Kuskokwim Region salmon harvests totaled 1,231,000 fish and 8.58 million pounds in 2008 (Tables 2, 3, and 6). The ex-vessel value was estimated to be \$4.0 million. Cumulative all-gear commercial harvest included 29,000 Chinook, 113,000 sockeye, 415,000 coho, 584,000 chum, and 90,000 pink salmon. The Chinook salmon harvest was considerably below average. Generally poor chum and pink salmon markets resulted in substantially lower harvest than available surpluses, with the exception of strong chum salmon markets in the Yukon River. Landings were made by 1,098 limited entry permit holders in 2008.

### **Kuskokwim Area**

A total of 494,108 salmon were commercially harvested from the Kuskokwim Area, approximately 50,000 more fish than in 2007. A total of 462 permit holders participated in the Kuskokwim Area commercial fisheries, which is up slightly from the 456 permit holders that operated in 2007. Ex-vessel value for the Kuskokwim Area commercial harvest is estimated at \$1.487 million. Prices paid for Chinook, sockeye, and coho salmon were higher in 2008 than in 2007. Chinook salmon average price increased from \$0.57 to \$0.71 per pound, sockeye average price increased moderately from \$0.53 to \$0.56 per pound, and coho average price increased from \$0.38 to \$0.42 per pound. The price paid for chum salmon remained at the 2007 level of \$0.05 per pound.

The 2008 Kuskokwim Area (Kuskokwim River and Kuskokwim Bay districts) sockeye and chum salmon runs were similar to what was anticipated; however, there has been a general reduction in abundance from the levels for these species seen in 2005 and 2006. The Chinook salmon runs were classified as late and below average in 2008. The 2008 forecast was for the Chinook salmon abundance to be near average and similar to 2007. Preliminary in-season assessment from Kuskokwim River test fishing and subsistence reports seemed to confirm the expectation of average runs; however, based on harvest and escapement estimates, the runs appeared to be lower in 2008 than in 2007. Subsistence harvest information in 2008 is still being compiled, so no postseason total abundance estimate is possible at this time. The commercial coho salmon harvest was below the most recent 10-year average for the Kuskokwim Area fishery; however, coho escapement and harvest information indicate coho runs were stronger in 2008 than in the last few years and had approximately normal timing.

### **Kuskokwim River**

In the Kuskokwim River, processing capacity and continued weak chum salmon market conditions were reoccurring issues in 2008. However, the first commercial fishing period was scheduled on June 20, which focused mainly on sockeye and chum salmon. There was a single buyer operating during the June portion of the season that informed the department that they would cease buying operations from late June through July and would not resume buying operations in District 1 until the coho directed fishery began in August. Participation in the District 1 June fishery fluctuated from 126 to 171 permits. In addition to the single buyer, 8 fishers registered with the department as Catcher/Sellers, with 6 making deliveries. An additional processor operated a buying station on a tender during one full District 1 commercial period during the August coho fishery. The Kuskokwim River District 1 commercial harvest in 2008 was 8,865 Chinook, 15,601 sockeye, 30,516 chum, and 142,862 coho salmon from 20 fishing periods. The 2008 Chinook, sockeye, and chum salmon harvests were above the most recent 10-

year average while the coho salmon harvest was approximately 27% below the recent 10-year average. A total of 374 individual permit holders recorded landings in District 1 during the 2008 season. This level of fishing effort was approximately 23% below the recent 10-year average of 428 fishers. The total ex-vessel value of the fishery was \$538,310—approximately 10% above the recent 10-year average.

Based on preseason outlook and projections, the Kuskokwim River subsistence fishing schedule was not implemented in 2008. We expect that the amounts of salmon necessary for subsistence were achieved throughout the area in 2008. However, high operating cost, weather conditions that were not optimum for processing salmon for subsistence use, and the outlook for high winter heating fuel prices may have increased the subsistence harvest to compensate for possible losses due to the damp conditions in June and July and higher living expenses.

Chinook salmon escapements were evaluated through aerial surveys on 13 index streams and by enumeration at weirs on 7 tributary streams. Chinook escapements in 2008 ranged from above average to below average at all monitored locations. Results of Chinook salmon aerial surveys ranged from below escapement goal ranges or below the median to above escapement goal ranges and above the median. Kogrukluk River Chinook escapement was within the escapement goal range, while Chinook escapement to the Kwethluk, Tuluksak, and George rivers did not achieve the lower end of their respective escapement goal ranges. Chinook salmon escapement timing was among the latest on record with some populations arriving almost 2 weeks later than average. This was inconsistent with inriver run timing near Bethel, which was only slightly later than average this year by 2 to 3 days.

Sockeye salmon escapements were monitored at each of the 7 tributary weir projects; however, sockeye are not a prominent species in many of these systems. Among these locations, Kogrukluk and Kwethluk Rivers receive the largest sockeye escapements. The sockeye salmon passage in these rivers in 2008 was above average, but below the record escapements observed in 2005 and 2006. Sockeye salmon escapement timing was approximately a week later than average at the Kwethluk and Kogrukluk rivers and among the latest on record. This was also inconsistent with inriver run timing near Bethel, which was only slightly later than average this year by approximately 3 days.

Chum salmon escapements were evaluated through enumeration at weirs on 7 tributary streams and a tributary sonar project on the Aniak River. Chum escapements in 2008 ranged from above average to below average at all monitored locations, and were overall well below the record escapements seen in recent years. Chum escapements to the Kogrukluk and Aniak Rivers were within and near the upper end of their respective escapement goal ranges. Chum salmon escapement timing ranged from near average to among the latest on record with some populations arriving a week to 10 days late. Inriver run timing near Bethel was near average.

Coho salmon escapements were counted at weirs on 7 tributary streams. Coho salmon escapements in 2008 were above average at nearly all monitored locations, with the exception of Tuluksak River, which was below average. Escapement at Kogrukluk River was within and near the upper end of the escapement goal range. Overall, coho salmon escapements were higher in 2008 than in previous years. Coho salmon escapement timing was approximately average this year. This was fairly consistent with inriver run timing near Bethel, which was approximately a day earlier than average in 2008.

### **Kuskokwim Bay**

Kuskokwim Bay commercial salmon fisheries were managed according to their associated management plans and regulations. In Kuskokwim Bay, the 2008 District 4 (Quinhagak) commercial harvests were 13,812 Chinook, 69,743 sockeye, 57,033 chum, and 94,257 coho

salmon from 31 fishing periods. District 4 Chinook salmon harvest was 27% below the recent 10-year average. Sockeye salmon harvest was 20% above the recent 10-year average, although well below the record harvests taken in recent years. Chum salmon harvest was above average over all years and was 43% above the recent 10-year average. Coho salmon harvest was above average compared to historical harvests and was 57% above the recent 10-year average. The total ex-vessel value of the District 4 fishery was \$750,731—approximately 45% above the recent 10-year average value.

The Kanektok River weir, the primary escapement assessment project for District 4, maintained consistent operation from July 17 through August 21. The decision was made in 2008 to discontinue Kanektok River weir operations each year once the majority of the Chinook, sockeye, and chum salmon runs have come to a close. This action was taken in an effort to reduce the potential of the weir remaining inriver over the winter because of high water levels experienced consistently each fall. Escapement counts at the weir for the operational period in 2008 were 4,730 Chinook, 68,993 sockeye, 24,490 coho, and 53,771 chum salmon. These escapement counts are incomplete because of the late startup of weir operations and earlier project stop date. Chinook and sockeye salmon aerial surveys were flown over the Kanektok River drainage on August 6 for a total count of 3,659 Chinook and 38,900 sockeye salmon. Chinook salmon aerial survey counts were within the escapement goal, although counts were at the lower end of the range. Sockeye salmon aerial survey counts exceeded the upper end of the escapement goal range.

District 5 (Goodnews Bay) commercial harvests in 2008 were 1,281 Chinook, 27,236 sockeye, 10,340 chum, and 22,547 coho salmon from 30 periods. The District 5 Chinook salmon harvest was approximately 49% below the recent 10-year average. Sockeye salmon harvest was approximately 2% above the recent 10-year average, although well below historical high harvests dating back to the early 1990s. Chum salmon harvest was approximately 29% above the recent 10-year average, although well below historical high harvests dating back to the late 1980s and early 1990s. Coho salmon harvest was approximately 29% above the recent 10-year average, although well below historical high harvests dating back to the early 1980s and mid-1990s. A total of 25 individual permit holders recorded landings in District 5 during the 2008 season. This level of fishing effort was slightly lower compared to 2007, and was 33% below the recent 10-year average of 38 fishers. The total ex-vessel value of the District 5 fishery was \$198,070—approximately 30% above the recent 10-year average value.

The Middle Fork Goodnews River weir maintained consistent operation from July 2 through September 15 when heavy rains and rising water resulted in project closure for the remainder of the season. Preliminary weir escapement counts were 1,983 Chinook, 35,635 sockeye, 33,308 coho, and 35,454 chum salmon. Chinook and sockeye salmon escapements were within their respective escapement goal ranges, and the chum and coho salmon escapement goal thresholds were achieved. Coho salmon escapement is believed to be a minimum count because weir operations were suspended on September 15. Chinook and sockeye salmon aerial surveys were flown on the Goodnews River drainage on August 5. Total aerial survey counts were 2,190 Chinook and 13,935 sockeye salmon on the Middle Fork, and 2,155 Chinook and 32,500 sockeye salmon on the North Fork. North Fork Chinook salmon aerial survey counts were within the escapement goal and sockeye salmon aerial survey counts exceeded the upper end of the escapement goal range.

## **Yukon Area**

The 2008 Yukon River total commercial harvest was 4,641 Chinook, 151,201 summer chum, 119,265 fall chum, 14,100 pink, and 35,691 coho salmon for the Alaskan portion of the drainage. A total of 4,641 Chinook, 125,598 summer chum, 108,974 fall chum, 14,100 pink, and 33,192



coho salmon were harvested in the Lower Yukon River (Districts 1–3) and 0 Chinook, 25,603 summer chum, 10,291 fall chum, and 2,499 coho salmon were harvested in the Upper Yukon River (Districts 4–6). All salmon were reported as whole fish; however, portions of the fishery in the Upper Yukon selectively targeted females to produce a salmon roe product. A total of 496 permit holders sold fish in 2008 and the ex-vessel value was \$1.4 million.

The 2008 Chinook salmon run was anticipated to be similar to the 2007 run, and below average in abundance. Despite recent declines in run size, it was anticipated the Chinook salmon run would provide for escapements, support a normal subsistence harvest, and support a small commercial harvest of 5,000 to 30,000 fish. The 2008 summer chum run was anticipated to be near average and support escapements and a normal subsistence and commercial harvest. Summer chum salmon runs have exhibited steady improvements since 2001, with a harvestable surplus in each of the last 5 years (2003 to 2007). The commercial harvestable surplus in Alaska was expected to range from 500,000 to 900,000 fish, recognizing that the actual commercial harvest of summer chum salmon could likely be 1) affected by a potentially poor Chinook salmon run, as Chinook salmon are incidentally harvested in this fishery, and 2) dependent on market conditions and fishing effort, though there has been a renewed market interest for summer chum salmon since 2007.

ADF&G and United States Fish and Wildlife Service staff cooperatively developed the preseason and in-season management approaches which were distributed in May, as the 2008 Yukon River Salmon Fisheries informational flyer. The subsistence salmon fishing schedule was initiated on May 26 in District 1 and implemented upriver chronologically, consistent with migratory timing as the run progressed upstream.

All available run assessment information was reviewed on a daily basis, including the Lower Yukon Test Fishery, Pilot Station sonar, Marshall Test Fishery, subsistence harvest reports, age composition data, and abundance and run timing information from other western Alaska rivers. This information was used to evaluate abundance, run timing, and quality of the Chinook salmon run. By June 20, the historical midpoint of the run, most indicators pointed to a weak Chinook salmon run.

The Lower Yukon Test Fishery detected the first pulse of Chinook salmon entering the Yukon River from the evening of June 14 through June 17, followed by 5 days of low catch rates. On June 20, the cumulative catch per unit effort (CPUE) was approximately half the historic average for that date. The first pulse of Chinook salmon yielded a lower than expected estimate of approximately 10,000 fish at Pilot Station Sonar. The estimated Pilot Station sonar run projection at that time appeared to be as low as 80,000 fish. These data raised concerns about the magnitude of the run. The projected Chinook salmon run abundance would not support average subsistence harvests in Alaska (approximately 50,000 Chinook salmon), meet escapement goals in Alaska, and meet the interim management escapement goal of more than 45,000 fish in Canada agreed to by the Yukon River Panel.

During Yukon River Drainage Fisheries Association weekly teleconferences, ADF&G and United States Fish and Wildlife Service staff provided run assessment and potential management strategies. Subsistence fishers provided reports on fishing efforts and were encouraged to provide input on management strategies. In an effort to conserve Chinook salmon, management actions were implemented that reduced the subsistence salmon fishing period duration chronologically from downriver to upriver after the first pulse of Chinook salmon had passed—consistent with the migratory timing as the run progressed. These reductions beginning June 23 in District 1, while unfortunate, were needed to provide adequate numbers of Chinook salmon on the spawning grounds.

The in-season management strategy was to protect the second and third pulses throughout the Yukon River mainstem by attempting to implement subsistence fishing period reductions equally

among each of the districts and subdistricts to conserve Chinook salmon as these pulses migrated upriver. This entailed reducing the regulatory fishing periods by half for 3 consecutive periods in Districts 1 through 4 and Subdistricts 5-A, B, and C. Because Subdistrict 5-D has a regulatory schedule of 7 days per week, the schedule was reduced by half for 2 weeks. Additionally, gillnet mesh size was restricted to 6 inch or smaller in Districts 1–3 to target chum salmon. This management action was taken to account for the opportunity lower river fishers had to harvest Chinook during the first pulse and was implemented when good quality chum salmon were available for harvest. This strategy may have impacted District 3 fishers more, because historically fewer chum salmon are harvested for subsistence than in Districts 1 and 2.

During the Yukon River Drainage Fisheries Association weekly teleconferences, there were discussions about applying lower river mesh size restrictions to upriver districts and establishing fish wheel restrictions requiring release of Chinook salmon. However, it was determined that fewer fishers upriver had access to smaller mesh size gillnets and the presence of poor quality of chum salmon would not be utilized for subsistence. Therefore, subsistence periods were reduced in Districts 4 and 5, but no gear restrictions were established. Subsistence fishing restrictions were not implemented in the Tanana and Koyukuk River drainages because of low fishing effort, and in the case of the Tanana River, assessment projects are available to manage this river separately.

No directed Chinook salmon commercial fishery occurred in 2008. Based on the projected average run estimate for summer chum, the department initiated short commercial periods restricted to 6-inch maximum mesh size in the lower river districts directed at chum salmon beginning in District 1 on July 2. Because of the uncertainty about the Chinook salmon run strength, only restricted mesh openings were allowed in 2008. Additionally, the department attempted to schedule these chum-directed commercial periods when Chinook salmon abundance was low, and 7 commercial periods were established in Subdistrict 4-A. Six commercial periods were established in District 6 directed at summer chum salmon, but due to high water events, fishing effort was limited. The commercial Chinook salmon harvest was 88% below the 1998 to 2007 average harvest of 39,367 fish. The summer chum salmon harvest was 206% above the 1998 to 2007 average harvest of 49,675 fish. A total of 457 permit holders participated in the summer chum salmon fishery, which was approximately 24% below the 1998 to 2007 average of 599 permit holders. The Lower Yukon Area (Districts 1–3) and Upper Yukon Area (Districts 4–6) are separate Commercial Fisheries Entry Commission permit areas. A total of 444 permit holders fished in the Lower Yukon Area in 2008, which was approximately 23% below the 1998 to 2007 average of 577. In the Upper Yukon Area, 13 permit holders fished, which was approximately 48% below the 1998 to 2007 average of 25.

Yukon River fishermen in Alaska received an estimated \$718,000 for their Chinook and summer chum salmon harvest in 2008, approximately 71% below the 1998 to 2007 average of \$2.5 million. Two buyer-processors and 5 catcher-sellers operated in the Lower Yukon Area (Districts 1–3). Lower Yukon River fishers received an estimated average price per pound of \$4.64 for incidentally harvested Chinook and \$0.40 for summer chum salmon. The average price paid for Chinook salmon in the Lower Yukon Area was approximately 35% above the 1998 to 2007 average of \$3.44 per pound. The average income for Lower Yukon Area fishers in 2008 was \$1,479. Three buyer-processors and one catcher-seller operated in the Upper Yukon Area (Districts 4–6). Upper Yukon Area fishers received an estimated average price per pound of \$0.25 for summer chum sold in the round and \$3.00 for summer chum roe. The average price paid for summer chum sold in the round in the Upper Yukon Area was approximately 7% above the 1998 to 2007 average of \$0.23 per pound. No Chinook salmon were sold in the Upper Yukon Area. The average income for Upper Yukon Area fishers that participated in the 2008 fishery was \$2,633. The majority of the income earned in the upper river was from the Subdistrict 4-A commercial fishery.

Preliminary postseason analysis indicates that the 2008 Chinook salmon total run was approximately 65,000 to 75,000 less than anticipated. Parent year escapements in 2002 and 2003 were generally above average across the drainage. High water hampered efforts to accurately quantify individual tributary escapements; thus, most escapement goals could not be assessed. Based on available data, it appears that the lower end of the BEGs in the Chena and Salcha rivers, the largest producing tributaries of Chinook salmon in the Alaska portion of the drainage, were met. Typically, about 50% of the Chinook salmon production occurs in Canada; hence, the US/Canada Yukon River Panel agreed to a 1-year Canadian Interim Management Escapement Goal of more than 45,000 Chinook salmon, based on the Eagle sonar program. The preliminary estimated escapement into Canada is approximately 32,000 fish, or 28% below the goal.

In 2008, there was an exceptionally large run of pink salmon and, for the period of approximately June 30 through July 3, we believe a significant number of pinks were initially incorrectly apportioned by Pilot Station sonar as summer chum salmon. These estimates were corrected postseason, reducing the final estimate for summer chums from 1,858,000 to 1,665,667 fish, which was still well above the drainage-wide optimum escapement goal of 600,000 fish for the Yukon River.

Summer chum escapements were generally good in lower river tributaries and the Koyukuk River drainage. Escapement goals have been established for the Andreafsky and Anvik Rivers. The estimated escapement of 57,259 summer chum salmon for the East Fork Andreafsky River was below the BEG range of 65,000 to 135,000 fish. The Anvik River sonar-based escapement count of 374,929 summer chum salmon was within the BEG range of 350,000 to 700,000 fish. The large number of pink salmon in the Anvik River precluded accurate in-season estimates, and a postseason adjustment was necessary.

The 2008 Yukon River fall chum salmon run was late and drawn out which contributed to a commercial harvest of both fall chum and coho salmon below the preseason outlook for both species. The fall commercial fishery anticipated a harvest of 50,000 to 400,000 fish based on the brood year returns and recent production levels. The 2008 commercial harvest of 119,265 fall chum salmon was approximately 148% above the 1998 to 2007 average of 48,086 fish and the 35,691 coho harvest was 66% above the 10-year average of 21,490 fish.

The commercial fall chum and coho salmon season value for the Yukon Area was estimated to be \$671,552 (\$645,746 for the Lower Yukon Area, \$25,806 for the upper Yukon Area). The value was well above the previous 10-year average for the Yukon Area of \$114,002 (\$99,287 for the Lower Yukon Area, \$14,715 for the Upper Yukon Area). Yukon River fishers received an average price of \$0.55 per pound for fall chum salmon in the Lower Yukon Area and \$0.27 per pound in the Upper Yukon Area in 2008; the recent 10-year average price was \$0.24 per pound in the Lower Yukon Area and \$0.14 per pound in the Upper Yukon Area. For coho salmon, fishers received an average price of \$0.97 per pound in the Lower Yukon Area and \$0.20 per pound in the Upper Yukon Area; the recent 10-year average price was \$0.29 per pound in the Lower Yukon Area and \$0.10 per pound in the Upper Yukon Area. An average of 117 permit holders fished the fall chum and coho salmon fishery (112 for the Lower Yukon Area, 5 for the Upper Yukon Area) during the previous 10 fall seasons as compared to 439 fishers who participated in 2008 (428 for the Lower Yukon Area, 11 for the Upper Yukon Area).

The long drawn-out run timing of fall chum salmon resulted in a slow harvest rate. Commercial fishing activity was delayed midseason until additional surplus became available in accordance with the Yukon River Drainage Fall Chum Salmon Management Plan. The fall season was extended and fishing time was increased as fish continued to enter the river late in the season. Overall fish quality was reported as exceptional with the highest prices paid per pound in the last 20 years. The slow salmon passage discouraged fall salmon markets in District 4 while Districts 5

and 6 fishermen were challenged with lost fishing gear due to flood waters and freezing conditions terminating commercial operations.

The total 2008 fall chum salmon run size was estimated to be approximately 730,000 fish, which was below the preseason projection of 900,000 to 1.2 million fish. Parent-year escapements in 2003 were 695,000 fish and in 2004 were 538,000 fish. The drainage-wide escapement was estimated to be near 500,000 fall chum salmon in 2008 and within the BEG goal of 300,000 to 600,000. Tributary stock escapement goals and management objectives were met or exceeded for the Chandalar River, the Canadian Mainstem, and the Tanana River while escapements fell slightly below goals for the Sheenjek and Fishing Branch Rivers.

There is only one established escapement goal for coho salmon in the Yukon River drainage, which is a SEG for the Delta Clearwater River. The 2008 boat count survey of 7,500 coho salmon was within the SEG range of 5,200 to 17,000 fish. The 2008 Pilot Station Sonar passage index of 136,000 fish was below the 1995, and 1997 to 2008 average of 149,000 fish, which is in agreement with most index projects for coho salmon of a slightly below average run strength and average timing.

### **Norton Sound Area**

Highlights of the 2008 Norton Sound District commercial salmon fishery included the third highest coho salmon harvest on record, a resurgence of directed pink salmon fishing, and the return of commercial salmon fishing in the Golovin (Subdistrict 2) and Norton Bay (Subdistrict 4) Subdistricts for the first time in years. There was increased commercial interest in chum salmon, but the onset of the chum salmon fishery was delayed until mid-July in southern Norton Sound in order to conserve Chinook salmon. In northern Norton Sound, below average chum salmon escapements limited directed chum salmon fishing to a few brief periods. Once again Chinook salmon runs were poor in Norton Sound and subsistence closures were necessary in Subdistricts 5 and 6 (Shaktolik and Unalakleet). Commercial salmon fishing began with a 12-hour opening in Subdistricts 2 and 4 on July 1 directed at pink and chum salmon. A subsequent 12-hour period occurred on July 3 in Subdistricts 2 and 4 although mesh size was restricted to 4<sup>1</sup>/<sub>2</sub> inches or less in Norton Bay in order to minimize the incidental harvest of Chinook salmon because of weakness shown in the Chinook salmon run in southern Norton Sound.

Commercial fishing for chum salmon began in Moses Point (Subdistrict 3) on July 5 with a 12-hour period followed by another 12-hour period on July 9. However, a weak commercial CPUE and comparably poor tower counts in both Subdistricts 2 and 3 indicated a surplus was not available for commercial harvest and directed chum salmon fishing was no longer permitted in these subdistricts. Fishing resumed in Subdistrict 3 in late July to target pink salmon after the majority of chum run was over. There was a lack of fishing effort in Subdistricts 2 and 4 during coho salmon season, but the Subdistrict 3 harvest was in the top ten historically.

Commercial salmon fishing began in Subdistricts 5 and 6 on July 8, with a 6-hour pink salmon opening. Commercial pink salmon fishing continued for a week with 3 more 6-hour periods and 4 more 8-hour periods. Catches in the Unalakleet River test net for chum salmon were record-setting in early July, but the department held off on commercial chum salmon fishing until July 17 in order to protect Chinook salmon. Chinook salmon runs were poor in 2008 and the run ended up being the worst on record. Subsistence fishing for Chinook salmon was closed for 2 weeks beginning on July 5 in both the marine waters of Subdistricts 5 and 6 and in the Unalakleet River drainage. The North River, a tributary of the Unalakleet River, had the lowest tower count of Chinook salmon in the project's history.

Cumulative Unalakleet River test net and Subdistrict 5 commercial coho salmon harvests were record-setting in 2008 and the Subdistrict 6 commercial coho harvest was the fourth highest on

record. The first coho salmon fishing period began on July 20 in Subdistricts 5 and 6 and two 48-hour fishing periods a week were allowed until mid-September.

The Port Clarence District had several 12-hour openings the first half of July to target sockeye salmon. However, by mid-July the in-river goal of 30,000 sockeye salmon for the Pilgrim River was projected to fall short and commercial fishing was suspended. The commercial catch was 89 sockeye salmon, 256 chum salmon, and 623 pink salmon.

The Norton Sound District combined commercial harvest of all salmon species ranked first in the last ten seasons. The number of commercial permits fished (92) was the highest since 1997, but twelfth lowest on record. The 2008 fishery value to permit holders of \$760,362 was well above the recent 5-year average of \$289,047 and the highest since 1994. The average value per permit holder of \$8,346 was a record without adjusting for inflation.

The Norton Sound District coho salmon harvest of 120,293 fish was nearly 150% above the recent 5-year average and nearly 240% above the recent 10-year average. A total of 75,384 pink and 25,124 chum salmon was purchased in the Norton Sound District, the majority of which were harvested in the Shaktoolik and Unalakleet Subdistricts.

The average price paid was \$0.73 per pound for Chinook salmon, \$0.56 per pound for sockeye salmon, \$0.77 per pound for coho salmon, \$0.23 per pound for pink salmon, and \$0.34 per pound for chum salmon. The average price paid for pink salmon was the highest on record, while the average prices for coho and chum salmon were the highest since 1988.

### **Kotzebue Sound Area**

The chum salmon run to Kotzebue Sound in 2008 was estimated to be well above average based on the commercial harvest rates, above average subsistence catches, the Kobuk test fish index, and aerial surveys. The commercial harvest consisted of 190,321 chum salmon and ranked second highest in the last decade. Also harvested during the commercial fishery and kept for personal use were 4 Chinook salmon, 9 sockeye salmon, 693 pink salmon, 36 coho salmon, 1,629 Dolly Varden, and 37 sheefish. There were likely some additional fish kept for personal use that did not get reported on fish tickets. The Kobuk test fish index ranked second highest in the 16-year project history. Both Kobuk River and Noatak River aerial surveys ranked in the top 3 historically.

As in recent years, the department opened the commercial fishery continuously and allowed the buyer to set the fishing time for their fleet. There were 48 permit holders who sold fish to the buyer, including one catcher-seller who sold fish to the buyer and also sold some of his catch from his boat to Kotzebue area residents. The number of active permit holders has been in the 40s since a buyer returned in 2004, but is less than half the permit holders that fished in the 1990s, and well below the nearly 200 permit holders that fished in the early 1980s.

A total of 1,540,238 pounds of chum salmon (average weight 8.1 lbs) were sold at an average of \$0.25 per pound. The total ex-vessel value was \$385,270 to Kotzebue Sound fishers. The average value for each participating permit holder was \$8,026. The total ex-vessel value represents 65% of the \$589,587 historical average from 1962 to 2007.

**Table 4:** Preliminary 2008 Arctic-Yukon-Kuskokwim Region commercial salmon harvests, by fishing area and species, in thousands of fish.

Fishing Area	Species					Total <sup>a</sup>
	Chinook	Sockeye	Coho	Pink	Chum	
Kuskokwim River	9	16	143	0	31	199
Kuskokwim Bay	15	97	117		67	296
Kuskokwim Area Total	24	113	260	0	98	495
Lower Yukon River	5	0	33	14	235	287
Upper Yukon River			2		35	37
Yukon River Total	5	0	36	14	270	324
Norton Sound	0	0	120	76	25	222
Kotzebue Sound					190	190
AYK Region Total	29	113	416	90	584	1,232

*Note:* Missing data indicates no harvest and zeros indicate harvest activity but <1,000.

<sup>a</sup> Columns and rows may not total exactly due to rounding errors.

## **WESTWARD REGION (Fishery Certification Units 14-16)**

### **Kodiak Management Area**

The following is an overview of the 2008 Kodiak Management Area (KMA) commercial salmon season and stock status summary. The 2008 KMA commercial salmon fishery began on June 5 and the last commercial landing occurred on September 14.

Salmon escapement and harvest estimates reported in this document were summarized from the ADF&G escapement and fish ticket databases on October 1, 2008. Data provided in this report are preliminary and supersede any data previously published.

Commercial fishing effort was once again low during the 2008 commercial salmon season and slightly lower than 2007. Of the 608 eligible commercial salmon permits, only 277 (45.6 %) made commercial landings.

By gear type, a total of 148 set gillnet and 129 purse seine permit holders fished in 2008. Beach seine permit holders did not participate in 2008. Both seine and gillnet permit holder's participation was below the previous 10-year average, and below the 2007 commercial salmon season as well. The number of permits actually fished at any given time varied throughout the season.

The 2008 estimated total for the KMA commercial harvest was 17,268 Chinook salmon, 1,818,702 sockeye salmon, 300,779 coho salmon, 8,788,000 pink salmon and 908,030 chum salmon (Table 7). Approximately 11.8 million fish were commercially harvested in the KMA, which is below the previous 10-year (1998 to 2007) average of 24.7 million fish. Of the total salmon commercially harvested in 2008, 3,270 salmon were retained for the permit holders' own use (homepack, taken but not sold). Subsistence and sport fishery salmon harvests will not be known until after permits and questionnaires are returned to the department in late spring of 2009.

The estimated total ex-vessel value of the 2008 fishery was approximately \$27.87 million, which was above the 10-year average ex-vessel value of \$24.32 million.

Purse seine fishermen accounted for 83.1% of the total number of salmon harvested and averaged \$163,644 per fished permit. The ex-vessel value increased from the 2007 season, and was significantly higher than the previous 10-year average of \$109,266 for purse seine permit holders.

Set gillnet fishermen accounted for 16.9% of the total number of salmon harvested. Earnings averaged approximately \$43,187 per fished permit, which was an increase over 2007, and higher than the previous 10-year average permit holder earnings of \$38,427.

### **2008 Commercial Harvest Summary**

#### **Chinook Salmon**

The Ayakulik and Karluk river systems support the largest Chinook salmon populations in the KMA. There are no directed Chinook salmon commercial fisheries in the KMA but incidental commercial harvest occurs during targeted sockeye salmon fisheries. Non-retention of Chinook salmon was implemented in the Outer Karluk Section in 2008 due to low returns. The 2008 commercial harvest of Chinook salmon in the KMA totaled 17,268 fish which was lower than the previous 10-year average of 19,037 and below the 2008 forecast of 20,000 fish.

## **Sockeye Salmon**

The 2008 commercial harvest of sockeye salmon in the KMA totaled 1,818,702 fish. The harvest was below the recent 10-year average of 3,051,291 but above the point forecast of 1,706,150 fish.

Early season (through July 15) management for much of the west side and north end of Kodiak Island is driven by the Karluk early-run sockeye salmon. The Karluk early-run sockeye salmon minimum escapement goal of 110,000 fish was not achieved in 2008 (82,071 fish).

Approximately 220,591 sockeye salmon were harvested in early-season (through July 15) westside fisheries, which was below the early-run sockeye salmon point forecast of 251,000 fish. Approximately 352,747 sockeye salmon were harvested in the late-season westside fishery which was above the late-run sockeye salmon point forecast of 191,000 fish.

The Ayakulik River was forecasted to have a small surplus of sockeye salmon (171,000 fish) available to commercial fishing in 2008. However, the total return proved to be weaker than forecast with escapements of 162,888, which was below the minimum escapement goal of 200,000 fish. No directed sockeye salmon fishery was allowed in the Inner and Outer Ayakulik sections. Approximately 50,000 sockeye salmon were harvested in the Inner and Outer Ayakulik sections during a pink salmon opening.

The department tentatively scheduled a commercial salmon fishing period for June 9 in the Alitak District if certain criteria were met prior to June 7. Generally, the early-run sockeye salmon appear in Upper Station earlier than they do in the Frazer system. The intent of the early opening was to allow an opportunity to harvest Upper Station early-run sockeye salmon prior to the Frazer Lake sockeye salmon peak run timing. The Upper Station sockeye salmon early-run came in as expected, and a commercial salmon fishery was prosecuted on June 9 as a 33-hour test fishery. The resulting sockeye salmon harvest indicated a fair run. As the season progressed, it became evident that the early-run sockeye salmon to Upper Station was fair. The Upper Station lower escapement goal was met for early-run sockeye salmon by June 20. The 2008 forecast for Frazer Lake was estimated at 420,000 with a harvestable surplus of approximately 295,000 fish. The Frazer Lake sockeye salmon run came in a little later than average with the first significant escapement count occurring on June 14. After the first push, it became evident that the run was stronger than expected. By July 9, the desired sockeye salmon goal was achieved through the Dog Salmon weir. In order to prevent overescapement, the Alitak District was opened until further notice. The Alitak District early-run sockeye salmon commercial harvest was approximately 407,726 fish, which was above the point forecast of 357,000 fish.

The late-run sockeye salmon forecast for Upper Station predicted a total return of 241,000 fish with 55,000 fish available for harvest. The late-run sockeye salmon to Upper Station proved to be much stronger than forecast. Escapements were sufficient to allow several commercial fishing openings in the Alitak District. The total late-run sockeye salmon harvest of 334,912 fish was well above forecast of 55,000 fish.

## **Cape Igvak Salmon Management Plan**

This regulatory management plan (5 AAC 18.360) allocates 15% of the total Chignik-bound sockeye salmon harvest prior to July 25 to KMA fishermen in the Cape Igvak Section. Based on regulations, 90% of all sockeye salmon caught prior to July 25 in the Cape Igvak Section are considered to be Chignik-bound.

Allocative and biological criteria of the management plan were expected to be met in 2008. However, as the season progressed, it became evident the early-run portion of the Chignik sockeye salmon run was below forecast. The Cape Igvak Section did not open to commercial salmon fishing prior to July 25 in the 2008 season.



## **North Shelikof Sockeye Salmon Management Plan**

From July 6 to 25, this regulatory management plan (5 AAC 18.363) places harvest limits on 2 areas of the KMA bordering northern Shelikof Strait (mid- to north Mainland and northwest Afognak/Shuyak Islands) to limit interception of sockeye salmon that are considered Cook Inlet-bound. During the period that this management plan is in effect, KMA fisheries are targeting local pink salmon runs and the fishing periods are based on the projected pink salmon run strength. If it appears that the sockeye salmon harvest will meet or exceed limits set by the Board of Fisheries, then fisheries are to be restricted to inshore “Shoreward Zones” only, and offshore “Seaward Zones” are closed. In 2008, a department biologist was present on the grounds to determine the sockeye salmon catch and facilitate orderly, short notice closures if the harvest limits were met.

A Seaward Zone closure was not required in the North Shelikof Unit. The total July 6 to 25 harvests in the North Shelikof Unit was 5,157 sockeye salmon, which includes both the Shoreward Zone and Seaward Zone harvests. A Seaward Zone closure was not required in the Southwest Afognak Section as the harvest cap of 50,000 fish was not met. The July 6 to 25 harvests in the Southwest Afognak Section was about 17,216 fish.

## **Terminal and Special Harvest Areas**

Some fisheries occur in areas where salmon enhancement projects create surplus production. Sockeye salmon harvests are outlined below.

There was very little commercial salmon effort or harvest in the Waterfall and Foul Bay special harvest areas with a total of 5,879 sockeye salmon harvested in both areas.

In the Spiridon special harvest area (Telrod Cove), 154,575 sockeye salmon were harvested. The harvest in the Spiridon special harvest area represents an estimated 41% of the total harvest of Spiridon enhancement fish; the other 59% are harvested in traditional net fisheries along the westside of the KMA. The total Spiridon sockeye salmon commercial harvest is an estimated 377,012 fish (forecast 226,000 fish).

The Kitoi Bay Hatchery sockeye salmon harvest was an estimated 66,318 fish, and was above the point forecast of 46,000 fish. This includes the commercial harvest of both enhanced and wild salmon from the Inner Kitoi Bay, Outer Kitoi Bay, Duck Bay, and Izhut Bay sections. Additional enhanced sockeye salmon may have been harvested in adjacent sections, but stock separation data are not available.

## **Coho Salmon**

The commercial coho salmon harvest of 300,779 was below the forecast of 409,737 fish, and below the 1998 to 2007 average of 409,412 fish.

The majority of the coho salmon commercial harvest occurred in those sections associated with Kitoi Bay Hatchery (Inner Kitoi Bay, Outer Kitoi Bay, Duck Bay, and Izhut Bay sections), with a total harvest of 120,366 fish.

## **Pink Salmon**

Overall, the 2008 pink salmon harvest of 8,788,884 was near the harvest forecast of 9,850,000 fish, and well below the past 5 even-year (1998 to 2006) average harvest of 20,690,329 fish, and below the previous 10-year average harvest of 20,393,127 fish.

Wild stock pink salmon harvests were poor as forecasted with 6,670,084 fish harvested in the KMA. Westside fisheries (Southwest Afognak to Ayakulik), accounted for 3,067,936 fish and the eastside and the north end of Kodiak Island had a harvest of 1,298,089 fish.

The Kitoi Bay Hatchery pink salmon return was weaker than expected. In those sections near the hatchery about 2,053,800 million fish were harvested. Additional Kitoi-bound pink salmon were likely harvested along the west side and east side of Kodiak and Afognak islands. However, the department does not have a stock separation program for pink salmon and is unable to differentiate stocks. There was a cost recovery fishery near the hatchery, with Kitoi pink salmon harvested and sold by the Kodiak Regional Aquaculture Association.

### **Chum Salmon**

The chum salmon harvest of 908,030 fish was slightly below the forecast of 919,372 fish, but above the 1998 to 2007 average of 869,010 fish. The eastside and the north end of Kodiak Island accounted for 317,947 chum salmon. Kitoi Bay Hatchery chum salmon production was weaker than expected, with 120,366 fish which was below the 2008 forecast of 161,000 fish.

### **2008 Escapement Summary**

During the 2008 KMA commercial salmon season, fish counting weirs were operated on 8 systems, including the Karluk, Ayakulik, Litnik, Upper Station, Frazer, Buskin, Saltery and Big Bay (Shuyak Island) systems. Continued erosion of funding has reduced the number of weirs from 12 in 2000. In addition, 4 observers flew over 30 aerial surveys, and several observers conducted foot and skiff survey escapement estimates. Foot surveys are still being conducted on road system streams, primarily by the Division of Sport Fish.

### **Chinook Salmon**

The total Chinook salmon escapement of 3,845 was well below the previous 10-year average of 20,967 fish. Escapement goals for Chinook salmon have been developed for the Karluk and Ayakulik rivers and the escapements are estimated using fish counting weirs. The Chinook salmon count of 752 through the Karluk weir was below the range of the established goal of 3,600 to 7,300 fish. Early in the 2008 commercial salmon season, it appeared that the Chinook salmon escapement into the Karluk River would be weak. In order to increase escapement numbers, the department implemented the non-retention of Chinook salmon over 28 inches in the Outer Karluk Section. In addition, both subsistence and sport fish fisheries were closed in the Karluk system. Chinook salmon escapement of 3,071 fish through the Ayakulik weir was also below the established range of the escapement goal of 4,800 to 9,600 fish.

### **Sockeye Salmon**

The 2008 sockeye salmon returns were varied. The Karluk early-run, Karluk late-run, Ayakulik, Buskin, and Little River systems did not meet the minimum escapement goals for sockeye salmon. The Upper Station early and late runs, the Frazer, Afognak, Uganik, Saltery and Pasagshak systems had escapements that were within or above established escapement goals.

### **Coho Salmon**

The only established coho salmon escapement goals occur in the Northeast Kodiak and Eastside Kodiak districts and include the following rivers; American (400 to 900 fish), Olds (1,000 to 2,200 fish), Buskin (3,200 to 7,200 fish) and the Pasagshak (1,200 to 3,300 fish) rivers. The escapement goals were met for the Buskin River (9,001 fish), and the American River (700 fish); however escapements in the Olds and Pasagshak rivers were below escapement objectives.

For the entire KMA, the estimated coho salmon escapement of 62,869 fish was well below the previous 10-year average of 132,114 fish. However, it is expected that the coho salmon escapement estimates will continue to increase as more coho salmon enter KMA systems throughout the fall. At this time the KMA has very little coho salmon monitoring, (the last aerial surveys were conducted on September 23) and the lack of stock status information will further hamper the management of coho salmon in the KMA.

### **Pink Salmon**

Overall, pink salmon escapement (3,161,208 fish) was below the previous 5 even-year average of 6,927,653 fish and below the 10-year average of 5,364,912 fish. Pink salmon escapement goals have been established as an aggregate goal for the entire Kodiak Archipelago and the Mainland District. The escapement goal range of 2.0 million to 5.0 million fish was met for the combined Kodiak Archipelago (2,924,708 fish). The Mainland District pink salmon escapement of 236,500 was below the established escapement goal range of 250,000 to 750,000 fish.

### **Chum Salmon**

The overall chum salmon escapement of 223,907 fish was below the recent 10-year average (549,389 fish). Escapement goals have been established in Kodiak Archipelago and the Mainland. The escapement in the Kodiak Archipelago was below the escapement goal of 151,000 fish with an estimate of 101,482 fish while the Mainland District escapement of 122,425 fish exceeded the escapement goal of 104,000 fish.

## **Chignik Management Area Season Summary**

The Chignik River watershed supports 2 distinct sockeye salmon runs which traditionally provide the majority of directed harvest opportunities within the Chignik Management Area. There are several streams within the Chignik Management Area that additionally support large runs of pink, chum, and coho salmon. In 2008, the sockeye salmon early and late-run were below recent averages. In contrast, strong returns of pink and chum salmon resulted in near record runs for those species. In 2008, the area was open to commercial salmon fishing for 73 days (June 24 to September 27) and a total of 54 permits were fished.

## **Escapement Summary**

Escapement through the Chignik River weir was monitored using underwater digital video equipment. There were 2 gates in the weir, which were normally open to provide uninterrupted escapement. The numbers of fish passing the weir were counted by species for the first 10 minutes of each hour. The counts were expanded to obtain hourly escapement estimates, and then summed to provide an estimate of daily fish passage. A digital video archive was kept of each 10-minute counting period. The first count of the 2008 season occurred on May 26 when weir installation was complete, and the last weir count of the season took place on September 2, after which the weir was removed.

Aerial surveys were flown throughout the season to monitor escapement into Chignik Management Area streams. Peak aerial survey counts, by index stream and species, were summed and compared to established escapement goals. Pink and chum salmon escapements were measured against established area-wide SEGs which were apportioned into district-wide management objectives.

## **Chinook Salmon**

The Chignik River is the only Chinook salmon-producing stream within the Chignik Management Area and one of the largest Chinook streams on the South Alaska Peninsula. The BEG for Chinook salmon in the Chignik River watershed is 1,300 to 2,700 fish. The 2008 Chignik River Chinook salmon escapement of 1,730 fish through the weir is assumed to have met the BEG but was well below the previous 5-, 10-, and 20-year averages. Subsistence and sport fishery harvest of Chinook salmon above the weir will not be known until after permits and questionnaires are returned and tabulated by the fall of 2009.

## **Sockeye Salmon**

Sockeye salmon escapement to the Chignik River is managed based on separate interim escapement objectives for both early- and late-run sockeye salmon. The late-run objectives include an additional 50,000 fish which are incorporated into the late-run SEG to provide for additional freshwater subsistence fishing opportunity. The early-run SEG of 350,000 to 400,000 sockeye salmon through July 4 was achieved with an estimated escapement of 377,579 fish.

Post-weir sockeye salmon escapement estimates were produced for the September 3–15 and the September 16–30 periods, which were included in the total late-run escapement estimate. The late-run (post-July 4) SEG of 250,000 to 400,000 fish was met with an estimated escapement of 328,479 fish. Early run escapement was slightly above the prior 5-year average but below the previous 10-, and 20-year average escapements. The late run was above prior 5-, 10-, and 20-year average escapements. Sockeye salmon escapements into other Chignik Management Area streams were relatively minor.

## **Coho Salmon**

Coho salmon begin to enter Chignik Management Area drainages in mid-August and continue through November. The coho salmon run is generally building when the weir is removed, therefore coho salmon escapement estimates are considered incomplete. The 2008 Chignik River coho salmon escapement estimate through September 2 was 13,958 fish. This was below prior 5-year, and above the 10-year average. Although no coho salmon escapement goals have been established for the Chignik Management Area, coho salmon escapement throughout the area appears to be consistent with past years and sustainable at this level.

## **Pink Salmon**

An estimated 22,341 pink salmon passed the Chignik River weir in 2008, which was the largest recorded pink salmon escapement on record. Pink salmon escapement to other Chignik Management Area streams were estimated via aerial survey and summarized by district. The even-year upper end of the SEG for all districts combined (600,000) was exceeded with an estimated total peak escapement of 796,190 fish.

## **Chum Salmon**

The 2008 Chignik River chum salmon escapement was 124 fish, which was slightly below average for the Chignik River. Chum salmon escapements to other Chignik Management Area streams were estimated via aerial survey and summarized by district. The SEG of all districts combined (57,400 fish) was exceeded with an estimated total peak escapement of 193,135 fish.

## **Commercial Fishery Summary**

The 2008 Chignik Management Area commercial salmon fishery was the third season since the cooperative management plan was deemed invalid in 2005. The first fishing period in the area occurred on June 24 and the last fishing period ended on September 27; however, there was no salmon harvest after September 16.

### **Harvest Summary**

#### **Chinook Salmon**

A total of 970 Chinook salmon were commercially harvested in 2008, which was below historic average harvests. The majority of the 2008 Chignik Management Area Chinook salmon harvest occurred in the Western District, with much of the remainder harvested in the Chignik Bay and Central districts. Most Chinook salmon were harvested in July and early August.

#### **Sockeye Salmon**

A total of 687,270 sockeye salmon were commercially harvested in the Chignik Management Area during 2008, which was approximately 633,000 (48%) less than the prior 10-year average harvest and approximately 251,000 (27%) less than the prior 5-year average harvest. The majority of the 2008 Chignik Management Area sockeye salmon harvest came from the Chignik Bay District, although substantial harvests also occurred in the Central and Western districts.

The Southeast District Mainland and Cape Igvak fisheries were not opened during the allocation period as the Chignik Area sockeye harvest did not exceed the required 600,000 fish during this time (through July 25).

#### **Coho Salmon**

A total of 161,536 coho salmon were commercially harvested in 2008, which was greater than the prior 10- and 20-year average harvests, and over 116,000 more coho salmon than the prior 5-year average harvest. The majority of the coho salmon harvest in 2008 took place in the Western District, and most were harvested during July and August.

#### **Pink Salmon**

A total of 2,389,958 pink salmon were commercially harvested in 2008, which was well above the prior 5-, 10-, and 20-year average harvests and was the second largest harvest on record. The largest portion of the Chignik Management Area pink salmon harvest came from the Western District, although the Central, Eastern, and Perryville districts also yielded a substantial portion of the catch. Most were harvested between late July and mid-August.

#### **Chum Salmon**

A total of 209,325 chum salmon were commercially harvested in 2008, which was well above the prior 5-, 10-, and 20-year average harvests. The majority of the chum salmon harvest in 2008 took place in the Western District, although the Central and Eastern districts also yielded substantial catches. Most chum salmon were harvested between late July and mid-August.

### **Economic Value Summary**

The ex-vessel value of the 2008 Chignik Management Area commercial salmon fishery was about \$7.3 million, which is approximately \$134,000 per active permit holder. A majority of the value was from the sale of sockeye salmon (56%), while pink harvest contributed a greater

proportion (25%) of the fishery value than past years, contributing roughly \$33,500 per active permit holder. Furthermore, coho (11%) and chum (7%) harvest accounted for a greater proportion of the value than past years. Per active permit holder, the harvest provided \$14,412 for coho, \$9,877 for chum \$282 for Chinook salmon.

### **Department Test Fishery Summary**

The department conducted test fisheries on 5 occasions in 2008. Data from these test fisheries were used to assess the early season buildup of sockeye salmon in Chignik Lagoon and to provide biological samples. An estimated 5,090 sockeye salmon were harvested, which provided approximately \$26,204 that was used to offset the cost of vessel charters and operating the Chignik weir.

### **Subsistence Summary**

At this writing subsistence harvest numbers for 2008 have not been finalized.

### **Alaska Peninsula, Aleutian Islands, and Atka-Amlia Islands Management Areas Salmon Season Summary**

The 2008 commercial salmon harvest in the Alaska Peninsula, Aleutian Islands, and Atka-Amlia Islands Management Areas totaled 6,000 Chinook, 4,243,000 sockeye, 351,000 coho, 13,529,000 pink, and 980,000 chum salmon (Table 7). Subsistence salmon harvest will be reported in the 2008 annual management report. Data reported in this report are considered preliminary and supersede any data previously published.

### **South Unimak and Shumagin Islands June Fisheries**

The South Unimak and Shumagin Islands fishing season began at 6:00 AM on June 7 with an 88-hour fishing period for all gear types (purse seine, drift gillnet, and set gillnet gear). During the June fishery, there were four 88-hour and one 64-hour fishing period. The commercial salmon harvest in June consisted of 3,744 Chinook, 1,713,167 sockeye, 178 coho, 1,971,268 pink, and 410,932 chum salmon. The first 2 periods of the June fishery were marked by a price dispute between the processors and most of the fleet. By the end of the second period, participation had returned to levels consistent with recent June fisheries.

### **Southeastern District Mainland**

Due to a weak early-run and a small commercial harvest in the Chignik Management Area, the Southeastern District Mainland remained closed and no commercial salmon harvest occurred during the allocation period (June 1 through July 25).

Beginning July 1, the Northwest Stepovak Section of the Southeastern District Mainland is managed on the strength of the Orzinski Lake sockeye salmon run. The return of sockeye salmon to Orzinski Lake was stronger than anticipated this year which allowed for commercial harvest opportunity in the Northwest Stepovak Section. From July 3 through July 25 there were 29 Chinook, 31,669 sockeye, 505 coho, 34,137 pink, and 6,139 chum salmon harvest in the Northwest Stepovak Section. The Orzinski Lake sockeye salmon escapement of 36,839 fish was above the season ending escapement objective (15,000 to 20,000 fish) through August 12, when the weir was removed.

From July 26 to September 30, the Southeastern District Mainland is managed based on the abundance of local salmon stocks. Approximately 2.9 million fish were harvested in the area from July 26 through August 20, consisting of 357 Chinook, 118,149 sockeye, 36,910 coho, 2,634,166

pink, and 63,071 chum salmon. The department suspended commercial salmon fishing from August 20 through August 31 to allow for additional pink and chum salmon escapement

From September 1 through September 30 the Southeastern District Mainland is opened concurrently with the remainder of the Southeastern District based on the abundance of coho salmon stocks. In September, 4 Chinook, 19,361 sockeye, 10,516 coho, 2,365 pink, and 3,053 chum salmon were harvested in the Southeastern District Mainland.

### **South Peninsula Post-June Fishery**

Prior to the South Peninsula Post-June fishery, ADF&G conducts a test fishery to determine immature salmon abundance in the Shumagin Islands. Test fishery results on July 5 indicated there were 112.3 immature salmon per set, which was above the threshold of 100 immature salmon per set. Consequently, the Shumagin Islands were opened to commercial salmon fishing to only set gillnet gear for the July 6 period. Test fishing results on July 8 indicated 48.0 immature salmon per set. With this information, commercial fishing during the July 8 period was opened to both set gillnet and seine gear. Continued monitoring of the seine fishery indicated that the harvest of immature salmon remained below the threshold throughout the season.

From July 6 to 21, there were 6 fishing periods, each consisting of a 24-hour opening followed by a 48-hour closure. From July 22 to July 31, there were 3 fishing periods that consisted of a 36-hour opening followed by a 48-hour closure. Additional fishing time in terminal areas was first allowed on July 15. During August, the post-June fishery is managed based on the abundance of local stocks. In September, management focuses on coho salmon returns though the status of local pink and chum salmon returns may also be taken into consideration.

The total commercial harvest for the South Peninsula Post-June fishery (excluding the Southeastern District Mainland) was 1,031 Chinook, 366,390 sockeye, 179,441 coho, 8,082,047 pink, and 330,928 chum salmon. A total of 126 permit holders participated in the 2008 South Peninsula Post-June salmon fishery. Participation consisted of 52 purse seine, 22 drift gillnet, and 52 set gillnet permits.

The South Peninsula indexed sockeye salmon escapement of 94,339 was above the upper end of the escapement goal range of 48,200 to 86,400 fish. The South Peninsula indexed total pink salmon escapement of 3,166,070 was near the upper end of the even-year goal range of 1,864,600 to 3,729,300 fish. The South Peninsula indexed total chum salmon escapement of 532,350 was within our escapement goal range of 330,400 to 660,800 fish. A total of 19,600 coho salmon were documented in South Peninsula streams. Some of the major coho salmon systems are typically not surveyed or surveyed during off-peak times. There are few escapement goals on the South Peninsula for coho salmon due to their late run timing.

### **Aleutian Islands Fishery**

The department opened the Aleutian Islands Area to commercial salmon fishing by seine gear on August 2. Commercial harvest of salmon occurred in Unalaska and Makushin bays, with a total harvest of 1 Chinook, 29 sockeye, 48 coho, 784,828 pink, and 261 chum salmon.

On July 30, an aerial survey of Unalaska and Makushin bays was performed by the department. An estimated 124,300 pink salmon were observed as escapement. No additional salmon escapement surveys were conducted in the Aleutian Islands during 2008.

### **North Alaska Peninsula**

In 2008, 158 Area M permit holders participated in commercial salmon fisheries along the North Alaska Peninsula. There were less than 3 deliveries made by Area T permit holders from Area M

and Area T overlap fishing sections in 2008. Effort by Area M permit holders was similar to 2006 (156) and 2007 (157). In 2006, 11 Area T permit holders participated, and in 2007, 6 Area T permit holders fished. The numbers of Area M and Area T permit holders participating in 2008 were far below the historic numbers observed during the 1990s.

The North Alaska Peninsula fishery is predominantly a sockeye salmon fishery, although depending on market conditions, directed Chinook, coho, and chum salmon fisheries occur in some locations. During even-numbered years, depending on market conditions, pink salmon runs are frequently targeted in the Northwestern District.

In 2008, the North Alaska Peninsula harvests of Chinook, sockeye, and pink salmon were below previous 10-year (1998 to 2007) averages, while the harvests of coho and chum were above the previous 10-year averages. Similarly, the harvest of Chinook, sockeye and pink salmon were all below projected levels, while coho and chum were above projected levels. The 2008 Chinook salmon harvest was 1,799 fish (7,000 projected), the sockeye salmon harvest was 2,003,906 fish (2,800,000 projected), the coho salmon harvest was 125,291 fish (70,000 projected), the pink salmon harvest was 21,137 fish (50,000 projected), and the chum salmon harvest was 177,469 fish (150,000 projected). Sockeye salmon harvests were below projections due in part to a lengthy closure in the Bear River, Three Hills, and Ilnik sections from 16 July to 10 August due to a poor return of early run sockeye salmon to Bear Lake.

### **Northwestern District**

In the 2008 Northwestern District commercial salmon fishery, a total of 51,446 sockeye, 42 coho, 16,541 pink, and 104,140 chum salmon were harvested. A total of 7 permit holders participated in the fishery, consisting of 3 purse seine, and 4 drift gillnet fishers.

The commercial fishery in Uria Bay harvested a total of 41,319 sockeye salmon in 2008, lower than the most recent 10-year average of 59,499 fish.

In the Northwestern District, chum salmon escapement totaled 357,850 fish, with the bulk of the escapement in the Izembek-Moffet Bay Section. The Northwestern District chum salmon escapement goal is 100,000 to 215,000 fish and was exceeded. The Uria Bay Section had an escapement of 87,300 sockeye salmon and 13,400 pink salmon escaped into Bechevin Bay. Bechevin Bay is the only North Peninsula location with a pink salmon escapement objective (31,000 fish during even-numbered years); the objective was not met in 2008.

### **Nelson Lagoon Section**

The total run of 361,930 sockeye salmon from the Nelson Lagoon Section harvest and escapements of all Nelson River tributaries was below the point estimate forecasted run of 523,000 fish. From the total run, 183,330 sockeye salmon were harvested in Nelson Lagoon and 178,600 escaped, of which 141,600 spawned in the Nelson (Sapsuk) River, and 37,000 sockeye salmon were observed in other tributaries such as the David's and Caribou rivers. The sockeye salmon escapement into Nelson River met the BEG of 97,000 to 219,000 fish.

### **Bear River and Three Hills Sections**

By regulation, the Bear River Section opens to commercial salmon fishing on May 1 while the Three Hills Section opens June 25. Both areas are managed based on the sockeye salmon run strengths into the Bear and Sandy rivers. In 2008 the lower-than-expected sockeye salmon returns to the Bear and Sandy rivers resulted in the Bear River and Three Hills sections being closed to commercial salmon fishing during June and July; no harvest occurred until August 11. The Bear



River early-run (through July 31) sockeye salmon escapement of 125,526 fish was below the escapement goal of 176,000 to 293,000 fish. However, during an aerial survey on July 30, 30,000 dark sockeye salmon were observed in the Bear River in 2 large schools above the Mad Sow confluence (midriver). Subsequent surveys over the next 2 weeks continued to document these fish in the same location.

The Bear River sockeye salmon late-run (after July 31) escapement of 195,474 fish, which includes the 30,000 seen in-river on July 30, exceeded the escapement goal of 117,000 to 195,000 fish. The largest daily escapement occurred on August 15 when 25,047 sockeye salmon were counted through the weir. There were 9 days when weir counts exceeded 9,000 fish, and 2 days when counts exceeded 20,000 fish.

In 2008, the Port Moller Bight, Bear River, Three Hills, and Ilnik sections were closed August 1 through August 9 and a test fishery was conducted to assess the run strength on August 6 and August 9. The August 9 test fishery showed a substantial buildup of sockeye salmon in the vicinity of Bear River. Subsequent weir counts in the following days also showed large numbers of fish moving up river. Good escapement counts at the Bear River weir allowed the Three Hills Section and the southern portion of the Bear River Section to reopen on August 10. A large closed area buffer was implemented to protect the milling fish observed in the test fishery. Within a few days, the entire Bear River Section was opened with 1,000 yard regulatory markers in effect and remained open for the duration of the commercial salmon fishing season. The sockeye salmon harvest in the Bear River Section during August and September was 417,261 fish while the Three Hills Section harvest was 123,344 fish.

The final 2008 Sandy River sockeye salmon escapement was 32,200—slightly below the escapement goal range of 34,000 to 74,000 fish.

### **Ilnik Section**

Since 2005, the Ocean River, normally a tributary of the Ilnik River, has emptied directly into the Bering Sea and bypassed the Ilnik River weir. Prior to 2005, the Ocean River had not emptied directly into the Bering Sea since 1987. To account for Ocean River-bound sockeye salmon that bypassed the weir, the Ilnik River weir escapement goal was decreased by 20%. The final Ilnik River and Ocean River sockeye salmon escapement was 44,300 fish and met the 40,000 to 60,000 escapement goal range. The Ocean River escapement estimate of 16,000 sockeye salmon, based on aerial surveys, exceeded the escapement objective range of 8,000 to 12,000 fish. By regulation, the Ilnik Section could open to commercial salmon

fishing on June 20, but because of low escapement rates into the Ilnik River, the area did not open until June 30. The closure of the entire Bear River and Three Hills sections due to the weak runs into Bear and Sandy rivers left only the Ilnik and Outer Port Heiden sections open to commercial salmon fishing.

No commercial salmon fishing effort occurred inside Ilnik Lagoon in 2008. The cumulative Ilnik River sockeye salmon escapement on June 30 met escapement objectives and continued to do so until about July 10 when it started to fall below objectives. The commercial salmon fishery was closed shortly thereafter and remained closed until August 10 when the late Bear River sockeye run strength was sufficient to warrant an opening.

Aerial escapement surveys began on the Meshik River on June 17 and were usually conducted weekly throughout the fishery. On July 3, 25,000 sockeye salmon were observed inriver. A peak survey conducted on July 30 documented 76,150 fish in the Meshik River, exceeding the season-ending escapement goal of 20,000 to 60,000 fish. The final escapement in the Inner Port Heiden

Section (including Meshik River, Red Bluff and Yellow Bluff creeks and tributaries) was 99,150 fish.

Management of the portion of the Ilnik Section southwest of Unangashak Bluffs is based on the run strength of Ilnik River sockeye salmon. Because the Ilnik River was meeting the escapement objective prior to about July 11, fishing time of 4½ days per week was allowed in the southern portion of the Ilnik Section (southwest of Unangashak Bluffs) from June 30 to July 11. That portion of the Ilnik Section northeast of Unangashak Bluffs to Stroganof Point is managed on the basis of Meshik and Ilnik Rivers sockeye salmon stocks prior to July 20. This area opened to commercial salmon fishing on June 30 and the fishing time was also 4½ days per week for 2 weeks. The entire Ilnik Section was closed to commercial salmon fishing July 11 to allow passage of sockeye salmon bound for the Ilnik, Bear and Sandy rivers as these rivers were not meeting escapement objectives.

In 2008, a total of about 120 permit holders harvested 885,634 sockeye salmon in the Ilnik Section from June 30 until mid-September. About 40% (348,585 fish) of this commercial harvest occurred southwest of Unangashak Bluffs and 60% (537,049 fish) was harvested between Unangashak Bluffs and Stroganof Point. The peak daily catch in the southern portion of the Ilnik Section was on July 3 when 32,811 fish were harvested. The largest daily harvest occurred July 4, in the northern portion of the Ilnik Section when 138,675 fish were harvested.

Between July 20 and August 15, the Ilnik Section is managed based on the abundance of Bear River sockeye salmon stocks. For effective management of late-run sockeye, the Ilnik Section was closed to commercial salmon fishing on July 11 along with the Bear River and Three Hills sections. These areas reopened on August 10 due to a strong return of late-run sockeye salmon to the Bear River.

Beginning August 15, the Ilnik Section is managed for coho salmon runs into Ilnik Lagoon. No directed coho salmon fisheries occurred in the Ilnik Section during 2008 even though there was a strong run into Ilnik Lagoon. Commercial fisheries in the Ilnik Section continued targeting sockeye salmon while coho salmon were harvested incidentally in the sockeye salmon fisheries.

### **Inner and Outer Port Heiden Sections**

Fishing time in the Outer Port Heiden Section is based on Meshik River sockeye salmon abundance, unless management actions are taken for the conservation of Ugashik River sockeye salmon in the Egegik District. The weekly fishing periods in the Outer Port Heiden Section are scheduled from 6:00 AM Monday to 6:00 PM Wednesday. A total of 9 days of fishing were permitted in the Outer Port Heiden Section during 2008, and the fishery was closed on July 15. The harvest from Inner Port Heiden is confidential because fewer than 3 permits fished in this section. In 2008, a total of 92 permit holders harvested 320,857 fish from the Outer Port Heiden Section. The peak daily catch was on July 8 when 63,094 fish were harvested.

### **Cinder River Section**

There was limited harvest reported in the Cinder River Section in September when coho salmon were targeted for a short period by less than 3 permit holders.

**Table 5:** Preliminary 2008 Westward Region commercial salmon harvests, by fishing area and species, in thousands of fish.

Fishing Area	Species					Total
	Chinook	Sockeye	Coho	Pink	Chum	
Kodiak	17	1,819	301	8,788	908	11,833
Chignik	1	687	162	2,390	209	3,449
South Peninsula	4	2,239	226	12,723	803	15,750
North Peninsula	2	2,004	125	21	177	2,329
Alaska Peninsula Total	6	4,243	351	12,744	980	18,079
Aleutian Islands	0	0	0	785	0	785
Westward Region Total	24	6,749	814	24,707	2,097	33,361

*Note:* Missing data indicates no harvest and zeros indicate harvest activity but <1,000.

*Note:* Columns may not total exactly due to rounding.

*Note:* Modified Western Region January 23, 2009 by DAS.

<sup>a</sup> 2008 Chignik Harvest includes test fish and personal use.

## CHANGES IN THE FISHERY AND FISHERY MANAGEMENT

The salmon management program conducted by the ADF&G is a responsive and adaptive program that monitors salmon abundance during the fishing season and makes continual adjustments in fishing time and areas based on test fishing, commercial fishery performance, observed escapements, biological data on age, sex and size, historical run timing and other data. Each year, more than 700 Emergency Orders (EOs) are issued to adjust time and area to achieve escapement goals and accomplish the goals of the fishery management plans.

The Alaska Board of Fisheries (Board) plays a vital role in developing management plans for each of the individual fisheries. Since re-certification in October 2007, the Board has met and considered proposals for changes to management in six of the salmon fisheries (Table 6). In this period, the changes recommended by the Board have been minor, reflecting insignificant (in the context of certification of Alaska salmon) changes to the management of salmon fisheries.

**Table 6:** Fisheries reviewed by the Board.

Board Cycle	Fisheries Reviewed
2007-2008	Lower Cook Inlet, Upper Cook Inlet, Kodiak, Chignik
2008-2009	Southeast, Prince William Sound

A complete list of the proposals considered and their outcome can be found at the Board of Fisheries website <http://www.boards.ADF&G.state.ak.us/fishinfo/meetsum/meetsum.php>. There were no changes to stock status or to the management of the Alaska salmon fishery during this audit period that have negatively affected the Alaska salmon MSC certificate

During the 2007-2008 cycle, the Board determined the Yentna River Sockeye salmon to be a stock of yield concern. This issue has been considered under Condition 37, but no new condition has been raised at this time.

### AFDF Actions Addressing 2008 Conditions of Certification

During the 2007 re-certification of the Alaskan salmon fishery, 70 conditions of certification were set. Originally, two of the certifications were numbered 31. This error has been remedied by naming the second of these Conditions '31A'. The other conditions have retained their previous numbering system, so that 69 is the final condition.

Many of the conditions apply to more than one certification unit and/or performance indicator resulting in the same condition appearing in different fisheries. For example, conditions 1 and 9 are the same, as are conditions 2 and 10. Where this occurs, the similar conditions are listed in the first part of the text for each condition, although each condition is still listed separately.

ADF&G initially developed an action plan for addressing these conditions in 2007. With the change in the client in 2008, the AFDF has now adopted the action plan and has reissued it. The text of the Action Plan has also been changed with minor revisions to reflect this change in client. This new text can be found in this report in the Action Plan section of each condition.

## **RESULTS, CONCLUSIONS AND RECOMMENDATIONS**

Information has been collected principally from reports provided by the ADF&G. Stakeholders were also offered the chance to meet with the surveillance audit team, but no communications were received.

For each condition, the report identifies the original performance indicator and sets out the scoring guideposts and scoring commentary, and the requirements of the original Condition ('Activity assessed'). These identify the areas in which the fishery was determined to perform below the level required by the MSC standard during the initial assessment, and the required actions to address these issues.

As required by the MSC assessment methodology, the AFDF produced an Action Plan setting out the stages involved in addressing the conditions raised ('AFDF Action'). The Action Plan created by the ADF&G was deemed to be adequate by the original main assessment team in 2007, and the new AFDF Action Plan has been agreed by the assessment team during this surveillance audit.

According to the terms of the Action Plan, the client has provided information on the work undertaken to date (the 'AFDF Activity'). This has now been evaluated by the Moody Marine assessment team ('Observations' and 'Conclusion') against:

- a) the commitments made in the Action Plan;
- b) the intent of the original Condition; and,
- c) the original scoring indicator, guideposts and commentary.

Where any condition is considered to have been fully met it has been re-scored against the original scoring guidepost and a rationale has been provided for the revised score. When a condition has been successfully completed it is "closed out".

## CONDITIONS

### Certification Unit 1 – Southeast Drift Gillnet

<b>Condition 1</b>	<p><b>Condition of Certification 1 (same as Condition 9):</b></p> <p>Document available data and current assumptions regarding chum salmon stock composition in each fishery [Southeast].</p>
<b>Assessed Activity</b>	<p>This Condition relates to Indicator 1.1.1.3.</p> <p><b>100 Scoring Guidepost</b></p> <ul style="list-style-type: none"> <li>• The geographic range for harvests of each stock unit in the fishery is estimated and documented each year.</li> <li>• The information on the geographic range of harvests is monitored during the fishing season and used when making in-season management decisions.</li> </ul> <p><b>80 Scoring Guidepost</b></p> <ul style="list-style-type: none"> <li>• The geographic range for harvests of target stocks is defined.</li> <li>• The information on the geographic range of the harvests of target stocks is monitored during the fishing season and is sufficient to prevent the over harvesting of these stocks.</li> <li>• The information available on the geographic range for harvest of non-target stocks is sufficient to prevent the over harvesting of these stocks.</li> </ul> <p><b>60 Scoring Guidepost</b></p> <ul style="list-style-type: none"> <li>• The information available on the geographic range for harvests of target or non-target stocks is sufficient to prevent the over harvesting for the majority of the stocks within each stock unit.</li> </ul> <p><b>SCORE 75</b></p> <p>The geographic range of Chinook, coho, and sockeye harvests are well documented. Contribution of hatchery Chinook, sockeye, and coho salmon are available for all drift gillnet districts through otolith and cwt recovery programs. ADF&amp;G operates a region wide coded-wire tag recovery program for Chinook and coho (including all drift gillnet fishing districts) that provides in-season contribution estimates for tagged wild indicator stocks and hatchery stocks. Catch estimates for Chinook are also based on GSI.</p> <p>ADF&amp;G has intensive in-season sockeye stock identification programs in four of five of the region's major drift gillnet fisheries, and postseason programs for all these areas. Estimates of the stock composition of sockeye salmon harvests by individual stocks or stock aggregates are generated for all drift gillnet fishing from analyses of a variety of biological characteristics (scale patterns, parasite incidence, developing GSI capabilities).</p> <p>The geographic range of target pink salmon is defined although information on each stock unit is not estimated in each year. Multiple years of marine adult tagging data are available for pink salmon that provide detailed information on migratory routes of individual stock groups through the region's fisheries (Heinl and Geiger, 2005). This data shows that fisheries in each of the 3 major subregions (southern, northern inside, and northern outside) target pink stocks primarily bound for streams in that subregion. Catch of pink salmon is available by sub-</p>

	<p>Districts, District and sub-Region. MSY escapement goals for Southeast pink salmon has been set at the subregion level (these are Southern Southeast, Northern Southeast inside, and Northern Southeast outside). Based on the known entry corridors and geography of the fisheries, ADF&amp;G assumes that catch in a sub-region originates from the aggregate index streams within the sub-Region.</p> <p>In-season stock composition data is not specifically collected from chum fisheries although geographical catch information and assumptions regarding origin of fish in each fishery area provide some information. Catch estimates of aggregate chum stocks are available by subdistrict. Stock origin for chum salmon in each fishing district is generally inferred from the location of the fishery (migration corridor or terminal area). Stock-specific harvest information is not available for wild chum salmon throughout the region although important fall chum salmon fisheries are largely temporally segregated from other stocks. There are specific areas where contribution of hatchery stocks is monitored in-season to allow wild stock strength to be assessed (e.g. Tree Point gillnet fishery) and annual postseason contribution estimates of hatchery chum stocks are generated for all five drift gillnet fishing districts through the efforts of private aquaculture associations from coded-wire tag and otolith mark recovery programs. Some stock information is available for targeted wild stock fisheries that are spatially or temporally segregated (Heinl 2005). However, Heinl (2005) reports that “stock-specific harvest information is not available for the vast majority of wild chum salmon stocks in Southeast Alaska, which are predominately harvested in mixed-stock fisheries far from their spawning grounds.” Data is particularly limited for stocks such as wild summer chum. Tagging and genetic data are not available for estimation of the geographic range of harvest of pink or chum stock units by fishery management area. It is unclear whether the in season data which does not include stock estimates by fishery is adequate in every case to avoid local depletion of all stocks in every year.</p> <p>ADF&amp;G notes that developing comprehensive harvest contribution estimates for specific wild chum salmon stocks throughout the region’s fisheries would require application of GSI technology, in concert with otolith mark recovery, and would be extremely expensive (estimated annual costs for comprehensive program &gt;\$2.0 million). Acquiring such information would allow improved understanding of wild stock productivity, but ADF&amp;G believes this information is not requisite for sustainable management of the resource. Additionally it would need to be coupled with expensive total escapement estimation programs for run reconstruction information to develop stock-recruit relationships necessary for establishing Biological Escapement Goals.</p>
<b>AFDF Action Plan</b>	To satisfy these conditions AFDF will interface with ADF&G to summarise exiting information on hatchery contributions and document assumptions and supporting information on wild stock composition used in managing the major drift gillnet and purse seine fisheries in the region. AFDF will provide a report produced by ADF&G to the appropriate MSC certifying body by early 2009.
<b>Conclusion from 1st Surveillance Report</b>	Progress on this condition is on-target. This condition remains open, but is expected to be closed following the publication and subsequent review in the second surveillance audit.
<b>AFDF Actions</b>	ADF&G compiled and reviewed information on Southeast Alaska chum salmon and developed escapement goals. The information is published in “Eggers, D.M., S. Heinl. 2008. Chum Salmon Stock Status and Escapement Goals in Southeast Alaska. ADF&G, Divisions of Sport and Commercial Fisheries, Special Publication No. 08-19, Anchorage.” The ADF&G also published maps of the southeast chum salmon index stream locations and stock groupings.
<b>Observations</b>	ADF&G produced a technical report that describes the status of wild chum salmon in SEAK, migration timing, and geographical distribution of spawning populations, and stock composition (hatchery versus wild) of most chum salmon fisheries (Eggers and Heinl 2008). Most hatchery chum salmon are harvested in terminal areas where stock composition is nearly 100% hatchery fish, but hatchery fish are also captured in mixed-stock fisheries. The report

	<p>also mentions preliminary findings of hatchery chum salmon straying into streams and hatchery versus wild chum salmon in some mixed stock fisheries. While this effort reflects a significant improvement in management, ADF&amp;G notes that the occurrence of hatchery chum salmon in mixed stock fisheries masks their ability to monitor trends in the harvest of wild chum salmon in northern SEAK (southern SEAK has adequate marking for identification of hatchery salmon in mixed-stock fisheries). In addition to this report, ADF&amp;G has presented more recent findings on straying of hatchery chum salmon into streams at the State of Salmon conference in Portland, OR in May 2010 (A, Piston, ADF&amp;G, pers. comm.). This presentation indicated much higher rates of straying than did the 2008 report.</p> <p>From Eggers and Heintz (2008): “Our knowledge of the harvest of wild chum salmon, particularly summer-run fish, is still imprecise.” “In areas where stock identification of catch is not available (e.g., much of Northern Southeast Alaska), the occurrence of hatchery fish in mixed-stock fisheries masks our ability to monitor trends in the harvest of wild chum salmon. The department obtained funding in 2008 to begin sampling mixed-stock fisheries in the northern portion of the region.” “In the past, harvest estimates of wild chum salmon have been based on estimates of the harvest of hatchery fish; i.e., simply subtracting the estimated contribution of hatchery fish to the common property fisheries from the total commercial harvest of chum salmon.” ADF&amp;G is improving upon this later approach using 100% thermal marks on hatchery chum in southern SEAK (began 2002 brood year; 2006 return year; CWT prior to this).</p> <p>Importantly, the new thermal mark approach indicates high numbers and percentages of hatchery chum salmon in mixed-stock catch than estimates based on the expanded CWT approach. The new analyses suggest the hatchery chum in <u>southern</u> SEAK were harvested at rates of 38%, 37%, and 49% in the mixed-stock fisheries during 2005, 2006, and 2007. These rates suggest wild chum salmon were under “moderate exploitation” in southern SEAK.</p> <p>ADF&amp;G has made considerable progress in regard to identifying hatchery versus wild salmon in mixed-stock fisheries and by providing evidence that harvest rates on wild chum salmon in SEAK are likely moderate rather than high. However, most data apply to southern SEAK and stock composition data for northern SEAK is still lacking detail. The ADF&amp;G report provided their opinion on whether a common property fishery was mostly hatchery chum, mixed-stock, or mostly wild. ADF&amp;G stated that they collected data for mixed-stock fisheries in northern SEAK in 2008 and 2009. However, in 2008 the pink salmon run was very low and there was basically no fishery in 2008. Available data have not been formally analyzed, but according to ADF&amp;G (information provided by D. Gaudet) the samples showed, not surprisingly, large portions hatchery chums in Chatham Strait (District 112, average weighted by week = 76% hatchery chum) and Stephens Passage (District 110, average weighted by week = 78% hatchery chum). These proportions are very similar to what ADF&amp;G has reported for all of Southeast Alaska using information provided by the hatchery operators in the annual enhancement report. Southern Southeast Regional Aquaculture Association (SSRAA) currently samples all of the fisheries in Southern Southeast Alaska (Districts 1-8) and will continue to do so in the future. However, ADF&amp;G reported to D. Gaudet that there is no funding to continue sampling of chum salmon in mixed stock fisheries beyond 2009.</p>
<b>Conclusion</b>	<p>On the basis of the following scoring guideposts the score associated with Performance Indicator 1.1.1.3 (gillnet) and 1.1.1.4 (purse seine) is adjusted as follows:</p> <p><b>80 Scoring Guidepost</b></p> <ul style="list-style-type: none"> <li>• The geographic range for harvests of target stocks is defined.</li> <li>• The information on the geographic range of the harvests of target stocks is monitored during the fishing season and is sufficient to prevent the over harvesting of these stocks.</li> <li>• The information available on the geographic range for harvest of non-target stocks is sufficient to prevent the over harvesting of these stocks.</li> </ul> <p>During the recertification assessment, the first bullet under the 80 guidepost was met, the second bullet received 50%, and the third was not applicable because ADF&amp;G states there are</p>



	<p>no non-target stocks in Alaska.</p> <p>Given the ongoing sampling of hatchery and wild chum salmon composition in the southern Southeast fishery and sampling of stock composition in northern Southeast fishery in 2009, we have rescored this indicator at the 80 level and the condition is closed out.</p> <p>However, the assessment team recommends that the management system periodically sample stock composition in the mixed-stock fisheries throughout Southeast Alaska, not just southern Southeast. This sampling would be especially important if production of hatchery chum salmon changes.</p>
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<b>Condition 2</b>	<p><b>Condition of Certification 2 (same as Condition 10):</b></p> <p>List streams with documented spawning of chum salmon, identify those streams with annual escapement assessments, and for those without annual assessments, using professional judgment, list the assessed stream that is most representative. Provide a discussion of methods that are practical and economically feasible to scientifically validate the professional judgment about the use of index streams. Implement validation methods agreed to by ADF&amp;G, the original certification body, and the certification body carrying out annual surveillance audits. [Southeast]</p>
<b>Assessed Activity</b>	<p>This Condition relates principally to Indicator 1.1.1.4.</p> <p><b>100 Scoring Guidepost</b></p> <ul style="list-style-type: none"> <li>• The status of the indicator stocks is well correlated with the stocks that are most at risk from a conservation point of view, not just correlated with the most productive stocks in the region.</li> <li>• The indicator stocks used have been reviewed and found to be scientifically defensible and appropriate by management authorities such as the NMFS, USFW, and the ADF&amp;G.</li> <li>• There is general agreement among regional fisheries scientists outside the management system that the indicator stocks are appropriate.</li> <li>• The relationships between indicator stocks and stocks of interest are assessed every three to five years.</li> </ul> <p><b>80 Scoring Guidepost</b></p> <ul style="list-style-type: none"> <li>• There is some evidence of coherence between the status of indicator stocks and the status of other stocks they represent within the management unit.</li> <li>• There is no significant scientific disagreement regarding the indicator stocks used by the management system to formulate management decisions for the fishery.</li> </ul> <p><b>60 Scoring Guidepost</b></p> <ul style="list-style-type: none"> <li>• There is some scientific basis for the indicator stocks used in the management of the fishery.</li> </ul> <p><b>SCORE 75</b></p> <p>A total of 11 indicator stocks, approved by the Chinook Technical Committee of the Pacific Salmon Commission, are used to represent assessment of Southeast Alaska Chinook salmon; stocks are distributed geographically across the region and among the relative production levels (large, medium, small producers). The Stikine and Taku River Chinook stocks, which are targeted by terminal U.S. gillnet fisheries, are intensively monitored for total escapement and harvest contributions. For sockeye salmon, stocks targeted in Districts 115, 111 and 108 drift gillnet fisheries are fully assessed. Fisheries in Districts 106 and 101 rely to a greater extent on indicator stocks (which contribute substantial portions of the catch), including</p>

	<p>McDonald and Hugh Smith lakes (in SE Alaska), Stikine (transboundary river) and the Nass and Skeena rivers (in northern B.C.). These indicator stocks contribute substantial portions of the sockeye catch taken in Districts 101 and 106. Shaul et al (2005) detail the rationale, representativeness and coherence of indicator stocks for coho salmon. There are currently seven long-term full indicator stock programs (four implemented in the 1980s and the remainder in the 1990s) that provide stock specific escapement, exploitation rates in net and troll fisheries and marine survival rates. In addition there are several long-term escapement monitoring and index programs (which include the Juneau road stocks, Sitka area, Ketchikan area, etc) that enable evaluation of the representativeness of full indicator stocks. Coho escapement indicator stocks are from a broad geographic area. Escapements are correlated among the indicator stocks and with other monitored coho salmon stocks. Further, exploitation rates and marine survival are consistent in magnitude and correlated among the indicator stocks, indicating that fisheries collectively exploit the stocks at similar rates.</p> <p>Over 700 pink salmon indicator stocks are monitored annually. Pink salmon escapement is highly correlated among index streams and the streams cluster along spatial scales comparable to aggregates of index streams for which escapement goals have been established and fisheries managed accordingly.</p> <p>Although several hundred chum salmon streams are annually surveyed for escapement, smaller numbers of chum salmon streams are consistently monitored and considered as index streams (82 of 1,200). It is unclear whether the sample size is adequate particularly in contrast to the much larger number and proportion of streams monitored for pink salmon. Index streams are geographically distributed throughout Southeast Alaska and represent a range of population sizes but no formal indicator stocks have been established for chum. It is unclear which index streams are deemed to be representative of which areas, whether summer and fall runs are adequately represented in each fishing district, and whether the selected index areas are representative of the full range of productivity among chum populations. A detailed analysis of the representative nature and coherence has not been conducted. Assessments of whether these represent the more productive chum stocks or also include the stocks most at risk are incomplete. Difficulties in accurate assessments of chum numbers compound the issue of how representative these index stocks are of all chum. The chum assessment issue is further complicated by the existence of summer and fall chum runs. Intra-specific coherence across broad geographical regions has been documented for both pink and chum but different trends have been observed among index stocks. No scientific disagreements regarding the indicator stocks have been published but the degree of external review of the index stock approach used by the management system and chum is unclear.</p>
<b>AFDF Action Plan</b>	To satisfy these conditions, AFDF will provide an updated list produced by ADF&G of summer and fall chum salmon index streams and maps showing geographic areas around index streams to represent non-indexed streams and provide a list of the non-indexed streams in each area. AFDF will provide maps produced by ADF&G showing geographic locations of all streams. Finally, ADF&G will produce a written discussion of potential methods that will provide information on how well these index streams represent all chum salmon streams in the region, including associated costs, by December 2008.
<b>Conclusion from 1st Surveillance Report</b>	Progress is on-target. The condition remains open pending the ADF&G report on how well index streams represent all chum salmon streams in the region. This is expected in December 2008 and will be evaluated during the second annual MSC surveillance audit.
<b>AFDF Actions</b>	ADF&G compiled and reviewed information on Southeast Alaska chum salmon and developed escapement goals. The information is published in "Eggers, D.M., S. Heinl. 2008. Chum Salmon Stock Status and Escapement Goals in Southeast Alaska. ADF&G, Divisions of Sport and Commercial Fisheries, Special Publication No. 08-19, Anchorage." The ADF&G also published maps of the southeast chum salmon index stream locations and stock groupings.
<b>Observations</b>	ADF&G produced a technical report that describes the status of wild chum salmon in SEAK, migration timing, and geographical distribution of spawning populations, and stock

composition (hatchery versus wild) of most chum salmon fisheries (Eggers and Heint 2008). The report also mentions preliminary findings of hatchery chum salmon straying into streams and hatchery versus wild chum salmon in some mixed stock fisheries. In addition to this report, ADF&G has presented more recent findings on straying of hatchery chum salmon into streams at the State of Salmon conference in Portland, OR in May 2010 (A, Piston, ADF&G, pers. comm.). This presentation indicated much higher rates of straying than did the 2008 report.

ADF&G (S. Heint, unpublished maps, see below) produced maps showing the distribution of summer and fall chum salmon index streams. They also show how these index streams relate to aggregate stock groupings for which escapement goals were developed. The report did not list numerous streams (1,230 total) that are not part of the regular index survey, as stated in the ADF&G Action Plan, but the report referenced the ADF&G Integrated Fisheries Database where information on all chum-bearing streams is located. The broad geographical distribution of summer and fall chum index streams suggests the status of chum salmon is likely monitored by the index streams. Relatively few summer run chum salmon streams are monitored regularly on Prince of Wales Island because abundant pink salmon confound counts in the area. ADF&G is examining the potential for additional fall chum salmon index sites.

## Summer-run Chum Salmon Stocks

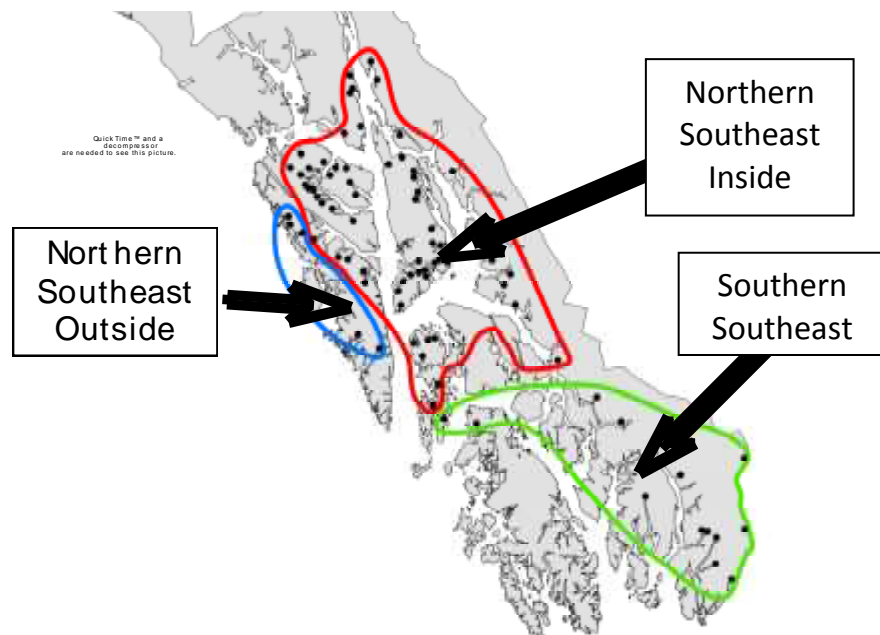
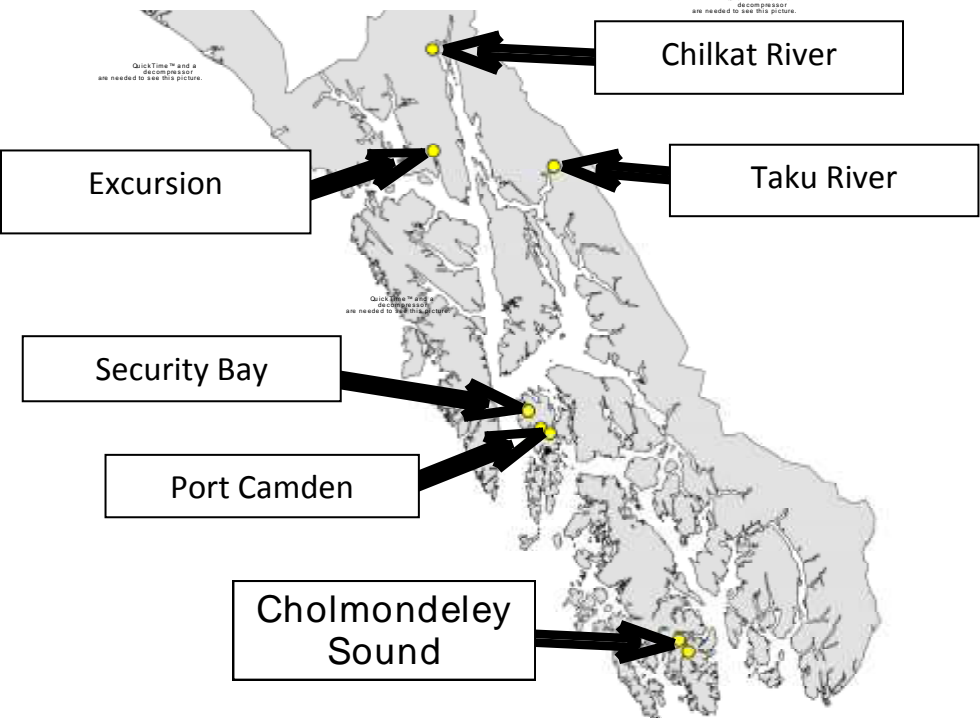


Figure 2: Location of summer run chum salmon index streams and associated stock management units.

Source: S. Heint (ADF&G) via D. Gaudet.

	<h2 style="text-align: center;">Fall-Run Chum Salmon Stocks</h2>  <p>Figure 3. Location of fall run chum salmon index streams and associated stock management units.</p> <p>Source: S. Heintl (ADF&amp;G) via D. Gaudet.</p>
<p><b>Conclusion</b></p>	<p>On the basis of the following scoring guideposts the score associated with Performance Indicator 1.1.1.4 (SEAK gillnet and purse seine) is adjusted as follows:</p> <p><b>80 Scoring Guidepost</b></p> <ul style="list-style-type: none"> <li>• There is some evidence of coherence between the status of indicator stocks and the status of other stocks they represent within the management unit.</li> <li>• There is no significant scientific disagreement regarding the indicator stocks used by the management system to formulate management decisions for the fishery.</li> </ul> <p>In the recertification assessment, the fishery passed the first bullet under the 80 guidepost but received partial credit for the second guidepost.</p> <p>The new ADF&amp;G analysis provides a good basis for indicator stocks based on migration timing and geographic distribution. These data were further analyzed by ADF&amp;G to develop escapement goals for stock aggregations. This report and the associated unpublished maps (Figs. 1 &amp; 2) fulfil the 80 guidepost requirements and so this PI is re-scored at 80 and the Condition closed out.</p>
<p><b>Condition 3</b></p>	<p><b>Condition of Certification 3 (same as Conditions 11 and 15):</b></p> <p>Estimate contribution of hatchery chum to wild escapement in representative areas through appropriate means, such as implementing thermal otolith mass marking of all hatchery chum</p>

	salmon. [Southeast]
<b>Assessed Activity</b>	<p>This Condition relates principally to Indicator 1.1.1.5.</p> <p><b>100 Scoring Guidepost</b></p> <ul style="list-style-type: none"> <li>• Fisheries targeting enhanced stocks are geographically removed from wild (unenhanced) stocks and separate terminal harvest areas are established for these fisheries.</li> <li>• Times and areas have been identified where the majority of enhanced fish migrate through the general fishery.</li> <li>• There is real time mark recovery program during the prosecution of the fishery that allows determination of harvest rates of the targets and naturally enhanced component of the run and these data are used in regulation of the fishery.</li> </ul> <p><b>80 Scoring Guidepost</b></p> <ul style="list-style-type: none"> <li>• In fisheries where both enhanced and wild (un-enhanced) stocks are harvested at the same time, the harvest guidelines are based on the goals and objectives established for the wild (un-enhanced) stocks, and there is sufficient information on stock composition (i.e. hatchery and natural fish) to determine whether those goals are met.</li> <li>• There are adequate data and analyses to determine that the presence of enhanced fish in the management units does not adversely impact the wild (un-enhanced) fish stocks</li> </ul> <p><b>60 Scoring Guidepost</b></p> <ul style="list-style-type: none"> <li>• There is general scientific agreement within the management system regarding the impacts of enhanced fish on the resultant harvest rates or escapements of wild (unenhanced) fish stocks</li> <li>• Managers have some scientific basis for assuring that harvest rates for enhanced stocks are not adversely affecting the majority of wild (un-enhanced) stocks within each stock unit.</li> </ul> <p><b>SCORE 75</b></p> <p>The majority of all species taken in Southeast Alaska are wild, with the exception of chum salmon. There is minimal enhanced production of pink salmon in Southeast Alaska (White 2005). However, a high proportion of the Southeast Alaska commercial harvest of chum salmon is from hatcheries (1995-2004 average=71%; White 2005 and JN SSRPT 2004). ADF&amp;G has recognized the potential risks of enhancement programs and has taken significant steps to identify impacts and control risks. Much of the total commercial harvest of chum is taken in terminal and special harvest areas where the catch of wild stocks is minimal. There is general agreement within the management system regarding the impacts of enhanced fish on the resultant harvest rates or escapements of wild fish stocks. Managers have some scientific basis for assuring that harvest rates for enhanced stocks are not adversely affecting the majority of wild stocks within each stock unit. In-season mark-recovery programs provide estimates of the hatchery contribution of Chinook, sockeye and coho salmon to all of the region's drift gillnet fisheries, which is adequate to determine that the presence of enhanced fish in the management units does not adversely impact wild stocks. In-season estimates of hatchery contributions of chum salmon are also available for some of the gillnet areas. Postseason estimates of hatchery contribution of chum salmon, based on coded-wire tag or thermal otolith mark recovery programs, are estimated and compiled by private aquaculture associations for all five of the major drift gillnet fisheries. However, the available information on wild and hatchery stock composition is not sufficient in all fisheries that harvest both wild and enhanced chum salmon at the same time to determine that the presence of enhanced fish does not adversely impact wild chum stocks.</p> <p>The department bases management actions for purse seine and drift gillnet fisheries in traditional mixed stock fisheries on a number of factors, including observations of wild stock escapements from aerial surveys, historical information relative to run timing of wild stocks, and fishery performance information. ADF&amp;G indicates that management of wild stocks takes</p>

	<p>precedence over hatchery stocks, and the management focus is on wild stocks. The department does not manage to meet harvest guidelines, but rather manages in order to meet escapement objectives for wild stocks. The majority of targeted fisheries on wild chum salmon stocks occur in areas or at times where enhanced chum salmon comprise a small or non-existent portion of the harvest; this is specifically the case for targeted fall chum fisheries which occur after the migration of summer run hatchery fish is over. Management of commercial net fisheries that harvest mixtures of enhanced and wild chum salmon as non-target species are managed largely passive with respect to chum salmon unless a problem with wild stock escapement is apparent.</p> <p>Information on hatchery contributions are reviewed by ADF&amp;G managers for specific fisheries that target chum salmon where enhanced fish are mixed with wild fish, so that wild stock fishery performance can be evaluated (Davidson et al 2005; example Tree Point drift gillnet fishery). Hatchery fish are otolith-marked so that they can be distinguished in the harvest (estimates of hatchery contributions to the fisheries are made by the hatchery operators from tagging studies (CWT and thermal otolith), except for the Sitka area (Heinl memo 3/29/06) where drift gillnetting is allowed only in terminal harvest areas. Coded wire tag and otolith mark recovery programs have identified basic migratory timing and routes for enhanced chum salmon stocks through most common property fishing areas in Southeast Alaska.</p> <p>Spatial segregation of hatchery and wild return areas affords a significant measure of protection. Hatcheries and release sites are generally located away from significant wild stocks (McGee 2004). The majority of the total commercial harvest is taken in terminal and special harvest areas where the catch of wild stocks is minimal (1996-2005 average of 59%; ADF&amp;G fish ticket database). Enhanced chum salmon are targeted in some traditional mixed stock fisheries including the District 1, 11 and 15 drift gillnet fisheries and in several purse seine sub-districts where they are not geographically removed from wild stocks, but wild stock abundance drives fisheries management in these areas (Davidson et al 2005, Davidson et al 2005a).</p> <p>The approach partially meets the MSC criteria regarding management of co-occurring hatchery and wild stocks but it is not possible to say that harvest is based solely on goals and objectives for wild stocks where the escapement data on which management is based contains an unknown fraction of hatchery fish. Natural spawning streams have not been systematically sampled to determine hatchery contribution. Fisheries are actively managed for wild escapement goals (there are 5 escapement goals according to Heinl et al. 2004), however "there is no scientific justification for the goals, because neither escapement nor harvest are reliably measured on a system-specific basis" (Heinl et al. 2004). There are no formal Biological Escapement Goals, nor are there Sustainable Escapement Goals, as recommended by the Sustainable Salmon Policy. (ADF&amp;G has recognized the limitations of escapement management based on average escapement levels, is reviewing escapement data, and intends to formalize sustainable escapement goals for Southeast Alaska chum salmon before the next Board of Fisheries Meeting in the winter of 2008/2009). Hatchery locations are generally sited in areas removed from wild production but data on natural spawning of hatchery fish is incomplete. The available information suggests that hatchery effects are most likely to occur in local areas near the hatcheries but that some straying can occur at significant distances from the hatchery. Ongoing analysis of a study of spawning hatchery chum salmon in natural spawning streams in Prince William Sound also raise concerns regarding that issue.</p>
<b>AFDF Action Plan</b>	<p>To satisfy this condition, AFDF will interface with ADF&amp;G to develop a multi-year otolith sampling program to estimate contributions of hatchery chum salmon to a subset of wild escapements, including streams near significant chum salmon hatchery release sites and streams in areas more distant from those releases. This will require additional staff time for collecting otoliths as well as for analysis. ADF&amp;G has implemented a 3 year sampling program that will estimate contributions of hatchery chum to wild escapements for a set index of streams surrounding significant hatchery release sites throughout southeast Alaska. Field crews will sample 100 fish each from early, middle, and late run. Otoliths will be returned to the tag lab to quantify hatchery fish. The need for further work will be assessed according to</p>

	<p>the results of this sampling. A report summarising the work will be completed in July, 2011.</p> <p>The major southeast Alaska hatcheries are already otolith marking virtually all of their chum salmon production, which represents most (e.g. 83% in 2004) of the region's enhanced chum salmon releases. It would be a substantial burden on smaller facility operators to purchase and operate otolith marking technology; therefore, we will consider the need to otolith marking additional facilities' production after obtaining results from the initial studies. By July, 2011, AFDF will provide an ADF&amp;G review of additional research needs, if any, based upon these initial studies.</p>
<b>Conclusion from 1st Surveillance Report</b>	<p>Progress is on-target. ADF&amp;G has a strategy and funding required to implement the study needed to fulfil this condition. The project report is to be published by ADF&amp;G in July 2011 and will be reviewed by the surveillance team in the fourth surveillance audit.</p>
<b>AFDF Actions</b>	<p>ADF&amp;G has sampled chum salmon index streams in 2008 and 2009 and will continue in 2010. The goal is to sample 50% of the 88 chum salmon index streams to collect baseline information on the proportion of otolith-marked hatchery chum salmon.</p> <p>Otoliths were collected from chum salmon carcasses on the spawning grounds of each sampling location, and sampling was distributed throughout each system as much as possible. Sampling was conducted over at least two sampling events based on known run-timing in each stream, with a sample size goal of 96 otoliths per visit (192 otoliths per season). In 2008 and 2009, ADF&amp;G obtained samples from 28 index streams around Ketchikan, Juneau, Baranof Island, and Chichagof Island, although only very small sample sizes (&lt;50 fish) were obtained from eight of the streams (due to weather or lack of carcasses). Samples were also collected in the Juneau area in the late 1990s. Results from all samples collected since 1995 indicate that streams within 50 km water distance from hatchery release sites are likely to contain high proportions of stray hatchery fish - eleven streams located within 50 km of release sites in which sample sizes were greater than 50 fish had an average sample proportion of approximately 50% hatchery fish. For 12 streams over 50 km from the nearest release site in which sample sizes were greater than 50 fish, the average sample proportion dropped to less than 3%. Approximately one-third of the 81 summer chum salmon index streams in Southeast Alaska are located within 50 km of a current release site. In 2010, ADF&amp;G will sample streams in central southeast (in the Petersburg Management Area) and try to resample some of the streams where only small samples were collected in 2009.</p> <p>Results of the otolith sampling will be summarized in a report after the 2010 field season, and a draft is expected by spring 2011.</p>
<b>Observations</b>	<p>ADF&amp;G has thermally marked most hatchery chum salmon and has estimated stray hatchery chum on the spawning grounds. Preliminary findings were presented at the Hatchery/Wild Salmon Conference in Portland Oregon in May 2010. These findings suggest high proportion of hatchery chum salmon in streams within 50 km of the release sites.</p> <p>Preliminary analyses by ADF&amp;G (R. Brenner, ADF&amp;G, presentation at State of Salmon conference, May 2010) indicated that approximate 30% of chum salmon streams in SEAK are within 50 km of hatchery chum salmon release locations and may therefore have high contributions of stray hatchery chum salmon.</p>
<b>Conclusion</b>	<p>Good progress has been made. Although the goal of this condition is on target as specified in the Action Plan, the preliminary findings by ADF&amp;G suggest that further work will be needed to consider information on stray hatchery chum salmon when estimating wild chum salmon spawners and when evaluating escapement goals for wild chum before this indicator can be successfully rescored to meet the 80 guidepost.</p> <p>Incorporating the presence of hatchery stray salmon into the escapement goal evaluation requires additional effort that may not be straight-forward because management agencies typically do not attempt to evaluate escapement goals based on the presence of wild spawners when the presence of hatchery strays can be relatively high. In order to score 80, the management agency should demonstrate in a report or memo how they will account for</p>

	<p>hatchery chum strays when establishing escapement goals and when evaluating spawning escapements of wild chum salmon against the wild chum escapement goals. The report might also identify ways in which stray levels might be reduced, although this is not a specific requirement. The effort to incorporate stray chum salmon into management of wild-origin chum spawners will require analyses that are typically not conducted by salmon management agencies; therefore it is possible that this evaluation may extend beyond the four year audit period.</p> <p>The client should work with ADF&amp;G to determine any courses of action that the managers will be advocating in reviewing these new hatchery stray data, and how fast such work can be accomplished, prior to the next audit.</p>
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<b>Condition 4</b>	<p><b>Condition of Certification 4 (same as Conditions 6, 7, 12 &amp; 14):</b></p> <p>Develop escapement goals for chum salmon. [Southeast]</p>
<b>Assessed Activity</b>	<p>This Condition relates to Indicator 1.1.2.2.</p> <p><b>100 Scoring Guidepost</b></p> <ul style="list-style-type: none"> <li>• Estimates are available for the annual escapement for each stock unit harvested in the fishery.</li> <li>• In-season escapement data are collected for all stock units and used to regulate the fishery.</li> <li>• Estimates are available for the annual escapement and natural spawning of all enhanced (e.g., hatchery) fish.</li> </ul> <p><b>80 Scoring Guidepost</b></p> <ul style="list-style-type: none"> <li>• Estimates are available for the annual escapement of each target stock harvested in the fishery.</li> <li>• Fishery independent indicators of spawning abundance are available for the non-target species harvested in the fishery.</li> <li>• In-season escapement data are collected for the target stocks and used to regulate the fishery.</li> <li>• Estimates are available for the annual escapement and natural spawning of enhanced (e.g., hatchery) fish, where enhanced fish are a significant component of the fishery, and where the release locations can have a reasonable probability of affecting the management of natural populations.</li> </ul> <p><b>60 Scoring Guidepost</b></p> <ul style="list-style-type: none"> <li>• Escapement estimates for target stocks are available, where escapement estimates are necessary to protect the target stock from overexploitation.</li> <li>• Fishery independent indicators of abundance are available for non-target stocks where the fishery harvests may represent a significant component of the harvest of that stock.</li> <li>• Capabilities exist to make estimates of the escapement and natural spawning of enhanced (e.g., marked hatchery) fish.</li> </ul> <p><b>SCORE 70</b></p> <p>Estimates are available for the annual escapement of target stocks of all species but there are significant questions regarding the quality and applicability of escapement information on chum. Some in-season data is collected and used to regulate the fishery but this information is incomplete, particularly for chum. Estimates of the escapement and natural spawning of enhanced chum are incomplete.</p>



	<p>Significant limitations exist in the Southeast Alaska chum salmon escapement data (Heinl 2005). ADF&amp;G has long-term standardized survey programs to estimate spawning abundance or to estimate an index of spawning abundance in over 80 indicator stocks distributed geographically throughout the region although these streams represent only a small portion of the chum salmon streams in Southeast Alaska (Heinl et al. 2004). Others have commented on the poor quality of escapement estimates for chum salmon in SEAK. A study sponsored by the American Fisheries Society indicated only 3% of the 1,516 identified spawning streams had enough information for a formal evaluation using their methods. They concluded that "little is known about the actual abundance and escapement of the vast majority of spawning aggregations in Southeast Alaska." Van Alen (2000) also noted the lack of stock-specific information for chum salmon.</p> <p>Significant questions have been raised regarding the adequacy of current chum escapement data. The Department has widely documented these problems and deemed them significant enough to preclude use of current data for establishing Biological Escapement Goals. The prodigious amount of pink salmon in spawning streams presents significant problems in assessing chum salmon escapements in some streams and years after huge numbers of pink salmon have entered the rivers. Most escapement estimates of chum salmon have been conducted incidentally or secondarily to pink salmon (Heinl et al. 2004). "Chum salmon are most easily observed early in the season when there are few pink salmon in the streams. As the season progresses, and large numbers of pink salmon enter streams, it frequently becomes much more difficult to see and count chum salmon. Peak annual counts of chum salmon for many streams have been limited to the period before pink salmon become abundant in the streams. Counts of chum salmon are not possible, and sometimes not even attempted, late in the season in those streams that have substantial populations of pink salmon and high pink salmon may have masked high chum salmon escapements in many areas (Van Alen 2000)" (quoted from Heinl et al. 2004). This problem is thought by ADF&amp;G to result in underestimation or the inability to obtain peak counts in some cases. Masking of chum salmon escapement by pink salmon is not a major issue with fall run chum stocks, which have a more distinct temporal separation in spawning time from pink salmon.</p> <p>There is limited information on straying of hatchery chum salmon in Southeast Alaska and its possible impacts on wild stock production. Hatchery contributions to net natural production have not been determined. Significant straying could mask true estimates of wild chum abundance and productivity or reduce natural stock productivity throughout-breeding depression of hatchery domestication. This is a particular concern given the large scale of chum enhancement in Southeast Alaska. ADF&amp;G believes straying is limited by its hatchery and fishery management practices but has not collected sufficient empirical information to corroborate this assumption. Hatchery programs follow numerous policies and practices to limit the potential for straying and potential impacts on wild stocks (McGee 2004, JN SSRPT 2004; supplied to SCS in 2005). Hatcheries use local brood stocks. Release sites are generally located where there are few wild stocks and there is an available area large enough to accommodate a terminal fishery to harvest returns, which limits the potential for straying into important wild chum salmon systems. The department encourages and where necessary has used its regulatory authority to require aggressive harvesting of hatchery fish in terminal areas in Southeast Alaska to limit straying concerns (A. McGregor, ADF&amp;G, personal communication). Unpublished information on the incidence of tagged hatchery fish in natural spawning areas indicates that some straying occurs, straying is most prevalent in the hatchery vicinities, some straying occurs into other areas, but straying does not appear to be significant in many natural production areas. A detailed enhancement plan has been developed for the Southeast including a series of standards and guidelines but data is not available to determine whether standards and guidelines are being met.</p> <p>ADF&amp;G notes that substantially improving the quality of chum salmon escapement data would be a complex and very expensive undertaking, particularly given the variation in pink salmon abundance among streams and years. Observer calibration studies could be conducted, but since they need to be operated in conjunction with weirs they are expensive, and the ability of</p>
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	such studies to correct for pink salmon masking is unknown. Re-institution of weirs would be very expensive (estimated annual cost per weir = \$100,000; annual cost of companion calibration study = \$14,000). Due to the high cost and difficulty in obtaining and maintaining funding, and the existence of approximately 1,200 chum salmon streams in Southeast Alaska, ADF&G does believe re-instituting long-term operation of chum salmon weirs in the region to be a viable alternative for improving escapement information.
<b>AFDF Action Plan</b>	Work is underway on this task. Existing ADF&G staff have developed sustainable escapement goals for southeast Alaska chum salmon stocks as part of the triennial escapement goal review prior to the next Alaska Board of Fisheries meeting for southeast Alaska. A published report will be available in early 2009.
<b>Conclusion from 1st Surveillance Report</b>	Progress on this Condition is on-target. This Condition remains open and is expected to be closed out following the publication of the escapement goal report in early 2009 and review during the second annual MSC surveillance audit.
<b>AFDF Actions</b>	ADF&G compiled and reviewed information on Southeast Alaska chum salmon and developed escapement goals. The information is published in "Eggers, D.M. & S. Heintz (2008). Chum Salmon Stock Status and Escapement Goals in Southeast Alaska. ADF&G, Divisions of Sport and Commercial Fisheries, Special Publication No. 08-19, Anchorage." The ADF&G also published maps of the southeast chum salmon index stream locations and stock groupings.
<b>Observations</b>	<p>ADF&amp;G produced a technical report that describes the development escapement goals for chum salmon in SEAK. The report also describes of status of wild chum salmon in SEAK, migration timing, and geographical distribution of spawning populations, and stock composition (hatchery versus wild) of most chum salmon fisheries (Eggers &amp; Heintz 2008). The investigators provided rational for grouping index streams for the purpose of developing escapement goals. Multiple quantitative methodologies were used for goal development.</p> <p>ADF&amp;G developed three sustainable escapement goals (SEGs) based on aggregate summer-run chum index streams (southern southeast, northern southeast inside, northern southeast outside). These fish are typically incidentally caught in mixed-stock fisheries. Additionally, four SEGs were developed for aggregate fall-run chum salmon (index streams) that are targeted in specific locations of SEAK by purse seiners. Finally, a escapement goal was developed for the Chilkat River (fall run), the largest producer of wild chum salmon in SEAK. Escapement indices for chum salmon for the recent 10-year period were generally within or above the escapement goals. However, the 2008 summer run was weak and it fell below the goal in northern inside and southern chum aggregates.</p> <p>The ADF&amp;G escapement goal report (Eggers &amp; Heintz 2008) commented on preliminary stray hatchery chum findings and its potential effect on escapement goals:</p> <p><i>"Recent stock status assessments of Southeast Alaska chum salmon have noted that most stocks for which we have sufficient information appeared to be stable or exhibited increasing trends in escapement (Baker et al. 1996; Van Alen 2000, Heintz et al. 2004, Heintz 2005; this report)". A concern is that the increasing trend in some chum salmon escapement indices in Southeast Alaska may simply be due to straying of hatchery fish into wild chum salmon streams. ADF&amp;G initiated a study in 2008 to detect large-scale hatchery straying into wild chum salmon index streams. This is an important consideration given the fact that our best measure of wild chum salmon abundance in Southeast Alaska is from the set of chum salmon index streams. If large-scale straying is detected, then official wild-stock escapement measures will need to be either adjusted or qualified in the future. Adequate samples of post-spawning chum salmon were obtained from eight index streams in 2008 and one in 2007; a poor chum run in 2008 resulted in many fewer streams being sampled than was originally planned. Preliminary analysis showed that samples from four of the nine chum salmon index stream had no hatchery fish, while samples from the remaining five streams had an average of 1.5% hatchery fish (range: 1% to 3%; ADF&amp;G unpublished data). Full results of this study will be published at a future date."</i></p>

	However, more recent preliminary hatchery stray data were presented by ADF&G at a conference (R. Brenner, ADF&G, presentation at State of Salmon conference, May 2010), indicating high percentages of hatchery chum salmon mixing with wild chum salmon in streams within 50 km of release locations.
<b>Conclusion</b>	<p>During recertification, the fishery received partial credit for all guideposts except the second which was considered not applicable because Alaska does not have non target stocks.</p> <p>ADF&amp;G surveys index streams for spawning escapement each year and they now have escapement goals for chum stock management units, a key product of this condition. Some aerial survey data and in-season fishery CPUE data are used to regulate the fishery in-season. Estimates of stray hatchery chum salmon on the spawning grounds have been estimated and presented at a scientific conference but a report has not been prepared. Preliminary findings indicate that many hatchery chum salmon stray to streams within 50 km of the hatchery.</p> <p>Two of the three guideposts have been met. The condition was scheduled to be closed-out in this audit following production of the escapement goal report in 2009, but the additional work that is being undertaken is needed before this can be closed out. This is beyond what was originally thought to be necessary to close the condition, but is welcomed as an important contribution. As such, the assessment team has agreed to move the close-out date to 2011, and this condition is still 'on target' to be met. Satisfactory progress is being made on the last guidepost that involves estimation of hatchery salmon on the spawning grounds. It is anticipated that this condition can be closed out when the report is prepared (likely in year 4 of this certificate) that documents hatchery salmon on the spawning grounds (see Condition 3 &amp; 11).</p>

<b>Condition 5</b>	<p><b>Condition of Certification 5 (same as Condition 13):</b></p> <p>Where agreed by ADF&amp;G and the certification body conducting annual surveillance audits under the MSC program, implement new estimates of productivity on wild salmon and incorporate appropriate changes in fishery management. [Southeast]</p>
<b>Assessed Activity</b>	<p>This Condition relates principally to Indicator 1.1.2.4</p> <p><b>100 Scoring Guidepost</b></p> <ul style="list-style-type: none"> <li>• Scientifically defensible productivity estimates (e.g. stock/recruitment relationships) have been derived for all target stocks and the relative productivity of non-target stocks is known.</li> <li>• Risk assessment has been conducted to determine the impact of alternative harvest strategies on non-target stocks. The risk assessment should include an assessment of the uncertainties with estimates of stock productivity for the target stocks.</li> </ul> <p><b>80 Scoring Guidepost</b></p> <ul style="list-style-type: none"> <li>• There is adequate information to identify the harvest and production strategies required to maintain the high productivity of the target stocks.</li> <li>• There is adequate information to estimate the relative productivity of the non-target stocks where the fishery harvests may represent a significant component of those non target stocks.</li> <li>• The harvest limitations for target stocks take into consideration the impacts on non target stocks and the uncertainty of the productivity for these stocks.</li> </ul> <p><b>60 Scoring Guidepost</b></p> <ul style="list-style-type: none"> <li>• The available information and analyses are adequate to identify the harvest limitations and production strategies required to maintain the productivity of the majority of target stocks.</li> <li>• The relative productivity of the non-target stocks is considered in the management strategy,</li> </ul>

	<p>where the fishery harvests may represent a significant component of those non-target stocks.</p> <p><b>SCORE 70</b></p> <p>Productivity has been estimated for indicator stocks of Chinook and coho salmon, numerous sockeye stocks, and stock aggregates of pink salmon, but no productivity calculations were presented for chum salmon. Information on the relative productivity of chum salmon based on annual harvest numbers and escapement indices may be adequate to detect large scale changes in productivity of the aggregate stock but may be insufficient to protect the productivity of all component of the aggregate chum stock. Unaccounted for contributions of hatchery fish to natural spawning has the potential to mask wild stock productivity. Heintz (2005) noted that wild chum salmon harvest levels have not rebounded to nearly the same degree as wild pink or coho salmon and are still below harvest levels of the early 20th century. We note that much of the recent increase in chum harvest in the 1990s has been driven by hatchery fish which highlights the question of whether enhanced fish have replaced or masked wild production. ADF&amp;G has also reported that the Chilkat and Taku rivers were historically two of the largest fall chum producers in the region but have declined for reasons that are not well understood (Heintz 2005 p. 207).</p>
<b>AFDF Action Plan</b>	<p>AFDF will interface with ADF&amp;G to organise a discussion with the surveillance team, either before or during the first annual surveillance, to review the anticipated work to produce updated productivity estimates. The surveillance team will have the opportunity to identify issues for ADF&amp;G to incorporate into its work plan, should ADF&amp;G and the surveillance team agree. AFDF will provide an estimated timeline, agreed to by ADF&amp;G, for delivering new estimates of productivity. Upon delivery of the new estimates of productivity, ADF&amp;G will advise AFDF, which will advise the surveillance team of what management actions may occur as a result.</p>
<b>Conclusion from 1st Surveillance Report</b>	<p>During this audit, the Surveillance Team considered whether or not productivity estimates were necessary to sustain runs and harvests of wild chum salmon in Southeast Alaska. The MSC Indicator used here implies that productivity estimates (e.g., return per spawner) are necessary. However, the MSC Fishery Assessment Methodology (July 2008) clarifies this in that productivity estimates are not required for such fisheries. The Surveillance Team agrees with this guidance, that productivity estimates are not necessary for maintaining chum harvests and runs, although productivity estimates would be needed to determine escapement levels required to sustain the highest potential yields. Therefore, the Surveillance Team changes the requirements of this Condition; the Condition will be met when ADF&amp;G develop the escapement goal for wild chum salmon (due in early 2009), with recent escapement levels that meet this goal. This Condition is on-target and is due to be closed following review at the second MSC surveillance audit in 2009.</p>
<b>AFDF Actions</b>	<p>ADF&amp;G compiled and reviewed information on Southeast Alaska chum salmon and developed escapement goals. The information is published in "Eggers, D.M., S. Heintz. 2008. Chum Salmon Stock Status and Escapement Goals in Southeast Alaska. ADF&amp;G, Divisions of Sport and Commercial Fisheries, Special Publication No. 08-19, Anchorage." The ADF&amp;G also published maps of the southeast chum salmon index stream locations and stock groupings.</p>
<b>Observations</b>	<p>The Surveillance Team agrees with the new MSC guidelines (MSC Fisheries Assessment Methodology, section 6.2.34) that productivity estimates are not necessary for maintaining chum harvests and runs, although productivity estimates would be needed to determine escapement levels needed to sustain the highest potential yields. In 2008, the Surveillance Team suggested that the intent of this Condition would be met when ADF&amp;G develops an escapement goal for wild chum salmon and recent escapement levels meet the goal.</p> <p>ADF&amp;G produced a technical report that describes the development escapement goals for chum salmon in SEAK. The report also describes of status of wild chum salmon in SEAK, migration timing, and geographical distribution of spawning populations, and stock</p>

	<p>composition (hatchery versus wild) of most chum salmon fisheries (Eggers and Heintz 2008). The investigators provided rationale for grouping index streams for the purpose of developing escapement goals. Multiple quantitative methodologies were used for goal development.</p> <p>ADF&amp;G developed three sustainable escapement goals (SEGs) based on aggregate summer-run chum index streams (southern southeast, northern southeast inside, northern southeast outside). These fish are typically incidentally caught in mixed-stock fisheries. Additionally, four SEGs were developed for aggregate fall-run chum salmon (index streams) that are targeted in specific locations of SEAK by purse seiners. Finally, an escapement goal was developed for the Chilkat River (fall run), the largest producer of wild chum salmon in SEAK. Escapement indices for chum salmon for the recent 10-year period were generally within or above the escapement goals. However, the 2008 summer run was weak and it fell below the goal in northern inside and southern chum aggregates.</p>
<b>Conclusion</b>	<p>On the basis of the following scoring guideposts the score associated with Performance Indicator 1.1.2.4 has been adjusted:</p> <p><b>80 Scoring Guidepost</b></p> <ul style="list-style-type: none"> <li>• There is adequate information to identify the harvest and production strategies required to maintain the high productivity of the target stocks.</li> <li>• There is adequate information to estimate the relative productivity of the non-target stocks where the fishery harvests may represent a significant component of those non target stocks.</li> <li>• The harvest limitations for target stocks take into consideration the impacts on non target stocks and the uncertainty of the productivity for these stocks.</li> </ul> <p>During recertification, this indicator received partial credit for the first bullet and the last two bullets were considered non-applicable because ADF&amp;G states that there are no non-target stocks.</p> <p>During the 2008 (1<sup>st</sup> year) audit, the Surveillance Team considered whether or not productivity estimates were necessary to sustain runs and harvests of wild chum salmon in Southeast Alaska. The MSC Indicator used here implies that productivity estimates (e.g., return per spawner) are necessary. However, the MSC Fishery Assessment Methodology (July 2009) states that productivity estimates are not required for such fisheries. The Surveillance Team agrees with this guidance, that productivity estimates are not necessary for maintaining chum harvests and runs, although productivity estimates would be needed to determine escapement levels required to sustain the highest potential yields. Therefore, the Surveillance Team changed the requirements of this Condition; the Condition will be met when ADF&amp;G develop the escapement goal for wild chum salmon, with recent escapement levels that meet this goal.</p> <p>Although some escapement goals were not met in 2008 due to weak returns, ADF&amp;G did develop SEGs for eight stock groupings. Fisheries for chum salmon were reduced in 2008 in order to maintain escapement levels. ADF&amp;G also began to use thermal marks to identify hatchery versus wild chum salmon in the mixed stock fisheries (see above). The intent of this Condition is met by these actions but the Surveillance Team notes that future assessments should examine whether or not ADF&amp;G reduces or closes mixed stock fisheries when the wild chum stock management units appear to be weak and coming in below the escapement goal.</p> <p>The intent of the first bullet is now met, ADF&amp;G has developed escapement goals for chum salmon in SEAK and produced a report that documents this analysis. This PI is re-scored at 80 and the Condition closed out.</p>

<b>Condition 6</b>	<b>Condition of Certification 6 (same as Condition 4, 7, 12 &amp; 14):</b>
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	Develop escapement goals for chum salmon. [Southeast]
<b>Assessed Activity</b>	<p>This Condition relates principally to Indicator 1.1.3.2</p> <p><b>100 Scoring Guidepost</b></p> <ul style="list-style-type: none"> <li>• The Target Reference Point (TRP) or operational equivalents for target species have been reviewed and found to be scientifically defensible and appropriate by management authorities such as the NMFS, USFW, and the ADF&amp;G.</li> <li>• There is general agreement among regional fisheries scientist outside the management system that the TRP's or operational equivalents are appropriate.</li> <li>• The TRP's or operational equivalents for the target stocks take into account variability in the productivity of each component of the target stock and productivity of non-target stocks.</li> </ul> <p><b>80 Scoring Guidepost</b></p> <ul style="list-style-type: none"> <li>• There is no significant scientific disagreement regarding the TRP's or operational equivalents used by the management system to formulate management decision for the fishery.</li> <li>• The TRP's or operational equivalents for the target stocks take into account variability in the productivity of each component of the target stock and the productivity of non-target stocks.</li> </ul> <p><b>60 Scoring Guidepost</b></p> <ul style="list-style-type: none"> <li>• There is general agreement among fisheries scientist within the management system that the TRP's or operational equivalents are appropriate for the target stocks.</li> <li>• Target reference points have been defined for the majority of target stocks harvested in the fishery and these target reference points are not scientifically disputed.</li> <li>• The management system has taken into account the relative productivity of non-target stocks when setting the TRP's or operational equivalents for the majority of target stocks.</li> </ul> <p><b>SCORE 75</b></p> <p>The Target Reference Point (TRP) or operational equivalents set by the management system has been defined above as “the state of a fishery and/or a resource, which is considered desirable. Management action, whether during a fishery development or stock rebuilding process, should aim at maintaining the fishery system at its level.”</p> <p>Target reference points for Chinook, sockeye and coho salmon stocks in the region take into account stock productivity (Geiger and Der Hovanisian 2005). Scientists from other agencies have been involved in review and/or development of most of these escapement goals (A. McGregor, personal communication). For pink salmon, target reference points are set on the basis of productivity calculations for aggregates. Escapement targets have been set for pink salmon stock groups within each sub-region, based on the historical escapement distribution, to insure that fisheries are managed to distributed escapement throughout each sub-region. There is a high degree of correlation and spatial coherence in pink salmon escapement indices among index steams in Southeast Alaska. Based on this, ADF&amp;G has concluded that production varies on spatial scales that conform to that by which the target pink salmon fisheries are managed.</p> <p>For chum salmon there are not similar target goals aimed at the maximal productivity, rather the productivity associated with past mean escapement counts is taken to be the desirable state, and even this is done informally for few chum salmon stocks. According to ADF&amp;G, escapement survey information is an integral part of managing the commercial fisheries directed on wild chum salmon stocks in Southeast Alaska, and average escapements currently serve as proxies for official escapement goals (ADF&amp;G). Heint et al. (2004) found reference in ADF&amp;G records to escapement goals for 5 chum salmon streams in Southeast Alaska.</p>

	<p>However Heintz et al. (2004) concluded that these escapement goals for chum salmon lacked scientific justification, "because neither escapement nor harvest are reliably measured on a system specific basis." ADF&amp;G notes that the quality of escapement and stock-specific harvest information for Southeast Alaska chum salmon is presently insufficient to develop Biological Escapement Goals on the basis of stock productivity parameters (Heintz 2005, pg 208). However, the information is sufficient to develop Sustainable Escapement Goals. ADF&amp;G is committed to investigating development of Sustainable Escapement Goals for Southeast Alaska chum salmon stocks or stock aggregates prior to the next Southeast Board of Fisheries meeting in early 2009 (Heintz 2005, pg 208).</p>
<b>AFDF Action Plan</b>	<p>Work is underway on this task. Existing ADF&amp;G staff have developed sustainable escapement goals for southeast Alaska chum salmon stocks as part of the triennial escapement goal review prior to the next Alaska Board of Fisheries meeting for southeast Alaska. A published report will be available in early 2009.</p>
<b>Conclusion from 1st Surveillance Report</b>	<p>Progress on this condition is on target. This condition remains open and is expected to be closed following the publication and subsequent review of the escapement goal report in early 2009, reviewed during the second annual MSC surveillance audit.</p>
<b>AFDF Actions</b>	<p>ADF&amp;G compiled and reviewed information on Southeast Alaska chum salmon and developed escapement goals. The information is published in "Eggers, D.M., S. Heintz. 2008. Chum Salmon Stock Status and Escapement Goals in Southeast Alaska. ADF&amp;G, Divisions of Sport and Commercial Fisheries, Special Publication No. 08-19, Anchorage." The ADF&amp;G also published maps of the southeast chum salmon index stream locations and stock groupings.</p>
<b>Observations</b>	<p>ADF&amp;G produced a technical report that describes the development escapement goals for chum salmon in SEAK. The report also describes of status of wild chum salmon in SEAK, migration timing, and geographical distribution of spawning populations, and stock composition (hatchery versus wild) of most chum salmon fisheries (Eggers and Heintz 2008). The investigators provided rationale for grouping index streams for the purpose of developing escapement goals. Multiple quantitative methodologies were used for goal development.</p> <p>ADF&amp;G developed three sustainable escapement goals (SEGs) based on aggregate summer-run chum index streams (southern southeast, northern southeast inside, northern southeast outside). These fish are typically incidentally caught in mixed-stock fisheries. Additionally, four SEGs were developed for aggregate fall-run chum salmon (index streams) that are targeted in specific locations of SEAK by purse seiners. Finally, a escapement goal was developed for the Chilkat River (fall run), the largest producer of wild chum salmon in SEAK. Escapement indices for chum salmon for the recent 10-year period were generally within or above the escapement goals. However, the 2008 summer run was weak and it fell below the goal in northern inside and southern chum aggregates.</p>
<b>Conclusion</b>	<p>On the basis of the following scoring guideposts the score associated with Performance Indicator 1.1.3.2 the score has been adjusted:</p> <p><b>80 Scoring Guidepost</b></p> <ul style="list-style-type: none"> <li>• There is no significant scientific disagreement regarding the TRP's or operational equivalents used by the management system to formulate management decision for the fishery.</li> <li>• The TRP's or operational equivalents for the target stocks take into account variability in the productivity of each component of the target stock and the productivity of non-target stocks.</li> </ul> <p>During recertification, the fishery received full credit for the first guideposts and partial credit for the second guidepost.</p> <p>Escapement goals were developed and reported, as required by the condition. The escapement goals are based on regional aggregates of chum salmon index streams. The goals are also separated by migration timing, i.e., stocks that have summer versus fall timing. This approach</p>

	takes into account potential variability in chum salmon stock management units returning to SEAK. The intent of this indicator is therefore met and the PI is re-scored at 80 at the Condition closed out.
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<b>Condition 7</b>	<b>Condition of Certification 7 (same as Conditions 4, 6, 12 &amp; 14):</b> Develop escapement goals for chum salmon [Southeast]
<b>Assessed Activity</b>	<p>This Condition relates principally to Indicator 1.2.2.</p> <p><b>100 Scoring Guidepost</b></p> <ul style="list-style-type: none"> <li>• There is general agreement among regional fisheries scientist outside the management system that the methods of estimating escapements and exploitation rates for the target stocks are scientifically defensible.</li> <li>• Management actions have reduced fishing as the target stocks approach the LRP and fisheries have only resulted in escapements that approach or are below the LRP escapement goal in one year in a period of the most recent 10 consecutive years, for any of the target stocks.</li> </ul> <p><b>80 Scoring Guidepost</b></p> <ul style="list-style-type: none"> <li>• There is general agreement among regional fisheries scientist inside the management system that the methods of estimating escapements and exploitation rates for the target stocks are scientifically defensible.</li> <li>• Management actions have reduced fishing as the target stocks approach the LRP and fisheries have only resulted in escapements that approach or are below the LRP escapement goal in one year in a period of the most recent 5 consecutive years, for any of the target stocks.</li> </ul> <p><b>60 Scoring Guidepost</b></p> <ul style="list-style-type: none"> <li>• There is general agreement among regional fisheries scientist inside the management system that the methods of estimating escapements and exploitation rates for the majority of target stocks are scientifically defensible.</li> <li>• Management actions have reduced fishing as the target stocks approach the LRP and fisheries have only resulted in escapements that approach or are below the LRP escapement goal in no more than two years in a period of the most recent 5 consecutive years, for the majority of the target stocks.</li> </ul> <p><b>SCORE 75</b></p> <p>There is general agreement within ADF&amp;G that methods of estimating escapements for a majority of target stocks are scientifically defensible but significant questions remain on the adequacy of chum indices. Fishery management typically reacts to reduced numbers in an effort to meet escapement goals and these efforts have been generally successful in avoiding extended periods of escapements below target levels for most stocks. However, a number of stocks subject to this fishery have been below escapement goals for a number of years (e.g., Blossom River Chinook salmon, McDonald Lake sockeye salmon, Chilkat River Chum salmon, Taku river chum salmon). In addition, 11 chum salmon stocks have been shown to be declining.</p> <p>ADF&amp;G has determined that while Blossom River Chinook and McDonald Lake sockeye have been below escapement goals in a number of recent years, neither qualifies for a stock of concern listing. The Blossom River goal was met in both 2004 and 2005 and ADF&amp;G does not consider Blossom River chinook to be a stock of concern, based on the rationale contained in</p>



	<p>McPherson et al 2004 (page 80). The McDonald Lake sockeye stock has undergone a recent reduction in recruitment, but the stock does not meet the formal definition for a stock of concern, as described in Geiger et al (2005; pg 79).</p> <p>For chum salmon, we note that of the 82 streams with escapement estimates in at least 16 of the 21 years prior to 2002, 11 showed a robust estimate of decline in peak escapement surveys (Heinl et al. 2004). Using data through 2004, Heinl (2005) presented an update of the original analysis, which showed a reduced number (8 of 82 ADF&amp;G chum salmon index streams) exhibited meaningful declines in abundance over the last two decades. ADF&amp;G subsequently presented the assessment team with further data analyses of these 8 systems, including updated data through 2005; results revealed that 5 of the 82 stocks exhibited significant declining trends based on the methods of Geiger et al. and only 1-2 stocks using statistical methods used by two other authors to assess trends in Southeast Alaska salmon escapements. ADF&amp;G concluded that had the percentile approach been used to establish sustainable escapement goals (which has been used extensively in Alaska; Bue and Hasbrouck 2001) for these stocks, none of the 8 stocks would have met criteria for stock of concern designation.</p> <p>For chum salmon ADF&amp;G notes that: 1) the long-term trend (21 years) in the region-wide catch of wild chum salmon is positive, 2) the long-term trend in the total region-wide chum salmon index escapement (summed totals of 82 index streams) is positive, 3) long-term trends in escapement by management district (index streams summed by district) are generally stable or increasing (none show statistically significant declines), and 4) long-term escapement measures are stable or increasing in 73% of 82 individual index streams. ADF&amp;G has concluded that while 8 of 82 streams at this fine level of inspection showed declines in escapement that Heinl considered to be biologically significant, this does not mean that these stocks are ‘depressed’ or that they should be considered as stocks of concern. Subsequent analyses by ADF&amp;G of these 8 index streams has concluded that none of these declines has reached the level of a ‘chronic inability’ to reach escapement goals, which is the criteria for stock of concern designation.</p> <p>ADF&amp;G has presented Alaska’s fishery regulatory body (the Alaska Board of Fisheries) with the available best stock status information, and the Board concurred with the department’s assessment to not consider Chilkat and Taku River chum salmon stocks as stocks of concern (ADF&amp;G submission to SCS 3/24/2006). ADF&amp;G discussed with the Board the management measures it was taking to limit harvests of the stocks, and research efforts it was making to improve understanding of stock status, both of which represent basic elements that would be contained in action plans were they to be developed. The new research conducted on Chilkat River chum salmon has resulted in major upgrades to the escapement monitoring program that should soon enable development of an escapement goal and an updated assessment of management effectiveness. Work is ongoing to continue improving information on the Taku River chum salmon run; in the meantime harvests and index escapements have remained stable over the last decade.</p> <p>We are particularly concerned by cases where the lack of suitable escapement data or goals preclude consideration as stocks of concern. The poor quality of existing estimates of escapement for chum limit their potential use in the SSP (Sustainable Salmon Policy) in listing stocks as stocks of concern. Not taking a management step because the data are not good enough runs counter to the concept of using the best available science, a part of the precautionary approach. Not having formal escapement goals and avoiding the Stocks of Concern process reduces the accountability for sustainability and recovery.</p>
<b>AFDF Action Plan</b>	Work is underway on this task. Existing ADF&G staff have developed sustainable escapement goals for southeast Alaska chum salmon stocks as part of the triennial escapement goal review prior to the next Alaska Board of Fisheries meeting for southeast Alaska. A published report will be available in early 2009.
<b>Conclusion from 1st Surveillance</b>	Progress on this condition is on target. This condition remains open and is expected to be closed following the publication and subsequent review of the escapement goal report in early

<b>Report</b>	2009, reviewed during the second annual MSC surveillance audit.
<b>AFDF Actions</b>	ADF&G compiled and reviewed information on Southeast Alaska chum salmon and developed escapement goals. The information is published in “Eggers, D.M., S. Heinl. 2008. Chum Salmon Stock Status and Escapement Goals in Southeast Alaska. ADF&G, Divisions of Sport and Commercial Fisheries, Special Publication No. 08-19, Anchorage.” The ADF&G also published maps of the southeast chum salmon index stream locations and stock groupings.
<b>Observations</b>	<p>ADF&amp;G produced a technical report that describes the development escapement goals for chum salmon in SEAK. The report also describes of status of wild chum salmon in SEAK, migration timing, and geographical distribution of spawning populations, and stock composition (hatchery versus wild) of most chum salmon fisheries (Eggers and Heinl 2008). The investigators provided rational for grouping index streams for the purpose of developing escapement goals. Multiple quantitative methodologies were used for goal development.</p> <p>ADF&amp;G developed three sustainable escapement goals (SEGs) based on aggregate summer-run chum index streams (southern southeast, northern southeast inside, northern southeast outside). These fish are typically incidentally caught in mixed-stock fisheries. Additionally, four SEGs were developed for aggregate fall-run chum salmon (index streams) that are targeted in specific locations of SEAK by purse seiners. Finally, a escapement goal was developed for the Chilkat River (fall run), the largest producer of wild chum salmon in SEAK. Escapement indices for chum salmon for the recent 10-year period were generally within or above the escapement goals. However, the 2008 summer run was weak and it fell below the goal in northern inside and southern chum aggregates.</p>
<b>Conclusion</b>	<p>On the basis of the following scoring guideposts the score associated with Performance Indicator 1.2.2 has been adjusted:</p> <p><b>80 Scoring Guidepost</b></p> <ul style="list-style-type: none"> <li>• There is general agreement among regional fisheries scientist inside the management system that the methods of estimating escapements and exploitation rates for the target stocks are scientifically defensible.</li> <li>• Management actions have reduced fishing as the target stocks approach the LRP and fisheries have only resulted in escapements that approach or are below the LRP escapement goal in one year in a period of the most recent 5 consecutive years, for any of the target stocks.</li> </ul> <p>During recertification, the fishery received full credit for the first guideposts and partial credit for the second guidepost. The assessment team was concerned that escapement goals were not developed for SEAK chum salmon and that depleted stocks could not be readily identified without these escapement goals. ADF&amp;G has developed escapement goals for a number of chum stock management units. The stock management units have been above or fluctuating around the escapement goal. Some stock management units were below the goal in 2008 and 2009 due to low abundance.</p> <p>The intent of this indicator is met and re-scored at 80. The condition is closed out and the issues associated with this PI will be part of the overall review of the ongoing operation of this fishery at audits.</p>

<b>Condition 8</b>	<p><b>Condition of Certification 8 (same as Condition 16, 22, 32, 39, 42, 49, 59 &amp; 61):</b></p> <p>Evaluate appropriate existing age-sex-size information to determine if fisheries are exerting significant selectivity; continue ASL sampling in fisheries and of several spawning stocks to continue a database for long-term evaluation of potential fishery selectivity. [Southeast]</p>
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<b>Assessed Activity</b>	<p>This Condition relates principally to Indicator 1.3.1.</p> <p><b>100 Scoring Guidepost</b></p> <ul style="list-style-type: none"> <li>• There is comprehensive knowledge of the effect of fishing on biological characteristics such as the age, size, sex and genetic structure of the target stocks and the impact of changes in these factors on the reproductive capacity of the target stocks.</li> <li>• Management actions are consistent with maintaining healthy target stocks relative to biological characteristics such as age, size, sex and genetic structure of all target stocks.</li> <li>• Enhanced fish are identified and managed as separate target stocks.</li> </ul> <p><b>80 Scoring Guidepost</b></p> <ul style="list-style-type: none"> <li>• The knowledge of the effect of fishing on biological characteristics such as the age, size, sex and component stocks is adequate to detect threats to the reproductive capacity of the target stocks.</li> <li>• Management actions are consistent with maintaining healthy target stocks relative to biological characteristics such as age, size, sex and genetic structure of all target stocks.</li> <li>• The management system includes provisions to minimize any adverse impacts to the genetic structure of wild (un-enhanced) stocks that may be due to the enhancement of other stocks.</li> </ul> <p><b>60 Scoring Guidepost</b></p> <ul style="list-style-type: none"> <li>• The knowledge of the effect of fishing on the biological characteristics such as age, size, sex and component stocks is adequate to detect threats to the reproductive capacity of the majority of target stocks.</li> <li>• Management actions are consistent with maintaining healthy target stocks relative to biological characteristics such as age, size, sex or genetic structure for the majority of target stocks.</li> <li>• The management system includes provisions to minimize the major adverse impacts for the majority of wild (un-enhanced) stocks that may be due to the enhancement of other stocks.</li> </ul> <p><b>SCORE 77</b></p> <p>Information on biological characteristics of all salmon species in the drift gillnet harvest is routinely collected on the majority of the fisheries but is not routinely used to evaluate threats to reproductive capacity associated with potential fishery-related changes in age, size, sex, and genetic structure. Management actions have been implemented consistent with maintaining healthy target stocks relative to biological characteristics but the efficacy of these management actions has not been directly evaluated. The management system includes provisions to minimize any adverse effects to the genetic structure of wild stocks that may be due to the enhancement of other stocks but we were presented no evidence on the degree of natural spawning by hatchery chums in the SEAK, nor of the effects of the associated interbreeding.</p> <p>ASL data is routinely collected for all species (except pink salmon) in the region's drift gillnet fisheries and from escapements to virtually all systems for which escapement goals have been established, as well as other systems (particularly sockeye) as funding allows. Collection of chum salmon ASL data for district-specific catches and select escapements was extensive from the early 1980s through early 1990s. Sample size goals are sufficient to allow for examination of intra-annual and inter-annual trends in age and sex in specific districts and escapements. The quantity of ASL data collected since that mid-1990s is reduced to a sub-set of fishing districts and escapements. Long-term ASL sampling datasets (25 to &gt;30 years) are available for several systems, including Fish Creek in the southern extent of the region and Chilkat and Taku rivers in the northern extent of the region; these databases allow long-term trends in age and size to be tracked. Jack Helle (NMFS) has compiled much of the Fish Creek and Chilkat River chum</p>
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	<p>salmon ASL databases (as well as data from several other systems distributed throughout the North American range) and published numerous papers monitoring changes in age and size of chum salmon, primarily as they relate to marine conditions. With respect to genetics, NMFS - Auke Bay Lab has compiled an extensive genetic baseline of chum salmon stocks in Southeast Alaska. This data could be accessed in the future to examine the likelihood of changes in genetic composition of populations over time.</p> <p>Knowledge of the effects of fishing on biological characteristics is not comprehensive, but fisheries management is generally consistent with maintaining the biological characteristics of salmon stocks in the region. Closed and open periods are rotated in all wild stock fisheries, distributing escapement over temporal and geographic run segments in order to maintain productivity and genetic variability. Fishing through weekly 'pulse' openings followed by closures reduces possible selection pressure due to gear selectivity, particularly for gillnet gear.</p> <p>The enhancement program employs a variety of practices to protect wild salmon stocks, including: 1) a rigorous hatchery permitting process that includes genetics, pathology and fishery management reviews; 2) policies that require hatcheries to be located away from significant wild stocks; 3) use of local brood sources; 4) legal mandates that require wild stocks be given priority in fishery management; 5) requirements for marking hatchery fish; and 6) as necessary, requirements for special studies on hatchery/wild stock interactions (McGee 2004).</p>
<b>AFDF Action Plan</b>	<p>ASL sampling of fisheries and select spawning stocks is expected to continue over the long term in each certification unit. The intensity of sampling will be dependent on available funding and identified concerns. ADF&amp;G currently maintains comprehensive ASL sampling in all these fisheries; however these programs may be expanded as appropriate.</p> <p>AFDF will provide a report compiled by ADF&amp;G of existing ASL data by the end of 2009 that will evaluate the consequences of selective fishing.</p>
<b>Conclusion from 1st Surveillance Report</b>	<p>As with all conditions, the Surveillance Team evaluated the evidence available for this issue against the requirements of the original scoring guideposts, as well as the Condition and action plan. In this case, it was concluded that the ongoing effort to collect ASL data was sufficient to meet the intent of the 80 Scoring Guidepost for this Performance Indicator. There is general knowledge on the effects of gear selectivity (e.g., gillnets) on salmon and ADFG routinely collects ASL data and makes them available in a database. These data can be used to examine shifts in age or size if concerns developed. For example, concerns regarding the age and size of Yukon Chinook salmon have arisen and ASL data have been used to examine net selectivity.</p> <p>The ASL database is maintained and is available as required. ADFG has also provided provisions to minimize impacts to the genetic structure of wild salmon, largely by locating hatcheries in terminal areas away from most wild stock streams and by attempting to harvest most hatchery salmon so they do not stray to streams. Nevertheless, new data are being collected to evaluate stray hatchery chum salmon in streams and the contribution of hatchery chum salmon in mixed-stock harvests. This indicator therefore meets the intent of the 80 guidepost; but as hatchery production is high and selectivity studies have not been conducted, the score is revised to only 80.</p>

## Certification Unit 2 – Southeast Purse Seine

<b>Condition 9</b>	<p><b>Condition of Certification 9 (same as Condition 1):</b></p> <p>Document available data and current assumptions regarding chum salmon stock composition in each fishery. [Southeast]</p>
<b>Assessed Activity</b>	<p>This Condition relates principally to Indicator 1.1.1.3</p> <p><b>100 Scoring Guidepost</b></p> <ul style="list-style-type: none"> <li>• The geographic range for harvests of each stock unit in the fishery is estimated and documented each year.</li> <li>• The information on the geographic range of harvests is monitored during the fishing season and used when making in-season management decisions.</li> </ul> <p><b>80 Scoring Guidepost</b></p> <ul style="list-style-type: none"> <li>• The geographic range for harvests of target stocks is defined.</li> <li>• The information on the geographic range of the harvests of target stocks is monitored during the fishing season and is sufficient to prevent the over harvesting of these stocks.</li> <li>• The information available on the geographic range for harvest of non-target stocks is sufficient to prevent the over harvesting of these stocks.</li> </ul> <p><b>60 Scoring Guidepost</b></p> <ul style="list-style-type: none"> <li>• The information available on the geographic range for harvests of target or non-target stocks is sufficient to prevent the over harvesting for the majority of the stocks within each stock unit.</li> </ul> <p><b>SCORE 75</b></p> <p>The geographic range of target pink and chum stocks is defined but information on each stock unit is not estimated and documented each year. Purse seine salmon harvests are monitored by district or finer scale using fish tickets and aerial surveys to determine the distribution and magnitude of fishing effort. Stock origin in each fishing district is generally inferred from the location of the fishery (migration corridor or terminal area). Many years of marine tagging data are available for pink salmon that provide detailed information on migratory routes of individual stock groups throughout the region's fisheries (Geiger et al 2005), and show that fisheries in each of the 3 major sub-region's (southern, northern inside and northern outside) target pink stocks primarily bound for streams in that subregion. Stock-specific harvest information is not available for chum salmon throughout the region although important fall chum salmon fisheries are temporally segregated from other stocks, and there are specific areas where contribution of hatchery stocks is monitored in-season to allow wild stock strength to be assessed. However, Heintz (2005) reports that "stock-specific harvest information is not available for the vast majority of wild chum salmon stocks in Southeast Alaska, which are predominately harvested in mixed-stock fisheries far from their spawning grounds." Genetic data are not available for estimation of the geographic range of harvest of pink or chum stock units by fishery management area.</p> <p>In season stock composition data is not specifically collected from pink and chum fisheries although geographical catch information and assumptions regarding origin of fish in each fishery area provide some information. Fishery effort and catch information are used to assess run strength in migration corridors and terminal areas as the season progresses. Escapement information is also available in a timely manner for many pink and chum stocks from an intensive aerial survey program. Managers routinely manipulate fishing time and area</p>

	boundaries on an in-season basis based on fishery catches. It is unclear whether the in season data which does not include stock estimates by fishery is adequate in every case to avoid local depletion of all stocks.
<b>AFDF Action Plan</b>	To satisfy these conditions AFDF will interface with ADF&G to summarise exiting information on hatchery contributions and document assumptions and supporting information on wild stock composition used in managing the major drift gillnet and purse seine fisheries in the region. AFDF will provide a report produced by ADF&G to the appropriate MSC certifying body by early 2009.
<b>Conclusion from 1st Surveillance Report</b>	Progress on this condition is on-target. This condition remains open, but is expected to be closed following the publication and subsequent review in the second surveillance audit.
<b>AFDF Actions</b>	ADF&G compiled and reviewed information on Southeast Alaska chum salmon and developed escapement goals. The information is published in “Eggers, D.M., S. Heintz. 2008. Chum Salmon Stock Status and Escapement Goals in Southeast Alaska. ADF&G, Divisions of Sport and Commercial Fisheries, Special Publication No. 08-19, Anchorage.” The ADF&G also published maps of the southeast chum salmon index stream locations and stock groupings.
<b>Observations</b>	<p>ADF&amp;G produced a technical report that describes the status of wild chum salmon in SEAK, migration timing, and geographical distribution of spawning populations, and stock composition (hatchery versus wild) of most chum salmon fisheries (Eggers and Heintz 2008). Most hatchery chum salmon are harvested in terminal areas where stock composition is nearly 100% hatchery fish, but hatchery fish are also captured in mixed-stock fisheries. The report also mentions preliminary findings of hatchery chum salmon straying into streams and hatchery versus wild chum salmon in some mixed stock fisheries. While this effort reflects a significant improvement in management, ADF&amp;G notes that the occurrence of hatchery chum salmon in mixed stock fisheries masks their ability to monitor trends in the harvest of wild chum salmon in northern SEAK (southern SEAK has adequate marking for identification of hatchery salmon in mixed-stock fisheries). In addition to this report, ADF&amp;G has presented more recent findings on straying of hatchery chum salmon into streams at the State of Salmon conference in Portland, OR in May 2010 (A. Piston, ADF&amp;G, pers. comm.). This presentation indicated much higher rates of straying than did the 2008 report.</p> <p>From Eggers and Heintz (2008): “Our knowledge of the harvest of wild chum salmon, particularly summer-run fish, is still imprecise.” “In areas where stock identification of catch is not available (e.g., much of Northern Southeast Alaska), the occurrence of hatchery fish in mixed-stock fisheries masks our ability to monitor trends in the harvest of wild chum salmon. The department obtained funding in 2008 to begin sampling mixed-stock fisheries in the northern portion of the region.” “In the past, harvest estimates of wild chum salmon have been based on estimates of the harvest of hatchery fish; i.e., simply subtracting the estimated contribution of hatchery fish to the common property fisheries from the total commercial harvest of chum salmon.” ADF&amp;G is improving upon this later approach using 100% thermal marks on hatchery chum in southern SEAK (began 2002 brood year; 2006 return year; CWT prior to this).</p> <p>Importantly, the new thermal mark approach indicates high numbers and percentages of hatchery chum salmon in mixed-stock catch than estimates based on the expanded CWT approach. The new analyses suggest the hatchery chum in <u>southern</u> SEAK were harvested at rates of 38%, 37%, and 49% in the mixed-stock fisheries during 2005, 2006, and 2007. These rates suggest wild chum salmon were under “moderate exploitation” in southern SEAK.</p> <p>ADF&amp;G has made considerable progress in regard to identifying hatchery versus wild salmon in mixed-stock fisheries and by providing evidence that harvest rates on wild chum salmon in SEAK are likely moderate rather than high. However, most data apply to southern SEAK and stock composition data for northern SEAK is still lacking detail. The ADF&amp;G report provided their opinion on whether a common property fishery was mostly hatchery chum, mixed-stock, or mostly wild. ADF&amp;G stated that they collected data for mixed-stock fisheries in northern SEAK in 2008 and 2009. However, in 2008 the pink salmon run was very low and there was</p>

	<p>basically no fishery in 2008. Available data have not been formally analyzed, but according to ADF&amp;G (information provided by D. Gaudet) the samples showed, not surprisingly, large portions hatchery chums in Chatham Strait (District 112, average weighted by week = 76% hatchery chum) and Stephens Passage (District 110, average weighted by week = 78% hatchery chum). These proportions are very similar to what ADF&amp;G has reported for all of Southeast Alaska using information provided by the hatchery operators in the annual enhancement report. Southern Southeast Regional Aquaculture Association (SSRAA) currently samples all of the fisheries in Southern Southeast Alaska (Districts 1-8) and will continue to do so in the future. However, ADF&amp;G reported to D. Gaudet that there is no funding to continue sampling of chum salmon in mixed stock fisheries beyond 2009.</p> <p>The assessment team recommends that the management system periodically sample stock composition in the mixed-stock fisheries throughout Southeast Alaska, not just southern Southeast. This sampling would be especially important if production of hatchery chum salmon changes.</p>
<b>Conclusion</b>	<p>On the basis of the following scoring guideposts the score associated with Performance Indicators 1.1.1.3 (gillnet) &amp; 1.1.1.4 (purse seine) the score has been adjusted:</p> <p><b>80 Scoring Guidepost</b></p> <ul style="list-style-type: none"> <li>• The geographic range for harvests of target stocks is defined.</li> <li>• The information on the geographic range of the harvests of target stocks is monitored during the fishing season and is sufficient to prevent the over harvesting of these stocks.</li> <li>• The information available on the geographic range for harvest of non-target stocks is sufficient to prevent the over harvesting of these stocks.</li> </ul> <p>During the recertification assessment, the first bullet under the 80 guidepost was met, the second bullet received 50%, and the third was not applicable because ADF&amp;G states there are no non-target stocks in Alaska.</p> <p>Given the ongoing sampling of hatchery and wild chum salmon composition in the southern Southeast fishery and sampling of stock composition in northern Southeast fishery in 2009, we have rescored this indicator at the 80 level and the condition is closed out.</p>

<b>Condition 10</b>	<p><b>Condition of Certification 10 (same as Condition 2)</b></p> <p>List streams with documented spawning of chum salmon, identify those streams with annual escapement assessments, and for those without annual assessments, using professional judgment, list the assessed stream that is most representative. Provide a discussion of methods that are practical and economically feasible to scientifically validate the professional judgment about the use of index streams. Implement methods agreed to by (AFDF) ADF&amp;G and the certification body carrying out annual surveillance audits. [Southeast]</p>
<b>Assessed Activity</b>	<p>This Condition relates principally to Indicator 1.1.1.4</p> <p><b>100 Scoring Guidepost</b></p> <ul style="list-style-type: none"> <li>• The status of the indicator stocks is well correlated with the stocks that are most at risk from a conservation point of view, not just correlated with the most productive stocks in the region.</li> <li>• The indicator stocks used have been reviewed and found to be scientifically defensible and appropriate by management authorities such as the NMFS, USFW, and the ADF&amp;G.</li> <li>• There is general agreement among regional fisheries scientists outside the management system that the indicator stocks are appropriate.</li> </ul>

	<ul style="list-style-type: none"> <li>• The relationships between indicator stocks and stocks of interest are assessed every three to five years.</li> </ul> <p><b>80 Scoring Guidepost</b></p> <ul style="list-style-type: none"> <li>• There is some evidence of coherence between the status of indicator stocks and the status of other stocks they represent within the management unit.</li> <li>• There is no significant scientific disagreement regarding the indicator stocks used by the management system to formulate management decisions for the fishery.</li> </ul> <p><b>60 Scoring Guidepost</b></p> <ul style="list-style-type: none"> <li>• There is some scientific basis for the indicator stocks used in the management of the fishery.</li> </ul> <p><b>SCORE 75</b></p> <p>A large number of pink salmon indicator stocks are monitored annually. ADF&amp;G considers their assessment of pinks to be a full assessment and does not use pink salmon indicator stocks. Pink salmon escapement is highly correlated among index streams and the streams cluster along spatial scales comparable to aggregates of index streams for which escapement goals have been established and fisheries accordingly managed. Although several hundred chum salmon streams are annually surveyed for escapement, smaller numbers of chum salmon streams are consistently monitored and considered as index streams (82 of 1,200). Index streams are geographically distributed throughout Southeast Alaska but no formal indicator stock have been established for chum. A detailed analysis of the representative nature and coherence has not been conducted. Assessments of whether these represent the more productive chum stocks or also include the stocks most at risk are incomplete. Difficulties in accurate assessments of chum numbers compound the issue of how representative these index stocks are of all chum. The chum assessment issue is further complicated by the existence of summer and fall chum runs. Intra-specific coherence across broad geographical regions has been documented for both pink and chum but different trends have been observed among index stocks. No scientific disagreements regarding the indicator stocks have been published but the degree of external review of the index stock approach used by the management system for pinks and chum is unclear.</p>
<b>AFDF Action Plan</b>	To satisfy these conditions, AFDF will provide an updated list produced by ADF&G of summer and fall chum salmon index streams and maps showing geographic areas around index streams to represent non-indexed streams and provide a list of the non-indexed streams in each area. AFDF will provide maps produced by ADF&G showing geographic locations of all streams. Finally, ADF&G will produce a written discussion of potential methods that will provide information on how well these index streams represent all chum salmon streams in the region, including associated costs, by December 2008.
<b>Conclusion from 1st Surveillance Report</b>	Progress is on-target. The condition remains open pending the ADF&G report on how well index streams represent all chum salmon streams in the region. This is expected in December 2008 and will be evaluated during the second annual MSC surveillance audit.
<b>AFDF Actions</b>	ADF&G compiled and reviewed information on Southeast Alaska chum salmon and developed escapement goals. The information is published in "Eggers, D.M., S. Heinl. 2008. Chum Salmon Stock Status and Escapement Goals in Southeast Alaska. ADF&G, Divisions of Sport and Commercial Fisheries, Special Publication No. 08-19, Anchorage." The ADF&G also published maps of the southeast chum salmon index stream locations and stock groupings.
<b>Observations</b>	ADF&G produced a technical report that describes the status of wild chum salmon in SEAK, migration timing, and geographical distribution of spawning populations, and stock composition (hatchery versus wild) of most chum salmon fisheries (Eggers and Heinl 2008). The report also mentions preliminary findings of hatchery chum salmon straying into streams and hatchery versus wild chum salmon in some mixed stock fisheries. In addition to this



report, ADF&G has presented more recent findings on straying of hatchery chum salmon into streams at the State of Salmon conference in Portland, OR in May 2010 (A, Piston, ADF&G, pers. comm.). This presentation indicated much higher rates of straying than did the 2008 report.

ADF&G (S. Heint, unpublished maps, see below) produced maps showing the distribution of summer and fall chum salmon index streams. They also show how these index streams relate to aggregate stock groupings for which escapement goals were developed. The report did not list numerous streams (1,230 total) that are not part of the regular index survey, as stated in the ADF&G Action Plan, but the report referenced the ADF&G Integrated Fisheries Database where information on all chum-bearing streams is located. The broad geographical distribution of summer and fall chum index streams suggests the status of chum salmon is likely monitored by the index streams. Relatively few summer run chum salmon streams are monitored regularly on Prince of Wales Island because abundant pink salmon confound counts in the area. ADF&G is examining the potential for additional fall chum salmon index sites.

## Summer-run Chum Salmon Stocks

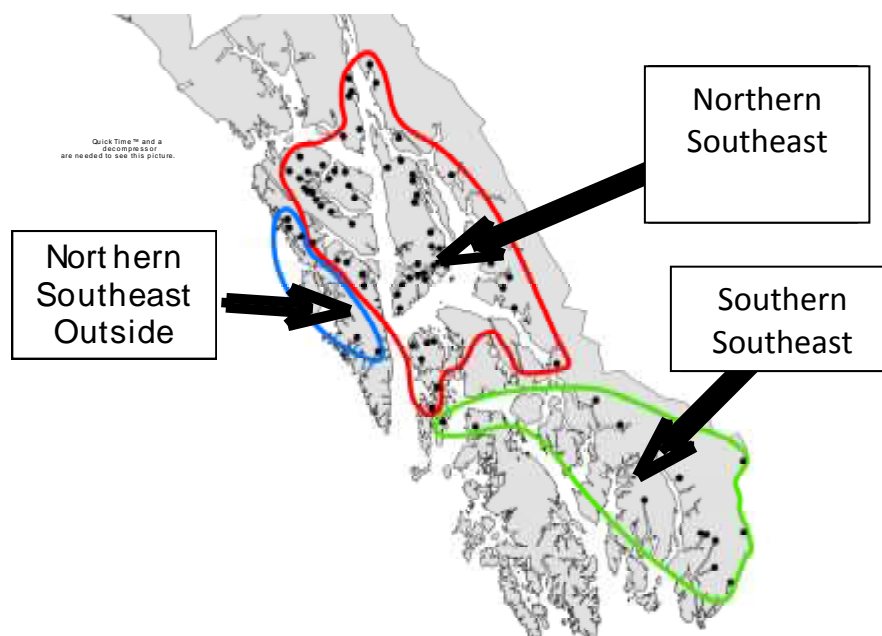


Figure 4: Location of summer run chum salmon index streams and associated stock management units. Source: S. Heint (ADF&G) via D. Gaudet.

	<h2 style="text-align: center;">Fall-Run Chum Salmon Stocks</h2> <p>Figure 5: Location of fall run chum salmon index streams and associated stock management units. Source: S. Heidl (ADF&amp;G) via D. Gaudet.</p>
<b>Conclusion</b>	<p>On the basis of the following scoring guideposts the score associated with Performance Indicators 1.1.1.4 (SEAK gillnet and purse seine) has been adjusted:</p> <p><b>80 Scoring Guidepost</b></p> <ul style="list-style-type: none"> <li>• There is some evidence of coherence between the status of indicator stocks and the status of other stocks they represent within the management unit.</li> <li>• There is no significant scientific disagreement regarding the indicator stocks used by the management system to formulate management decisions for the fishery.</li> </ul> <p>In the recertification assessment, the fishery passed the first bullet under the 80 guidepost but received partial credit for the second guidepost.</p> <p>The new ADF&amp;G analysis provides a good basis for indicator stocks based on migration timing and geographic distribution. These data were further analyzed by ADF&amp;G to develop escapement goals for stock aggregations. This report and the associated unpublished maps (Figs. 4 &amp; 5) fulfil the 80 guidepost requirements. This PI is re-scored at 80 and the Condition closed out.</p>

<b>Condition 11</b>	<p><b>Condition of Certification 11 (same as Condition 3 &amp; 15)</b></p> <p>Estimate contribution of hatchery chum to wild escapement in representative areas through appropriate means, such as implementing thermal otolith mass marking of all hatchery salmon. [Southeast]</p>
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<b>Assessed Activity</b>	<p>This Condition relates principally to Indicator 1.1.1.5</p> <p><b>100 Scoring Guidepost</b></p> <ul style="list-style-type: none"> <li>• Fisheries targeting enhanced stocks are geographically removed from wild (unenhanced) stocks and separate terminal harvest areas are established for these fisheries.</li> <li>• Times and areas have been identified where the majority of enhanced fish migrate through the general fishery.</li> <li>• There is real time mark recovery program during the prosecution of the fishery that allows determination of harvest rates of the targets and naturally enhanced component of the run and these data are used in regulation of the fishery.</li> </ul> <p><b>80 Scoring Guidepost</b></p> <ul style="list-style-type: none"> <li>• In fisheries where both enhanced and wild (un-enhanced) stocks are harvested at the same time, the harvest guidelines are based on the goals and objectives established for the wild (un-enhanced) stocks, and there is sufficient information on stock composition (i.e. hatchery and natural fish) to determine whether those goals are met.</li> <li>• There are adequate data and analyses to determine that the presence of enhanced fish in the management units does not adversely impact the wild (un-enhanced) fish stocks</li> </ul> <p><b>60 Scoring Guidepost</b></p> <ul style="list-style-type: none"> <li>• There is general scientific agreement within the management system regarding the impacts of enhanced fish on the resultant harvest rates or escapements of wild (unenhanced) fish stocks</li> <li>• Managers have some scientific basis for assuring that harvest rates for enhanced stocks are not adversely affecting the majority of wild (un-enhanced) stocks within each stock unit.</li> </ul> <p><b>SCORE 75</b></p> <p>The majority of the seine fishery catch is comprised of wild pink salmon. There is minimal enhancement of pink salmon in Southeast Alaska. A high proportion of the Southeast Alaska commercial harvest of chum salmon is from hatcheries (1995-2004 average=71%; White 2005 and JN SSRPT 2004) although much of this harvest occurs in terminal and special harvest areas where catch of wild stocks is minimal.. ADF&amp;G has recognized the potential risks of enhancement programs and has taken significant steps to identify impacts and control risks. There is general agreement within the management system regarding the impacts of fish on the impacts of enhanced fish on the resultant harvest rates or escapements of wild fish stocks. Managers have some scientific basis for assuring that harvest of enhanced stocks is not adversely affecting the majority of wild stocks within each stock unit. However, the available information on wild and hatchery stock composition is not sufficient in all fisheries that harvest both wild and enhanced chum salmon at the same time to determine whether wild stock objectives are being met. Some data exists on the occurrence of hatchery chum salmon in fisheries but the available information is not adequate to determine that the presence of enhanced fish does not adversely impact wild chum stocks.</p> <p>The department bases management actions for purse seine fisheries in traditional mixed stock fisheries on a number of factors, including observations of wild stock escapements from aerial surveys, historical information relative to run timing of wild stocks, test fishing, and fishery performance information. ADF&amp;G indicates that management of wild stocks takes precedence over hatchery stocks, and the management focus is on wild stocks. The department does not manage to meet harvest guidelines, but rather manages in order to meet escapement objectives for wild stocks. The majority of targeted fisheries on wild chum salmon stocks occur in areas or at times where enhanced chum salmon comprise a small or non-existent portion of the harvest; this is specifically the case for targeted fall chum fisheries which occur after the migration of summer run hatchery fish is over. Management of commercial net fisheries that</p>
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	<p>harvest mixtures of enhanced and wild chum salmon as non-target species are managed largely passive with respect to chum salmon unless a problem with wild stock escapement is apparent.</p> <p>Coded wire tag and otolith mark recovery programs have identified basic migratory timing and routes for enhanced chum salmon stocks through most common property fishing areas in Southeast Alaska. Estimates of hatchery contributions of chum salmon to the purse seine fishery, based on otolith or coded wire tag sampling, are currently generated by private aquaculture associations for most non-terminal harvest areas in southern Southeast Alaska and selected northern Southeast Alaska purse seine fishing areas (no sampling is currently conducted in the Sitka area; Heintz memo 3/29/2006). Additionally, hatchery contributions of Chinook and coho salmon are estimated through coded wire tags, and thermal otolith marks are used in select purse seine fisheries to estimate contributions of hatchery sockeye salmon (such as the July Hawk Inlet fishery in Chatham Strait where a catch limit of wild sockeye is imposed in regulation).</p> <p>Spatial segregation of hatchery and wild return areas affords a significant measure of protection. Hatcheries and release sites are generally located away from significant wild stocks (McGee 2004). The majority of the total commercial harvest is taken in terminal and special harvest areas where the catch of wild stocks is minimal (1996-2005 average of 59%; ADF&amp;G fish ticket database). Enhanced chum salmon are targeted in some traditional mixed stock fisheries including the District 1, 11 and 15 drift gillnet fisheries and in several purse seine sub-districts where they are not geographically removed from wild stocks, but wild stock abundance drives fisheries management in these areas (Davidson et al 2005, Davidson et al 2005a).</p> <p>The approach partially meets the MSC criteria regarding management of co-occurring hatchery and wild stocks but it is not possible to say that harvest is based on solely on goals and objectives for wild stocks where the escapement data on which management is based contains an unknown fraction of hatchery fish. Natural spawning streams have not been systematically sampled to determine hatchery contribution. Fisheries are actively managed for wild escapement goals, however "there is no scientific justification for the goals, because neither escapement nor harvest are reliably measured on a system-specific basis" (Heintz, et al. 2004). There are no formal Biological Escapement Goals, nor are there Sustainable Escapement Goals, as recommended by the Sustainable Salmon Policy. (Managers currently use average escapement levels as proxies for escapement goals. ADF&amp;G is reviewing escapement data and is intending to formalize Sustainable Escapement Goals for Southeast Alaska chum salmon before the next Board of Fisheries meeting in the winter of 2008/2009.) Hatchery locations are generally sited in areas removed from wild production but data on natural spawning of hatchery fish has not been collected to verify assumptions of limited straying. The distances of hatcheries from non-index streams were not reported. The available information suggests that hatchery effects are most likely to occur in local areas near the hatcheries. However, ongoing analysis of a study of spawning hatchery chum salmon in natural spawning streams in Prince William Sound raise some concerns regarding that issue. Early verbal reports of the results of that study of 17 streams (Moffitt, 2010c) indicate straying varies from 0 to 62 percent, and that there was not a negative correlation with distance from hatcheries.</p>
<b>AFDF Action Plan</b>	<p>To satisfy this condition, AFDF will interface with ADF&amp;G to develop multi-year otolith sampling program to estimate contributions of hatchery chum salmon to a subset of wild escapements, including streams near significant chum salmon hatchery release sites and streams in areas more distant from those releases. This will require additional staff time for collecting otoliths as well as for analysis. ADF&amp;G has implemented a 3 year sampling program that will estimate contributions of hatchery chum to wild escapements for a set index of streams surrounding significant hatchery release sites throughout southeast Alaska. Field crews will sample 100 fish each from early, middle, and late run. Otoliths will be returned to the tag lab to quantify hatchery fish. The need for further work will be assessed according to the results of this sampling. A report summarising the work will be completed in July, 2011.</p> <p>The major southeast Alaska hatcheries are already otolith marking virtually all of their chum</p>

	salmon production, which represents most (e.g. 83% in 2004) of the region's enhanced chum salmon releases. It would be a substantial burden on smaller facility operators to purchase and operate otolith marking technology; therefore, we will consider the need to otolith marking additional facilities' production after obtaining results from the initial studies. By July, 2011, AFDF will provide an ADF&G review of additional research needs, if any, based upon these initial studies.
<b>Conclusion from 1st Surveillance Report</b>	Progress is on-target. ADF&G has a strategy and funding required to implement the study needed to fulfil this condition. The project report is to be published by ADF&G in July 2011 and will be reviewed by the surveillance team in the fourth surveillance audit.
<b>AFDF Actions</b>	<p>ADF&amp;G has sampled chum salmon index streams in 2008 and 2009 and will continue in 2010. The goal is to sample 50% of the 88 chum salmon index streams to collect baseline information on the proportion of otolith-marked hatchery chum salmon.</p> <p>Otoliths were collected from chum salmon carcasses on the spawning grounds of each sampling location, and sampling was distributed throughout each system as much as possible. Sampling was conducted over at least two sampling events based on known run-timing in each stream, with a sample size goal of 96 otoliths per visit (192 otoliths per season). In 2008 and 2009, ADF&amp;G obtained samples from 28 index streams around Ketchikan, Juneau, Baranof Island, and Chichagof Island, although only very small sample sizes (&lt;50 fish) were obtained from eight of the streams (due to weather or lack of carcasses). Samples were also collected in the Juneau area in the late 1990s. Results from all samples collected since 1995 indicate that streams within 50 km water distance from hatchery release sites are likely to contain high proportions of stray hatchery fish - eleven streams located within 50 km of release sites in which sample sizes were greater than 50 fish had an average sample proportion of approximately 50% hatchery fish. For 12 streams over 50 km from the nearest release site in which sample sizes were greater than 50 fish, the average sample proportion dropped to less than 3%. Approximately one-third of the 81 summer chum salmon index streams in Southeast Alaska are located within 50 km of a current release site. In 2010, ADF&amp;G will sample streams in central Southeast (in the Petersburg Management Area) and try to resample some of the streams where only small samples were collected in 2009.</p> <p>Results of the otolith sampling will be summarized in a report after the 2010 field season, and a draft is expected by spring 2011.</p>
<b>Observations</b>	<p>ADF&amp;G has thermally marked most hatchery chum salmon and has estimated stray hatchery chum on the spawning grounds. Preliminary findings were presented at the Hatchery/Wild Salmon Conference in Portland Oregon in May 2010. These findings suggest high proportion of hatchery chum salmon in streams within 50 km of the release sites.</p> <p>Preliminary analyses by ADF&amp;G (R. Brenner, ADF&amp;G, presentation at State of Salmon conference, May 2010) indicated that approximate 30% of chum salmon streams in SEAK are within 50 km of hatchery chum salmon release locations and may therefore have high contributions of stray hatchery chum salmon.</p>
<b>Conclusion</b>	<p>Good progress has been made. Although the goal of this condition is on target as specified in the Action Plan, the preliminary findings by ADF&amp;G suggest that further work will be needed to consider information on stray hatchery chum salmon when estimating wild chum salmon spawners and when evaluating escapement goals for wild chum before this indicator can be successfully rescored to meet the 80 guidepost.</p> <p>Incorporating the presence of hatchery stray salmon into the escapement goal evaluation requires additional effort that may not be straight-forward because management agencies typically do not attempt to evaluate escapement goals based on the presence of wild spawners when the presence of hatchery strays can be relatively high. In order to score 80, the management agency should demonstrate in a report or memo how they will account for hatchery chum strays when establishing escapement goals and when evaluating spawning escapements of wild chum salmon against the wild chum escapement goals. The report might</p>

	<p>also identify ways in which stray levels might be reduced, although this is not a specific requirement. The effort to incorporate stray chum salmon into management of wild-origin chum spawners will require analyses that are typically not conducted by salmon management agencies, therefore it is possible that this evaluation may extend beyond the four year audit period. The delay in meeting the SG80 guidepost is justified because good progress has been made.</p> <p>The client should work with ADF&amp;G to determine any courses of action that the managers will be advocating in reviewing these new hatchery stray data, and how fast such work can be accomplished, prior to the next audit.</p>
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<b>Condition 12</b>	<p><b>Condition of Certification 12 (same as Condition 4, 6, 7 &amp; 14):</b></p> <p>Develop escapement goals for chum salmon. [Southeast]</p>
<b>Assessed Activity</b>	<p>This Condition relates principally to Indicator 1.1.2.2.</p> <p><b>100 Scoring Guidepost</b></p> <ul style="list-style-type: none"> <li>• Estimates are available for the annual escapement for each stock unit harvested in the fishery.</li> <li>• In-season escapement data are collected for all stock units and used to regulate the fishery.</li> <li>• Estimates are available for the annual escapement and natural spawning of all enhanced (e.g., hatchery) fish.</li> </ul> <p><b>80 Scoring Guidepost</b></p> <ul style="list-style-type: none"> <li>• Estimates are available for the annual escapement of each target stock harvested in the fishery.</li> <li>• Fishery independent indicators of spawning abundance are available for the non-target species harvested in the fishery.</li> <li>• In-season escapement data are collected for the target stocks and used to regulate the fishery.</li> <li>• Estimates are available for the annual escapement and natural spawning of enhanced (e.g., hatchery) fish, where enhanced fish are a significant component of the fishery, and where the release locations can have a reasonable probability of affecting the management of natural populations.</li> </ul> <p><b>60 Scoring Guidepost</b></p> <ul style="list-style-type: none"> <li>• Escapement estimates for target stocks are available, where escapement estimates are necessary to protect the target stock from overexploitation.</li> <li>• Fishery independent indicators of abundance are available for non-target stocks where the fishery harvests may represent a significant component of the harvest of that stock.</li> <li>• Capabilities exist to make estimates of the escapement and natural spawning of enhanced (e.g., marked hatchery) fish.</li> </ul> <p><b>SCORE 70</b></p> <p>Estimates are available for the annual escapement of target stocks of pink and chum but there are significant questions regarding the quality and applicability of escapement information on chum. Escapements are monitored on an in-season basis and data is used to regulate the fishery but this information is incomplete, particularly for chum. Estimates of the escapement and natural spawning of enhanced chum are not available.</p> <p>Significant limitations exist in the Southeast Alaska chum salmon escapement data (Heinl</p>

	<p>2005). ADF&amp;G has long-term standardized survey programs to estimate spawning abundance or to estimate an index of spawning abundance in over 80 indicator stocks distributed geographically throughout the region although these streams represent only a small portion of the chum salmon streams in Southeast Alaska (Heinl, et al. 2004). Others have commented on the poor quality of escapement estimates for chum salmon in SEAK. A study sponsored by the American Fisheries Society indicated only 3% of the 1,516 identified spawning streams had enough information for a formal evaluation using their methods. They concluded that "little is known about the actual abundance and escapement of the vast majority of spawning aggregations in Southeast Alaska." Van Alen (2000) also noted the lack of stock-specific information for chum salmon.</p> <p>The prodigious amount of pink salmon in spawning streams presents significant problems in assessing chum salmon escapements in some streams and years after huge numbers of pink salmon have entered the rivers. Most escapement estimates of chum salmon have been conducted incidentally or secondarily to pink salmon (Heinl, et al. 2004). "Chum salmon are most easily observed early in the season when there are few pink salmon in the streams. As the season progresses, and large numbers of pink salmon enter streams, it frequently becomes much more difficult to see and count chum salmon. Peak annual counts of chum salmon for many streams have been limited to the period before pink salmon become abundant in the streams. Counts of chum salmon are not possible, and sometimes not even attempted, late in the season in those streams that have substantial populations of pink salmon and high pink salmon may have masked high chum salmon escapements in many areas (Van Alen 2000)" (quoted from Heinl, et al. 2004). This problem is thought by ADF&amp;G to result in underestimation or the inability to obtain peak counts in some cases. Masking of chum salmon escapement by pink salmon is not a major issue with fall run chum stocks, which have a more distinct temporal separation in spawning time from pink salmon.</p> <p>There is little documented information on straying of hatchery chum salmon in Southeast Alaska and its possible impacts on wild stock production. ADF&amp;G believes straying is limited by its hatchery and fishery management practices but has not collected sufficient empirical information to corroborate this assumption. Hatchery programs follow numerous policies and practices to limit the potential for straying and potential impacts on wild stocks (McGee 2004, JNSSRPT 2004; supplied to SCS in 2005). Hatcheries use local brood stocks. Release sites are generally located where there are few wild stocks and there is an available area large enough to accommodate a terminal fishery to harvest returns, which limits the potential for straying into important wild chum salmon systems. The department encourages and where necessary has used its regulatory authority to require aggressive harvesting of hatchery fish in terminal areas in Southeast Alaska to limit straying concerns (A. McGregor, ADF&amp;G, personal communication). While recent studies indicate high straying rates of chum salmon in some Prince William Sound streams, ADF&amp;G has postulated that extrapolation of this data to Southeast Alaska is inappropriate.</p> <p>ADF&amp;G notes that substantially improving the quality of chum salmon escapement data would be a complex and very expensive undertaking, particularly given the variation in pink salmon abundance among streams and years. Observer calibration studies could be conducted, but since they need to be operated in conjunction with weirs they are expensive, and the ability of such studies to correct for pink salmon masking is unknown. Re-institution of weirs would be very expensive (estimated annual cost per weir = \$100,000; annual cost of companion calibration study = \$14,000). Due to the high cost and difficulty in obtaining and maintaining funding, and the existence of approximately 1,200 chum salmon streams in Southeast Alaska, ADF&amp;G does believe re-instituting long-term operation of chum salmon weirs in the region to be a viable alternative for improving escapement information.</p>
<b>AFDF Action Plan</b>	<p>Work is underway on this task. Existing ADF&amp;G staff have developed sustainable escapement goals for southeast Alaska chum salmon stocks as part of the triennial escapement goal review prior to the next Alaska Board of Fisheries meeting for southeast Alaska. A published report will be available in early 2009.</p>

<b>Conclusion from 1st Surveillance Report</b>	Progress on this Condition is on-target. This Condition remains open and is expected to be closed out following the publication of the escapement goal report in early 2009 and review during the second annual MSC surveillance audit.
<b>AFDF Actions</b>	ADF&G compiled and reviewed information on Southeast Alaska chum salmon and developed escapement goals. The information is published in Eggers & Heintz (2008). The ADF&G also published maps of the southeast chum salmon index stream locations and stock groupings.
<b>Observations</b>	<p>ADF&amp;G produced a technical report that describes the development escapement goals for chum salmon in SEAK. The report also describes of status of wild chum salmon in SEAK, migration timing, and geographical distribution of spawning populations, and stock composition (hatchery versus wild) of most chum salmon fisheries (Eggers and Heintz 2008). The investigators provided rationale for grouping index streams for the purpose of developing escapement goals. Multiple quantitative methodologies were used for goal development.</p> <p>ADF&amp;G developed three sustainable escapement goals (SEGs) based on aggregate summer-run chum index streams (southern southeast, northern southeast inside, northern southeast outside). These fish are typically incidentally caught in mixed-stock fisheries. Additionally, four SEGs were developed for aggregate fall-run chum salmon (index streams) that are targeted in specific locations of SEAK by purse seiners. Finally, a escapement goal was developed for the Chilkat River (fall run), the largest producer of wild chum salmon in SEAK. Escapement indices for chum salmon for the recent 10-year period were generally within or above the escapement goals. However, the 2008 summer run was weak and it fell below the goal in northern inside and southern chum aggregates.</p> <p>The ADF&amp;G escapement goal report (Eggers &amp; Heintz 2008) commented on preliminary stray hatchery chum findings and its potential effect on escapement goals:</p> <p><i>"Recent stock status assessments of Southeast Alaska chum salmon have noted that most stocks for which we have sufficient information appeared to be stable or exhibited increasing trends in escapement (Baker et al. 1996; Van Alen 2000, Heintz et al. 2004, Heintz 2005; this report)". A concern is that the increasing trend in some chum salmon escapement indices in Southeast Alaska may simply be due to straying of hatchery fish into wild chum salmon streams. ADF&amp;G initiated a study in 2008 to detect large-scale hatchery straying into wild chum salmon index streams. This is an important consideration given the fact that our best measure of wild chum salmon abundance in Southeast Alaska is from the set of chum salmon index streams. If large-scale straying is detected, then official wild-stock escapement measures will need to be either adjusted or qualified in the future. Adequate samples of post-spawning chum salmon were obtained from eight index streams in 2008 and one in 2007; a poor chum run in 2008 resulted in many fewer streams being sampled than was originally planned. Preliminary analysis showed that samples from four of the nine chum salmon index stream had no hatchery fish, while samples from the remaining five streams had an average of 1.5% hatchery fish (range: 1% to 3%; ADF&amp;G unpublished data). Full results of this study will be published at a future date."</i></p> <p>However, more recent preliminary hatchery stray data were presented by ADF&amp;G at a conference (R. Brenner, ADF&amp;G, presentation at State of Salmon conference, May 2010), indicating high percentages of hatchery chum salmon mixing with wild chum salmon in streams within 50 km of release locations.</p>
<b>Conclusion</b>	<p>During recertification, the fishery received partial credit for all guideposts except the second which was considered not applicable because Alaska does not have non target stocks.</p> <p>ADF&amp;G surveys index streams for spawning escapement each year and they now have escapement goals for chum stock management units, a key product of this condition. Some aerial survey data and in-season fishery CPUE data are used to regulate the fishery in-season. Estimates of stray hatchery chum salmon on the spawning grounds have been estimated and presented at a scientific conference but a report has not been prepared. Preliminary findings indicate that many hatchery chum salmon stray to streams within 50 km of the hatchery.</p>



	Two of the three guideposts have been met. The condition was scheduled to be closed-out in this audit following production of the escapement goal report in 2009, but the additional work that is being undertaken is needed before this can be closed out. This is beyond what was originally thought to be necessary to close the condition, but is welcomed as an important contribution. As such, the assessment team has agreed to move the close-out date to 2011, and this condition is still 'on target' to be met. Satisfactory progress is being made on the last guidepost that involves estimation of hatchery salmon on the spawning grounds. It is anticipated that this condition can be closed out when the report is prepared (likely in year 4 of this certificate) that documents hatchery salmon on the spawning grounds (see Condition 3 & 11).
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<b>Condition 13</b>	<p><b>Condition of Certification 13 (same as Condition 5):</b></p> <p>Where agreed by ADF&amp;G and the certification body conducting annual surveillance audits under the MSC program, implement new estimates of productivity on wild salmon and incorporate appropriate changes in fishery management. [Southeast]</p>
<b>Assessed Activity</b>	<p>This Condition relates principally to Indicator 1.1.2.4.</p> <p><b>100 Scoring Guidepost</b></p> <ul style="list-style-type: none"> <li>• Scientifically defensible productivity estimates (e.g. stock/recruitment relationships) have been derived for all target stocks and the relative productivity of non-target stocks is known.</li> <li>• Risk assessment has been conducted to determine the impact of alternative harvest strategies on non-target stocks. The risk assessment should include an assessment of the uncertainties with estimates of stock productivity for the target stocks.</li> </ul> <p><b>80 Scoring Guidepost</b></p> <ul style="list-style-type: none"> <li>• There is adequate information to identify the harvest and production strategies required to maintain the high productivity of the target stocks.</li> <li>• There is adequate information to estimate the relative productivity of the non-target stocks where the fishery harvests may represent a significant component of those non target stocks.</li> <li>• The harvest limitations for target stocks take into consideration the impacts on non target stocks and the uncertainty of the productivity for these stocks.</li> </ul> <p><b>60 Scoring Guidepost</b></p> <ul style="list-style-type: none"> <li>• The available information and analyses are adequate to identify the harvest limitations and production strategies required to maintain the productivity of the majority of target stocks.</li> <li>• The relative productivity of the non-target stocks is considered in the management strategy, where the fishery harvests may represent a significant component of those non-target stocks.</li> </ul> <p><b>SCORE 70</b></p> <p>Productivity has been estimated for the stock aggregates of pink salmon, but no productivity calculations were presented for chum salmon. Information on the relative productivity of chum salmon based on annual harvest numbers and escapement indices may be adequate to detect large scale changes in productivity of the aggregate stock but may be insufficient to protect the productivity of all component of the aggregate chum stock. Unaccounted for contributions of hatchery fish to natural spawning has the potential to mask wild stock productivity. Heintz (2005) noted that wild chum salmon harvest levels have not rebounded to nearly the same degree as wild pink or coho salmon and chum harvests are still below harvest levels of the early 20th century.</p>

<b>AFDF Action Plan</b>	AFDF will interface with ADF&G to organise a discussion with the surveillance team, either before or during the first annual surveillance, to review the anticipated work to produce updated productivity estimates. The surveillance team will have the opportunity to identify issues for ADF&G to incorporate into its work plan, should ADF&G and the surveillance team agree. AFDF will provide an estimated timeline, agreed to by ADF&G, for delivering new estimates of productivity. Upon delivery of the new estimates of productivity, ADF&G will advise AFDF, which will advise the surveillance team of what management actions may occur as a result.
<b>Conclusion from 1st Surveillance Report</b>	During this audit, the Surveillance Team considered whether or not productivity estimates were necessary to sustain runs and harvests of wild chum salmon in Southeast Alaska. The MSC Indicator used here implies that productivity estimates (e.g., return per spawner) are necessary. However, the MSC Fishery Assessment Methodology (July 2008) clarifies this in that productivity estimates are not required for such fisheries. The Surveillance Team agrees with this guidance, that productivity estimates are not necessary for maintaining chum harvests and runs, although productivity estimates would be needed to determine escapement levels required to sustain the highest potential yields. Therefore, the Surveillance Team changes the requirements of this Condition; the Condition will be met when ADF&G develop the escapement goal for wild chum salmon (due in early 2009), with recent escapement levels that meet this goal. This Condition is on-target and is due to be closed following review at the second MSC surveillance audit in 2009.
<b>AFDF Actions</b>	ADF&G compiled and reviewed information on Southeast Alaska chum salmon and developed escapement goals. The information is published in Eggers & Heinl (2008). The ADF&G also published maps of the southeast chum salmon index stream locations and stock groupings.
<b>Observations</b>	<p>The Surveillance Team agrees with the new MSC guidelines that productivity estimates are not necessary for maintaining chum harvests and runs, although productivity estimates would be needed to determine escapement levels needed to sustain the highest potential yields. In 2008, the Surveillance Team suggested that the intent of this Condition would be met when ADF&amp;G develops an escapement goal for wild chum salmon and recent escapement levels meet the goal.</p> <p>ADF&amp;G produced a technical report that describes the development escapement goals for chum salmon in SEAK. The report also describes of status of wild chum salmon in SEAK, migration timing, and geographical distribution of spawning populations, and stock composition (hatchery versus wild) of most chum salmon fisheries (Eggers and Heinl 2008). The investigators provided rational for grouping index streams for the purpose of developing escapement goals. Multiple quantitative methodologies were used for goal development.</p> <p>ADF&amp;G developed three sustainable escapement goals (SEGs) based on aggregate summer-run chum index streams (southern southeast, northern southeast inside, northern southeast outside). These fish are typically incidentally caught in mixed-stock fisheries. Additionally, four SEGs were developed for aggregate fall-run chum salmon (index streams) that are targeted in specific locations of SEAK by purse seiners. Finally, a escapement goal was developed for the Chilkat River (fall run), the largest producer of wild chum salmon in SEAK. Escapement indices for chum salmon for the recent 10-year period were generally within or above the escapement goals. However, the 2008 summer run was weak and it fell below the goal in northern inside and southern chum aggregates.</p>
<b>Conclusion</b>	<p>On the basis of the following scoring guideposts the score associated with Performance Indicator 1.1.2.4 has been adjusted:</p> <p><b>80 Scoring Guidepost</b></p> <ul style="list-style-type: none"> <li>• There is adequate information to identify the harvest and production strategies required to maintain the high productivity of the target stocks.</li> <li>• There is adequate information to estimate the relative productivity of the non-target stocks</li> </ul>

	<p>where the fishery harvests may represent a significant component of those non target stocks.</p> <ul style="list-style-type: none"> <li>• The harvest limitations for target stocks take into consideration the impacts on non target stocks and the uncertainty of the productivity for these stocks.</li> </ul> <p>During recertification, this indicator received partial credit for the first bullet and the last two bullets were considered non-applicable because ADF&amp;G states that there are no non-target stocks.</p> <p>During the 2008 (1<sup>st</sup> year) audit, the Surveillance Team considered whether or not productivity estimates were necessary to sustain runs and harvests of wild chum salmon in Southeast Alaska. The MSC Indicator used here implies that productivity estimates (e.g., return per spawner) are necessary. However, the MSC Fishery Assessment Methodology (July 2009) states that productivity estimates are not required for such fisheries. The Surveillance Team agrees with this guidance, that productivity estimates are not necessary for maintaining chum harvests and runs, although productivity estimates would be needed to determine escapement levels required to sustain the highest potential yields. Therefore, the Surveillance Team changed the requirements of this Condition; the Condition will be met when ADF&amp;G develop the escapement goal for wild chum salmon, with recent escapement levels that meet this goal. Although some escapement goals were not met in 2008 due to weak returns, ADF&amp;G did develop SEGs for eight stock groupings. Fisheries for chum salmon were reduced in 2008 in order to maintain escapement levels. ADF&amp;G also began to use thermal marks to identify hatchery versus wild chum salmon in the mixed stock fisheries (see above). The intent of this Condition is met by these actions and so this PI is re-scored at 80 and the Condition closed out. However, the Surveillance Team notes that future assessments should examine whether or not ADF&amp;G reduces or closes mixed stock fisheries when the wild chum stock management units appear to be weak and coming in below the escapement goal.</p>
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<b>Condition 14</b>	<p><b>Condition of Certification 14 (same as Condition 4, 6, 7 &amp; 12):</b></p> <p>Develop appropriate sustainable escapement goals for chum salmon. [Southeast]</p>
<b>Assessed Activity</b>	<p>This Condition relates principally to Indicator 1.1.3.2</p> <p><b>100 Scoring Guidepost</b></p> <ul style="list-style-type: none"> <li>• The Target Reference Point (TRP) or operational equivalents for target species have been reviewed and found to be scientifically defensible and appropriate by management authorities such as the NMFS, USFW, and the ADF&amp;G.</li> <li>• There is general agreement among regional fisheries scientist outside the management system that the TRP's or operational equivalents are appropriate.</li> <li>• The TRP's or operational equivalents for the target stocks take into account variability in the productivity of each component of the target stock and productivity of non-target stocks.</li> </ul> <p><b>80 Scoring Guidepost</b></p> <ul style="list-style-type: none"> <li>• There is no significant scientific disagreement regarding the TRP's or operational equivalents used by the management system to formulate management decision for the fishery.</li> <li>• The TRP's or operational equivalents for the target stocks take into account variability in the productivity of each component of the target stock and the productivity of non-target stocks.</li> </ul> <p><b>60 Scoring Guidepost</b></p> <ul style="list-style-type: none"> <li>• There is general agreement among fisheries scientist within the management system that the TRP's or operational equivalents are appropriate for the target stocks.</li> </ul>

	<ul style="list-style-type: none"> <li>• Target reference points have been defined for the majority of target stocks harvested in the fishery and these target reference points are not scientifically disputed.</li> <li>• The management system has taken into account the relative productivity of non-target stocks when setting the TRP's or operational equivalents for the majority of target stocks.</li> </ul> <p><b>SCORE 75</b></p> <p>Target reference points for Chinook, sockeye and coho salmon stocks in the region take into account stock productivity (Geiger and Der Hovanisian 2005). Scientists from other agencies have been involved in review and/or development of most of these escapement goals (A. McGregor, personal communication). For pink salmon, target reference points are set on the basis of productivity calculations for aggregates. Escapement targets have been set for pink salmon stock groups within each sub-region, based on the historical escapement distribution, to insure that fisheries are managed to distributed escapement throughout each sub-region. There is a high degree of correlation and spatial coherence in pink salmon escapement indices among index streams in Southeast Alaska. Based on this, ADF&amp;G has concluded that production varies on spatial scales that conform to that by which the target pink salmon fisheries are managed.</p> <p>For chum salmon there are not similar target goals aimed at the maximal productivity, rather the productivity associated with past mean escapement counts is taken to be the desirable state, and even this is done informally for few chum salmon stocks. According to ADF&amp;G, escapement survey information is an integral part of managing the limited commercial fisheries directed on wild chum salmon stocks in Southeast Alaska, and average escapements currently serve as proxies for official escapement goals (ADF&amp;G). Heintz et al. (2004) found reference in ADF&amp;G records to escapement goals for 5 chum salmon streams in Southeast Alaska. However Heintz et al. (2004) concluded that these escapement goals for chum salmon lacked scientific justification, "because neither escapement nor harvest are reliably measured on a system specific basis." ADF&amp;G notes that the quality of escapement and stock-specific harvest information for Southeast Alaska chum salmon is presently insufficient to develop Biological Escapement Goals on the basis of stock productivity parameters (Heintz 2005, pg 208). However, the information is sufficient to develop Sustainable Escapement Goals. ADF&amp;G is committed to investigating development of Sustainable Escapement Goals for Southeast Alaska chum salmon stocks or stock aggregates prior to the next Southeast Board of Fisheries meeting in early 2009 (Heintz 2005, pg 208).</p>
<b>AFDF Action Plan</b>	Work is underway on this task. Existing ADF&G staff have developed sustainable escapement goals for southeast Alaska chum salmon stocks as part of the triennial escapement goal review prior to the next Alaska Board of Fisheries meeting for southeast Alaska. A published report will be available in early 2009.
<b>Conclusion from 1st Surveillance Report</b>	Progress on this Condition is on-target. This Condition remains open and is expected to be closed out following the publication of the escapement goal report in early 2009 and review during the second annual MSC surveillance audit.
<b>AFDF Actions</b>	ADF&G compiled and reviewed information on Southeast Alaska chum salmon and developed escapement goals. The information is published in Eggers & Heintz (2008). The ADF&G also published maps of the southeast chum salmon index stream locations and stock groupings.
<b>Observations</b>	<p>ADF&amp;G produced a technical report that describes the development escapement goals for chum salmon in SEAK. The report also describes of status of wild chum salmon in SEAK, migration timing, and geographical distribution of spawning populations, and stock composition (hatchery versus wild) of most chum salmon fisheries (Eggers and Heintz 2008). The investigators provided rationale for grouping index streams for the purpose of developing escapement goals. Multiple quantitative methodologies were used for goal development.</p> <p>ADF&amp;G developed three sustainable escapement goals (SEGs) based on aggregate summer-</p>

	run chum index streams (southern southeast, northern southeast inside, northern southeast outside). These fish are typically incidentally caught in mixed-stock fisheries. Additionally, four SEGs were developed for aggregate fall-run chum salmon (index streams) that are targeted in specific locations of SEAK by purse seiners. Finally, a escapement goal was developed for the Chilkat River (fall run), the largest producer of wild chum salmon in SEAK. Escapement indices for chum salmon for the recent 10-year period were generally within or above the escapement goals. However, the 2008 summer run was weak and it fell below the goal in northern inside and southern chum aggregates.
<b>Conclusion</b>	<p>On the basis of the following scoring guideposts the score associated with Performance Indicator 1.1.3.2 has been adjusted:</p> <p><b>80 Scoring Guidepost</b></p> <ul style="list-style-type: none"> <li>• There is no significant scientific disagreement regarding the TRP's or operational equivalents used by the management system to formulate management decision for the fishery.</li> <li>• The TRP's or operational equivalents for the target stocks take into account variability in the productivity of each component of the target stock and the productivity of non-target stocks.</li> </ul> <p>During recertification, the fishery received full credit for the first guideposts and partial credit for the second guidepost.</p> <p>Escapement goals were developed and reported, as required by the condition. The escapement goals are based on regional aggregates of chum salmon index streams. The goals are also separated by migration timing, i.e., stocks that have summer versus fall timing. This approach takes into account potential variability in chum salmon stock management units returning to SEAK. The intent of this indicator is met and re-scored at 80 and the Condition closed out.</p>

<b>Condition 15</b>	<p><b>Condition of Certification 15 (same as Condition 3 &amp; 11)</b></p> <p>Estimate contribution of hatchery chum to wild escapement in representative areas through appropriate means, such as implementing thermal otolith mass marking of all hatchery chum salmon. [Southeast]</p>
<b>Assessed Activity</b>	<p>This Condition relates principally to Indicator 1.2.2.</p> <p><b>100 Scoring Guidepost</b></p> <ul style="list-style-type: none"> <li>• There is general agreement among regional fisheries scientist outside the management system that the methods of estimating escapements and exploitation rates for the target stocks are scientifically defensible.</li> <li>• Management actions have reduced fishing as the target stocks approach the LRP and fisheries have only resulted in escapements that approach or are below the LRP escapement goal in one year in a period of the most recent 10 consecutive years, for any of the target stocks.</li> </ul> <p><b>80 Scoring Guidepost</b></p> <ul style="list-style-type: none"> <li>• There is general agreement among regional fisheries scientist inside the management system that the methods of estimating escapements and exploitation rates for the target stocks are scientifically defensible.</li> <li>• Management actions have reduced fishing as the target stocks approach the LRP and fisheries have only resulted in escapements that approach or are below the LRP escapement goal in one year in a period of the most recent 5 consecutive years, for any of the target stocks.</li> </ul> <p><b>60 Scoring Guidepost</b></p>

	<ul style="list-style-type: none"> <li>• There is general agreement among regional fisheries scientist inside the management system that the methods of estimating escapements and exploitation rates for the majority of target stocks are scientifically defensible.</li> <li>• Management actions have reduced fishing as the target stocks approach the LRP and fisheries have only resulted in escapements that approach or are below the LRP escapement goal in no more than two years in a period of the most recent 5 consecutive years, for the majority of the target stocks.</li> </ul> <p><b>SCORE 75</b></p> <p>There is general agreement within ADF&amp;G that methods of estimating escapements for a majority of target stocks are scientifically defensible but significant questions remain on the adequacy of chum indices. Fishery management typically reacts to reduced numbers in an effort to meet escapement goals and these efforts have been generally successful in avoiding extended periods of escapements below target levels for most stocks. However, a number of stocks subject to this fishery have been below escapement goals for a number of years (e.g., Blossom River Chinook salmon, McDonald Lake sockeye salmon, Chilkat River Chum salmon, Taku river chum salmon). In addition, 11 chum salmon stocks have been shown to be declining.</p> <p>ADF&amp;G has determined that while Blossom River Chinook and McDonald Lake sockeye have been below escapement goals in a number of recent years, neither qualifies for a stock of concern listing. The Blossom River goal was met in both 2004 and 2005 and ADF&amp;G does not consider Blossom River chinook to be a stock of concern, based on the rationale contained in McPherson et al 2004 (page 80). The McDonald Lake sockeye stock has undergone a recent reduction in recruitment, but the stock does not meet the formal definition for a stock of concern, as described in Geiger et al (2005; pg 79).</p> <p>For chum salmon, we note that of the 82 streams with escapement estimates in at least 16 of the 21 years prior to 2002, 11 showed a robust estimate of decline in peak escapement surveys (Heinl et al. 2004). Using data through 2004, Heinl (2005) presented an update of the original analysis, which showed a reduced number (8 of 82 ADF&amp;G chum salmon index streams) exhibited meaningful declines in abundance over the last two decades. ADF&amp;G subsequently presented the assessment team with further data analyses of these 8 systems, including updated data through 2005; results revealed that 5 of the 82 stocks exhibited significant declining trends based on the methods of Geiger et al. and only 1-2 stocks using statistical methods used by two other authors to assess trends in Southeast Alaska salmon escapements. ADF&amp;G concluded that had the percentile approach been used to establish sustainable escapement goals (which has been used extensively in Alaska; Bue and Hasbrouck 2001) for these stocks, none of the 8 stocks would have met criteria for stock of concern designation.</p> <p>For chum salmon ADF&amp;G notes that: 1) the long-term trend (21 years) in the region-wide catch of wild chum salmon is positive, 2) the long-term trend in the total region-wide chum salmon index escapement (summed totals of 82 index streams) is positive, 3) long-term trends in escapement by management district (index streams summed by district) are generally stable or increasing (none show statistically significant declines), and 4) long-term escapement measures are stable or increasing in 73% of 82 individual index streams. ADF&amp;G has concluded that while 8 of 82 streams at this fine level of inspection showed declines in escapement that Heinl considered to be biologically significant, this does not mean that these stocks are ‘depressed’ or that they should be considered as stocks of concern. Subsequent analyses by ADF&amp;G of these 8 index streams has concluded that none of these declines has reached the level of a ‘chronic inability’ to reach escapement goals, which is the criteria for stock of concern designation.</p> <p>ADF&amp;G has presented Alaska’s fishery regulatory body (the Alaska Board of Fisheries) with the available best stock status information, and the Board concurred with the department’s assessment to not consider Chilkat and Taku River chum salmon stocks as stocks of concern#</p>
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	<p>(ADF&amp;G submission to SCS 3/24/2006). ADF&amp;G discussed with the Board the management measures it was taking to limit harvests of the stocks, and research efforts it was making to improve understanding of stock status, both of which represent basic elements that would be contained in action plans were they to be developed. The new research conducted on Chilkat River chum salmon has resulted in major upgrades to the escapement monitoring program that should soon enable development of an escapement goal and an updated assessment of management effectiveness. Work is ongoing to continue improving information on the Taku River chum salmon run; in the meantime harvests and index escapements have remained stable over the last decade.</p> <p>We are particularly concerned by cases where the lack of suitable escapement data or goals preclude consideration as stocks of concern. The poor quality of existing estimates of escapement for chum limit their potential use in the SSP in listing stocks as stocks of concern. Not taking a management step because the data are not good enough runs counter to the concept of using the best available science, a part of the precautionary approach. Not having formal escapement goals and avoiding the Stocks of Concern process reduces the accountability for sustainability and recovery.</p>
<b>AFDF Action Plan</b>	<p>To satisfy this condition, AFDF will interface with ADF&amp;G to develop multi-year otolith sampling program to estimate contributions of hatchery chum salmon to a subset of wild escapements, including streams near significant chum salmon hatchery release sites and streams in areas more distant from those releases. This will require additional staff time for collecting otoliths as well as for analysis. ADF&amp;G has implemented a 3 year sampling program that will estimate contributions of hatchery chum to wild escapements for a set index of streams surrounding significant hatchery release sites throughout southeast Alaska. Field crews will sample 100 fish each from early, middle, and late run. Otoliths will be returned to the tag lab to quantify hatchery fish. The need for further work will be assessed according to the results of this sampling. A report summarising the work will be completed in July, 2011.</p> <p>The major southeast Alaska hatcheries are already otolith marking virtually all of their chum salmon production, which represents most (e.g. 83% in 2004) of the region's enhanced chum salmon releases. It would be a substantial burden on smaller facility operators to purchase and operate otolith marking technology; therefore, we will consider the need to otolith marking additional facilities' production after obtaining results from the initial studies. By July, 2011, AFDF will provide an ADF&amp;G review of additional research needs, if any, based upon these initial studies.</p>
<b>Conclusion from 1st Surveillance Report</b>	<p>Progress is on-target. ADF&amp;G has a strategy and funding required to implement the study needed to fulfil this condition. The project report is to be published by ADF&amp;G in July 2011 and will be reviewed by the surveillance team in the fourth surveillance audit.</p>
<b>AFDF Actions</b>	<p>ADF&amp;G has sampled chum salmon index streams in 2008 and 2009 and will continue in 2010. The goal is to sample 50% of the 88 chum salmon index streams to collect baseline information on the proportion of otolith-marked hatchery chum salmon.</p> <p>Otoliths were collected from chum salmon carcasses on the spawning grounds of each sampling location, and sampling was distributed throughout each system as much as possible. Sampling was conducted over at least two sampling events based on known run-timing in each stream, with a sample size goal of 96 otoliths per visit (192 otoliths per season). In 2008 and 2009, ADF&amp;G obtained samples from 28 index streams around Ketchikan, Juneau, Baranof Island, and Chichagof Island, although only very small sample sizes (&lt;50 fish) were obtained from eight of the streams (due to weather or lack of carcasses). Samples were also collected in the Juneau area in the late 1990s. Results from all samples collected since 1995 indicate that streams within 50 km water distance from hatchery release sites are likely to contain high proportions of stray hatchery fish - eleven streams located within 50 km of release sites in which sample sizes were greater than 50 fish had an average sample proportion of approximately 50% hatchery fish. For 12 streams over 50 km from the nearest release site in which sample sizes were greater than 50 fish, the average sample proportion dropped to less than 3%. Approximately one-third of the 81 summer chum salmon index streams in Southeast</p>

	<p>Alaska are located within 50 km of a current release site. In 2010, ADF&amp;G will sample streams in central Southeast (in the Petersburg Management Area) and try to resample some of the streams where only small samples were collected in 2009.</p> <p>Results of the otolith sampling will be summarized in a report after the 2010 field season, and a draft is expected by spring 2011.</p>
<b>Observations</b>	<p>ADF&amp;G has thermally marked most hatchery chum salmon and has estimated stray hatchery chum on the spawning grounds. Preliminary findings were presented at the Hatchery/Wild Salmon Conference in Portland Oregon in May 2010. These findings suggest high proportion of hatchery chum salmon in streams within 50 km of the release sites.</p> <p>Preliminary analyses by ADF&amp;G (R. Brenner, ADF&amp;G, presentation at State of Salmon conference, May 2010) indicated that approximate 30% of chum salmon streams in SEAK are within 50 km of hatchery chum salmon release locations and may therefore have high contributions of stray hatchery chum salmon.</p>
<b>Conclusion</b>	<p>Good progress has been made. Although the goal of this condition is on target as specified in the Action Plan, the preliminary findings by ADF&amp;G suggest that further work will be needed to consider information on stray hatchery chum salmon when estimating wild chum salmon spawners and when evaluating escapement goals for wild chum before this indicator can be successfully rescored to meet the 80 guidepost.</p> <p>Incorporating the presence of hatchery stray salmon into the escapement goal evaluation requires additional effort that may not be straight-forward because management agencies typically do not attempt to evaluate escapement goals based on the presence of wild spawners when the presence of hatchery strays can be relatively high. In order to score 80, the management agency should demonstrate in a report or memo how they will account for hatchery chum strays when establishing escapement goals and when evaluating spawning escapements of wild chum salmon against the wild chum escapement goals. The report might also identify ways in which stray levels might be reduced, although this is not a specific requirement. The effort to incorporate stray chum salmon into management of wild-origin chum spawners will require analyses that are typically not conducted by salmon management agencies, therefore it is possible that this evaluation may extend beyond the four year audit period. The delay in meeting the SG80 guidepost is justified because good progress has been made.</p> <p>The client should work with ADF&amp;G to determine any courses of action that the managers will be advocating in reviewing these new hatchery stray data, and how fast such work can be accomplished, prior to the next audit.</p>

<b>Condition 16</b>	<p><b>Condition of Certification 16 (same as part 2 of Conditions 8, 22, 32, 49, 50, 59 &amp; 61):</b></p> <p>Continue ASL sampling in fisheries and of several spawning stocks to continue a database for long-term evaluation of potential fishery selectivity. [Southeast]</p>
<b>Assessed Activity</b>	<p>This Condition relates principally to Indicator 1.3.1.</p> <p><b>100 Scoring Guidepost</b></p> <ul style="list-style-type: none"> <li>• There is comprehensive knowledge of the effect of fishing on biological characteristics such as the age, size, sex and genetic structure of the target stocks and the impact of changes in these factors on the reproductive capacity of the target stocks.</li> <li>• Management actions are consistent with maintaining healthy target stocks relative to biological characteristics such as age, size, sex and genetic structure of all target stocks.</li> <li>• Enhanced fish are identified and managed as separate target stocks.</li> </ul>



	<p><b>80 Scoring Guidepost</b></p> <ul style="list-style-type: none"> <li>• The knowledge of the effect of fishing on biological characteristics such as the age, size, sex and component stocks is adequate to detect threats to the reproductive capacity of the target stocks.</li> <li>• Management actions are consistent with maintaining healthy target stocks relative to biological characteristics such as age, size, sex and genetic structure of all target stocks.</li> <li>• The management system includes provisions to minimize any adverse impacts to the genetic structure of wild (un-enhanced) stocks that may be due to the enhancement of other stocks.</li> </ul> <p><b>60 Scoring Guidepost</b></p> <ul style="list-style-type: none"> <li>• The knowledge of the effect of fishing on the biological characteristics such as age, size, sex and component stocks is adequate to detect threats to the reproductive capacity of the majority of target stocks.</li> <li>• Management actions are consistent with maintaining healthy target stocks relative to biological characteristics such as age, size, sex or genetic structure for the majority of target stocks.</li> <li>• The management system includes provisions to minimize the major adverse impacts for the majority of wild (un-enhanced) stocks that may be due to the enhancement of other stocks.</li> </ul> <p><b>SCORE 77</b></p> <p>Information on biological characteristics of the pink and chum harvest is routinely collected on the majority of the fisheries but is not routinely used to evaluate threats to reproductive capacity associated with potential fishery related changes in age, size, sex, and genetic structure. Management actions have been implemented consistent with maintaining healthy target stocks relative to biological characteristics but the efficacy of these management actions has not been directly evaluated. The management system includes provisions to minimize any adverse effects to the genetic structure of wild stocks that may be due to the enhancement of other stocks but we were presented no evidence on the degree of natural spawning by hatchery chums in the SEAK, nor of the effects of the associated interbreeding.</p> <p>Extensive chum salmon ASL data is available for district-specific catches and select escapements from the early 1980s through early 1990s. Sample size goals are sufficient to allow for examination of intra-annual and inter-annual trends in age and sex in specific districts and escapements. The quantity of ASL data collected since that mid-1990s is reduced to a sub-set of fishing districts and escapements. Long-term ASL sampling datasets (25 to &gt;30 years) are available for several systems, including Fish Creek in the southern extent of the region and Chilkat and Taku rivers in the northern extent of the region; these databases allow long-term trends in age and size to be tracked. Jack Helle (NMFS) has compiled much of the Fish Creek and Chilkat River chum salmon ASL databases (as well as data from several other systems distributed throughout the North American range) and published numerous papers monitoring changes in age and size of chum salmon, primarily as they relate to marine conditions. With respect to genetics, NMFS-Auke Bay Lab has compiled an extensive genetic baseline of chum salmon stocks in Southeast Alaska. This data could be accessed in the future to examine possible changes in genetic composition of populations over time.</p> <p>Knowledge of the effects of fishing on biological characteristics is not comprehensive, but fisheries management is generally consistent with maintaining the biological characteristics of salmon stocks in the region. Closed and open periods are rotated in all wild stock fisheries, distributing escapement over temporal and geographic run segments in order to maintain productivity and genetic variability. Additionally, purse seine gear is not size-selective, so the fishery should have little or no impacts on age, sex and size of returns, particularly since fishing is conducted through weekly ‘pulse’ openings followed by closures.</p>
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	<p>The enhancement program employs a variety of practices to protect wild salmon stocks, including: 1) a rigorous hatchery permitting process that includes genetics, pathology and fishery management reviews; 2) policies that require hatcheries to be located away from significant wild stocks; 3) use of local brood sources; 4) legal mandates that require wild stocks be given priority in fishery management; 5) requirements for marking hatchery fish; and 6) as necessary, requirements for special studies on hatchery/wild stock interactions (McGee 2004).</p>
<b>AFDF Action Plan</b>	<p>ASL sampling of fisheries and select spawning stocks is expected to continue over the long term in each certification unit. The intensity of sampling will be dependent on available funding and identified concerns. ADF&amp;G currently maintains comprehensive ASL sampling in all these fisheries; however these programs may be expanded as appropriate.</p> <p>AFDF will provide a report compiled by ADF&amp;G of existing ASL data by the end of 2009 that will evaluate the consequences of selective fishing.</p>
<b>Conclusion from 1st Surveillance Report</b>	<p>As with all conditions, the Surveillance Team evaluated the evidence available for this issue against the requirements of the original scoring guideposts, as well as the condition and action plan. In this case, it was concluded that the ongoing effort to collect ASL data was sufficient to meet the intent of the 80 Scoring Guidepost for this Performance Indicator.</p> <p>There is general knowledge on the effects of gear selectivity on salmon, and purse seines are typically not selective for age, size, or gender. ADFG routinely collects ASL data and makes them available in a database. These data can be used to examine shifts in age or size if concerns developed. For example, concerns regarding the age and size of Yukon Chinook salmon have arisen and ASL data have been used to examine net selectivity. The ASL database is maintained and is available as required. ADFG has also provided provisions to minimize impacts to the genetic structure of wild salmon, largely by locating hatcheries in terminal areas away from most wild stock streams and by attempting to harvest most hatchery salmon so they do not stray to streams. Nevertheless, new data are being collected to evaluate stray hatchery chum salmon in streams and the contribution of hatchery chum salmon in mixed-stock harvests. This indicator therefore exceeds the intent of the 80 guidepost and this condition is closed. The indicator is scored as 90 as purse seine gear is not selective.</p>

## Certification Unit 3 - Southeast/Yakutat Troll

<b>Condition 17</b>	<p><b>Condition of Certification 17:</b></p> <p>Provide an updated description of the coho indicator stock program, including a discussion of how representative the indicators are of all populations in the region. Discuss information with the certification body to determine if further analyses are indicated to validate the choice of indicator stocks [SE/Yakutat Troll]</p>
<b>Assessed Activity</b>	<p>This Condition relates principally to Indicator 1.1.1.4.</p> <p><b>100 Scoring Guidepost</b></p> <ul style="list-style-type: none"> <li>• The status of the indicator stocks is well correlated with the stocks that are most at risk from a conservation point of view, not just correlated with the most productive stocks in the region.</li> <li>• The indicator stocks used have been reviewed and found to be scientifically defensible and appropriate by management authorities such as the NMFS, USFW, and the ADF&amp;G.</li> <li>• There is general agreement among regional fisheries scientists outside the management system that the indicator stocks are appropriate.</li> <li>• The relationships between indicator stocks and stocks of interest are assessed every three to five years.</li> </ul> <p><b>80 Scoring Guidepost</b></p> <ul style="list-style-type: none"> <li>• There is some evidence of coherence between the status of indicator stocks and the status of other stocks they represent within the management unit.</li> <li>• There is no significant scientific disagreement regarding the indicator stocks used by the management system to formulate management decisions for the fishery.</li> </ul> <p><b>60 Scoring Guidepost</b></p> <ul style="list-style-type: none"> <li>• There is some scientific basis for the indicator stocks used in the management of the fishery.</li> </ul> <p><b>SCORE 70</b></p> <p>Chinook indicator stocks have been carefully selected, are intensively monitored, and have been extensively reviewed and evaluated. The region's 11 Chinook salmon indicator stocks are distributed geographically across the Southeast Alaska-Yakutat region and among the relative production levels (large, medium, small producers)(ADF&amp;G 2005). The Chinook indicator stock approach has been accepted by the Chinook Technical Committee of the Pacific Salmon Treaty (S. McPherson, ADF&amp;G, co-chair of the Chinook Technical Committee, personal communication).</p> <p>Coho status is evaluated based on four long term indicator stocks, nine additional indicator stocks with increased funding acquired in the late 1990s, and several long term Coho escapement monitoring and indexing programs which include the Juneau road stocks, Sitka area, Ketchikan area, Black River, and the Taku River (Shaul et al 2005). Indicator stocks provide specific escapement, exploitation rates in net and troll fisheries, and marine survival rates. The coho escapement indicator stocks are from a broad area coverage. Escapements, exploitation rates and marine survival are consistent in magnitude and correlated among the indicator stocks. The program also has demonstrated that management actions taken in response to weak runs as indicated by in-season fishery performance have been effective in reducing exploitation rates. However, the escapement indicator stocks collectively represent a very small portion of the aggregate coho stock. It is unclear whether the small number of coho index stocks (33) relative to populations (2,500) represents the full spectrum of coho</p>

	population productivity within each geographical region.
<b>AFDF Action Plan</b>	<p>AFDF will provide an updated description produced by ADF&amp;G of the coho indicator stock program in the coho salmon escapement goal review and stock status report produced by the Board of Fisheries in early 2009. AFDF and ADF&amp;G will be available to discuss this information, as well as other ADF&amp;G publications on the subject, after that time.</p> <p>A number of documents that described the coho salmon indicator stock program has been expanded and improved with receipt of new funds. AFDF believes the coho salmon indicator stock program has been described sufficiently and that this condition will be met with submission of the 2009 report produced by ADF&amp;G.</p>
<b>Conclusion from 1st Surveillance Report</b>	Progress on this condition is on target. This condition remains open and is expected to be closed following the publication of the draft coho salmon indicator stock program report (expected in October 2008) and the final report (expected in February 2009; L. Shaul, ADF&G, pers. comm.), and subsequent review during the second annual MSC surveillance audit.
<b>AFDF Actions</b>	ADF&G compiled and reviewed information published a review of Southeast Alaska coho salmon status and escapement goals. The document is "Shaul, L., E. Jones, K. Crabtree, T. Tydingco, S. McCurdy and B. Eliot. 2008. Coho Salmon Stock Status and Escapement Goals in Southeast Alaska. ADF&G Special Publication No. 08-20".
<b>Observations</b>	<p>The large number and broad distribution of coho salmon-producing streams in the region necessitates that management be evaluated based on selected "indicator stocks" that represent the overall aggregate of stocks available to the fisheries. ADF&amp;G published a review of the coho salmon stock status and escapement goals in Southeast Alaska in December 2008 (Shaul et al. 2008). The publication compiled and reviewed a large amount of data among which was an examination of the coho stock indicator program. Additionally, Shaul et al. (2007) provided a detailed report on coho salmon production and survival.</p> <p>Correlations among stocks for smolt abundance were relatively weak, with only 15% of variability explained by other stocks. Correlations among stocks for survival and total run size were somewhat stronger, with 28% of the variability in survival and run size explained by that of other stocks. Survival and run size correlations were higher for nearby stocks.</p> <p>ADF&amp;G (Shaul et al. 2008) concluded that the correlations indicate that returns to indicator systems, particularly those on the outer coast, are relatively poorly correlated with other systems. The degree of variability among stocks and the poor correlation between some stocks and measures of aggregate coho salmon abundance constrain options to manage highly mixed-stock fisheries for theoretical maximum sustained yield. At the same time, the broad distribution of production among hundreds of systems limits the potential to focus fisheries on specific stocks, with the exception of larger stocks in the Yakutat area.</p>

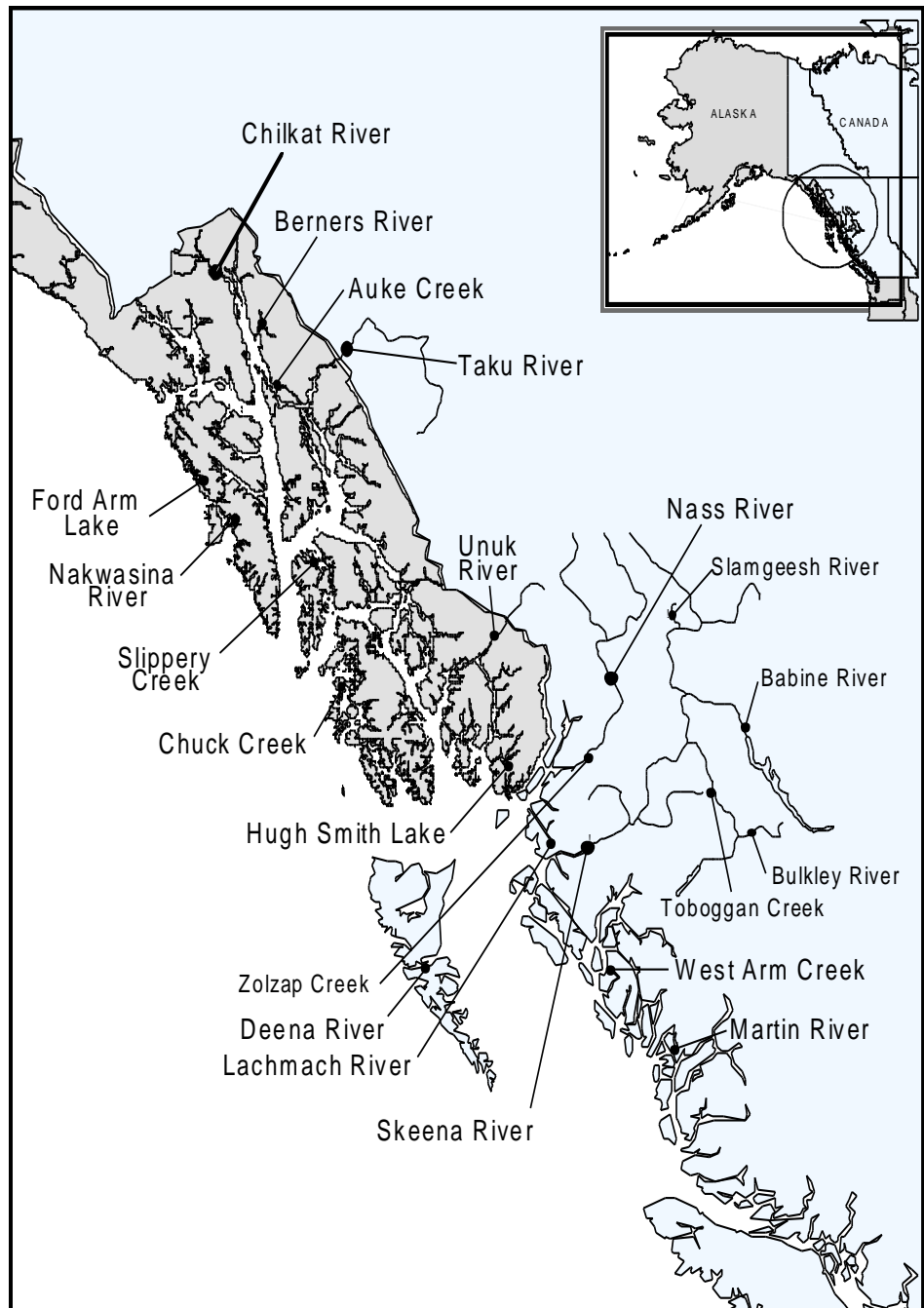


Figure 6: Map of Southeast Alaska and northern British Columbia, showing the locations of coho salmon full indicator stock assessment projects (Shaul et al. 2008).

However, according to ADF&G, the disadvantage to fishery management resulting from variability among individual populations is offset by population characteristics of the species that provide resilience and flexibility under mixed-stock fishery management in which fishing effort and patterns tend to be stable. Most coho salmon stocks appear to perform well under a broad range of escapements and have high intrinsic productivity that provides resilience and quick recovery from low escapement events. For example, the Beverton-Holt spawner- recruit

	relationship for the Hugh Smith Lake stock indicates that yields within 10% of <i>MSY</i> can be obtained from a broad range of escapements with the upper escapement bound estimated at 3.76 times the lower bound. The minimum goal of 500 spawners would be achieved or exceeded under an exploitation rate of 65% under all run sizes observed during 26 years except one (1,346 adults in 2000).
<b>Conclusion</b>	<p>On the basis of the following scoring guideposts the score associated with Performance Indicator 1.1.1.4 has been adjusted:</p> <p><b>80 Scoring Guidepost</b></p> <ul style="list-style-type: none"> <li>• There is some evidence of coherence between the status of indicator stocks and the status of other stocks they represent within the management unit.</li> <li>• There is no significant scientific disagreement regarding the indicator stocks used by the management system to formulate management decisions for the fishery.</li> </ul> <p>During the recertification assessment, the SEAK troll fishery received partial credit for each of the two bullets.</p> <p>The recent analyses by ADF&amp;G provides a thorough investigation of stock correlations and productivity of coho salmon in SEAK. Although ADF&amp;G does not have many coho indicator stocks relative to the number of streams in SEAK, the indicators stocks are intensively monitored with CWTs, allowing relatively accurate estimates of stock-specific harvest and survival. Furthermore, the CWT recoveries provide important in-season information for managing the coho troll fishery. ADF&amp;G also notes that there are some additional indicator stocks in northern British Columbia that are also used for management. ADF&amp;G has analyzed the coho data and they seem to be aware of limitations so that coho salmon stocks are not likely to be over harvested.</p> <p>The analysis meets the intent of this Condition and the coho troll fishery is considered to meet the 80 scoring guidepost. This PI is re-scored at 80 and the Condition closed out.</p>

<b>Condition 18</b>	<p><b>Condition of Certification 18:</b></p> <p>Evaluation of hatchery stray rates of coho in representative natural spawning populations. [SE/Yakutat Troll]</p>
<b>Assessed Activity</b>	<p>This Condition relates principally to Indicator 1.1.1.5.</p> <p><b>100 Scoring Guidepost</b></p> <ul style="list-style-type: none"> <li>• Fisheries targeting enhanced stocks are geographically removed from wild (unenhanced) stocks and separate terminal harvest areas are established for these fisheries.</li> <li>• Times and areas have been identified where the majority of enhanced fish migrate through the general fishery.</li> <li>• There is real time mark recovery program during the prosecution of the fishery that allows determination of harvest rates of the targets and naturally enhanced component of the run and these data are used in regulation of the fishery.</li> </ul> <p><b>80 Scoring Guidepost</b></p> <ul style="list-style-type: none"> <li>• In fisheries where both enhanced and wild (un-enhanced) stocks are harvested at the same time, the harvest guidelines are based on the goals and objectives established for the wild (un-enhanced) stocks, and there is sufficient information on stock composition (i.e. hatchery and natural fish) to determine whether those goals are met.</li> </ul>

	<ul style="list-style-type: none"> <li>• There are adequate data and analyses to determine that the presence of enhanced fish in the management units does not adversely impact the wild (un-enhanced) fish stocks</li> </ul> <p><b>60 Scoring Guidepost</b></p> <ul style="list-style-type: none"> <li>• There is general scientific agreement within the management system regarding the impacts of enhanced fish on the resultant harvest rates or escapements of wild (unenhanced) fish stocks</li> <li>• Managers have some scientific basis for assuring that harvest rates for enhanced stocks are not adversely affecting the majority of wild (un-enhanced) stocks within each stock unit.</li> </ul> <p><b>SCORE 75</b></p> <p>Hatchery Chinook and coho comprise a small but significant portion of the fishery harvest. Both enhanced and wild stocks are harvested at the same time but harvest guidelines are based on goals and objectives established for the wild stocks and there is sufficient information on hatchery and wild stock composition to determine whether goals are met. Some information exists on the effects of enhancement. Hatchery and fishery practices are designed to limit adverse effects of enhancement on the wild fish stocks. However, empirical data natural spawning by hatchery fish is limited and the available information is insufficient to conclude that impacts on wild stocks do not occur.</p>
<b>AFDF Action Plan</b>	To meet this condition, AFDF will interface with ADF&G, which will compile and summarise information from existing programs where ADF&G routinely sample coded wire tags in coho salmon escapements (i.e., coho indicator stock programs, Yakutat coho mark/recapture). AFDF will provide a report produced by ADF&G by late 2008.
<b>Conclusion from 1st Surveillance Report</b>	<p>This condition relates principally to performance indicator 1.1.1.5.</p> <p>On the basis of the following scoring guideposts the score associated with the Performance Indicator 1.1.1.5 is adjusted as follows:</p> <p>The fishery had already been deemed to have met the first bullet point of the 80 scoring guidepost (hence the original score of 75). The in-press report ‘Wild and Hatchery Coded-wire Tagged Coho Salmon Recovered as Strays in Natural Spawning Escapements in Southeast Alaska, 1976-2007’, shows that the presence of hatchery fish is sufficiently low (~1%) to be considered not to impact the wild stocks. This fulfills the requirement of the second bullet point for the 80 scoring guidepost and so the performance indicator has been rescored at 80 and the condition is closed.</p>

<b>Condition 19</b>	<p><b>Condition of Certification 19:</b></p> <p>Continue efforts to improve current in-season coho run strength assessments and fishery management approach. [SE/Yakutat Troll]</p>
<b>Assessed Activity</b>	<p>This Condition relates principally to Indicator 1.1.2.2</p> <p><b>100 Scoring Guidepost</b></p> <ul style="list-style-type: none"> <li>• Estimates are available for the annual escapement for each stock unit harvested in the fishery.</li> <li>• In-season escapement data are collected for all stock units and used to regulate the fishery.</li> <li>• Estimates are available for the annual escapement and natural spawning of all enhanced (e.g., hatchery) fish.</li> </ul> <p><b>80 Scoring Guidepost</b></p> <ul style="list-style-type: none"> <li>• Estimates are available for the annual escapement of each target stock harvested in the</li> </ul>

	<p>fishery.</p> <ul style="list-style-type: none"> <li>• Fishery independent indicators of spawning abundance are available for the non-target species harvested in the fishery.</li> <li>• In-season escapement data are collected for the target stocks and used to regulate the fishery.</li> <li>• Estimates are available for the annual escapement and natural spawning of enhanced (e.g., hatchery) fish, where enhanced fish are a significant component of the fishery, and where the release locations can have a reasonable probability of affecting the management of natural populations.</li> </ul> <p><b>60 Scoring Guidepost</b></p> <ul style="list-style-type: none"> <li>• Escapement estimates for target stocks are available, where escapement estimates are necessary to protect the target stock from overexploitation.</li> <li>• Fishery independent indicators of abundance are available for non-target stocks where the fishery harvests may represent a significant component of the harvest of that stock.</li> <li>• Capabilities exist to make estimates of the escapement and natural spawning of enhanced (e.g., marked hatchery) fish.</li> </ul> <p><b>SCORE 73</b></p> <p>Escapement estimates are available for Chinook and coho indicator stocks. In season escapement data is collected for Chinook and coho but coho fisheries are managed primarily based on fishery-dependent data. Some information is available on natural spawning escapement of hatchery Chinook and coho but this information is not comprehensive.</p>
<b>AFDF Action Plan</b>	<p>A project was recently funded through the Southeast Sustainable Salmon Fund to investigate improving in-season coho salmon run assessments. A final copy of the report and its recommendations should be available in 2007, and will be provided by AFDF. Additionally, ADF&amp;G staff will continue to improve ongoing assessment programs and management approaches and will report changes to the surveillance team at each annual audit.</p>
<b>Conclusion from 1st Surveillance Report</b>	<p>This condition relates principally to performance indicator (PI) 1.1.2.1.</p> <p>On the basis of the following scoring guideposts the score associated with this Performance Indicator is re-evaluated and re-scored. The first bullet point of the 80 Scoring Guidepost was met during the re-certification, and the second was not considered applicable to this fishery. The third and fourth bullet points were each partially met.</p> <p>The third bullet point of the Scoring Guidepost is now met, based on the ADF&amp;G escapement estimates using in-season information of CPUE and post-season escapement estimates. The requirements of the fourth bullet point are also now met based on newly reported information showing negligible straying rates. The score for this PI is now revised to 80 and this Condition closed.</p>

## Certification Unit 4 - Yakutat Set Gillnet

<b>Condition 20</b>	<p><b>Condition of Certification 20:</b></p> <p>ADF&amp;G will continue ongoing research evaluating the relationship between peak survey counts of sockeye and coho and total escapement in the Yakutat area, including providing final reports on this work to AFDF to provide to Moody marine Ltd. [Yakutat Set Gillnet]</p>
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<b>Assessed Activity</b>	<p>This Condition relates principally to Indicator 1.1.2.2.</p> <p><b>100 Scoring Guidepost</b></p> <ul style="list-style-type: none"> <li>• Estimates are available for the annual escapement for each stock unit harvested in the fishery.</li> <li>• In-season escapement data are collected for all stock units and used to regulate the fishery.</li> <li>• Estimates are available for the annual escapement and natural spawning of all enhanced (e.g., hatchery) fish.</li> </ul> <p><b>80 Scoring Guidepost</b></p> <ul style="list-style-type: none"> <li>• Estimates are available for the annual escapement of each target stock harvested in the fishery.</li> <li>• Fishery independent indicators of spawning abundance are available for the non-target species harvested in the fishery.</li> <li>• In-season escapement data are collected for the target stocks and used to regulate the fishery.</li> <li>• Estimates are available for the annual escapement and natural spawning of enhanced (e.g., hatchery) fish, where enhanced fish are a significant component of the fishery, and where the release locations can have a reasonable probability of affecting the management of natural populations.</li> </ul> <p><b>60 Scoring Guidepost</b></p> <ul style="list-style-type: none"> <li>• Escapement estimates for target stocks are available, where escapement estimates are necessary to protect the target stock from overexploitation.</li> <li>• Fishery independent indicators of abundance are available for non-target stocks where the fishery harvests may represent a significant component of the harvest of that stock.</li> <li>• Capabilities exist to make estimates of the escapement and natural spawning of enhanced (e.g., marked hatchery) fish.</li> </ul> <p><b>SCORE 70</b></p> <p>Escapement estimates are available for target stocks. In-season escapement data are collected for major stocks and used to regulate the fisheries. Fishery independent indicators of spawning abundance are available for important species harvested in the fishery. No hatcheries operate in or near the Yakutat area, and no hatchery fish have been recovered in spawning ground sampling conducted by ADF&amp;G in association with wild stock coded-wire tagging programs. The main limitation in escapement information for Yakutat stocks is that the relationship between peak survey counts used for annual assessment and total escapement is not well understood for some systems. Geiger and McPherson (2005) report that expansions of peak counts to estimate annual escapement are based on a fixed factor which is based on professional opinion.</p> <p>Escapement surveys in some areas are regularly considered to be inadequate for reflecting spawner abundance. ADF&amp;G is making significant efforts to improve escapement estimates for Yakutat area stocks by conducting studies to provide scientific validation for expansion factors used to relate peak counts to total escapement, and has published numerous reports on this work (e.g. Waltemyer 2005, Clark et al 2005). Since 2003 ADF&amp;G has implemented extensive studies to upgrade the escapement information for Yakutat area stocks. Mark-recapture escapement studies have been conducted on East Alsek (in 2003-2005), Lost (in 2003 and 2004), and Akwe and Italio river (in 2004) sockeye and on Situk (in 2004-2006) and Lost river (in 2003-2004) coho salmon to provide scientific validation for expansion factors used to relate peak survey counts to total escapement.</p>
<b>AFDF Action</b>	ADF&G has implemented a significant research effort, costing well in excess of \$500,000

<b>Plan</b>	beginning in 2001 and continuing through 2006 to improve escapement assessments in the Yakutat area. These studies have enabled evaluation of the efficacy of survey counts of total escapement in the Yakutat area. ADF&G is continuing the final phase of the research by completing the final report and will provide it to AFDF when complete in late 2007
<b>Conclusion from 1st Surveillance Report</b>	<p>As with all conditions, the Surveillance Team evaluated the evidence available for this issue against the requirements of the original scoring guideposts, as well as the condition and action plan. The PI is based on four bullet points.</p> <p>In the original assessment of this performance indicator, the second and fourth bullet points for the 80 scoring guidepost were not considered to be applicable in this fishery. This is still considered the case.</p> <p>With the research that has been undertaken between 2005 and 2008, the improvement in escapement assessments for the coho and sockeye stocks in the Yakutat area are such that estimates of annual escapement are now available in the fishery and, where hatchery fish are a significant component of the fishery, estimates of annual escapement and natural spawning are now available. The remaining requirements of this PI are now considered to be met, and in parts exceeded. This PI has therefore been rescored at 85 and the condition closed.</p>

<b>Condition 21</b>	<p><b>Condition of Certification 21:</b></p> <p>Evaluate stock-production relationships for Yakutat area sockeye and coho based on best available data. [Yakutat Set Gillnet]</p>
<b>Assessed Activity</b>	<p>This Condition relates principally to Indicator 1.1.2.4.</p> <p><b>100 Scoring Guidepost</b></p> <ul style="list-style-type: none"> <li>• Scientifically defensible productivity estimates (e.g. stock/recruitment relationships) have been derived for all target stocks and the relative productivity of non-target stocks is known.</li> <li>• Risk assessment has been conducted to determine the impact of alternative harvest strategies on non-target stocks. The risk assessment should include an assessment of the uncertainties with estimates of stock productivity for the target stocks.</li> </ul> <p><b>80 Scoring Guidepost</b></p> <ul style="list-style-type: none"> <li>• There is adequate information to identify the harvest and production strategies required to maintain the high productivity of the target stocks.</li> <li>• There is adequate information to estimate the relative productivity of the non-target stocks where the fishery harvests may represent a significant component of those non target stocks.</li> <li>• The harvest limitations for target stocks take into consideration the impacts on non target stocks and the uncertainty of the productivity for these stocks.</li> </ul> <p><b>60 Scoring Guidepost</b></p> <ul style="list-style-type: none"> <li>• The available information and analyses are adequate to identify the harvest limitations and production strategies required to maintain the productivity of the majority of target stocks.</li> <li>• The relative productivity of the non-target stocks is considered in the management strategy, where the fishery harvests may represent a significant component of those non-target stocks.</li> </ul> <p><b>SCORE 70</b></p>

	<p>Estimates of productivity were made for some, but not all stocks. Estimates are available for Situk and Klukshu River Chinook and Situk River pink salmon. Research programs are underway to improve the scientific basis of escapement estimation programs for several important sockeye and coho salmon systems in the Yakutat area by estimating index survey expansion factors, which have previously been based largely on assumptions. Management plans include strategies for maintaining high productivity in mixed species fisheries. For instance, management plans for the Situk and Lost river gillnet fisheries that target sockeye salmon contain provisions to limit the fisheries if the Situk River Chinook salmon run is weak, and opening dates of the Situk River fishery have been delayed to reduce incidental harvest of emigrating steelhead (Woods 2005).</p>
<b>AFDF Action Plan</b>	<p>AFDF will interface with ADF&amp;G to see that review of assessment data and escapement goals is continued every three years, coincident with the Board of Fisheries cycle. New information from recently completed and ongoing studies will be included in ADF&amp;G's escapement goal review due in late 2009, and will be provided to the surveillance team by AFDF.</p>
<b>Conclusion from 1st Surveillance Report</b>	<p>Progress on this Condition is on-target. This Condition remains open and is expected to be closed out following the Board of Fisheries (BOF) review and provision of ADF&amp;G/ BOF report by April 2009 and review during the second annual MSC surveillance audit.</p>
<b>AFDF Actions</b>	<p>ADF&amp;G reviewed escapement goals for Yakutat sockeye and coho salmon. Results of the reviews were published for coho salmon in Shaul <i>et al.</i> (2008). Results of the reviews were published for sockeye salmon in Eggers <i>et al.</i> (2008).</p>
<b>Observations</b>	<p>ADF&amp;G has developed biological escapement goals for 7 coho salmon stocks in the region. Evaluation of the escapement goals and a review of the coho fishery examined in a publicly available report (Shaul et al. 2008) and another report that is in preparation (Shaul et al. in prep.). ADF&amp;G has collected spawner count data on these streams since 1972. ADF&amp;G conducted mark-recapture studies in 2004-2006 to improve index counts but these studies show that index counts were not well-correlated with total population estimates. Index counts are a small fraction of the total spawning population. Available data and reports suggest that the escapement methodology may not be sufficient to maintain production at MSY but the methodology appears sufficient to sustain the coho stocks at similar production levels. ADF&amp;G has continued to evaluate the stock-production relationships for coho salmon (Shaul et al. 2008).</p> <p>There are currently four escapement goals for sockeye salmon stocks in the Yakutat area. Performance of sockeye escapement levels against the escapement goals was recently evaluated by Eggers et al. (2008). Sockeye salmon escapements typically exceeded the goal except in 2008 when all stocks were below goal despite very limited fishing. It is noteworthy that ADF&amp;G reduced the escapement goal for the East Alsek-Doame River in response to naturally deteriorated spawning habitat since about 1990. The escapement goal was independently estimated by the University of Alaska and Glacier Bay National Park and Preserve biologists using habitat analysis (Faber et al. 2005, Farber 2008 in Eggers et al. 2008). Their estimate of spawning escapement was similar to that that developed by ADF&amp;G.</p>
<b>Conclusion</b>	<p>On the basis of the following scoring guideposts the score associated with Performance Indicator 1.1.2.4 is adjusted as follows:</p> <p><b>80 Scoring Guidepost</b></p> <ul style="list-style-type: none"> <li>• There is adequate information to identify the harvest and production strategies required to maintain the high productivity of the target stocks.</li> <li>• There is adequate information to estimate the relative productivity of the non-target stocks where the fishery harvests may represent a significant component of those non target stocks.</li> <li>• The harvest limitations for target stocks take into consideration the impacts on non target stocks and the uncertainty of the productivity for these stocks.</li> </ul>

	<p>During recertification, the fishery received partial credit for the first guidepost and the last two bullets were considered not applicable. ADF&amp;G continues to evaluate spawners and recruits of coho and sockeye salmon in the Yakutat area. The intent of this condition and the scoring guidepost are met, the PI is re-scored at 80 and the Condition closed out.</p>
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<b>Condition 22</b>	<p><b>Condition of Certification 22 (same as Condition 8, 16, 32, 49, 50, 59 &amp; 61):</b></p> <p>Evaluate appropriate existing age-sex-size information to determine if fisheries are exerting significant selectivity; continue ASL sampling in fisheries and several spawning stocks to continue a database for long-term evaluation of potential fishery selectivity. [Yakutat Set Gillnet]</p>
<b>Assessed Activity</b>	<p>This Condition relates principally to Indicator 1.3.1.</p> <p><b>100 Scoring Guidepost</b></p> <ul style="list-style-type: none"> <li>• There is comprehensive knowledge of the effect of fishing on biological characteristics such as the age, size, sex and genetic structure of the target stocks and the impact of changes in these factors on the reproductive capacity of the target stocks.</li> <li>• Management actions are consistent with maintaining healthy target stocks relative to biological characteristics such as age, size, sex and genetic structure of all target stocks.</li> <li>• Enhanced fish are identified and managed as separate target stocks.</li> </ul> <p><b>80 Scoring Guidepost</b></p> <ul style="list-style-type: none"> <li>• The knowledge of the effect of fishing on biological characteristics such as the age, size, sex and component stocks is adequate to detect threats to the reproductive capacity of the target stocks.</li> <li>• Management actions are consistent with maintaining healthy target stocks relative to biological characteristics such as age, size, sex and genetic structure of all target stocks.</li> <li>• The management system includes provisions to minimize any adverse impacts to the genetic structure of wild (un-enhanced) stocks that may be due to the enhancement of other stocks.</li> </ul> <p><b>60 Scoring Guidepost</b></p> <ul style="list-style-type: none"> <li>• The knowledge of the effect of fishing on the biological characteristics such as age, size, sex and component stocks is adequate to detect threats to the reproductive capacity of the majority of target stocks.</li> <li>• Management actions are consistent with maintaining healthy target stocks relative to biological characteristics such as age, size, sex or genetic structure for the majority of target stocks.</li> <li>• The management system includes provisions to minimize the major adverse impacts for the majority of wild (un-enhanced) stocks that may be due to the enhancement of other stocks.</li> </ul> <p><b>SCORE 70</b></p> <p>While age, sex, and size is available, it is unclear whether this information has been adequately evaluated to detect threats to the reproductive capacity of the target stock with respect to healthy age, size, sex, and genetic structure. Age, sex and size sampling is routinely conducted for the major directed set gillnet fisheries for sockeye salmon (Yakutat Bay, Situk, East Alsek, Alsek and Akwe rivers). Escapements are routinely sampled for the largest sockeye stocks (Situk, Alsek, East Alsek rivers), with less frequent sampling of smaller stocks. Age, sex and</p>

	<p>size of Akwe River sockeye is assessed annually through sampling of terminal commercial harvests since 1982, spawning ground sampling from 1982-1986, and extensive mark-recapture, radio telemetry and spawning ground sampling of the stock in 2004 (Smith et al 2006).</p> <p>Extensive age, sex and size sampling is conducted on the Situk and Klukshu Chinook salmon harvests and escapements. Sampling of coho is concentrated on the Situk fishery and stock, the largest in the area. The Situk set gillnet fishery typically contributes the bulk of the Yakutat area coho salmon catch (2001-2005 average of 85%), and the Situk fishery is routinely sampled for age, sex and size information. The Situk and Lost river escapements have been sampled extensively for coho age, sex and size information in recent years. Management actions are generally consistent with maintaining healthy target stocks relative to biological characteristics such as age, size, sex and genetic structure of all target stocks; harvest is distributed over time in relative proportion to abundance in order to allow escapement of all temporal segments of runs. Pink salmon stocks are lightly exploited and sampling is unnecessary to demonstrate either an invariable age structure or good health of the stocks. There are no hatcheries in or near the Yakutat area.</p>
<b>AFDF Action Plan</b>	<p>ASL sampling of fisheries and select spawning stocks is expected to continue over the long term in each certification unit. The intensity of sampling will be dependent on available funding and identified concerns. ADF&amp;G currently maintains comprehensive ASL sampling in all these fisheries; however these programs may be expanded as appropriate.</p> <p>AFDF will provide a report compiled by ADF&amp;G of existing ASL data by the end of 2009 that will evaluate the consequences of selective fishing.</p>
<b>Conclusion from 1st Surveillance Report</b>	<p>As with all conditions, the Surveillance Team evaluated the evidence available for this issue against the requirements of the original scoring guideposts, as well as the condition and action plan. In this case, it was concluded that the ongoing effort to collect ASL data was sufficient to meet the intent of the 80 Scoring Guidepost for this Performance Indicator.</p> <p>There is general knowledge on the effects of gear selectivity (e.g., gillnets) on salmon and ADFG routinely collects ASL data and makes them available in a database. These data can be used to examine shifts in age or size if concerns developed. For example, concerns regarding the age and size of Yukon Chinook salmon have arisen and ASL data have been used to examine gillnet selectivity. The ASL database is maintained and available in the event that concerns develop. There are no hatcheries in this region. This indicator therefore exceeds the intent of the 80 guidepost, the indicator is scored as 85 and this condition is closed.</p>

## Certification Unit 5 – Prince William Sound Seine & Gillnet

<b>Condition 23</b>	<p><b>Condition of Certification 23 (Same as Condition 25):</b></p> <p>Provide adequate data and analyses to demonstrate that hatchery and fishery management actions are sufficient to ensure that harvest of enhanced fish is not adversely affecting the wild pink, chum, sockeye, and coho stocks. Revise wild stock assessments and management as appropriate. [Prince William Sound]</p>
<b>Assessed Activity</b>	<p>This Condition relates principally to Indicator 1.1.1.5.</p> <p><b>100 Scoring Guidepost</b></p> <ul style="list-style-type: none"> <li>• Fisheries targeting enhanced stocks are geographically removed from wild (unenhanced) stocks and separate terminal harvest areas are established for these fisheries.</li> <li>• Times and areas have been identified where the majority of enhanced fish migrate through the general fishery.</li> <li>• There is real time mark recovery program during the prosecution of the fishery that allows determination of harvest rates of the targets and naturally enhanced component of the run and these data are used in regulation of the fishery.</li> </ul> <p><b>80 Scoring Guidepost</b></p> <ul style="list-style-type: none"> <li>• In fisheries where both enhanced and wild (un-enhanced) stocks are harvested at the same time, the harvest guidelines are based on the goals and objectives established for the wild (un-enhanced) stocks, and there is sufficient information on stock composition (i.e. hatchery and natural fish) to determine whether those goals are met.</li> <li>• There are adequate data and analyses to determine that the presence of enhanced fish in the management units does not adversely impact the wild (un-enhanced) fish stocks</li> </ul> <p><b>60 Scoring Guidepost</b></p> <ul style="list-style-type: none"> <li>• There is general scientific agreement within the management system regarding the impacts of enhanced fish on the resultant harvest rates or escapements of wild (unenhanced) fish stocks</li> <li>• Managers have some scientific basis for assuring that harvest rates for enhanced stocks are not adversely affecting the majority of wild (un-enhanced) stocks within each stock unit.</li> </ul> <p><b>SCORE 70</b></p> <p>There is general agreement within the management system regarding the impacts of enhanced fish on the resultant harvest rates and escapements of wild fish. ADF&amp;G has recognized the potential risks of large-scale PWS enhancement programs and has taken significant steps to identify impacts and remedy effects where identified. Fisheries are actively managed for wild escapement goals based on regular in-season escapement monitoring. Hatchery fish are otolith marked so that they can be distinguished in the harvest and on the spawning grounds. Straying studies have been implemented for hatchery pink, chum, and sockeye salmon. Where significant straying of hatchery salmon was identified, fishing practices have been modified to reduce straying. For instance, pink salmon research documented straying rates exceeding 2% in some systems near hatcheries and an increase in straying as the season progressed (Joyce and Evans 2000). Terminal fisheries near hatcheries have now been extended through the run to reduce late season buildups of fish near the hatchery and reduce the possibility of straying.</p> <p>Managers have some scientific basis for assuring that harvest rates for enhanced stocks are not adversely affecting the majority of wild (un-enhanced) stocks within each stock unit. Pink salmon fisheries are managed to achieve sound-wide aggregate escapement goals and ensure</p>

	<p>adequate geographical distribution among all districts. This aggregate goal approach to pink salmon management was supported by observations of a high natural stray rate (25%) of pink salmon marked with coded wire tags as fry emigrating from natal streams in Prince William Sound (Sharp et al. 1994). Aggregate pink salmon escapement goals have been achieved in 12 of the last 16 years. Chum salmon escapement goals were established for each of five districts and these goals have been consistently met. Since 1990 chum goals for the Eastern and Northwestern districts has been met in 14 of 16 years, in 13 of 16 years for the Northern and Southeastern districts, and in 12 of 16 years for the Coghill district.</p> <p>Information on PWS enhancement is improving, with implementation of mass marking of all PWS hatchery fish, improvements in estimation of hatchery fish to PWS harvests, implementation of straying studies, and assessment of potential effects on escapement monitoring programs. ADF&amp;G is conducting an internal review of PWS hatcheries, which may provide information relevant to the proposed condition (D. Gray, ADF&amp;G, personal communication).</p> <p>The available information is not sufficient to determine whether goals for wild fish are consistently met. Wild escapement of pink and chum salmon is being overestimated in some areas because of high hatchery stray rates (Ashe et al. 2005). Hatchery pink salmon were an estimated 26-97% of those sampled for otoliths in 12 PWS streams in 1997 and stray percentages were related to distance from release site for two hatcheries (Joyce and Evans 1999); however, the selection of stream for this study as well as a number of other factors may provide significant bias in the results and so the rates of straying should be used very cautiously. Samples during 2005 from four streams identified substantially lower stray rates (2% or less) of pink salmon (ADF&amp;G, unpublished). It is unclear whether these sample streams are representative or a positive response to fishery and hatchery practices. According to an internal ADF&amp;G memo (Merizon 2004), hatchery strays represented roughly 10% of the chum escapement in 14 PWS streams sampled by ADF&amp;G in 2004. Contributions of wild fish to individual escapements was 90% or higher in 7 streams, from 85% to 90% in 3 streams and below 70% in 4 streams. Hatchery chum contributed from zero to 62% of the natural escapement in 11 streams sampled in 2005 and strays exceeded 3% of the samples in 6 of 11 streams (ADF&amp;G unpublished). All of these data provide a possible indication but in and of themselves are insufficient to make any specific case. The data showing these trends comes from very limited sampling and has not been peer reviewed sufficiently to draw dependable conclusions. Unlike pinks, chum stray rates did not appear to be related to distance from the hatchery. Chum salmon strays from Wally Noerenberg Hatchery have been documented in streams as far as 90 miles from their release site and strays from Port Chalmers releases have been documented almost 80 miles from their release site (Ashe et al. 2005). Again, these data need to be viewed in light of the way in which they were compiled and provided. According to comments received from Tim Joyce, retired ADF&amp;G biologist (see Appendix 5), the data on straying rates for chums is confounded by some errors in the original accounting system as well as the timing of marking and sampling.</p> <p>The available data and analyses are not adequate to determine that the presence of enhanced fish in the management unit does not adversely impact any component of the wild stock. Interpretations of the significance of hatchery effects depend in part on the genetic and life history stock structure of the wild stock. For instance, hatchery effects might be construed to pose limited risk if a species is one homogenous aggregate that does not exhibit significant spatial differences in genetic or life history patterns within the management area or among management areas. However, if there is significant substock structure, then local hatchery impacts can pose substantial risk in lost diversity and production of locally adapted stocks (Utter 2004). Previous research reporting high natural stray rates of pink salmon (Sharp et al. 1994) would appear to suggest a lack of stock structure. Recent genetic studies of pink salmon in PWS have found genetic differences between even- and odd-year fish, between early and late spawning aggregates, among streams within the Sound, and between tidal and upstream spawning fish within streams indicate that the latter is clearly the case in PWS (ADF&amp;G, 2006).</p>
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	<p>According to ADF&amp;G (2006): “These differences indicate that pink salmon that spawn within the Prince William Sound should not be viewed as one randomly interbreeding population, but rather as a collection of populations with restricted gene flow.” According to Joyce (comments to SCS Assessment team in Appendix 5), not all late run PWS pinks should be considered to have restricted gene flow. ADF&amp;G (2006) found pink salmon genetic population structure to be organized latitudinally from Northwest Alaska to Northwest Washington with populations that are geographically farthest apart being the most divergent.</p> <p>Production trends in PWS indicate that enhancement has affected the number of wild pink salmon available for harvest but it is unclear whether long term viability and sustainability of the wild stock has been impaired. Wild escapements and productivity (returns per spawner) in PWS have decreased concurrent with increasing hatchery salmon numbers (Figure 1). At the same time, pink salmon numbers have been increasing in other regions of Alaska. Hilborn and Eggers (2000, 2001) suggested based on analysis of this information that the hatchery program in PWS replaced rather than augmented wild production, either because a decline in wild escapement associated with harvesting hatchery stocks or because of biological impacts of the hatchery fish on wild fish. Wertheimer et al. (2001, 2004) suggested that Hilborn and Eggers greatly overestimated the potential for production by naturally spawning pink salmon in PWS and provided alternative explanations for wild stock declines. However, Wertheimer et al. (2001) acknowledged that the large fishery benefits of the enhancement program may have come with some degree of effect on wild stocks. Wertheimer et al. (2005) subsequently estimated an annual wild stock yield loss of 1 million pink salmon in PWS due to an enhancement-related decline in body size from density-dependent growth in the Gulf of Alaska.</p> <p>In addition, Joyce (comments to SCS assessment team see Appendix 5) points out that a study by Cooney (1993) found that the number of pink salmon fry (wild and hatchery) has minimal predatory effect on zooplankton populations, further indicating that while competition for food may be a factor, there is no unequivocal proof that hatchery fish are overloading the system. Comments received from the Prince William Sound Aquaculture Corporation support the fact that the effects of hatcheries on all components of wild populations and on all functions (i.e. feeding, breeding, etc.) are not known. The letter from PWSAC states, “The Genetics Policy and associated fish culture practices were developed to address these [straying and competition] concerns and incorporate a precautionary approach to ensure that straying hatchery salmon do not endanger the genetic integrity of or adjacent wild stocks. Yet, the extent to which hatchery salmon stray in Prince William Sound as well as unforeseen effects on wild stocks remain unknown, and cannot be discerned from the reconnaissance level studies conducted thus far.” The suggested lack of understanding noted by PWSAC was also noted by the assessment review above and was a contributing factor in assigning the score to this indicator.</p> <p>The information provided by both PWSAC and Tim Joyce are persuasive, and when examined against the performance benchmarks for scoring this indicator suggest that the assessment team was too critical and did not give enough credence to the data that is collected on hatchery and wild stocks in this area. As a result, the score has been adjusted to reflect these efforts. The assessment still indicates that further work is needed to sort out the complicated interactions between hatchery and wild populations, so the condition still stands.</p>
<b>AFDF Action Plan</b>	<p>Current management practices identify wild stocks in catch and fishery openings are modified as needed on a weekly basis. Escapement goals have been established for wild stocks of pink, chum, and sockeye salmon in PWS. Escapement goals have been consistently met in face of large hatchery runs of pink and chum salmon. No significant wild coho stock exists in PWS so the condition is not relevant for PWS coho salmon. AFDF will provide a report produced by ADF&amp;G, including data and analyses, by December 31, 2008.</p>
<b>Conclusion from 1st Surveillance Report</b>	<p>Progress on this Condition is on-target , however, while the Department’s research programs are making progress in regard to gathering needed information, the 80 Scoring Guidepost for this condition is not yet achieved:</p>



	<ul style="list-style-type: none"> <li>• With respect to the first bullet point; the impacts and interactions of hatchery salmon that stray into wild salmon spawning streams is still required.</li> <li>• With respect to the second bullet point; an analysis of the results of these studies in the context of the State's genetics policy and wild stock escapement goals is required.</li> </ul> <p>This Condition therefore remains open. The above information is expected in early 2009 and will be reviewed during the second annual MSC surveillance audit.</p>
<b>AFDF Actions</b>	ADF&G compiled information on management of the 2008 Prince William Sound salmon fishery and published it as "Botz, J. and G. Hollowel. 2008. Prince William Sound Salmon Fisheries, 2008; a Report to the Alaska Board of Fisheries. ADF&G. Special Publication No. 08-13."
<b>Observations</b>	<p>The issues surrounding this condition remain complex as pointed out by the certification team in the 5-Year Re-Assessment document. One of the main issues contained in the condition is the lack of accounting for hatchery strays into wild stock spawning streams. A review of escapement goals for Prince William Sound salmon stocks was completed in November 2008 with the three year Board of Fisheries regulatory cycle (Fair <i>et al.</i> 2008). Chum salmon escapement goals are sustainable escapement goals (SEGs) as defined by the Alaska Sustainable Fisheries Policy (ADF&amp;G 2000). In 2005, SEG thresholds were estimated using risk analysis for the Coghill, Eastern, Northern/Unakwik, Northwestern, and Southwestern districts. These were not re-analyzed with the 2008 escapement goal review. In 2002 the escapement goals for pink salmon were changed from BEGs to SEGs, and a Sound-wide goal was established. The sound-wide goals for even and odd pink salmon cycles were re-evaluated in the 2008 review and the escapement goal review team chose to leave the goals unchanged. Mass marking of hatchery chum salmon is utilized by ADF&amp;G to allocate harvests into wild and hatchery components. Department biologists are in the process of reconstructing past escapements to reevaluate existing wild stock escapement goals given the measured numbers of hatchery strays. Such a reconstruction requires a significant modeling and statistical effort and is ongoing. Reporting of straying studies referenced in the October 2008 Audit Report (Moody Marine 2008) has not been completed although preliminary results have been presented at recent symposia (Moffitt, 2010c).</p> <p>Precautionary straying thresholds were established in the PWS Phase III Salmon Plan of 2%. Studies to date have shown that pink salmon straying rates vary as a function of the distance from the hatchery where fish are returning to. Based on studies conducted in 1998 straying rates exceeded the 2% threshold out to 93 kilometers from the AFK hatchery. When other facilities (WHN and Cannery Creek) were included in the model, a majority of the PWS spawning streams would have straying rates exceeding the 2% threshold. Researchers concluded that; 1) in some years, hatchery pink salmon greatly exceed threshold levels in a majority of PWS streams, and 2) strays being counted in the wild stock escapement surveys are causing ADF&amp;G to overestimate wild stock productivity. Utter (2004) also suggested that, in general, straying could affect the genetic diversity of wild salmon stocks, especially when wild stocks are heterogeneous.</p> <p>Chum salmon straying was modeled from release levels ranging from 76 million to 146 million from 1997 to 2009. Base upon a Monte Carlo simulation there was no (zero) chance for the lowest release level (76 million) to be below the 2% straying threshold, and at larger releases there is no chance of being below a 5% straying threshold. Researchers concluded that current average release levels (approx 128 million chum) are too large to maintain straying below a 5% threshold in the spawning escapement (Moffitt, 2010b)</p> <p>Progress on collection of stray hatchery sockeye salmon is on target for close out in the 4th audit, but available data raise an issue about potentially high stray rates in some years. ADF&amp;G has been collecting data on sockeye straying to Coghill and Eshamy river weirs for several years (Moffitt, 2010a). Main Bay Hatchery sockeye are identified by thermal marks. Identification of hatchery fish at the weirs does not necessarily mean that the fish has strayed to natural spawning areas because it could migrate back downstream to reach the hatchery. In</p>

	<p>most years, &lt;2% of the sampled sockeye at the weirs are hatchery origin. However, in 2007, approximately 22% of the fish were hatchery origin. According to ADF&amp;G, Prince William Sound Aquaculture Association stated that the high proportion of hatchery fish at Eshamy weir was caused by closure of the southern part of the Eshamy District for most of the season. ADF&amp;G has also sampled other streams for hatchery sockeye salmon &amp; they found high proportions of hatchery sockeye salmon, especially in 2007. ADF&amp;G is planning to prepare a report, possibly during winter 2010-2011. It is noteworthy that in 2010 ADF&amp;G approved a 22% increase in sockeye releases from main Bay Hatchery (total 12.4 million egg take). Given the increased hatchery production of sockeye salmon and high potential stray rates in 2007, it is important to track straying sockeye salmon and to identify whether hatchery sockeye production interferes with sustainability and management of wild sockeye salmon.</p> <p>There is little information from which to assess if PWS hatchery fish may have affected physical characterizes of wild salmon stocks. The Department has collected very little age, sex, length (ASL) data for chum salmon to monitor for trends or changes through time (Moffitt, 2010a). ASL data for PWS salmon stocks is not separated into hatchery and wild components. There are over 20 years of data for pink salmon weights, and size changes have been observed, moving both up and down through time, with no consistent trend and no apparent linkage to the enhancement program (Moffitt, 2010a).</p> <p>The ratio of hatchery fish to wild fish may be a limiting factor in the Department's ability to achieve wild stock escapement goals. PWS fishery managers reported that the existing management program is capable of achieving wild stock pink salmon escapement objectives through time are area fishery restrictions provided that the ratio was not in excess of 4 to 5 hatchery fish to each wild fish (Regnart, 2010; Gray, 2010). When hatchery fish outnumber wild fish by a ratio of 8 or 10 to 1 the fishery is confined to small terminal harvest areas in front of the hatcheries for the entire season, resulting in congestion and reduced product quality (Regnart, 2010). Even with such restrictions it is very difficult to meet wild stock escapement goals. High ratio of hatchery fish appear to be correlated with escapements falling below the lower end of the published escapement goal ranges (Moffitt, 2010b).</p> <p>The permitted hatchery production levels in PWS have not increased substantially since 1990. The average pink salmon fry releases for PWS hatcheries averaged approximately 556 million in the 1990's and approximately 608 million over the past decade. Annual chum salmon fry releases have averaged 95 million in the 1990's and approximately 115 million over the past decade. Substantial production increases have recently been proposed by the Prince William Sound Aquaculture Association and are under review by the Regional Salmon Planning Team (Josephson, 2010). These include an increase of 103 million pink salmon eggs (22% increase in the permitted production), and 17.4 million egg increase in chum salmon eggs, and additional increases to the sockeye production at Main Bay (PWS) and Gulkana (Copper River).</p> <p>In 2008, ADF&amp;G began a four year study to evaluate potential effects of straying on allele frequencies of chum salmon (Brenner and Habicht 2008). The study will compare chum allele frequencies before and after chum hatcheries were built in PWS. This study is scheduled to be complete in June 2012. ADF&amp;G is waiting to examine the findings of this study before testing other salmon species.</p>
<b>Conclusion</b>	<p>The first bullet point of the 80 scoring guidepost is not completely achieved. Clearly the Department's harvest guidelines in the mixed wild and hatchery fisheries are based upon goals established for wild stocks, and considerable effort is undertaken to identify wild and hatchery fish components of the harvest. Progress is being shown on the identification of straying of hatchery fish into escapements. ADF&amp;G has yet to determine how this information should be incorporated into wild stock escapement goal objectives.</p> <p>The second bullet point of the 80 scoring guidepost is not completely achieved. While there is a growing body of data and analyses describing the presence of enhanced fish in the management unit, the question of adverse impacts to wild fish has not been answered. Minimizing straying and managing for wild stock escapement becomes increasingly difficult</p>

	<p>as the ratio of hatchery to wild returns exceeds 5 to 1. The ongoing genetic studying involving stray hatchery chum salmon will provide important information for this condition but the study will not be complete until June 30, 2012.</p> <p>While the Department is making progress on this condition, it is a complex situation that may not be resolved during the certification period.</p> <p>The client should work with ADF&amp;G to determine any courses of action that the managers will be advocating in reviewing these new hatchery stray data, and how fast such work can be accomplished, prior to the next audit.</p>
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<b>Condition 24</b>	<p><b>Condition of Certification 24:</b></p> <p>Estimate the contributions of stray hatchery chum and sockeye to spawning escapements and report results. [Prince William Sound]</p>
<b>Assessed Activity</b>	<p>This Condition relates principally to Indicator 1.1.2.2.</p> <p><b>100 Scoring Guidepost</b></p> <ul style="list-style-type: none"> <li>• Estimates are available for the annual escapement for each stock unit harvested in the fishery.</li> <li>• In-season escapement data are collected for all stock units and used to regulate the fishery.</li> <li>• Estimates are available for the annual escapement and natural spawning of all enhanced (e.g., hatchery) fish.</li> </ul> <p><b>80 Scoring Guidepost</b></p> <ul style="list-style-type: none"> <li>• Estimates are available for the annual escapement of each target stock harvested in the fishery.</li> <li>• Fishery independent indicators of spawning abundance are available for the non-target species harvested in the fishery.</li> <li>• In-season escapement data are collected for the target stocks and used to regulate the fishery.</li> <li>• Estimates are available for the annual escapement and natural spawning of enhanced (e.g., hatchery) fish, where enhanced fish are a significant component of the fishery, and where the release locations can have a reasonable probability of affecting the management of natural populations.</li> </ul> <p><b>60 Scoring Guidepost</b></p> <ul style="list-style-type: none"> <li>• Escapement estimates for target stocks are available, where escapement estimates are necessary to protect the target stock from overexploitation.</li> <li>• Fishery independent indicators of abundance are available for non-target stocks where the fishery harvests may represent a significant component of the harvest of that stock.</li> <li>• Capabilities exist to make estimates of the escapement and natural spawning of enhanced (e.g., marked hatchery) fish.</li> </ul> <p><b>SCORE 70</b></p> <p>Escapement estimates are available for target stocks and fishery-independent estimates are available in-season. Estimates are incomplete for the annual escapement and natural spawning of enhanced (e.g., hatchery) fish. The limited available information indicates that significant natural spawning by enhanced pink and chum salmon occurs at a rate that increases with proximity to the hatchery. A chum salmon straying study is underway (2 years of data and continuing for a third year in 2006). A stratified approach to sample site selection was used.</p>

	<p>This is not planned to be an annual, long-term monitoring program. Annual costs for the chum salmon work is \$40,000. There will be a pilot genetic component conducted on chum salmon in 2006. ADF&amp;G has also monitored for sockeye strays at Coghill Lake weir. Data (thermal mark recovery) is as yet unpublished but is provided here as follows: 2004 Coghill Lake weir, N=150, 13-17 July, 0 hatchery strays. 2005 Coghill Lake weir, N=288, 2-20 July, 1 hatchery stray. As a result of potential high stray rates, ADF&amp;G may have been overestimating the escapement of wild pink and chum salmon in PWS (Ashe et al. 2005). No adjustments have been made in escapement estimates based on hatchery contributions. The fishery does not meet the 80 scoring guidepost regarding the availability of estimates of escapement and spawning of enhanced fish stocks.</p>
<b>AFDF Action Plan</b>	<p>AFDF has advised Moody marine Ltd that ADF&amp;G is entering year 3 of a multi-year study of chum salmon straying. The sockeye salmon from the Main Bay hatchery are thermally marked. Study of straying Eshamy and Coghill river systems is feasible. ADF&amp;G will conduct a three year study of sockeye salmon straying and will provide a report to AFDF when completed. The report for chum salmon is scheduled to be completed by May 30, 2008, and the report for sockeye salmon will likely be completed by May 30, 2011.</p>
<b>Conclusion from 1st Surveillance Report</b>	<p>While progress has been made on chum salmon, and promising new information will come of the future work to be conducted on pink and sockeye salmon, the requirements of this condition are on-target but have not yet been met.</p> <p>The first bullet point of the 80 scoring guidepost is not achieved due to the uncertainty of enhanced salmon straying into wild streams. The second bullet point is not applicable as was determined by the original assessment team. The requirements of the third bullet point were achieved during the original assessment. The fourth 80 guidepost, similar to the first, is also not achieved. To meet the first and fourth 80 scoring guideposts ADF&amp;G will need to complete the straying studies and conduct an analysis of the results in the context of current hatchery management practices, wild stock escapement goals and the state's genetics' policy. This is expected in May 2011 and will be reviewed by the surveillance team in the fourth annual surveillance audit.</p>
<b>AFDF Actions</b>	<p>In 2008 ADF&amp;G began a program "Hatchery Salmon Straying in PWS, Alaska". The project has four objectives: 1. Quantify the spatial and temporal extent of pink salmon straying within PWS streams; 2. Describe genetic population structure of chum salmon from samples collected from selected spawning aggregates before the establishment of hatcheries in PWS and contrast this with present-day variation in non-marked (F1+wild-origin) fish sampled at the same sites and from fish used as hatchery broodstock; 3. Estimate the effective straying rates of hatchery chum salmon into each of five selected spawning aggregates; and 4. Perform an investigation of hatchery sockeye salmon straying in PWS by time and area.</p> <p>Field work took place in 2008 and 2009 and will continue in 2010. A final report is expected by June 30, 2012.</p>
<b>Observations</b>	<p>Mass marking of hatchery chum salmon is utilized by ADF&amp;G to allocate harvests into wild and hatchery components. Department biologists are in the process of reconstructing past escapements to reevaluate existing wild stock escapement goals given the measured numbers of hatchery strays. Such a reconstruction requires a significant modeling and statistical effort and is ongoing. Reporting of straying studies referenced in the October 2008 Audit Report (Moody Marine 2008) has not been completed although preliminary results have been presented at recent symposiums (Moffitt 2010b). Precautionary straying thresholds were established in the PWS Phase III Salmon Plan of 2%. Chum salmon straying was modeled from release levels ranging from 76 million to 146 million from 1997 to 2009. Based on a Monty Carlo simulation there was no (zero) chance for the lowest release level (76 million) to be below the 2% straying threshold, and at larger releases there in no chance of being below a 5% straying threshold. Researchers concluded that current average release levels (approx 128 million chum) are too large to maintain straying below a 5% threshold in the spawning escapement. (Moffitt, 2010b)</p>

	<p>Progress on collection of stray hatchery sockeye salmon is on target for close out in the 4<sup>th</sup> audit, but available data raise an issue about potentially high stray rates in some years. ADF&amp;G has been collecting data on sockeye straying to Coghill and Eshamy river weirs for several years (Moffitt, 2010a). Main Bay Hatchery sockeye are identified by thermal marks. Identification of hatchery fish at the weirs does not necessarily mean that the fish has strayed to natural spawning areas because it could migrate back downstream to reach the hatchery. In most years, &lt;2% of the sampled sockeye at the weirs are hatchery origin. However, in 2007, approximately 22% of the fish were hatchery origin. According to ADF&amp;G, Prince William Sound Aquaculture Association that the high proportion of hatchery fish at Eshamy weir was caused by closure of the southern part of the Eshamy District closed for most of the season. ADF&amp;G has also sampled other streams for hatchery sockeye salmon &amp; they found high proportions of hatchery sockeye salmon, especially in 2007. ADF&amp;G is planning to prepare a report, possibly during winter 2010-2011. It is noteworthy that in 2010 ADF&amp;G approved a 22% increase in sockeye releases from main Bay Hatchery (total 12.4 million egg take). Given the increased hatchery production of sockeye salmon and high potential stray rates in 2007, it is important to track straying sockeye salmon and to identify whether hatchery sockeye production interferes with sustainability and management of wild sockeye salmon.</p> <p>A study was funded by the Pacific Coastal Salmon Recovery Fund in 2008 to study hatchery salmon straying in PWS (Brenner &amp; Habicht 2008). The study is due to be completed in June 2012. Investigators propose to:</p> <ol style="list-style-type: none"> <li>1. Initiate a comprehensive study to investigate the spatial and temporal extent of hatchery pink salmon straying into streams throughout PWS,</li> <li>2. Supplement a current ADF&amp;G-funded study of hatchery chum salmon straying with a genetic study to describe the genetic population structure of chum salmon from samples collected from selected spawning aggregates before the establishment of hatcheries in PWS and contrast this structure with (a) present-day variation in non-marked (F1+ wild-origin) chum salmon sampled at the same sites, and (b) from fish used as hatchery broodstock,</li> <li>3. Determine how the <u>potential</u> degree of straying that has been determined in our ongoing study matches the <u>actual</u> extent of introgression resulting from hatchery-wild mating (effective straying rate), and</li> <li>4. determine the extent of hatchery sockeye salmon straying in PWS by examining otoliths of sockeye salmon carcasses collected at the major sockeye salmon spawning location in PWS, and any sockeye salmon found during other straying investigations.</li> </ol>
<b>Conclusion</b>	<p>With the Brenner &amp; Habicht, PCSRF research project, the Department has made a significant progress toward addressing the issues contained in the condition. We anticipate that this condition will be satisfied once the study is complete and results reported. However, this is likely to be after the end of the current certificate period. The assessment team has proposed a new milestone and timescale for this condition of the genetics study being completed by June 2012.</p> <p>Although a delay in closing out this condition is not desirable, the work proposed is complex and will take time. As such, the team considers that progress is satisfactory to meet this condition.</p>

<b>Condition 25</b>	<p><b>Condition of Certification 25 (same as Condition 23)</b></p> <p>Provide adequate data and analyses to demonstrate that hatchery and fishery management actions are sufficient to ensure that harvest of enhanced fish is not adversely affecting the wild pink, chum, sockeye, and coho stocks. Revise wild stock assessments and management as</p>
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	appropriate. [Prince William Sound]
<b>Assessed Activity</b>	<p>This Condition relates principally to Indicator 1.1.2.4.</p> <p><b>100 Scoring Guidepost</b></p> <ul style="list-style-type: none"> <li>• Scientifically defensible productivity estimates (e.g. stock/recruitment relationships) have been derived for all target stocks and the relative productivity of non-target stocks is known.</li> <li>• Risk assessment has been conducted to determine the impact of alternative harvest strategies on non-target stocks. The risk assessment should include an assessment of the uncertainties with estimates of stock productivity for the target stocks.</li> </ul> <p><b>80 Scoring Guidepost</b></p> <ul style="list-style-type: none"> <li>• There is adequate information to identify the harvest and production strategies required to maintain the high productivity of the target stocks.</li> <li>• There is adequate information to estimate the relative productivity of the non-target stocks where the fishery harvests may represent a significant component of those non target stocks.</li> <li>• The harvest limitations for target stocks take into consideration the impacts on non target stocks and the uncertainty of the productivity for these stocks.</li> </ul> <p><b>60 Scoring Guidepost</b></p> <ul style="list-style-type: none"> <li>• The available information and analyses are adequate to identify the harvest limitations and production strategies required to maintain the productivity of the majority of target stocks.</li> <li>• The relative productivity of the non-target stocks is considered in the management strategy, where the fishery harvests may represent a significant component of those non-target stocks.</li> </ul> <p><b>SCORE 70</b></p> <p>The available information and analyses appear generally adequate to identify the harvest limitations and production strategies required to maintain the productivity of the majority of target stocks. However, estimates for pink and chum are based on historical ranges rather than stock-recruitment relationship and these estimates are confounded by hatchery contributions to natural spawners. Chum relationships are expressed as SEG thresholds based analyses that explicitly recognize the considerable uncertainty. The fishery does not meet the 80 scoring guideposts for productivity information required to maintain the high productivity of the target stocks. ADF&amp;G indicates that the issue of how hatchery contributions to natural spawners may impact stock productivity relationships is complex, data collection on incidence of hatchery straying is underway, adjustments to productivity estimates will be considered if indicated.</p>
<b>AFDF Action Plan</b>	<p>Current management practices identify wild stocks in catch and fishery openings are modified as needed on a weekly basis. Escapement goals have been established for wild stocks of pink, chum, and sockeye salmon in PWS. Escapement goals have been consistently met in face of large hatchery runs of pink and chum salmon. No significant wild coho stock exists in PWS so the condition is not relevant for PWS coho salmon. AFDF will provide a report produced by ADF&amp;G including data and analyses, by December 31, 2008.</p>
<b>Conclusion from 1st Surveillance Report</b>	<p>While the Department's research programs are making progress in regard to gathering needed information, the 80 Scoring Guidepost for this condition will not be achieved until the Department completes an analysis of the results of the straying studies in the context of the State's genetics policy and wild stock escapement goals. The Department is to publish reports for chum and sockeye salmon in December 2008 and May 2011 respectively. This Condition is on target and will therefore be reviewed by the surveillance team in the fourth annual surveillance audit.</p>
<b>AFDF Actions</b>	<p>In 2008 ADF&amp;G began a program "Hatchery Salmon Straying in PWS, Alaska". The project has four objectives: 1. Quantify the spatial and temporal extent of pink salmon straying within</p>

	<p>PWS streams; 2. Describe genetic population structure of chum salmon from samples collected from selected spawning aggregates before the establishment of hatcheries in PWS and contrast this with present-day variation in non-marked (F1+wild-origin) fish sampled at the same sites and from fish used as hatchery broodstock; 3. Estimate the effective straying rates of hatchery chum salmon into each of five selected spawning aggregates; and 4. Perform an investigation of hatchery sockeye salmon straying in PWS by time and area.</p> <p>Field work took place in 2008 and 2009 and will continue in 2010. A final report is expected by June 30, 2012.</p>
<b>Observations</b>	<p>The issues surrounding this condition remain complex as pointed out by the certification team in the 5-Year Re-Assessment document. One of the main issues contained in the condition is the lack of accounting for hatchery strays into wild stock spawning streams. A review of escapement goals for Prince William Sound salmon stocks was completed in November 2008 with the three year Board of Fisheries regulatory cycle (Fair et.al. 2008). Chum salmon escapement goals are sustainable escapement goals (SEGs) as defined by the Alaska Sustainable Fisheries Policy (ADF&amp;G 2000). In 2005, SEG thresholds were estimated using risk analysis for the Coghill, Eastern, Northern/Unakwik, Northwestern, and Southwestern districts. These were not re-analyzed with the 2008 escapement goal review. In 2002 the escapement goals for pink salmon were changed from BEGs to SEGs, and a Sound-wide goal was established. The sound-wide goals for even and odd pink salmon cycles were re-evaluated in the 2008 review and the escapement goal review team chose to leave the goals unchanged. Mass marking of hatchery chum salmon is utilized by ADF&amp;G to allocate harvests into wild and hatchery components. Department biologists are in the process of reconstructing past escapements to reevaluate existing wild stock escapement goals given the measured numbers of hatchery strays. Such a reconstruction requires a significant modeling and statistical effort and is ongoing. Reporting of straying studies referenced in the October 2008 Audit Report (Moody Marine 2008) has not been completed although preliminary results have been presented at recent symposia (Moffitt, 2010c).</p> <p>Precautionary straying thresholds were established in the PWS Phase III Salmon Plan of 2%. Studies to date have shown that pink salmon straying rates vary as a function of the distance from the hatchery where fish are returning to. Based on studies conducted in 1998 straying rates exceeded the 2% threshold out to 93 kilometers from the AFK hatchery. When other facilities (WHN and Cannery Creek) were included in the model, a majority of the PWS spawning streams would have straying rates exceeding the 2% threshold. Researchers concluded that; 1) in some years, hatchery pink salmon greatly exceed threshold levels in a majority of PWS streams, and 2) strays being counted in the wild stock escapement surveys are causing ADF&amp;G to overestimate wild stock productivity. Utter (2004) also suggested that, in general, straying could affect the genetic diversity of wild salmon stocks, especially when wild stocks are heterogeneous. Chum salmon straying was modeled from release levels ranging from 76 million to 146 million from 1997 to 2009. Based upon a Monty Carlo simulation there was no (zero) chance for the lowest release level (76 million) to be below the 2% straying threshold, and at larger releases there is no chance of being below a 5% straying threshold. Researchers concluded that current average release levels (approx 128 million chum) are too large to maintain straying below a 5% threshold in the spawning escapement (Moffitt, 2010b).</p> <p>Progress on collection of stray hatchery sockeye salmon is on target for close out in the 4th audit, but available data raise an issue about potentially high stray rates in some years. ADF&amp;G has been collecting data on sockeye straying to Coghill and Eshamy river weirs for several years (Moffitt, 2010a). Main Bay Hatchery sockeye are identified by thermal marks. Identification of hatchery fish at the weirs does not necessarily mean that the fish has strayed to natural spawning areas because it could migrate back downstream to reach the hatchery. In most years, &lt;2% of the sampled sockeye at the weirs are hatchery origin. However, in 2007, approximately 22% of the fish were hatchery origin. According to ADF&amp;G, Prince William Sound Aquaculture Association that the high proportion of hatchery fish at Eshamy weir was caused by closure of the southern part of the Eshamy District closed for most of the season. ADF&amp;G has also sampled other streams for hatchery sockeye salmon &amp; they found high</p>

	<p>proportions of hatchery sockeye salmon, especially in 2007. ADF&amp;G is planning to prepare a report, possibly during winter 2010-2011. It is noteworthy that in 2010 ADF&amp;G approved a 22% increase in sockeye releases from main Bay Hatchery (total 12.4 million egg take). Given the increased hatchery production of sockeye salmon and high potential stray rates in 2007, it is important to track straying sockeye salmon and to identify whether hatchery sockeye production interferes with sustainability and management of wild sockeye salmon.</p> <p>There is little information from which to assess if PWS hatchery fish may have affected physical characterizes of wild salmon stocks. The Department has collected very little age, sex, length (ASL) data for chum salmon to monitor for trends or changes through time (Moffitt, 2010a). ASL data for PWS salmon stocks is not separated into hatchery and wild components. There are over 20 years of data for pink salmon weights, and size changes have been observed, moving both up and down through time, with no consistent trend and no apparent linkage to the enhancement program (Moffitt, 2010a).</p> <p>The ratio of hatchery fish to wild fish may be a limiting factor in the Department's ability to achieve wild stock escapement goals. PWS fishery managers reported that the existing management program is capable of achieving wild stock pink salmon escapement objectives through time are area fishery restrictions provided that the ratio was not in excess of 4 to 5 hatchery fish to each wild fish (Regnart, 2010; Gray, 2010). When hatchery fish outnumber wild fish by a ratio of 8 or 10 to 1 the fishery is confined to small terminal harvest areas in front of the hatcheries for the entire season, resulting in congestion and reduced product quality (Regnart, 2010). Even with such restrictions it is very difficult to meet wild stock escapement goals. High ratio of hatchery fish appear to be correlated with escapements falling below the lower end of the published escapement goal ranges (Moffitt, 2010b).</p> <p>The permitted hatchery production levels in PWS have not increased substantially since 1990. The average pink salmon fry releases for PWS hatcheries averaged approximately 556 million in the 1990's and approximately 608 million over the past decade. Annual chum salmon fry releases have averaged 95 million in the 1990's and approximately 115 million over the past decade. Substantial production increases have recently been proposed by the Prince William Sound Aquaculture Association and are under review by the Regional Salmon Planning Team (Josephson, 2010). These include an increase of 103 million pink salmon eggs (22% increase in the permitted production), and 17.4 million egg increase in chum salmon eggs, and additional increases to the sockeye production at Main Bay (PWS) and Gulkana (Copper River).</p> <p>In 2008, ADF&amp;G began a four year study to evaluate potential effects of straying on allele frequencies of chum salmon (Brenner and Habicht 2008). The study will compare chum allele frequencies before and after chum hatcheries were built in PWS. This study is scheduled to be complete in June 2012. ADF&amp;G is waiting to examine the findings of this study before testing other salmon species.</p>
<b>Conclusion</b>	<p>The first bullet point of the 80 scoring guidepost is not completely achieved. Clearly the Department's harvest guidelines in the mixed wild and hatchery fisheries are based upon goals established for wild stocks, and considerable effort is undertaken to identify wild and hatchery fish components of the harvest. Progress is being shown on the identification of straying of hatchery fish into escapements. ADF&amp;G has yet to determine how this information should be incorporated into wild stock escapement goal objectives.</p> <p>The second bullet point of the 80 scoring guidepost is not completely achieved. While there is a growing body of data and analyses describing the presence of enhance fish in the management unit, the question of adverse impacts to wild fish has not been answered. Minimizing straying and managing for wild stock escapement becomes increasingly difficult as the ratio of hatchery to wild returns exceeds 5 to 1.</p> <p>While the Department is making progress on this condition, it is a complex situation that may not be resolved during the certification period due to the need to wait for the Brenner and Habicht report in 2012.</p>



	The client should work with ADF&G to determine any courses of action that the managers will be advocating in reviewing these new hatchery stray data, and how fast such work can be accomplished, prior to the next audit.
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<b>Condition 26</b>	<p><b>Condition of Certification 26:</b></p> <p>Review pink salmon escapement goals and management practices taking into account recent research results on genetic stock structure of wild pink stocks. The review should include a discussion of how the escapement goals take into account variability in the productivity of each component of the target stocks. [Prince William Sound]</p>
<b>Assessed Activity</b>	<p>This Condition relates principally to Indicator 1.1.3.2</p> <p><b>100 Scoring Guidepost</b></p> <ul style="list-style-type: none"> <li>• The Target Reference Point (TRP) or operational equivalents for target species have been reviewed and found to be scientifically defensible and appropriate by management authorities such as the NMFS, USFW, and the ADF&amp;G.</li> <li>• There is general agreement among regional fisheries scientist outside the management system that the TRP's or operational equivalents are appropriate.</li> <li>• The TRP's or operational equivalents for the target stocks take into account variability in the productivity of each component of the target stock and productivity of non-target stocks.</li> </ul> <p><b>80 Scoring Guidepost</b></p> <ul style="list-style-type: none"> <li>• There is no significant scientific disagreement regarding the TRP's or operational equivalents used by the management system to formulate management decision for the fishery.</li> <li>• The TRP's or operational equivalents for the target stocks take into account variability in the productivity of each component of the target stock and the productivity of non-target stocks.</li> </ul> <p><b>60 Scoring Guidepost</b></p> <ul style="list-style-type: none"> <li>• There is general agreement among fisheries scientist within the management system that the TRP's or operational equivalents are appropriate for the target stocks.</li> <li>• Target reference points have been defined for the majority of target stocks harvested in the fishery and these target reference points are not scientifically disputed.</li> <li>• The management system has taken into account the relative productivity of non-target stocks when setting the TRP's or operational equivalents for the majority of target stocks.</li> </ul> <p><b>SCORE 75</b></p> <p>Escapement goal ranges (SEGs) established for indicator stocks clearly fit the definition of a Target Reference Point (TRP) as the desirable fishery level that management action should aim at maintaining. Escapement goals provide TRP's for the dominant fishery stocks. Sustainable escapement goals have been reviewed and found to be scientifically defensible by ADF&amp;G although the extent of review and agreement among regional fisheries scientist outside the management system is unclear. It remains unclear whether aggregate basin-wide escapement goals for pink salmon adequately consider variability in the productivity of all stock components identified in recent studies by ADF&amp;G of genetic stock structure.</p> <p>Management targets have been established by distributing the basin-wide escapement goal to individual districts based on historical distribution of escapements among the districts. While aggregate escapement goals are generally achieved, 44% of district-specific targets were not achieved during the last 10 years (Gray et al. 2005). For instance, shortfalls were common in</p>

	<p>the Coghill (6 of 10), Northwestern (8 of 10), and Eshamy districts (6 of 10) and for even year returns (58%). Sound-wide aggregate goals were often met on the strength of returns to other areas. Shortfalls in wild escapement were infrequent in the Montague and Southeastern district. Smoker et al. (2000) has noted that concentrated fisheries in PWS for hatchery-produced stocks have reduced some wild stocks below desirable numbers in some years (Smoker et al. 2000). For instance, pink salmon in the Coghill District are at high risk of excessive harvest rates even in the absence of hatchery-produced salmon because they must negotiate a series of mixed stock fisheries beginning with the interception fisheries in the entrance to the sound and continuing with west side fisheries (Smoker et al. 2000). The fishery does not meet the 80 scoring guideposts with respect to the escapement goals taking into account variability in the productivity of each component of the target stocks.</p>
<b>AFDF Action Plan</b>	<p>Pink salmon escapement goals and management practices are reviewed every three years. The next review will occur during the 2008/2009 Board of Fisheries cycle. This review will take all available research information into consideration.</p> <p>While current management practices, including escapement windows and district management targets, have consistently maintained spatial and temporal distribution of escapement, refinements in management may come out of this review. AFDF will provide a report of these evaluations, produced by ADF&amp;G, taking into account genetics data, prior to the 2008/2009 Board of Fisheries meeting.</p>
<b>Conclusion from 1st Surveillance Report</b>	<p>The condition remains open. The first bullet point of the 80 scoring guidepost is met by the Department's process for regular review and updating of escapement goals. The second bullet point remains only partially achieved. The Department's decision in 2002 to switch to a Sound wide goal rather than district goals appears to depart from accounting for variability in production of stock components of the target stock. However, in practice the Department manages the Sound to distribute fish to each district in proportion to historical escapement distribution (Evenson 2005). A review of the PWS pink salmon escapement goal will be prepared for the December 2008 Board of Fisheries meeting. It is anticipated that this escapement goal analysis will satisfy the 80 scoring guideposts and the condition will be closed on the 2009 audit. This Condition is on target and will therefore be reviewed during the second annual MSC surveillance audit.</p>
<b>AFDF Actions</b>	<p>ADF&amp;G reviewed escapement goals for pink salmon in the Prince William Sound area and published the results for them in Fair <i>et al.</i> (2008)</p>
<b>Observations</b>	<p>The issues surrounding this condition remain complex as pointed out by the certification team in the 5-Year Re-Assessment document. One of the main issues contained in the condition is the lack of accounting for hatchery strays into wild stock spawning streams. A review of escapement goals for Prince William Sound salmon stocks was completed in November 2008 with the three year Board of Fisheries regulatory cycle (Fair et.al. 2008). In 2002 the escapement goals for pink salmon were changed from BEGs to SEGs, and a Sound-wide goal was established. The sound-wide goals for even and odd pink salmon cycles were re-evaluated in the 2008 review and the escapement goal review team chose to leave the goals unchanged.</p> <p>Department biologists are in the process of reconstructing past escapements to reevaluate existing wild stock escapement goals given the measured numbers of hatchery strays. Such a reconstruction requires a significant modeling and statistical effort and is ongoing. Reporting of straying studies referenced in the October 2008 Audit Report (Moody Marine 2008) has not been completed although preliminary results have been presented at recent symposia (Moffitt 2010b). Precautionary straying thresholds were established in the PWS Phase III Salmon Plan of 2%. Studies to date have shown that pink salmon straying rates vary as a function of the distance from the hatchery where fish are returning to. Based on studies conducted in 1998 straying rates exceeded the 2% threshold out to 93 kilometers from the AFK hatchery. When other facilities (WHN and Cannery Creek) were included in the model, a majority of the PWS spawning streams would have straying rates exceeding the 2% threshold. Researchers concluded that; 1) in some years, hatchery pink salmon greatly exceed threshold levels in a</p>

	<p>majority of PWS streams, and 2) strays being counted in the wild stock escapement surveys are causing ADF&amp;G to overestimate wild stock productivity. Utter (2004) also suggested that, in general, straying could affect the genetic diversity of wild salmon stocks, especially when wild stocks are heterogeneous.</p> <p>The ratio of hatchery fish to wild fish may be a limiting factor in the Department's ability to achieve wild stock escapement goals. PWS fishery managers reported that the existing management program is capable of achieving wild stock pink salmon escapement objectives through time and area fishery restrictions provided that the ratio was not in excess of 4 to 5 hatchery fish to each wild fish (Regnart, 2010; Gray, 2010). When hatchery fish outnumber wild fish by a ratio of 8 or 10 to 1 the fishery is confined to small terminal harvest areas in front of the hatcheries for the entire season, resulting in congestion and reduced product quality (Regnart, 2010). Even with such restrictions it is very difficult to meet wild stock escapement goals. High ratio of hatchery fish appear to be correlated with escapements falling below the lower end of the published escapement goal ranges (Moffitt, 2010b).</p> <p>The permitted hatchery production levels in PWS have not increased substantially since 1990. The average pink salmon fry releases for PWS hatcheries averaged approximately 556 million in the 1990's and approximately 608 million over the past decade. Annual chum salmon fry releases have averaged 95 million in the 1990's and approximately 115 million over the past decade. Substantial production increases have recently been proposed by the Prince William Sound Aquaculture Association and are under review by the Regional Salmon Planning Team (Josephson, 2010). These include an increase of 103 million pink salmon eggs (22% increase in the permitted production), and 17.4 million egg increase in chum salmon eggs, and additional increases to the sockeye production at Main Bay (PWS) and Gulkana (Copper River).</p>
<b>Conclusion</b>	<p>While there is a growing body of data and analyses describing the presence of enhanced fish in the management unit, the question of adverse impacts to wild fish has not been answered. Minimizing straying and managing for wild stock escapement becomes increasingly difficult as the ratio of hatchery to wild returns exceeds 5 to 1.</p> <p>Progress is being made on this complex condition. However the concerns may not be resolved during the certification period due to the need to wait for the Brenner and Habicht report in 2012 and the Department's review of the PWS hatchery program scheduled for the same year.</p>

<b>Condition 27</b>	<p><b>Condition of Certification 27:</b></p> <p>Provide a written evaluation of the effects of potentially selective hatchery practices on characteristics of un-enhanced wild stocks. [Prince William Sound]</p>
<b>Assessed Activity</b>	<p>This Condition relates principally to Indicator 1.3.1.</p> <p><b>100 Scoring Guidepost</b></p> <ul style="list-style-type: none"> <li>• There is comprehensive knowledge of the effect of fishing on biological characteristics such as the age, size, sex and genetic structure of the target stocks and the impact of changes in these factors on the reproductive capacity of the target stocks.</li> <li>• Management actions are consistent with maintaining healthy target stocks relative to biological characteristics such as age, size, sex and genetic structure of all target stocks.</li> <li>• Enhanced fish are identified and managed as separate target stocks.</li> </ul> <p><b>80 Scoring Guidepost</b></p> <ul style="list-style-type: none"> <li>• The knowledge of the effect of fishing on biological characteristics such as the age, size, sex and component stocks is adequate to detect threats to the reproductive capacity of the target</li> </ul>

	<p>stocks.</p> <ul style="list-style-type: none"> <li>• Management actions are consistent with maintaining healthy target stocks relative to biological characteristics such as age, size, sex and genetic structure of all target stocks.</li> <li>• The management system includes provisions to minimize any adverse impacts to the genetic structure of wild (un-enhanced) stocks that may be due to the enhancement of other stocks.</li> </ul> <p><b>60 Scoring Guidepost</b></p> <ul style="list-style-type: none"> <li>• The knowledge of the effect of fishing on the biological characteristics such as age, size, sex and component stocks is adequate to detect threats to the reproductive capacity of the majority of target stocks.</li> <li>• Management actions are consistent with maintaining healthy target stocks relative to biological characteristics such as age, size, sex or genetic structure for the majority of target stocks.</li> <li>• The management system includes provisions to minimize the major adverse impacts for the majority of wild (un-enhanced) stocks that may be due to the enhancement of other stocks.</li> </ul> <p><b>SCORE 70</b></p> <p>The knowledge of the effect of fishing on biological characteristics such as the age, size, sex and component stocks may be adequate to detect threats to the reproductive capacity of the majority of the target stocks but it is unclear if hatchery management actions are consistent with maintaining the native biological characteristics such as age, size, sex and genetic structure of all target stocks. The management system includes some provisions to minimize major adverse impacts to the genetic structure of wild (un-enhanced) stocks that may be due to the enhancement of other stocks. However, the information made available indicates that selective hatchery practices may have affected the characteristics of wild (unenhanced) stocks. The fishery did not meet the 80 scoring guidepost with respect to the effects of enhancement on biological characteristics such as the age, size, sex and component stocks because of the lack of direct evidence that there is no change as well as the inclusion of information presented to the assessment team by ADF&amp;G (pers. Com ADF&amp;G staff).</p>
<b>AFDF Action Plan</b>	One of the primary concerns for hatchery practices is changing run timing. AFDF will request ADF&G to compile the long-term data on run timing for both wild and hatchery stocks and provide a report and analysis to AFDF by the end of 2008.
<b>Conclusion from 1st Surveillance Report</b>	<p>Progress on this Condition appears to be behind target.</p> <p>This Condition remains open and is expected to be closed out following the publication of the report and analysis of run timing for both wild and hatchery stocks, as agreed in the ADF&amp;G action plan, at the end of 2008. This will be reviewed during the second annual MSC surveillance audit.</p>
<b>AFDF Actions</b>	ADF&G reviewed data that can be used to construct run timing profiles for hatchery and wild stocks in Prince William Sound. They concluded that they could construct run timing profiles for the catch but not for wild stocks in the streams or hatchery terminal areas. They concluded that run timing profiles of catch would be of limited use in determining the effects of any selective hatchery practices on run timing. Some of the options that they considered included: 1) using the current escapement counts which are comprised of wild and hatchery as a proxy for the wild but were concerned that the data is biased by the combination, 2) compare pre-hatchery wild timing from aerial surveys to current timing, or 3) look at individual streams with multiple otolith samples through time for differences in enhanced fish proportions. They concluded that all of these means would be very imprecise and that if changes in run timing were detected that it would not be possible to determine if it was due to selective hatchery practices, environmental factors, or even fishery factors. ADF&G does not plan to proceed

	with this condition unless there is further discussion and direction.
<b>Observations</b>	<p>There is little information from which to assess if PWS hatchery fish may have affected physical characteristics of wild salmon stocks. The Department has collected very little age, sex, length (ASL) data for chum salmon to monitor for trends or changes through time (Moffitt, 2010a). ASL data for PWS salmon stocks is not separated into hatchery and wild components. There are over 20 years of data for pink salmon weights, and size changes have been observed, moving both up and down through time, with no consistent trend and no apparent linkage to the enhancement program (Moffitt, 2010a).</p> <p>For this Condition, ADF&amp;G initially agreed to assess changes in run timing of salmon as a means to assess whether straying may have influenced characteristics of wild salmon. However, ADF&amp;G biologists concluded that such an analysis would not provide meaningful results because environmental factors such as ocean temperatures would confound interpretation. The audit team, who have experience of carrying out research on run timing of salmon in Alaska, agreed with the assessment of the ADF&amp;G biologists. Furthermore, the audit team agreed that the ongoing genetic study by ADF&amp;G is a better approach to assessing possible effects of hatchery straying on characteristics of wild chum salmon. ADF&amp;G noted that chum will be analyzed first. If changes in allele frequencies are detected over time, then genetic characteristics of pink salmon may be analyzed.</p> <p>A study was also funded by the Pacific Coastal Salmon Recovery Fund in 2008 to study hatchery salmon straying in PWS (Brenner &amp; Habicht 2008). The study is due to be completed in June 2012. Investigators propose to:</p> <ol style="list-style-type: none"> <li>1. Initiate a comprehensive study to investigate the spatial and temporal extent of hatchery pink salmon straying into streams throughout PWS,</li> <li>2. Supplement a current ADF&amp;G-funded study of hatchery chum salmon straying with a genetic study to describe the genetic population structure of chum salmon from samples collected from selected spawning aggregates before the establishment of hatcheries in PWS and contrast this structure with (a) present-day variation in non-marked (F1+ wild-origin) chum salmon sampled at the same sites, and (b) from fish used as hatchery broodstock,</li> <li>3. Determine how the potential degree of straying that has been determined in our ongoing study matches the actual extent of introgression resulting from hatchery-wild mating (effective straying rate), and</li> <li>4. Determine the extent of hatchery sockeye salmon straying in PWS by examining otoliths of sockeye salmon carcasses collected at the major sockeye salmon spawning location in PWS, and any sockeye salmon found during other straying investigations.</li> </ol>
<b>Conclusion</b>	<p>The audit team notes that there must be a change of focus for closing out this condition, given the limited information that an analysis of run timing is likely to reveal.</p> <p>With the Brenner &amp; Habicht, PCSRF research project, the Department has made a significant progress toward addressing the issues contained in the condition. We anticipate that this condition will be closed out once the study is complete and results reported. However, this is likely to be after the end of the current certificate period. The assessment team has proposed a new milestone and timescale for this condition of the genetics study being completed by June 2012.</p> <p>Although a delay in closing out this condition is not desirable, the work proposed is complex and will take time. As such, the team considers that progress is satisfactory to meet this condition.</p>

## Certification Unit 6 – Copper Bering Drift Gillnet

<b>Condition 28</b>	<p><b>Condition of Certification 28 (same as Condition 30 and 31):</b></p> <p>Continue to improve information on contributions of component stocks of sockeye and Chinook salmon to the commercial fishery by time and area and demonstrate that current harvest strategies are adequate to maintain the high productivity of all target stock components. [Copper/Bering]</p>
<b>Assessed Activity</b>	<p>This Condition relates principally to Indicator 1.1.1.3.</p> <p><b>100 Scoring Guidepost</b></p> <ul style="list-style-type: none"> <li>• The geographic range for harvests of each stock unit in the fishery is estimated and documented each year.</li> <li>• The information on the geographic range of harvests is monitored during the fishing season and used when making in-season management decisions.</li> </ul> <p><b>80 Scoring Guidepost</b></p> <ul style="list-style-type: none"> <li>• The geographic range for harvests of target stocks is defined.</li> <li>• The information on the geographic range of the harvests of target stocks is monitored during the fishing season and is sufficient to prevent the over harvesting of these stocks.</li> <li>• The information available on the geographic range for harvest of non-target stocks is sufficient to prevent the over harvesting of these stocks.</li> </ul> <p><b>60 Scoring Guidepost</b></p> <ul style="list-style-type: none"> <li>• The information available on the geographic range for harvests of target or non-target stocks is sufficient to prevent the over harvesting for the majority of the stocks within each stock unit.</li> </ul> <p><b>SCORE 75</b></p> <p>The geographic range for harvests of target stocks is limited to the terminal fishing area but stock composition in fisheries is not clear. Management acknowledges and accounts for complex stock structure by incorporating evenly spaced escapement windows, terminal area barrier islands closures, and in-season escapement monitoring (including aerial surveys of many streams) in order to allow escapement over all temporal segments of returns to the rivers. However, the fishery does not explicitly monitor sub-stock units within the aggregate during the fishing season. Time and area differences in sockeye stock composition are assumed in-season based on run timing but information on the relative contributions of upper Copper, delta, and Bering stocks in the fisheries is limited. There has been some stock identification work done for Copper River fish (e.g. sockeye SPA, extensive Chinook radio telemetry). Fishery contributions of hatchery sockeye are now routinely estimated from otolith mark recovery programs. A genetic baseline for Chinook is now complete and fishery sampling began in 2005. There are no comprehensive GSI baselines for sockeye or coho. No stock-specific estimates of coho harvest are available. The fishery did not meet the 80 scoring guidepost for monitoring of the geographic range of target stocks during the fishing season sufficient to prevent the over harvesting.</p>
<b>AFDF Action Plan</b>	<p>Chinook salmon genetic stock identification studies are underway and will be continued. Gulkana hatchery sockeye are marked with strontium and recovered through sampling of the commercial fishery to ensure that hatchery contributions through time are factored into management and do not impact wild stocks. AFDF has been advised that this program will be continued. DNA baselines for sockeye salmon will need to be developed before any mixed stock fishery analysis can occur using this approach. ADF&amp;G has advised AFDF that they will begin to develop the sockeye salmon baseline. AFDF will provide a report, produced by</p>

	ADF&G, by July 2009 on Chinook salmon stock identification using DNA, sockeye salmon hatchery stock identification using strontium, and progress on sockeye salmon DNA development.
<b>Conclusion from 1st Surveillance Report</b>	<p>The Surveillance Team evaluated the evidence available for this issue against the requirements of the original scoring guideposts, as well as the condition and action plan.</p> <p>In the original assessment, the requirements of the first bullet point of the 80 scoring guidepost were met while the second was only partially met. Due to the nature of the Copper River fishery it is considered inappropriate to require the gathering of information during each season on the geographic range of the various Chinook and sockeye salmon stocks. Rather, the detailed work on timing and distribution from the telemetry studies, in combination with the completion of the genetic baselines, is considered appropriate to provide sufficient information to evaluate whether current harvest policies sufficiently protect sub-stock components. The requirements of this condition are therefore changed to the provision of this information. The escapement goal review is to be provided by ADF&amp;G in 2011 and will be reviewed by the surveillance team in the fourth surveillance audit. The condition is on-target for successful completion.</p>
<b>AFDF Actions</b>	Detailed work on timing and distribution using on-going telemetry studies in combination with the completion of genetic baselines studies and publication in 2011 escapement goal report.
<b>Observations</b>	The Copper River Chinook salmon genetic origins study was completed and published in 2009 (Seeb <i>et.al.</i> , 2009). Genetic baseline data are being collected for Copper River sockeye under a study funded by the Alaska Sustainable Salmon Fund.
<b>Conclusion</b>	<p>Research efforts over the past five years have provided a good deal of new information on sockeye, Chinook and coho salmon stock origins and timing in the Copper River watershed. In light of this we anticipate this condition to be closed in 2011 upon the completion of the next scheduled escapement goal review for Copper River stocks.</p> <p>Progress is satisfactory and on target to meet this condition</p>

<b>Condition 29</b>	<p><b>Condition of Certification 29 (to be completed as part of Condition 66 &amp; 67):</b></p> <p>Conduct a review of the Gulkana sockeye hatchery program with emphasis on potential impacts to wild stocks. [Copper/Bering]</p>
<b>Assessed Activity</b>	<p>This Condition relates principally to Indicator 1.1.1.5.</p> <p><b>100 Scoring Guidepost</b></p> <ul style="list-style-type: none"> <li>• Fisheries targeting enhanced stocks are geographically removed from wild (unenhanced) stocks and separate terminal harvest areas are established for these fisheries.</li> <li>• Times and areas have been identified where the majority of enhanced fish migrate through the general fishery.</li> <li>• There is real time mark recovery program during the prosecution of the fishery that allows determination of harvest rates of the targets and naturally enhanced component of the run and these data are used in regulation of the fishery.</li> </ul> <p><b>80 Scoring Guidepost</b></p> <ul style="list-style-type: none"> <li>• In fisheries where both enhanced and wild (un-enhanced) stocks are harvested at the same time, the harvest guidelines are based on the goals and objectives established for the wild (un-enhanced) stocks, and there is sufficient information on stock composition (i.e. hatchery and natural fish) to determine whether those goals are met.</li> <li>• There are adequate data and analyses to determine that the presence of enhanced fish in the</li> </ul>

	<p>management units does not adversely impact the wild (un-enhanced) fish stocks</p> <p><b>60 Scoring Guidepost</b></p> <ul style="list-style-type: none"> <li>• There is general scientific agreement within the management system regarding the impacts of enhanced fish on the resultant harvest rates or escapements of wild (unenhanced) fish stocks</li> <li>• Managers have some scientific basis for assuring that harvest rates for enhanced stocks are not adversely affecting the majority of wild (un-enhanced) stocks within each stock unit.</li> </ul> <p><b>SCORE 70</b></p> <p>Enhanced and wild sockeye stocks are harvested at the same time in the latter part of the run. In-river goals are established for both wild and hatchery stocks but it is unclear whether existing information on hatchery and wild stock composition is adequate to determine whether goals are met. It is unclear whether data and analyses are adequate to ensure that the presence of enhanced sockeye in the management unit does not adversely impact the wild stock. The fishery did not meet the 80 scoring guideposts for sufficiency of hatchery/wild stock composition information for determining whether wild escapement goals are met or that the presence of enhanced fish in the management units does not adversely impact the wild stocks.</p> <p>Comments received from PWSAC note, “The enhanced fish released from the Gulkana hatchery have been marked since the late 1980’s. Coded wire tags were used through 2004 and have been since replaced with otolith marks. While the coded wire tags were only applied a percentage of the fish, the otolith mark is applied to 100% of the population. This provides the ability, with high precision, to distinguish between the stocks.”</p> <p>What is still not apparent, is whether an analysis has been conducted using the information that is generated through marking to determine whether the goals for enhanced and wild stocks are being met. The assessment team did not receive any further input from ADF&amp;G on this matter and agreed to the condition, suggesting that no further information was readily available at the time. The condition for this assessment therefore cannot be removed at this time. However, if such an analysis does exist and can show that the hatchery fish are not having any negative effects on wild populations, this condition can be closed out during the annual surveillance audits and no further work would be required.</p>
<b>AFDF Action Plan</b>	<p>AFDF believes that ADF&amp;G will provide the information to close out this condition as part of Condition 66 &amp; 67:</p> <ul style="list-style-type: none"> <li>• Condition 66 – The department, in concert with hatchery operators, adopts annual management plans for each hatchery. These plans are reviewed and amended as necessary to maintain consistency with current policies, regulations and fishery management plans. Hatcheries are also subject to biennial pathology inspections to ensure compliance with disease policies. Additionally, all fish and egg transport permits are reviewed for consistency with all applicable plans, regulations and policies when they are approved. To formalise this process, ADF&amp;G will establish and implement a mechanism for additional periodic formal evaluation of hatchery programs and regional plans. This condition will be phased in using a 5 year rotational review for hatcheries; the evaluations included in each year’s rotation will be provided to the certifying body each January.</li> <li>• Condition 67 - ADF&amp;G, in cooperation with the PWS/CBR Regional Planning Team and PWSAC, will conduct a review of the PWS enhancement programs and revise the PWS comprehensive plan.</li> </ul>
<b>Conclusion from 1st Surveillance Report</b>	<p>While progress is on target, the first and second bullet points of the 80 Scoring Guidepost have not yet been achieved. More years of stock allocation data from the strontium marking program in conjunction with the retrospective analysis from the genetic baseline are needed to evaluate if the presence of enhanced fish is impacting wild stocks. This Condition remains open and is expected to be closed after the PCSRF genetic baseline study is completed and will</p>



	be reviewed during the third (2010) annual MSC surveillance audit.
<b>AFDF Actions</b>	Genetic baseline data is currently being collected for Copper River sockeye salmon. A study recently funded by AKSFF will complete the baseline.
<b>Observations</b>	<p>The periodic formal review of hatchery programs described under condition 66 will not be implemented for the Gulkana Hatchery until 2012 as part of the Prince William Sound review. The Department conducted an internal review of the operator of the Gulkana Hatchery, Prince William Sound Aquaculture Association, in 2007. This review was published in Lewis (2009). This review contained an action plan with clear performance measures. The action plan is reviewed and updated annually (Josephson, 2010).</p> <p>All fish produced by the Gulkana Hatchery have a strontium chloride mark on their otoliths. Contributions of Gulkana stocks to the fisheries are monitored in season by analysis of otoliths taken in the personal use fishery at Chitina (Lewis, 2008). Over the past ten years, the proportion of Gulkana hatchery fish in the total sockeye salmon return to the Copper River has ranged from a high of 41% in 1999 to 4% in 2007 (Lewis 2008, Appendix A2). Over this period of time Gulkana Hatchery fish comprised an average of 17% of the return. In the main stem of the Copper River, after delta stocks have separated out, this proportion is probably higher. To date there has been no effort to detect if Gulkana Hatchery fish are present in wild stock spawning areas.</p>
<b>Conclusion</b>	<p>Progress is noted for the work on establishing genetic baselines for copper River stocks and the within season identification of hatchery fish in the harvests. The Department is not scheduled to undertake a review of the Gulkana Hatchery until 2012, which will be after the end of the certification period. The 2007 internal review and resulting action plans, referenced above, do not address the question of enhanced stocks impacting wild stocks. In order to achieve the 80 scoring guidepost the management agency would need to perform an analysis of the possible interaction of hatchery strays on wildstock spawning grounds. This could be incorporated as part of the scheduled 2012 review.</p> <p>The hatchery review will not take place until 2012, which the assessment team consider to be just acceptable even though it is after the end of the current certificate. In light of the complexity of the review process, the assessment team, in conjunction with the client, has proposed a new milestone and timescale for this condition of the PWS hatchery review being completed by May 2013. Progress is satisfactory and on target to meet this condition.</p>

<b>Condition 30</b>	<p><b>Condition of Certification 30 (this will be completed as part of Conditions 28 &amp; 31):</b></p> <p>Continue to improve information on contributions of component stocks of sockeye and chino salmon to the commercial fisheries by time and area and incorporate appropriate refinements in escapement estimates for target species and enhanced fish. Provide a publicly available report that discusses the results. [Copper/Bering]</p>
<b>Assessed Activity</b>	<p>This Condition relates principally to Indicator 1.1.2.2</p> <p><b>100 Scoring Guidepost</b></p> <ul style="list-style-type: none"> <li>• Estimates are available for the annual escapement for each stock unit harvested in the fishery.</li> <li>• In-season escapement data are collected for all stock units and used to regulate the fishery.</li> <li>• Estimates are available for the annual escapement and natural spawning of all enhanced (e.g., hatchery) fish.</li> </ul> <p><b>80 Scoring Guidepost</b></p> <ul style="list-style-type: none"> <li>• Estimates are available for the annual escapement of each target stock harvested in the fishery.</li> </ul>

	<ul style="list-style-type: none"> <li>• Fishery independent indicators of spawning abundance are available for the non-target species harvested in the fishery.</li> <li>• In-season escapement data are collected for the target stocks and used to regulate the fishery.</li> <li>• Estimates are available for the annual escapement and natural spawning of enhanced (e.g., hatchery) fish, where enhanced fish are a significant component of the fishery, and where the release locations can have a reasonable probability of affecting the management of natural populations.</li> </ul> <p><b>60 Scoring Guidepost</b></p> <ul style="list-style-type: none"> <li>• Escapement estimates for target stocks are available, where escapement estimates are necessary to protect the target stock from overexploitation.</li> <li>• Fishery independent indicators of abundance are available for non-target stocks where the fishery harvests may represent a significant component of the harvest of that stock.</li> <li>• Capabilities exist to make estimates of the escapement and natural spawning of enhanced (e.g., marked hatchery) fish.</li> </ul> <p><b>SCORE 70</b></p> <p>Escapement data is available but is incomplete or uncertain. Annual escapement is estimated based on a combination of species-aggregate sonar counts, mark-recapture estimates, or index areas surveys. Many index counts are based on uncertain aerial surveys. In-season data is based on sonar which does not distinguish species. In-season indicators of run size rely heavily on fishery-dependent harvest indicators that are highly uncertain. Estimates of the annual escapement and natural spawning of enhanced (e.g., hatchery) fish are incomplete. The fishery did not meet 80 scoring guideposts for reliable estimates of escapement for any target stock, fishery-independent indicators of in-season escapement, or estimates of annual escapement and natural spawning of hatchery fish.</p> <p>ADF&amp;G has initiated investigations of assumptions of escapement estimation programs. The validity of the Copper River Chinook salmon aerial survey program has been evaluated and the revised aerial survey program is no longer used to provide an index of the total escapement. Sockeye mark-recapture work is began in 2006 to provide verification for sonar estimates, with a companion sockeye telemetry project. Copper River coho salmon radio telemetry work began in 2005 and is scheduled to continue through 2007.</p>
<b>AFDF Action Plan</b>	<p>AFDF believes that ADF&amp;G will provide the information to complete this condition as part of Conditions 28 and 31:</p> <ul style="list-style-type: none"> <li>• Condition 28 and Condition 31 – Chinook salmon genetic stock identification studies are underway and will be continued. Gulkana hatchery sockeye are marked with strontium and recovered through sampling of the commercial fishery to ensure that hatchery contributions through time are factored into management and do not impact wild stocks. AFDF has been advised that this program will be continued. DNA baselines for sockeye salmon will need to be developed before any mixed stock fishery analysis can occur using this approach. ADF&amp;G has advised AFDF that they will begin to develop the sockeye salmon baseline. AFDF will provide a report, produced by ADF&amp;G, by July 2009 on Chinook salmon stock identification using DNA, sockeye salmon hatchery stock identification using strontium, and progress on sockeye salmon DNA development.</li> </ul>
<b>Conclusion from 1st Surveillance Report</b>	<p>The Surveillance Team evaluated the evidence available for this issue against the requirements of the original scoring guideposts, as well as the condition and action plan.</p> <p>In the original assessment, the requirements of the first bullet point of the 80 scoring guidepost were met while the second was only partially met. Due to the nature of the Copper River fishery it is considered inappropriate to require the gathering of information during each season</p>

	on the geographic range of the various Chinook and sockeye salmon stocks. Rather, the detailed work on timing and distribution from the telemetry studies, in combination with the completion of the genetic baselines, is considered appropriate to provide sufficient information to evaluate whether current harvest policies sufficiently protect sub-stock components. The requirements of this condition are therefore changed to the provision of this information. The escapement goal review is to be provided by ADF&G in 2011 and will be reviewed by the surveillance team in the fourth surveillance audit. The condition is considered on target for successful completion.
<b>AFDF Actions</b>	Detailed work on timing and distribution using on-going telemetry studies in combination with the completion of genetic baselines studies and publication in 2011 escapement goal report.
<b>Observations</b>	The Copper River Chinook salmon genetic origins study was completed and published in 2009 (Seeb <i>et.al.</i> , 2009). Genetic baseline data are being collected for Copper River sockeye under a study funded by the Alaska Sustainable Salmon Fund.
<b>Conclusion</b>	Research efforts over the past five years have provided a good deal of new information on sockeye, Chinook and coho salmon stock origins and timing in the Copper River watershed. In light of this we anticipate this condition to be closed in 2011 upon the completion of the next scheduled escapement goal review for Copper River stocks.  Progress is satisfactory and on target to meet this condition.

<b>Condition 31</b>	<b>Condition of Certification 31 (same as Condition 28 and 30)</b>  Validate assumptions regarding fishery contribution of component stocks of sockeye and Chinook by time and area or otherwise demonstrate that current harvest strategies are adequate to maintain the high productivity of all target stock components. [Copper/Bering]
<b>Assessed Activity</b>	This Condition relates principally to Indicator 1.1.2.4.  <b>100 Scoring Guidepost</b> <ul style="list-style-type: none"> <li>• Scientifically defensible productivity estimates (e.g. stock/recruitment relationships) have been derived for all target stocks and the relative productivity of non-target stocks is known.</li> <li>• Risk assessment has been conducted to determine the impact of alternative harvest strategies on non-target stocks. The risk assessment should include an assessment of the uncertainties with estimates of stock productivity for the target stocks.</li> </ul> <b>80 Scoring Guidepost</b> <ul style="list-style-type: none"> <li>• There is adequate information to identify the harvest and production strategies required to maintain the high productivity of the target stocks.</li> <li>• There is adequate information to estimate the relative productivity of the non-target stocks where the fishery harvests may represent a significant component of those non target stocks.</li> <li>• The harvest limitations for target stocks take into consideration the impacts on non target stocks and the uncertainty of the productivity for these stocks.</li> </ul> <b>60 Scoring Guidepost</b> <ul style="list-style-type: none"> <li>• The available information and analyses are adequate to identify the harvest limitations and production strategies required to maintain the productivity of the majority of target stocks.</li> <li>• The relative productivity of the non-target stocks is considered in the management strategy, where the fishery harvests may represent a significant component of those non-target stocks.</li> </ul>

	<p><b>SCORE 70</b></p> <p>Current information provides some basis for identifying sustainable harvest and production strategies but scientifically defensible productivity estimates are lacking due to limitations of the escapement data. It is unclear whether harvest limitations for target stocks take into adequate consideration the uncertainty in productivity estimates or the variability in productivity of different components within the aggregate sockeye, Chinook, and coho stocks for which this fishery is managed. The fishery does not meet the 80 scoring guideposts for productivity information required to maintain the high productivity of the target stocks.</p>
<b>AFDF Action Plan</b>	<p>Chinook salmon genetic stock identification studies are underway and will be continued. Gulkana hatchery sockeye are marked with strontium and recovered through sampling of the commercial fishery to ensure that hatchery contributions through time are factored into management and do not impact wild stocks. AFDF has been advised that this program will be continued. DNA baselines for sockeye salmon will need to be developed before any mixed stock fishery analysis can occur using this approach. ADF&amp;G has advised AFDF that they will begin to develop the sockeye salmon baseline. AFDF will provide a report, produced by ADF&amp;G, by July 2009 on Chinook salmon stock identification using DNA, sockeye salmon hatchery stock identification using strontium, and progress on sockeye salmon DNA development.</p>
<b>Conclusion from 1st Surveillance Report</b>	<p>The Surveillance Team evaluated the evidence available for this issue against the requirements of the original scoring guideposts, as well as the condition and action plan.</p> <p>In the original assessment, the requirements of the first bullet point of the 80 scoring guidepost were met while the second was only partially met. Due to the nature of the Copper River fishery it is considered inappropriate to require the gathering of information during each season on the geographic range of the various Chinook and sockeye salmon stocks. Rather, the detailed work on timing and distribution from the telemetry studies, in combination with the completion of the genetic baselines, is considered appropriate to provide sufficient information to evaluate whether current harvest policies sufficiently protect sub-stock components. The requirements of this condition are therefore changed to the provision of this information. The escapement goal review is to be provided by ADF&amp;G in 2011 and will be reviewed by the surveillance team in the fourth surveillance audit. The condition is considered to be on target for successful completion.</p>
<b>AFDF Actions</b>	<p>Detailed work on timing and distribution using on-going telemetry studies in combination with the completion of genetic baselines studies and publication in 2011 escapement goal report.</p>
<b>Observations</b>	<p>The Copper River Chinook salmon genetic origins study was completed and published in 2009 (Seeb <i>et al.</i>, 2009). Genetic baseline data are being collected for Copper River sockeye under a study funded by the Alaska Sustainable Salmon Fund.</p>
<b>Conclusion</b>	<p>Research efforts over the past five years have provided a good deal of new information on sockeye, Chinook and coho salmon stock origins and timing in the Copper River watershed. In light of this we anticipate this condition to be closed in 2011 upon the completion of the next scheduled escapement goal review for Copper River stocks.</p> <p>Progress is satisfactory and on target to meet this condition.</p>

<b>Condition 31a</b>	<p><b>Condition of Certification 31a:</b></p> <p>Refine knowledge of sub-stock structure of Copper salmon. Incorporate information as appropriate into stock productivity estimates and refinement of escapement goals.</p>
<b>Assessed Activity</b>	<p>This Condition relates principally to Indicator 1.1.3.2</p> <p><b>100 Scoring Guidepost</b></p>

	<ul style="list-style-type: none"> <li>• The Target Reference Point (TRP) or operational equivalents for target species have been reviewed and found to be scientifically defensible and appropriate by management authorities such as the NMFS, USFW, and the ADF&amp;G.</li> <li>• There is general agreement among regional fisheries scientist outside the management system that the TRP's or operational equivalents are appropriate.</li> <li>• The TRP's or operational equivalents for the target stocks take into account variability in the productivity of each component of the target stock and productivity of non-target stocks.</li> </ul> <p><b>80 Scoring Guidepost</b></p> <ul style="list-style-type: none"> <li>• There is no significant scientific disagreement regarding the TRP's or operational equivalents used by the management system to formulate management decision for the fishery.</li> <li>• The TRP's or operational equivalents for the target stocks take into account variability in the productivity of each component of the target stock and the productivity of non-target stocks.</li> </ul> <p><b>60 Scoring Guidepost</b></p> <ul style="list-style-type: none"> <li>• There is general agreement among fisheries scientist within the management system that the TRP's or operational equivalents are appropriate for the target stocks.</li> <li>• Target reference points have been defined for the majority of target stocks harvested in the fishery and these target reference points are not scientifically disputed.</li> <li>• The management system has taken into account the relative productivity of non-target stocks when setting the TRP's or operational equivalents for the majority of target stocks.</li> </ul> <p><b>SCORE 75</b></p> <p>Escapement goal ranges (SEGs) established for indicator stocks clearly fit the definition of a Target Reference Point (TRP) as the desirable fishery level that management action should aim at maintaining. Escapement goals provide TRP's for the dominant fishery stocks. Sustainable escapement goals have been reviewed and found to be scientifically defensible by ADF&amp;G though the extent of review and agreement among regional fisheries scientist outside the management system is unclear. The degree to which aggregate basin-wide escapement goals consider variability in the productivity of all stock components is unclear. Fishery management based on aggregate stock management has not yet been reconciled with recent Chinook genetic data which identified significant substock structure and differences in run timing among populations from different tributaries. Management plan escapement goals based on the Miles Lake sonar appear to be inconsistent with goals for species other than sockeye and current in-river harvest information but differences were not reconciled at the 2006 Board of Fisheries meeting. The fishery does not meet the 80 scoring guideposts with respect to the escapement goals taking into account variability in the productivity of each component of the target stocks.</p>
<b>AFDF Action Plan</b>	<p>Chinook salmon genetic stock identification studies are underway and will be continued. Gulkana hatchery sockeye are marked with strontium and recovered through sampling of the commercial fishery to ensure that hatchery contributions through time are factored into management and do not impact wild stocks. AFDF has been advised that this program will be continued. DNA baselines for sockeye salmon will need to be developed before any mixed stock fishery analysis can occur using this approach. ADF&amp;G has advised AFDF that they will begin to develop the sockeye salmon baseline. AFDF will provide a report by July 2009, produced by ADF&amp;G, on Chinook salmon stock identification using DNA, sockeye salmon hatchery stock identification using strontium, and progress on sockeye salmon DNA development.</p>
<b>Conclusion from 1st Surveillance</b>	<p>The Surveillance Team evaluated the evidence available for this issue against the requirements of the original scoring guideposts, as well as the condition and action plan.</p>

<b>Report</b>	In the original assessment, the requirements of the first bullet point of the 80 scoring guidepost were partially met in the original assessment. The second and third bullet points are not applicable because there are not significant harvests of non-target stocks in this fishery. Due to the nature of the Copper River fishery it is considered inappropriate to require the gathering of information during each season on the geographic range of the various Chinook and sockeye salmon stocks. Rather, the detailed work on timing and distribution from the telemetry studies, in combination with the completion of the genetic baselines, is considered appropriate to provide sufficient information to evaluate whether current harvest policies sufficiently protect sub-stock components. The requirements of this condition are therefore changed to the provision of this information. The escapement goal review is to be provided by ADF&G in 2011 and will be reviewed by the surveillance team in the fourth surveillance audit. The condition is considered to be on target for completion.
<b>AFDF Actions</b>	ADF&G has received funding for a multiple year study of population structure in sockeye salmon in the Copper River drainage and surrounding delta. 2008 is the first field season for data collection. A final report will be available sometime in 2011.
<b>Observations</b>	The Copper River Chinook salmon genetic origins study was completed and published in 2009 (Seeb <i>et al.</i> , 2009). Genetic baseline data are being collected for Copper River sockeye under a study funded by the Alaska Sustainable Salmon Fund.
<b>Conclusion</b>	Research efforts over the past five years have provided a good deal of new information on sockeye, Chinook and coho salmon stock origins and timing in the Copper River watershed. In light of this we anticipate this condition to be closed in 2011 upon the completion of the next scheduled escapement goal review for Copper River stocks.  Progress is satisfactory and on target to meet this condition.

<b>Condition 32</b>	<b>Condition of Certification 32 (same as Condition 8, 16, 22, 39, 42, 49, 59, 61)</b>  Evaluate appropriate existing age-sex-size information to determine if fisheries are exerting significant selectivity; continue ASL sampling in fisheries and of several spawning stocks to continue a database for long-term evaluation of potential fishery selectivity. [Copper/Bering]
<b>Assessed Activity</b>	This Condition relates principally to Indicator 1.3.1  <b>100 Scoring Guidepost</b> <ul style="list-style-type: none"> <li>• There is comprehensive knowledge of the effect of fishing on biological characteristics such as the age, size, sex and genetic structure of the target stocks and the impact of changes in these factors on the reproductive capacity of the target stocks.</li> <li>• Management actions are consistent with maintaining healthy target stocks relative to biological characteristics such as age, size, sex and genetic structure of all target stocks.</li> <li>• Enhanced fish are identified and managed as separate target stocks.</li> </ul> <b>80 Scoring Guidepost</b> <ul style="list-style-type: none"> <li>• The knowledge of the effect of fishing on biological characteristics such as the age, size, sex and component stocks is adequate to detect threats to the reproductive capacity of the target stocks.</li> <li>• Management actions are consistent with maintaining healthy target stocks relative to biological characteristics such as age, size, sex and genetic structure of all target stocks.</li> <li>• The management system includes provisions to minimize any adverse impacts to the genetic structure of wild (un-enhanced) stocks that may be due to the enhancement of other stocks.</li> </ul> <b>60 Scoring Guidepost</b>

	<ul style="list-style-type: none"> <li>• The knowledge of the effect of fishing on the biological characteristics such as age, size, sex and component stocks is adequate to detect threats to the reproductive capacity of the majority of target stocks.</li> <li>• Management actions are consistent with maintaining healthy target stocks relative to biological characteristics such as age, size, sex or genetic structure for the majority of target stocks.</li> <li>• The management system includes provisions to minimize the major adverse impacts for the majority of wild (un-enhanced) stocks that may be due to the enhancement of other stocks.</li> </ul> <p><b>SCORE 74</b></p> <p>ADF&amp;G believes its management and assessment programs are adequate to assure the long-term biological characteristics and reproductive capacity of Copper and Bering River salmon stocks, particularly given the program upgrades being undertaken presently and during the last decade. Important program elements include distributing escapements temporally across runs through use of time and area fishery restrictions, establishing and managing for escapement goals, and extensive age, sex and size sampling of runs. ADF&amp;G has observed no demonstrated detrimental effects of selective fishing in salmon populations managed to maintain escapements, including several sockeye stocks from different areas of Alaska that have been harvested extensively with size selective gillnets for over a century without measurable effects. However, it remains unclear whether this risk has been adequately considered and evaluated. Given the apparent diversity and metapopulation structure in this large system, it is unclear whether the current knowledge of the effect of fishing on biological characteristics such as the age, size, sex and component stocks is adequate to detect threats to the reproductive capacity of the target stocks or whether management actions are consistent with maintaining healthy target stocks relative to biological characteristics such as age, size, sex and genetic structure of all target stocks. Some measure of wild sockeye protection is afforded by segregated release sites of hatchery fish although detailed assessments have not been made. The fishery does not meet the 80 scoring guidepost for the adequacy of knowledge to maintain biological characteristics related to productivity of target stocks of sockeye, chinook, and coho.</p> <p>PWSAC provided comments related to the Gulkana hatchery stating, “....the Gulkana hatchery closely resembles a F1 enhancement program. With that, the statement is confusing in its suggestion of “wild sockeye protection”. It also exhibits a limited understanding of the nursery lake release sites and arrangements.” No doubt the assessment team could have used further specific information about the practices at Gulkana hatchery; however, the score for this indicator was not conditioned on hatchery practices. Instead the score and the condition related to this indicator is mostly regarding the knowledge base associated with the wild fishery, and only had little to do with the hatchery practices.</p>
<b>AFDF Action Plan</b>	<p>ASL sampling of fisheries and select spawning stocks is expected to continue over the long term in each certification unit. The intensity of sampling will be dependent on available funding and identified concerns. ADF&amp;G currently maintains comprehensive ASL sampling in all these fisheries; however these programs may be expanded as appropriate.</p> <p>AFDF will provide a report compiled by ADF&amp;G of existing ASL data by the end of 2009 that will evaluate the consequences of selective fishing.</p>
<b>Conclusion from 1st Surveillance Report</b>	<p>The Surveillance Team evaluated the evidence available for this issue against the requirements of the original scoring guideposts, as well as the condition and action plan.</p> <p>Enhanced fish are marked and ASL data are partitioned for these stocks. While specific gear selectivity studies have not been undertaken, ADF&amp;G’s historical data and current data collection efforts are adequate to monitor the stocks for changes or</p>

	<p>trends that might occur as a result of fishing selectivity or management actions. In this case, this is considered sufficient to meet the intent of the 80 Scoring Guidepost for this Performance Indicator. The score would likely improve if the ADF&amp;G were to complete the analysis of historical ASL data and evaluate the selectivity issue as indicated in the action plan.</p> <p>This PI is now re-scored to 80 and the condition closed.</p>
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## Certification Unit 7 – Lower Cook Inlet Seine and Gillnet

<b>Condition 33</b>	<p><b>Condition of Certification 33:</b></p> <p>Complete revision of Cook Inlet Regional Enhancement Plan including specific guidelines consistent with existing sustainable fisheries and genetics policies and criteria for evaluating hatchery effectiveness. [Lower Cook Inlet]</p>
<b>Assessed Activity</b>	<p>This Condition relates principally to Indicator 1.1.1.5.</p> <p><b>100 Scoring Guidepost</b></p> <ul style="list-style-type: none"> <li>• Fisheries targeting enhanced stocks are geographically removed from wild (unenhanced) stocks and separate terminal harvest areas are established for these fisheries.</li> <li>• Times and areas have been identified where the majority of enhanced fish migrate through the general fishery.</li> <li>• There is real time mark recovery program during the prosecution of the fishery that allows determination of harvest rates of the targets and naturally enhanced component of the run and these data are used in regulation of the fishery.</li> </ul> <p><b>80 Scoring Guidepost</b></p> <ul style="list-style-type: none"> <li>• In fisheries where both enhanced and wild (un-enhanced) stocks are harvested at the same time, the harvest guidelines are based on the goals and objectives established for the wild (un-enhanced) stocks, and there is sufficient information on stock composition (i.e. hatchery and natural fish) to determine whether those goals are met.</li> <li>• There are adequate data and analyses to determine that the presence of enhanced fish in the management units does not adversely impact the wild (un-enhanced) fish stocks</li> </ul> <p><b>60 Scoring Guidepost</b></p> <ul style="list-style-type: none"> <li>• There is general scientific agreement within the management system regarding the impacts of enhanced fish on the resultant harvest rates or escapements of wild (unenhanced) fish stocks</li> <li>• Managers have some scientific basis for assuring that harvest rates for enhanced stocks are not adversely affecting the majority of wild (un-enhanced) stocks within each stock unit.</li> </ul> <p><b>SCORE 70</b></p> <p>There is general scientific agreement within the management system regarding the impacts of enhanced fish on harvest rates and escapements of wild fish stocks. Consistent achievement of wild stock escapement goals provides some basis for assuring that harvest rates for enhanced stocks are not affecting the majority of wild stocks. Terminal fisheries for hatchery fish and at least partially segregated hatchery programs appear likely to limit wild stock impacts. However, harvest guidelines in hatchery terminal areas are driven by hatchery fish and effects on local wild stocks are unclear. The need for most of the harvest of enhanced fish for cost recovery also raises some question of the long term value and viability of some hatchery programs. It is unclear whether the fishery meets the 80 scoring guidepost regarding the adequacy of data and analyses to determine that the presence of enhanced fish in the management units does not adversely impact the wild (un-enhanced) fish stocks. The management system has responded to related issues with the termination of the Tutka Hatchery Pink salmon program in 2004 and completion of studies to assess straying of hatchery coho and Chinook into nearby streams. These studies found no straying of either species Begich 2006a, 2006b).</p>

	<p>Comments submitted by UFA during the public comment phase of this project state. “The condition [33] places all the emphasis on the Plan and ignores the Regional Planning Team (RPT) process indicating the reviewer failed to completely comprehend the control and regulatory measures enhancement programs must adhere to. A complete revision of the Cook Inlet plan has been completed. The revised plan considers the sustainable fisheries and genetics policies and includes a definition of significant stock and designates wild stock sanctuaries as recommended by the Genetics Policy.”</p> <p>To the best of our knowledge, the assessment team was not provided with the information suggested by UFA. Given the situation, the information should be put together and submitted during the first annual surveillance. If the information answers the concerns raised, this condition can be closed out immediately and no further work will be necessary.</p> <p>At present, the score reflects the information that was presented through the department (ADF&amp;G). Since the score does not cause the fishery to fail, and the assessment team has not been given further evidence, the best opportunity to address this issue will be during the first annual surveillance audit.</p>
<b>AFDF Action Plan</b>	This plan revision was completed in March 2007, as reported by ADF&G. The finished product will be provided by AFDF as soon as possible.
<b>Conclusion from 1st Surveillance Report</b>	<p>On the basis of the above, this PI, consisting of two bullet points, is now re-evaluated. During the re-certification, each bullet point requirement was partially met, as the original assessment team did not have access to the Cook Inlet Regional Salmon Enhancement Plan. The plan was provided to the surveillance team and upon review it can be confirmed that the unit analyses contained in the Plan employs tactics utilizing concepts of significant stocks and wild stock sanctuaries; harvest guidelines are based on the goals and objectives established for the wild stocks; there is sufficient information on stock composition to determine whether those goals are met; and, analyses of data is used to determine that hatchery fish do not adversely impact the wild fish stocks.</p> <p>The 80 scoring guidepost for indicator 1.1.1.5 is therefore met and in some respects exceeded. Because the enhanced stocks are geographically isolated from wild stocks the score has therefore been revised to 85.</p>

<b>Condition 34</b>	<p><b>Condition of Certification 34:</b></p> <p>Identify assumptions regarding contributions of enhanced sockeye, pink, and chum in natural spawning areas in the Cook Inlet Regional Enhancement Plan and describe guidelines which ensure that hatchery contributions to natural escapement are adequately considered in fishery management. [Lower Cook Inlet]</p>
<b>Assessed Activity</b>	<p>This Condition relates principally to Indicator 1.1.2.2</p> <p><b>100 Scoring Guidepost</b></p> <ul style="list-style-type: none"> <li>• Estimates are available for the annual escapement for each stock unit harvested in the fishery.</li> <li>• In-season escapement data are collected for all stock units and used to regulate the fishery.</li> <li>• Estimates are available for the annual escapement and natural spawning of all enhanced (e.g., hatchery) fish.</li> </ul> <p><b>80 Scoring Guidepost</b></p> <ul style="list-style-type: none"> <li>• Estimates are available for the annual escapement of each target stock harvested in the</li> </ul>

	<p>fishery.</p> <ul style="list-style-type: none"> <li>• Fishery independent indicators of spawning abundance are available for the non-target species harvested in the fishery.</li> <li>• In-season escapement data are collected for the target stocks and used to regulate the fishery.</li> <li>• Estimates are available for the annual escapement and natural spawning of enhanced (e.g., hatchery) fish, where enhanced fish are a significant component of the fishery, and where the release locations can have a reasonable probability of affecting the management of natural populations.</li> </ul> <p><b>60 Scoring Guidepost</b></p> <ul style="list-style-type: none"> <li>• Escapement estimates for target stocks are available, where escapement estimates are necessary to protect the target stock from overexploitation.</li> <li>• Fishery independent indicators of abundance are available for non-target stocks where the fishery harvests may represent a significant component of the harvest of that stock.</li> <li>• Capabilities exist to make estimates of the escapement and natural spawning of enhanced (e.g., marked hatchery) fish.</li> </ul> <p><b>SCORE 77</b></p> <p>Estimates are available for the annual escapement of pink, sockeye, and chum salmon which comprise the bulk of the fishery harvest. Escapement estimates are also available for important Chinook salmon systems, though these stocks aren't targeted by commercial fisheries. Fishery independent indicators of abundance are not available for coho although fishing effort is not focused on this species. In-season escapement data are collected for key stocks and used to regulate the fishery. However, the fishery did not meet the 80 scoring guidepost for estimates of annual escapement of each target stock harvested in the fishery. Limited information exists on the annual escapement and natural spawning of enhanced (e.g., hatchery) pink, sockeye, and chum. Data is available for coho and Chinook. Recent studies showed a 0% incidence of hatchery coho strays from Homer Spit releases into nearby Deep Creek in 2000 and 2001 (Begich 2006a), and no strays from three Kachemak Bay Chinook salmon enhancement projects into the nearby Ninilchik River in 1999 and 2000 (Begich 2006b). The Ninilchik study also provided estimates of contributions of natural and hatchery-produced Chinook (from Ninilchik River egg takes) to the Ninilchik River escapement.</p>
<b>AFDF Action Plan</b>	This condition was fulfilled as part of the revision of the Cook Inlet Regional Plan that was completed in March 2007. The finished product will be provided by AFDF as soon as possible.
<b>Conclusion from 1st Surveillance Report</b>	<p>On the basis of the above, this PI, consisting of four bullet points, is now re-evaluated. During the re-certification, the requirements of the first and third bullet points of the 80 scoring guidepost were met. The second bullet point of the scoring guidepost was identified as not being applicable in the original assessment. The fourth bullet point was partially met.</p> <p>The unit analyses contained in the Cook Inlet Regional Salmon Enhancement Plan illustrates how enhanced salmon returns are isolated from significant stocks of wild salmon, both spatially and temporally. This meets the 80 scoring guidepost for each bullet point of PI 1.1.2.2. The performance indicator is therefore rescored to 80 and the condition is closed.</p>

## Certification Unit 8 – Upper Cook Inlet Gillnet

<b>Condition 35</b>	<p><b>Condition of Certification 35:</b></p> <p>Complete evaluations of sockeye and assess Kasilof Chinook stock composition in fisheries to ensure accuracy of post-season analyses and clarify effectiveness of in season time and area management. [Upper Cook Inlet]</p>
<b>Assessed Activity</b>	<p>This Condition relates principally to Indicator 1.1.1.3.</p> <p><b>100 Scoring Guidepost</b></p> <ul style="list-style-type: none"> <li>• The geographic range for harvests of each stock unit in the fishery is estimated and documented each year.</li> <li>• The information on the geographic range of harvests is monitored during the fishing season and used when making in-season management decisions.</li> </ul> <p><b>80 Scoring Guidepost</b></p> <ul style="list-style-type: none"> <li>• The geographic range for harvests of target stocks is defined.</li> <li>• The information on the geographic range of the harvests of target stocks is monitored during the fishing season and is sufficient to prevent the over harvesting of these stocks.</li> <li>• The information available on the geographic range for harvest of non-target stocks is sufficient to prevent the over harvesting of these stocks.</li> </ul> <p><b>60 Scoring Guidepost</b></p> <ul style="list-style-type: none"> <li>• The information available on the geographic range for harvests of target or non-target stocks is sufficient to prevent the over harvesting for the majority of the stocks within each stock unit.</li> </ul> <p><b>SCORE 75</b></p> <p>Harvest of Upper Cook Inlet salmon occurs within a known geographic range which is primarily upper Cook Inlet with limited interception of some species in Peninsula and Kodiak fisheries. Current information appears generally adequate to ensure that escapement goals for all stocks are met in most but not all years. In-season assessments of stock composition in mixed stock commercial fisheries of Cook Inlet are generally based on assumed time and area patterns inferred from post-season analysis of scale patterns for sockeye and historical tag recovery data for selected Chinook and coho populations. In-river escapement estimates also provide some indication of relative run size and stock contribution. Time and area patterns may or may not be accurate in any given year. Previous attempts to infer sockeye stock composition in-season from scale patterns have been discontinued. Questions have been raised within the management system regarding the accuracy of historical stock composition data and an extensive sockeye GSI program is being implemented in 2006 for the Upper Cook Inlet commercial fisheries. The lack of accurate in-season information on sockeye stock composition can confound attempts to manage mixed stock commercial sockeye fisheries for stock-specific escapement goals, particularly in years of disparate returns of different stocks.</p> <p>In-season information is not available on Chinook and or stock composition although stock structure of Chinook in particular is less complex than that of sockeye during periods of intensive commercial salmon fisheries. ADF&amp;G believes that the need for improved stock composition data for Chinook salmon is minor in comparison with sockeye. UCI Chinook salmon stocks are well known based on geographic and temporal proximity of fishing to spawning aggregates. The early run stocks (Susitna, early-run Kenai and a few relatively smaller stocks e.g. Anchor, Kasilof) have not been subjected to significant commercial fishing</p>

	<p>since the 1970s when the early run period was closed by regulation in face of low Chinook runs. Because of the lack of early run sockeye, ADF&amp;G notes that the early run period commercial fisheries have and will likely continue to be restricted for allocative reasons. The Kenai stock is the primary late-run stock and the UCI fishery management plan has many provisions to protect this stock, and expressly limits the interceptions of late run Kenai Chinook in face of strong Kenai late run sockeye returns. There have been numerous radio telemetry studies of the Kenai (to verify sonar counts, etc), and the components of the early and late run Kenai Chinook are well known. However, significant questions remain regarding the status of late run Chinook in the Kasilof River and ADF&amp;G has initiated an assessment of that stock. With the advent in recent years of intensive fisheries for large returns of Kasilof sockeye, the relative contribution of late run Kasilof and Kenai Chinook stocks in Kasilof area fisheries has come into question. The fishery did not meet the 80 scoring guidepost for monitoring of the geographic range of all target stocks during the fishing season sufficient to prevent over harvest. Significant questions remain for sockeye and to a lesser extent Kasilof Chinook.</p>
<b>AFDF Action Plan</b>	<p>Sockeye salmon genetic stock identification studies have been funded and are in progress by ADF&amp;G. A final sockeye salmon report will be provided to AFDF by February 2008. Late-run Kasilof River Chinook salmon are harvested in commercial and recreational fisheries. ADF&amp;G has reported to AFDF that it began assessing this run by determining size of spawning escapements through a mark/recapture experiment that will be reported in late 2009. At that time, based upon the results of this work, ADF&amp;G will assess needs for further research on late-run Kasilof River Chinook salmon. Development of DNA baseline by ADF&amp;G is in progress for the Kasilof River. In late 2009, if a genetic stock identification project is warranted, ADF&amp;G will assess the need to enhance baselines for other river systems in Cook Inlet that may be present in mixtures.</p>
<b>Conclusion from 1st Surveillance Report</b>	<p>Refinements of the genetic baseline for Upper Cook Inlet sockeye salmon and the referenced report have improved the precision for estimating the stock composition of mixed stock fishery harvests in Upper Cook Inlet. Mark recapture studies of Kasilof late run Chinook are promising but will not be reported until 2009.</p> <p>Progress on this Condition is on-target. This Condition remains open and is expected to be closed out following the publication of the above report in early 2009 and review during the second annual MSC surveillance audit.</p>
<b>AFDF Actions</b>	<p>ADF&amp;G has completed field work and analysis of four years of modified two-event mark-recapture experiments on Chinook salmon. A document, "Abundance of Late-run Kasilof River Chinook Salmon, 2005-2008" has been drafted by Adam Reimer and Steve Fleischman. The document is undergoing peer review and is expected to be published in 2010.</p>
<b>Observations</b>	<p>The ADF&amp;G Sport Fish Division has completed a four year mark and recapture study on the late run Kasilof Chinook salmon, providing quantitative estimates of in-river abundance of the period of the study. The report for this study is in press with an anticipated publication data before the end of 2010. An abstract of the study was made available to the audit team.</p>
<b>Conclusion</b>	<p>On the basis of the following scoring guideposts the score associated with the Performance Indicator 1.1.1.3 is adjusted as follows:</p> <p><b>80 Scoring Guidepost</b></p> <ul style="list-style-type: none"> <li>• The geographic range for harvests of target stocks is defined.</li> <li>• The information on the geographic range of the harvests of target stocks is monitored during the fishing season and is sufficient to prevent the over harvesting of these stocks.</li> <li>• The information available on the geographic range for harvest of non-target stocks is sufficient to prevent the over harvesting of these stocks.</li> </ul>

	When originally scored by the certification team, indicator 1.1.1.3 met the first bullet point of the 80 scoring guide post but only partially met the second due to lingering questions about the level of information available to fishery managers on the geographic range of target stocks; specifically sockeye salmon and late run Kasilof Chinook salmon. At the first surveillance audit, the Department had completed a genetic study of Upper Cook Inlet sockeye salmon, providing adequate information to meet this scoring guide post for this species. With the completion of the four year Kasilof Chinook salmon study, the second bullet point of the 80 scoring guidepost is now achieved and the PI re-scored at 80 and the Condition closed out.
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<b>Condition 36</b>	<b>Condition of Certification 36:</b> Develop appropriately reliable estimates or indices of escapement for Susitna sockeye and Kasilof Chinook and incorporate into fishery management practices. [Upper Cook Inlet]
<b>Assessed Activity</b>	<p>This Condition relates principally to Indicator 1.1.2.2.</p> <p><b>100 Scoring Guidepost</b></p> <ul style="list-style-type: none"> <li>• Estimates are available for the annual escapement for each stock unit harvested in the fishery.</li> <li>• In-season escapement data are collected for all stock units and used to regulate the fishery.</li> <li>• Estimates are available for the annual escapement and natural spawning of all enhanced (e.g., hatchery) fish.</li> </ul> <p><b>80 Scoring Guidepost</b></p> <ul style="list-style-type: none"> <li>• Estimates are available for the annual escapement of each target stock harvested in the fishery.</li> <li>• Fishery independent indicators of spawning abundance are available for the non-target species harvested in the fishery.</li> <li>• In-season escapement data are collected for the target stocks and used to regulate the fishery.</li> <li>• Estimates are available for the annual escapement and natural spawning of enhanced (e.g., hatchery) fish, where enhanced fish are a significant component of the fishery, and where the release locations can have a reasonable probability of affecting the management of natural populations.</li> </ul> <p><b>60 Scoring Guidepost</b></p> <ul style="list-style-type: none"> <li>• Escapement estimates for target stocks are available, where escapement estimates are necessary to protect the target stock from overexploitation.</li> <li>• Fishery independent indicators of abundance are available for non-target stocks where the fishery harvests may represent a significant component of the harvest of that stock.</li> <li>• Capabilities exist to make estimates of the escapement and natural spawning of enhanced (e.g., marked hatchery) fish.</li> </ul> <p><b>SCORE 77</b></p> <p>Estimates are available for the annual escapement of most significant sockeye and chinook stocks harvested in the fishery. However, the reliability of sockeye sonar escapement estimates, particularly in the Susitna, has been called into question and is subject to an evaluation by the management system. Chinook escapement data is lacking for the Kasilof. In-season escapement data is collected for key sockeye and chinook stocks and used to regulate the fishery. Escapement estimates, particularly fishery independent in-season estimators, are lacking or limited for other species including coho, pink and chum although these species are</p>

	not currently subject to intensive target fisheries. Estimates are available for the annual escapement and natural spawning of enhanced (e.g., hatchery) sockeye in the Kenai but not the Kasilof although the latter program has been discontinued. The fishery did not meet the 80 scoring guidepost for estimates of annual escapement of each target stock harvested in the fishery. New Susitna sockeye and Kasilof Chinook escapement assessment programs are in the process of being implemented.
<b>AFDF Action Plan</b>	ADF&G has reported to AFDF that the Susitna sockeye work has been funded and work is in progress. The Kasilof Chinook work has also been funded and is in progress for completion in late 2009.
<b>Conclusion from 1st Surveillance Report</b>	<p>The Department has made significant progress on this condition and the Condition is on-target for completion. A summary analysis of the three year mark and recapture study on the Susitna River system is expected to be completed on the fall of 2009. An analysis of three year comparison study of the Bendix and DIDSON sonar escapement enumeration systems used on the Yentna River is also expected to be completed in the fall of 2009.</p> <p>This Condition remains open and is expected to be closed following the completion of these studies and review during the third annual MSC surveillance audit.</p>
<b>AFDF Actions</b>	A summary analysis of the three year mark and recapture study on the Susitna River system is expected to be completed on the fall of 2009. An analysis of three year comparison study of the Bendix and DIDSON sonar escapement enumeration systems used on the Yentna River is also expected to be completed in the fall of 2009.
<b>Observations</b>	<p>This condition relates to both Susitna sockeye salmon and late run Kasilof Chinook salmon, although the latter are not a species specifically targeted by the commercial fishery. The ADF&amp;G Sport Fish Division has completed a four year mark and recapture study on the late run Kasilof Chinook salmon, providing quantitative estimates of in-river abundance of the period of the study. The report for this study is in press with an anticipated publication data before the end of 2010. An abstract of the study was made available to the audit team.</p> <p>Concern regarding the precision of the Yentna River sockeye salmon escapement estimates, and it's importance to the management of Susitna River and Upper Cook Inlet sockeye salmon stocks, led the Department to conduct a Susitna River escapement goal review outside on the normal 3 year cycle (Fair, 2009). Prior to this time, the Yentna River sockeye escapement had been used as a proxy for the escapement for the entire Susitna drainage. Escapement estimates for the Yentna have been obtained by a Bendix sonar counter since 1981. From 2006 – 2008 a DIDSON sonar was operated at the Bendix site, several weirs were operated in the drainage and mark recapture studies were conducted. The Bendix sonar counts were significantly below the estimates produced by these other methods illustrating significant deficiencies in the Bendix based Yentna goal. A major source of error appears to be a bias due to selectivity of fishwheel data used to allocate sonar targets by species. During the period of study the combined count of sockeye salmon from the Chelatna, Shell and Judd Lake weirs, all part of the Yentna drainage, substantially exceeded the Bendix sonar estimate. The Chelatna and Judd weirs have sufficient quality and quantity of escapement data for application of the Percentile Approach to establish sustainable escapement goals (SEGs). Larson Lake, located off the main stem of the Susitna River has similar quality and quantity of data for generation of a SEG. In its analysis the Department recommended that the Bendix based Yentna escapement goal be dropped and that in its place three weir based SEGs be established for Chelatna, Judd and Larson. The three goals more accurately and geographically representing the Susitna drainage.</p>
<b>Conclusion</b>	<p>On the basis of the following scoring guideposts the score associated with the Performance Indicator 1.1.2.2 is adjusted as follows:</p> <p><b>80 Scoring Guidepost</b></p> <ul style="list-style-type: none"> <li>Estimates are available for the annual escapement of each target stock harvested in the</li> </ul>

	<p>fishery.</p> <ul style="list-style-type: none"> <li>• Fishery independent indicators of spawning abundance are available for the non-target species harvested in the fishery.</li> <li>• In-season escapement data are collected for the target stocks and used to regulate the fishery.</li> <li>• Estimates are available for the annual escapement and natural spawning of enhanced (e.g., hatchery) fish, where enhanced fish are a significant component of the fishery, and where the release locations can have a reasonable probability of affecting the management of natural populations.</li> </ul> <p>When originally scored by the certification team, indicator 1.1.2.2 fell short of the first bullet point for the 80 scoring guide post due to the deficiency in the estimates for annual escapement for the Susitna River sockeye and the late run Kasilof Chinook stocks. The remaining bullet points for the 80 scoring guideposts were achieved. The completion of the four year Kasilof Chinook salmon study satisfies the first bullet point for this species. Similarly the Department's review and analysis of Susitna River sockeye salmon escapement goals, their recommendations to and the Alaska Board of Fisheries acceptance of the new SEGs satisfies this bullet point for Susitna sockeye salmon. The indicator has now fully met the 80 scoring guidepost, is re-scored at 80 and the Condition closed out.</p>
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<b>Condition 37</b>	<p><b>Condition of Certification 37:</b></p> <p>Review stock status of Susitna sockeye and develop an action plan intended to ensure achievement of Susitna sockeye escapement goals. Action plan should provide specific goals and an anticipated timeline for achieving the goals (see condition under Principle 3 for Indicator 3.4.1.2 [Upper Cook Inlet].</p>
<b>Assessed Activity</b>	<p>This Condition relates principally to Indicator 1.2.1</p> <p><b>100 Scoring Guidepost</b></p> <ul style="list-style-type: none"> <li>• There are comprehensive and pre-agreed responses to low stock size that utilize a range of management measures to ensure rapid recovery.</li> <li>• Stocks are allowed to recover to the TRP before commercial fisheries are permitted that target these stocks.</li> <li>• The management system does not use artificial propagation as a substitute for maintaining or recovering wild stocks.</li> </ul> <p><b>80 Scoring Guidepost</b></p> <ul style="list-style-type: none"> <li>• In the event of severe depletion, recovery plans are developed and implemented to facilitate the recovery of the depleted stocks within 3 reproductive cycles.</li> <li>• Stocks are allowed to recover to more than 150% of the LRP for abundance before any fisheries are permitted that target these stocks.</li> </ul> <p><b>60 Scoring Guidepost</b></p> <ul style="list-style-type: none"> <li>• In the event of severe depletion, recovery plans are developed and implemented to facilitate the recovery of the depleted stocks within 5 reproductive cycles</li> <li>• Stocks are allowed to recover to more than 125% of the LRP for abundance before any fisheries are permitted that target these stocks.</li> </ul>



## SCORE 60

Under the operational definition of an LRP used in the evaluation, this evaluation identified depleted stocks based on a consistent failure to meet the lower end of the prescribed escapement goal range. This is equivalent to the definition of a “stock of concern” in Alaska’s sustainable fisheries policy (SSFP) where yield, management, or conservation concerns are identified based on a chronic inability to meet escapement thresholds over a four to five year period. The SSP defines a “depleted salmon stock” based on identification of a conservation concern which is a chronic inability, despite the use of specific management measures, to maintain escapements for a stock above a sustained escapement threshold (SET). However, SETs have not been established for any Alaska stock and so conservation concerns have never been formally recognized by the management system. Lacking definition of specific SETs, application of sustainability criterion relative to LRPs and identification of depleted stocks was based on designated SEGs and BEGs.

No stocks of concern have been formally designated by the board of Fisheries for Upper Cook Inlet. Fish Creek sockeye were previously designated as a species of management concern but this designation has been removed based on new information and the response to management actions. However, Yentna sockeye met our operational definition of a depleted stock based on failure to meet escapement goals in 4 of last 5 years. Failure to meet the minimum escapement goal for this stock is particularly concerning because goals have been reduced on two previous occasions.

According to ADF&G, escapement goals and stock status of Cook Inlet sockeye stocks were reviewed during the 2004 Board of Fisheries cycle. At that time, the Yentna stock had not met the Sustainable Escapement Goal for the stock for 3 of the previous 5 years. It was not considered by ADF&G or the BOF as a SOC. The escapement goal for the Yentna was again not reached in 2005. An agenda change request for designation of Yentna sockeye as a stock of concern was rejected by the BOF at its fall work session. Comments submitted to the BOF on the ACR stated that ADF&G did not believe the sustainability of this stock, as defined by the SSFP is jeopardized despite failure to reach escapement goals. ADF&G has expressed concerns with regard to Susitna River sockeye (for which the Yentna has served as an index). Time and area management actions were taken in Northern and Central Districts to limit harvest of Susitna sockeye based on low in-season returns in 2005. ADF&G has also implemented major stock assessment research including a genetic stock identification program that will provide information of where, when and in what numbers Susitna sockeye (and other Cook Inlet stocks) are harvested in Upper Cook Inlet, and a large mark-recapture program to estimate escapement to the Susitna River.

Our qualitative assessment of the management response to stock depletion suggests that planned time and area restrictions under existing management plans adopted by the Board of Fisheries and intensive stock assessments that have been implemented, provide a reasonable expectation for significant improvements in Yentna sockeye escapements within the scale and time period prescribed at the 60 scoring guidepost. However, recovery plans do not rise to the standard of the 80 scoring guidepost due to the lack of a formal stock of concern designation contrary to the SSFP definition based on chronic inability to meet escapement thresholds over a four or five year period, lack of a written action or recovery plan, absence of specific targets consistent with recovery within 3 reproductive cycles, and absence of specific fishery closure triggers consistent with the intent of a true limit reference point.

Yentna sockeye have failed to meet minimum escapement goals in 4 of the last 5 years and are a depleted stock based on our operational definition of limit reference points. ADF&G reviews stock status relative to identification of stocks of concern for consideration by the Board of Fisheries. Final content of action plans is determined in an open public process by ADF&G and the Board. However, the BOF did not elect to designate Yentna sockeye as a stock of concern at the 2005 meeting. The management response to depletion of Yentna sockeye does not meet the requirements of the 80 scoring guidepost with respect development and

	implementation of a specific plan for recovery within 3 reproductive cycles and or limitations of the fishery which allow the stock to recover to more than 150% of the LRP for abundance before any fisheries are permitted that target these stocks.
<b>AFDF Action Plan</b>	AFDF has advised the certifier that Susitna drainage sockeye salmon studies have been funded and are being conducted by ADF&G for the second year. ADF&G has also reported investigating alternative sonar technologies for monitoring escapements. In addition, the genetic stock identification work, referenced under Condition 35, will contribute to meeting this condition. Once this information is available, in late 2009, ADF&G will assess escapement goals, management implications, the need for any adjustments to management, and the need for further research and provide this information to AFDF. At present, action plans are required for stocks of concern under the terms of the Policy for Management of Sustainable Salmon Fisheries (SSFP) and are adopted by the Board of Fisheries. Once adopted, they are reviewed every three years and adjusted as needed. It is beyond the authority of the AFDF or ADF&G to modify the SSFP because that policy was adopted by the Alaska Board of Fisheries, an independent regulatory body. The results of the Susitna sonar, mark/recapture, and genetics studies in 2009 will allow a far more detailed analysis of escapement goals, which in part determine the need for an action plan, which is normally prepared as part of a stock of concern designation, if such concern is warranted. Separate from the recovery plan, ADF&G will provide AFDF with an estimated timeframe for recovery, and AFDF will pass this information to the surveillance team.
<b>Conclusion from 1st Surveillance Report</b>	<p>The original assessment team found that the Department did not meet either bullet point requirements of the 80 scoring guideposts for this indicator – hence a score of only 60. The Susitna sockeye salmon stock was determined to be a stock of Yield Concern under the Alaska sustainable salmon fisheries policy. This is not as severe as a “Management Concern” or a “Conservation Concern” defined under the same policy. The Department’s action plan and expanded research efforts in the Susitna Drainage are greatly improving the information base for Susitna salmon. We find that the first 80 scoring guidepost is at least partially met by the research component of the Department’s action plan. The second 80 scoring guidepost pertains to a stock being allowed to recover to more than 150% of the LRP of abundance before any fisheries are permitted. There is no LRP defined for Susitna sockeye salmon, or for any salmon stocks in Alaska. For this reason the second 80 scoring guidepost is not applicable in the scoring of this indicator. While the score for this indicator has improved, the condition shall remain in place and be re-assessed after the analysis of the sonar comparison studies, and the mark recapture /telemetry studies are completed in the fall of 2009.</p> <p>Progress on this Condition is therefore on-target. This Condition remains open and is expected to be closed out following review during the third annual MSC surveillance audit.</p>
<b>AFDF Actions</b>	ADF&G will analyse sonar comparison studies, and the mark recapture /telemetry studies will be completed in the fall of 2009.
<b>Observations</b>	<p>Concern regarding the precision of the Yentna River sockeye salmon escapement estimates, and its importance to the management of Susitna River and Upper Cook Inlet sockeye salmon stocks, led the Department to conduct a Susitna River escapement goal review outside on the normal 3 year cycle (Fair, 2009). Prior to this time, the Yentna River sockeye escapement had been used as a proxy for the escapement for the entire Susitna drainage.</p> <p>Escapement estimates for the Yentna have been obtained by a Bendix sonar counter since 1981. From 2006 – 2008 a DIDSON sonar was operated at the Bendix site, several weirs were operated in the drainage and mark recapture studies were conducted. The Bendix sonar counts were significantly below the estimates produced by these other methods illustrating significant deficiencies in the Bendix based Yentna goal. A major source of error appears to be a bias due to selectivity of fish-wheel data used to allocate sonar targets by species. During the period of study the combined count of sockeye salmon from the Chelatna, Shell and Judd Lake weirs, all part of the Yentna drainage, substantially exceeded the Bendix sonar estimate. The Chelatna and Judd weirs have sufficient quality and quantity of escapement data for application of the</p>

	<p>Percentile Approach to establish sustainable escapement goals (SEGs).</p> <p>Larson Lake, located off the main stem of the Susitna River has similar quality and quantity of data for generation of a SEG. In its analysis the Department recommended that the Bendix based Yentna escapement goal be dropped and that in its place three weir based SEGs be established for Chelatna, Judd and Larson. The three goals more accurately and geographically represent the Susitna drainage.</p>
<b>Conclusion</b>	<p>Indicator 1.2.1 falls short of the first bullet point for the 80 scoring guide post due to the lack of a recovery plan for the Susitna sockeye stock. The Board of Fisheries designated Susitna sockeye salmon a stock of yield concern in 2008, and the Department has implemented a research effort as part of the recovery plan. The escapement goal review referenced above is part of that effort. We anticipate this condition to be fulfilled in the third audit when research reports are completed for the Susitna studies.</p> <p>Progress is satisfactory and on target to meet the Condition.</p>

<b>Condition 38</b>	<p><b>Condition of Certification 38 (related to Conditions 41 &amp; 65):</b></p> <p>Develop a method for specifically setting an LRP that is comparable to the SET (Sustainable Escapement Threshold) outlined in the Sustainable Escapement Goal Policy (see Condition under Principle 3, Indicator 3.1.1) [Upper Cook Inlet]</p>
<b>Assessed Activity</b>	<p>This Condition relates principally to Indicator 1.2.2.</p> <p><b>100 Scoring Guidepost</b></p> <ul style="list-style-type: none"> <li>• There is general agreement among regional fisheries scientist outside the management system that the methods of estimating escapements and exploitation rates for the target stocks are scientifically defensible.</li> <li>• Management actions have reduced fishing as the target stocks approach the LRP and fisheries have only resulted in escapements that approach or are below the LRP escapement goal in one year in a period of the most recent 10 consecutive years, for any of the target stocks.</li> </ul> <p><b>80 Scoring Guidepost</b></p> <ul style="list-style-type: none"> <li>• There is general agreement among regional fisheries scientist inside the management system that the methods of estimating escapements and exploitation rates for the target stocks are scientifically defensible.</li> <li>• Management actions have reduced fishing as the target stocks approach the LRP and fisheries have only resulted in escapements that approach or are below the LRP escapement goal in one year in a period of the most recent 5 consecutive years, for any of the target stocks.</li> </ul> <p><b>60 Scoring Guidepost</b></p> <ul style="list-style-type: none"> <li>• There is general agreement among regional fisheries scientist inside the management system that the methods of estimating escapements and exploitation rates for the majority of target stocks are scientifically defensible.</li> <li>• Management actions have reduced fishing as the target stocks approach the LRP and fisheries have only resulted in escapements that approach or are below the LRP escapement goal in no more than two years in a period of the most recent 5 consecutive years, for the majority of the target stocks.</li> </ul> <p><b>SCORE 60</b></p> <p>There is general agreement among regional fisheries scientist inside the management system</p>

	<p>that the methods of estimating escapements and exploitation rates for the majority of target stocks are scientifically defensible. Management actions have reduced fishing as the target stocks approach the LRP (i.e. escapement goals) and fisheries have only resulted in escapements that approach or are below the LRP escapement goal in no more than two years in a period of the most recent 5 consecutive years, for the majority of the target stocks. This fishery fails the 80 scoring guidepost for this indicator which is based on any rather than most target stocks. Yentna sockeye have failed to reach escapement goals in 4 of 5 recent years and significant questions exist regarding the accuracy of methods for estimating escapement and exploitation rates of this stock. The fishery did not meet the 80 scoring guidepost for this indicator due to failure of Yentna sockeye to reach escapement goals in 4 of 5 recent years and significant questions exist regarding the accuracy of methods for estimating escapement and exploitation rates of this stock. ADF&amp;G is improving its assessment program for Yentna/Susitna sockeye salmon, and is taking management actions to limit commercial harvests of these fish in 2006. Improved management tools and performance are expected from improved assessment programs.</p> <p>Application of this criterion recognizes that salmon management agencies cannot ensure ALL target stock escapements will meet goals four out of every five consecutive years given the variable nature of salmon returns. For instance, short-term declines in productivity as a result of environmental conditions can result in escapement goals not being met even when a management agency has closed fisheries in response to low returns. This is not the case for Yentna sockeye. Significant sockeye fisheries have been prosecuted in Cook Inlet despite a chronic failure to meet the Yentna escapement goal. Continuing strong returns of other sockeye stocks in Cook Inlet and other portions of Alaska indicate favorable environmental conditions for ocean rearing and maturation. The fact that Yentna sockeye have apparently declined during a period of favorable ocean productivity could be indicative of changes in local productivity in the Susitna system, problems with the assessment methods, a fishery effect. Any of these causes could be construed as a basis for significant concern from the standpoint of stock sustainability.</p>
<b>AFDF Action Plan</b>	<p>Sustainable escapement threshold (SET) relates to the definition of a stock of conservation concern. A general framework for setting SET has been developed based on its definition as “a level of escapement from which the stock has been demonstrated to recover.” ADF&amp;G will provide a report to AFDF describing the method of setting a SET and elaboration on the application of this framework to differing circumstances. AFDF will pass this information to the certifier upon receipt.</p>
<b>Conclusion from 1st Surveillance Report</b>	<p>The 80 Scoring Guidepost for this PI is based on two bullet point requirements. With respect to the first bullet point, the narrative from the original assessment stated that there was general agreement on the methods of estimating escapements and exploitation rates. Although concern was raised regarding the accuracy of the Yentna sonar estimates, recent studies and the future transition to a DIDSON sonar will improve the precision of the estimates. This part of the guidepost is therefore rescored as meeting the 80 level requirements.</p> <p>While Yentna River escapements in the recent five years have fallen below the lower bound of the SEG range, it is problematic to measure this against a LRP, which is not defined or inappropriately defined. The Department’s Susitna River action plan developed at the recent Board of Fisheries meeting is responding to this concern. Due to the lack of (or need for) clear definition of a LRP the surveillance team consider that this part of the guidepost is not applicable.</p> <p>The Condition is therefore rescored at 80 and the Condition is closed.</p>

<b>Condition 39</b>	<p><b>Condition of Certification 39 (same as Conditions 8, 16, 32, 42, 49, 59 &amp; 61):</b></p> <p>Evaluate appropriate existing age-sex-size information to determine if fisheries are exerting significant selectivity; continue ASL sampling in fisheries and several spawning stocks to continue a database for long-term evaluation of potential fishery selectivity. [Upper Cook inlet]</p>
<b>Assessed Activity</b>	<p>This Condition relates principally to Indicator 1.3.1</p> <p><b>100 Scoring Guidepost</b></p> <ul style="list-style-type: none"> <li>• There is comprehensive knowledge of the effect of fishing on biological characteristics such as the age, size, sex and genetic structure of the target stocks and the impact of changes in these factors on the reproductive capacity of the target stocks.</li> <li>• Management actions are consistent with maintaining healthy target stocks relative to biological characteristics such as age, size, sex and genetic structure of all target stocks.</li> <li>• Enhanced fish are identified and managed as separate target stocks.</li> </ul> <p><b>80 Scoring Guidepost</b></p> <ul style="list-style-type: none"> <li>• The knowledge of the effect of fishing on biological characteristics such as the age, size, sex and component stocks is adequate to detect threats to the reproductive capacity of the target stocks.</li> <li>• Management actions are consistent with maintaining healthy target stocks relative to biological characteristics such as age, size, sex and genetic structure of all target stocks.</li> <li>• The management system includes provisions to minimize any adverse impacts to the genetic structure of wild (un-enhanced) stocks that may be due to the enhancement of other stocks.</li> </ul> <p><b>60 Scoring Guidepost</b></p> <ul style="list-style-type: none"> <li>• The knowledge of the effect of fishing on the biological characteristics such as age, size, sex and component stocks is adequate to detect threats to the reproductive capacity of the majority of target stocks.</li> <li>• Management actions are consistent with maintaining healthy target stocks relative to biological characteristics such as age, size, sex or genetic structure for the majority of target stocks.</li> <li>• The management system includes provisions to minimize the major adverse impacts for the majority of wild (un-enhanced) stocks that may be due to the enhancement of other stocks.</li> </ul> <p><b>SCORE 74</b></p> <p>Extensive information on biological characteristics such as the age, size, sex and component stocks provides a reasonable basis for detection of fishing threats to the reproductive capacity of the target stocks. The management system includes provisions to minimize any adverse impacts to the genetic structure of wild (unenhanced) stocks that may be due to the enhancement of other stocks. The significance of these considerations is specifically identified in the SSFP. Fishery management plans include specific actions aimed at protecting diversity and reproductive capacity.</p> <p>ADF&amp;G believes its existing management and assessment programs are adequate to assure the long-term biological characteristics and reproductive capacity of UCI salmon stocks. Important elements include distributing escapements temporally across runs through use of time and area fishery restrictions, establishing and managing for escapement goals, and extensive age, sex and size sampling of runs. ADF&amp;G is unaware of no demonstrated detrimental effects of selective fishing that have occurred in salmon populations managed to maintain escapements, including several sockeye stocks from different areas of Alaska that have been harvested extensively with size selective gillnets for over a century “without measurable effects”.</p>

	<p>However, given the intensive nature of UCI fisheries, it is unclear whether management actions are adequate for the health of all target stocks relative to biological characteristics such as age, size, sex and genetic structure. Fishery assessments have considered potential selective fishery impacts on some species such as early run Kenai Chinook which is primarily a sport fishery species. It is unclear whether similar assessments have been completed for other species and stocks, particularly in large systems like the Kenai, Susitna, and Kasilof where genetic data has identified significant genetic sub-stock structure. The fishery did not completely meet the 80 scoring guidepost for this indicator with respect to the consistency of management actions with maintaining healthy biological characteristics such as age, size, sex, and genetic structure of all target stocks.</p> <p>Harvest rates in many of these fisheries are high. High harvest rates have the potential for differential harvest of stock components. Genetic studies using ever-advancing techniques are documenting high diversity among and within subcomponents of a stock. Salmon conservationists have increasingly recognized the close relationship between diversity and productivity. All of this adds up to a real, albeit theoretical risk that intensive fisheries could exert a directional selective pressure which, over a period of time, could alter the genetic composition and performance of a stock. Of particular concern to the reviewers has been a prevailing belief in the management system that fisheries cannot pose a significant risk to salmon sustainability where habitats are intact. Until this belief has been thoroughly vetted, documented, and published in the scientific literature, this review must continue to treat this view as an untested hypothesis. Further, precautionary management requires that the burden of proof fall on demonstration that selective fisheries do not jeopardize diversity.</p>
<b>AFDF Action Plan</b>	<p>ASL sampling of fisheries and select spawning stocks is expected to continue over the long term in each certification unit. The intensity of sampling will be dependent on available funding and identified concerns. ADF&amp;G currently maintains comprehensive ASL sampling in all these fisheries; however these programs may be expanded as appropriate.</p> <p>AFDF will provide a report compiled by ADF&amp;G of existing ASL data by the end of 2009 that will evaluate the consequences of selective fishing.</p>
<b>Conclusion from 1st Surveillance Report</b>	<p>The Surveillance Team evaluated the evidence available for this issue against the requirements of the original scoring guideposts, as well as the condition and action plan.</p> <p>ADF&amp;G has a long history of collecting ASL data from the commercial harvest and from the spawning stocks. While specific gear selectivity studies have not been undertaken, ADF&amp;G's historical data and current data collection efforts are adequate to monitor the stocks for changes or trends that might occur as a result of fishing selectivity or management actions. In this case, this is considered sufficient to meet the requirements of the 80 Scoring Guidepost for this Performance Indicator. The ADF&amp;G suggests that their new genetic stock identification technique may be able to assist them with this Condition. We <u>recommend</u> that this or an alternative approach are considered and implemented, this would also improve the scoring of this condition.</p> <p>The PI is now re-scored at 80 and the condition closed.</p>

## Certification Unit 10 – Yukon River Gillnet and Fish Wheel

<b>Condition 40</b>	<p><b>Condition of Certification 40 (related to Conditions 52, 64 &amp; 69):</b></p> <p>Review stock status and develop an action plan intended to ensure achievement of escapement goals. Action plan should provide specific goals and an anticipated timeline for achieving the goals (see condition under Principle 3 for Indicator 3.4.1.2 [Yukon])</p>
<b>Assessed Activity</b>	<p>This Condition relates principally to Indicator 1.2.1.</p> <p><b>100 Scoring Guidepost</b></p> <ul style="list-style-type: none"> <li>• There are comprehensive and pre-agreed responses to low stock size that utilize a range of management measures to ensure rapid recovery.</li> <li>• Stocks are allowed to recover to the TRP before commercial fisheries are permitted that target these stocks.</li> <li>• The management system does not use artificial propagation as a substitute for maintaining or recovering wild stocks.</li> </ul> <p><b>80 Scoring Guidepost</b></p> <ul style="list-style-type: none"> <li>• In the event of severe depletion, recovery plans are developed and implemented to facilitate the recovery of the depleted stocks within 3 reproductive cycles.</li> <li>• Stocks are allowed to recover to more than 150% of the LRP for abundance before any fisheries are permitted that target these stocks.</li> </ul> <p><b>60 Scoring Guidepost</b></p> <ul style="list-style-type: none"> <li>• In the event of severe depletion, recovery plans are developed and implemented to facilitate the recovery of the depleted stocks within 5 reproductive cycles</li> <li>• Stocks are allowed to recover to more than 125% of the LRP for abundance before any fisheries are permitted that target these stocks.</li> </ul> <p><b>SCORE 75</b></p> <p>Following depletion of Yukon chum and Chinook stocks, stocks were formally designated as stocks of concern and recovery action plans were developed and implemented. Management plans included comprehensive and pre-agreed responses to low stock size and significant fishery restrictions have been implemented. These include commercial fishery closures in low run years. Depleted populations have responded with increasing numbers. It should be noted that stocks of concern are reviewed by the public, department and Board of Fisheries every three years. Thus a scheduled review is in policy to determine continuation as stocks of concern, to assess how action plans are working and to make changes to such plans to continue addressing stocks of concern. In practice, actions plans appear to have generally met the intent of this indicator. However, the fishery did not meet the 80 scoring guidepost for a prescribed recovery schedule. Recovery action plans did not include a specific recovery schedule as specified by this indicator to ensure the sufficiency of planned actions.</p> <p>A recover schedule may include consideration of the effects of variable environmental conditions. If fishing exploitation is very low and/or escapement goals are met and habitat is pristine, then it may be appropriate to conclude that change in environmental conditions is needed for recovery. (This covers a management concern where low levels of subsistence fishing may occur and a yield concern when harvests would be allowed as long as escapement goals are met and we are waiting for production/environmental conditions to change.) Nor do</p>

	<p>the plans or corresponding policy include specific measurable conditions or criteria for recognizing recovery and being removed from the list of stocks of concern. A formal process for recognizing recovery and removal from the list of stocks of concern is not contained in regulation. Instead, the definitions for stocks of concern in the SSFP are used to define recovered stocks, and these are relative to a 'chronic inability' clause that defines the situation as a "four to five year period which is approximately the generation time of most salmon species". This serves as a benchmark for the designations, and in the absence of other complexities particular to a specific situation, the department is comfortable with recognizing recovery as meeting escapement or yield objectives for a stock of concern in a majority of the previous five years.</p> <p>Based on this, the department has informed SCS that it would recommend removing a stock from the list as a stock of concern under those conditions. In addition, a formal review process involving the department and Board of Fisheries with public input is required to make the formal determination of removal from a list of stocks of concern.</p>
<b>AFDF Action Plan</b>	<p>The Board of Fisheries has delisted Yukon River fall and summer chum salmon as stocks of concern based upon contemporary data. This report will be provided to the certifying body by December 1, 2007. Escapement goals have been met or exceeded for 5 and 4 consecutive years respectively. AFDF reports that ADF&amp;G recommends continued listing of Yukon River Chinook salmon as a stock of yield concern.</p> <p>Whenever a stock of concern is established, an action plan is required (5 AAC 39.22 – Policy for Management of Sustainable Salmon Fisheries SSFP). Action plans for the most recent Board of Fisheries cycle will be provided by December 1, 2007. For stocks that require action plan, i.e. Norton Sound, AFDF will provide the assessment team with the action plan and timeline for anticipated recovery, reviewed and approved by ADF&amp;G after that date.</p>
<b>Conclusion from 1st Surveillance Report</b>	<p>The 80 Scoring Guidepost for this PI has two bullet point requirements. For the first requirement, it is considered that the existing Action Plans for recovery incorporate the intent of an appropriate timeline for recovery. The action plans are reviewed in the course of the triennial review cycle by the ADF&amp;G and the Board of Fisheries. This frequent review serves the purpose of a recovery timeline. If the stock has not recovered, then additional actions are taken as necessary. For the Yukon this will be 2009/10. The second requirement was achieved at the original re-certification.</p> <p>This PI has therefore been rescored at 80 and the condition closed.</p>

<b>Condition 41</b>	<p><b>Condition of Certification 41 (same as Condition 38 &amp; 65):</b></p> <p>Develop a method for specifically setting an LRP that is comparable to the SET (Sustainable Escapement Threshold) outlined in the Sustainable Escapement Goal Policy (see Condition under Principle 3, Indicator 3.1.1) [Yukon]</p>
<b>Assessed Activity</b>	<p>This Condition relates principally to Indicator 1.2.2.</p> <p><b>100 Scoring Guidepost</b></p> <ul style="list-style-type: none"> <li>• There is general agreement among regional fisheries scientist outside the management system that the methods of estimating escapements and exploitation rates for the target stocks are scientifically defensible.</li> <li>• Management actions have reduced fishing as the target stocks approach the LRP and fisheries have only resulted in escapements that approach or are below the LRP escapement goal in one year in a period of the most recent 10 consecutive years, for any of the target stocks.</li> </ul> <p><b>80 Scoring Guidepost</b></p> <ul style="list-style-type: none"> <li>• There is general agreement among regional fisheries scientist inside the management system</li> </ul>



	<p>that the methods of estimating escapements and exploitation rates for the target stocks are scientifically defensible.</p> <ul style="list-style-type: none"> <li>• Management actions have reduced fishing as the target stocks approach the LRP and fisheries have only resulted in escapements that approach or are below the LRP escapement goal in one year in a period of the most recent 5 consecutive years, for any of the target stocks.</li> </ul> <p><b>60 Scoring Guidepost</b></p> <ul style="list-style-type: none"> <li>• There is general agreement among regional fisheries scientist inside the management system that the methods of estimating escapements and exploitation rates for the majority of target stocks are scientifically defensible.</li> <li>• Management actions have reduced fishing as the target stocks approach the LRP and fisheries have only resulted in escapements that approach or are below the LRP escapement goal in no more than two years in a period of the most recent 5 consecutive years, for the majority of the target stocks.</li> </ul> <p><b>SCORE 70</b></p> <p>There is general agreement among regional fisheries scientists inside the management system that the methods of estimating escapements and exploitation rates for the target stocks are scientifically defensible. Management plans and strategies are based upon attempting to achieve all escapement goals. Management actions have reduced fishing at low escapements and stocks are gradually rebuilding following low escapements during 1998-2001. Most escapement goals have been met for Chinook since 2001, for fall chum since 2003, for summer chum since 2002 and coho since 2000. However, some goals prior to these years and during recent years have not been met.</p> <p>The fishery did not meet the 80 scoring guidepost for this indicator due to failures to reach escapement goals over several years. Environmental conditions may affect some individual spawning stocks and management may have little effect in attaining those escapement goals under such a scenario. Even where fishing is curtailed, it may not be possible to consistently meet all goals during periods of poor environmental conditions, particularly where goals are defined based on sustainable or biological escapement goals. This highlights the limitations in application of SEGs or BEGs for assessments of conservation risk. As previously discussed, this assessment utilized SEGs or BEGs as the operational equivalent of limit reference points.</p>
<b>AFDF Action Plan</b>	<p>Sustainable escapement threshold (SET) relates to the definition of a stock of conservation concern. A general framework for setting SET has been developed based on its definition as “a level of escapement from which the stock has been demonstrated to recover.” ADF&amp;G will provide a report to AFDF describing the method of setting a SET and elaboration on the application of this framework to differing circumstances. AFDF will pass this information to the certifier upon receipt.</p>
<b>Conclusion from 1st Surveillance Report</b>	<p>The 80 Scoring Guidepost for this PI is based on two bullet point requirements. With respect to the first bullet point, The 80 Scoring Guidepost for this PI is based on two bullet point requirements. With respect to the first bullet point, the narrative from the original assessment stated that there was general agreement on the methods of estimating escapements and exploitation rates. Although concern was raised regarding the accuracy of the Yentna sonar estimates, recent studies and the future transition to a DIDSON sonar will improve the precision of the estimates. This part of the guidepost therefore met the 80 level requirements.</p> <p>With respect to the second, while escapements in the recent five years have fallen below the lower bound of the SEG range, it is problematic to measure this against a LRP, which is not defined or inappropriately defined. ADF&amp;G continues to monitor and report on stock status. Action plans have been developed and some stocks have recovered. Due to the lack of (or need for) clear definition of a LRP the surveillance team consider that this part of the guidepost is</p>

	not applicable. The Condition is therefore rescored at 80 and the Condition is closed.
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<b>Condition 42</b>	<p><b>Condition of Certification 42 (same as condition 8, 16, 22, 32, 39, 49, 59, 61):</b></p> <p>Evaluate appropriate existing age-sex-size information to determine if fisheries are exerting significant selectivity; continue ASL sampling in fisheries and several spawning stocks to continue a database for long-term evaluation of potential fishery selectivity. [Yukon]</p>
<b>Assessed Activity</b>	<p>This Condition relates principally to Indicator 1.3.1.</p> <p><b>100 Scoring Guidepost</b></p> <ul style="list-style-type: none"> <li>• There is comprehensive knowledge of the effect of fishing on biological characteristics such as the age, size, sex and genetic structure of the target stocks and the impact of changes in these factors on the reproductive capacity of the target stocks.</li> <li>• Management actions are consistent with maintaining healthy target stocks relative to biological characteristics such as age, size, sex and genetic structure of all target stocks.</li> <li>• Enhanced fish are identified and managed as separate target stocks.</li> </ul> <p><b>80 Scoring Guidepost</b></p> <ul style="list-style-type: none"> <li>• The knowledge of the effect of fishing on biological characteristics such as the age, size, sex and component stocks is adequate to detect threats to the reproductive capacity of the target stocks.</li> <li>• Management actions are consistent with maintaining healthy target stocks relative to biological characteristics such as age, size, sex and genetic structure of all target stocks.</li> <li>• The management system includes provisions to minimize any adverse impacts to the genetic structure of wild (un-enhanced) stocks that may be due to the enhancement of other stocks.</li> </ul> <p><b>60 Scoring Guidepost</b></p> <ul style="list-style-type: none"> <li>• The knowledge of the effect of fishing on the biological characteristics such as age, size, sex and component stocks is adequate to detect threats to the reproductive capacity of the majority of target stocks.</li> <li>• Management actions are consistent with maintaining healthy target stocks relative to biological characteristics such as age, size, sex or genetic structure for the majority of target stocks.</li> <li>• The management system includes provisions to minimize the major adverse impacts for the majority of wild (un-enhanced) stocks that may be due to the enhancement of other stocks.</li> </ul> <p><b>SCORE 74</b></p> <p>Extensive information on biological characteristics such as the age, size, sex and component stocks provides a reasonable basis for detection of fishing threats to the reproductive capacity of the target stocks. The significance of these considerations is specifically identified in the SSFP. It is unclear whether management actions are adequate for the health of all target stocks relative to biological characteristics such as age, size, sex and genetic structure of all stocks. Available time series of age, size, and length data for Yukon Chinook have been analyzed and noted small decreases in large female Chinook in most tributaries and a marginal decrease in average length of older fish although the causes of this pattern were unclear (Hyer and Schleusner 2005).</p>

	<p>This fishery did not meet the 80 scoring guidepost relative to the adequacy of management actions for maintaining biological characteristics including age, size, sex, and genetic structure of all target stocks. Chinook salmon age, sex and size characteristics and identifying potential temporal changes are in the process of being thoroughly reviewed by the U.S./Canada Yukon River Joint Technical Committee (JTC). In addition, the JTC will recommend further studies and projects to collect necessary information for monitoring changes in biological characteristics.</p>
<b>AFDF Action Plan</b>	<p>ASL sampling of fisheries and select spawning stocks is expected to continue over the long term in each certification unit. The intensity of sampling will be dependent on available funding and identified concerns. ADF&amp;G currently maintains comprehensive ASL sampling in all these fisheries; however these programs may be expanded as appropriate.</p> <p>AFDF will provide a report compiled by ADF&amp;G of existing ASL data by the end of 2009 that will evaluate the consequences of selective fishing.</p>
<b>Conclusion from 1st Surveillance Report</b>	<p>The Surveillance Team evaluated the evidence available for this issue against the requirements of the original scoring guideposts, as well as the condition and action plan. Potential effects of size-selective gillnets are well-known, in general, and data specific to Yukon Chinook salmon have been collected and analyzed. We anticipate additional analyses will be forthcoming, which would likely improve the score for this PI. This is considered sufficient to meet the requirement of the 80 Scoring Guidepost for this Performance Indicator. The PI is therefore rescored at 80 and the condition is closed.</p>

## Certification Unit 11 - Kuskokwim

<b>Condition 43</b>	<p><b>Condition of Certification 43 (related to Conditions 44, 45, 46, 47, 48, 50 &amp; 51):</b></p> <p>AFDF will provide information, produced by ADF&amp;G, to the assessment team that escapement monitoring activities will continue into the future and that the information collected is being used to further develop relationships between monitored stocks. [Kuskokwim]</p>
<b>Assessed Activity</b>	<p>This Condition relates principally to Indicator 1.1.1.4</p> <p><b>100 Scoring Guidepost</b></p> <ul style="list-style-type: none"> <li>• The status of the indicator stocks is well correlated with the stocks that are most at risk from a conservation point of view, not just correlated with the most productive stocks in the region.</li> <li>• The indicator stocks used have been reviewed and found to be scientifically defensible and appropriate by management authorities such as the NMFS, USFW, and the ADF&amp;G.</li> <li>• There is general agreement among regional fisheries scientists outside the management system that the indicator stocks are appropriate.</li> <li>• The relationships between indicator stocks and stocks of interest are assessed every three to five years.</li> </ul> <p><b>80 Scoring Guidepost</b></p> <ul style="list-style-type: none"> <li>• There is some evidence of coherence between the status of indicator stocks and the status of other stocks they represent within the management unit.</li> <li>• There is no significant scientific disagreement regarding the indicator stocks used by the management system to formulate management decisions for the fishery.</li> </ul> <p><b>60 Scoring Guidepost</b></p> <ul style="list-style-type: none"> <li>• There is some scientific basis for the indicator stocks used in the management of the fishery.</li> </ul> <p><b>SCORE 75</b></p> <p>ADF&amp;G has identified most stocks in the watershed. However, monitoring of escapements is a recent event. Mark-recapture techniques have been used to estimate the abundance of Chinook, chum, sockeye, and coho salmon in the mainstem Kuskokwim upstream of a point near the village of Kalskag, and escapement estimates of the Holitna River drainage. The Holitna River tagging project provides a relationship between escapement enumerated at Kogrukluks weir (operated for many years) and the remainder of the Holitna drainage. Salmon production below Kalskag is primarily from 3 large rivers, two of which have weirs (Tuluksak and Kwethluk). Presently, ADF&amp;G has developed escapement goals for 22 stocks in the region. There are an additional 32 stocks where escapement data are being collected (weir or aerial survey), but data are insufficient to develop escapement goals at this time. Unpublished analyses have compared stock escapements over time in an effort to develop a watershed-wide escapement index. ADF&amp;G anticipates the existing weir projects will continue in the foreseeable future, pending adequate funding.</p>
<b>AFDF Action Plan</b>	<p>The array of escapement weir projects and aerial surveys provide the information for addressing escapement monitoring and escapement goal development. ADF&amp;G has reported to AFDF that it has funded initiatives to operate these weirs/aerial surveys concurrent with drainage wide abundance estimates. The combination of these will serve as the vehicle for developing correlations between tributary escapements and total escapement (Chinook, chum and coho salmon) that will allow future estimates of total escapement from the weir/aerial</p>

	<p>surveys alone.</p> <p>ADF&amp;G has reported to AFDF that it has sought and will continue to seek funding for these projects however funding for these initiatives is extramural (i.e., AYK-SSI, OSM) and ADF&amp;G cannot guarantee that funding will continue indefinitely. By July 2008, AFDF will provide the assessment team with a summary of funding requests submitted by ADF&amp;G, and timelines for continued operations.</p>
<b>Conclusion from 1st Surveillance Report</b>	<p>At the original re-assessment, the first requirement of the Scoring Guidepost was partially met and the second requirement met. Since then, ADF&amp;G has continued to collect information as part of the run reconstruction effort for evaluating coherence among stocks (watersheds) in the large basin. Therefore the requirements of the 80 Scoring Guidepost are considered to be met. The PI is rescored at 80 and the condition closed.</p>

<b>Condition 44</b>	<p><b>Condition of Certification 44 (related to Conditions 43, 45, 46, 47, 48, 50 &amp; 51):</b></p> <p>Continue efforts to improve annual escapement assessments and improve escapement goals. [Kuskokwim]</p>
<b>Assessed Activity</b>	<p>This Condition relates principally to Indicator 1.1.2.2.</p> <p><b>100 Scoring Guidepost</b></p> <ul style="list-style-type: none"> <li>• Estimates are available for the annual escapement for each stock unit harvested in the fishery.</li> <li>• In-season escapement data are collected for all stock units and used to regulate the fishery.</li> <li>• Estimates are available for the annual escapement and natural spawning of all enhanced (e.g., hatchery) fish.</li> </ul> <p><b>80 Scoring Guidepost</b></p> <ul style="list-style-type: none"> <li>• Estimates are available for the annual escapement of each target stock harvested in the fishery.</li> <li>• Fishery independent indicators of spawning abundance are available for the non-target species harvested in the fishery.</li> <li>• In-season escapement data are collected for the target stocks and used to regulate the fishery.</li> <li>• Estimates are available for the annual escapement and natural spawning of enhanced (e.g., hatchery) fish, where enhanced fish are a significant component of the fishery, and where the release locations can have a reasonable probability of affecting the management of natural populations.</li> </ul> <p><b>60 Scoring Guidepost</b></p> <ul style="list-style-type: none"> <li>• Escapement estimates for target stocks are available, where escapement estimates are necessary to protect the target stock from overexploitation.</li> <li>• Fishery independent indicators of abundance are available for non-target stocks where the fishery harvests may represent a significant component of the harvest of that stock.</li> <li>• Capabilities exist to make estimates of the escapement and natural spawning of enhanced (e.g., marked hatchery) fish.</li> </ul> <p><b>SCORE 74</b></p> <p>Monitoring of spawning escapements expanded in 2000 and 2001 due to concerns over stock</p>

	production and productivity. Weirs have been built to improve escapement monitoring. As noted above, mark-recapture techniques have been used to estimate the abundance of Chinook, chum, sockeye, and coho salmon in the mainstem Kuskokwim upstream of a point near the village of Kalskag, and escapement estimates of the Holitna River drainage. Aerial surveys are flown, but weather seems to be a major limitation in some years. Coho salmon are often difficult to enumerate by air and they spawn relatively late. Coho is the major species supporting the commercial fishery. ADF&G provided eight references that describe recent enumeration programs. ADF&G anticipates continued funding of weir projects, but it notes that if funding is reduced, then an analysis would be undertaken to select projects most useful for indicting escapement trends and health of salmon stocks.
<b>AFDF Action Plan</b>	AFDF has been advised by ADF&G that it reviews assessment data and escapement goals every three years, coincident with the Board of Fisheries cycle. New information from recently completed and ongoing studies is included in these escapement goal reviews. The review for the Arctic-Yukon-Kuskokwim Region (including Kuskokwim and Norton Sound) was completed prior to the January 2007 Board of Fisheries meeting and is available from the ADF&G website. AFDF will provide this report to the assessment team. Efforts to improve assessments and analysis of escapement are detailed in that report as well as other ancillary reports. This effort will continue on a three cycle with the next review to be completed in 2010. AFDF will provide these reports to the surveillance team as they are generated, starting in 2007.
<b>Conclusion from 1st Surveillance Report</b>	<p>At the original re-assessment, the first and third requirements of the Scoring Guidepost was partially met, the second requirement met and the fourth not applicable. Since then, ADF&amp;G are now monitoring escapement into major tributaries thereby meeting the requirement of the first bullet point of the guidepost. They also continue to collect in-season test fishery data and enumerate salmon at weirs as a means to manage the fishery during the course of the season thereby meeting the requirement of the third bullet point.</p> <p>Therefore the requirements of the 80 Scoring Guidepost are considered to be fully met, the PI re-scored at 80 and the condition closed.</p>

<b>Condition 45</b>	<p><b>Condition of Certification 45 (same as Conditions 43, 44, 46, 47, 48, 50 &amp; 51):</b></p> <p>ADF&amp;G shall provide evidence to the assessment team that escapement monitoring activities will continue into the future and that the information collected is being used to further develop relationships between monitored stocks. [Kuskokwim]</p>
<b>Assessed Activity</b>	<p>This Condition relates principally to Indicator 1.1.2.4.</p> <p><b>100 Scoring Guidepost</b></p> <ul style="list-style-type: none"> <li>• Scientifically defensible productivity estimates (e.g. stock/recruitment relationships) have been derived for all target stocks and the relative productivity of non-target stocks is known.</li> <li>• Risk assessment has been conducted to determine the impact of alternative harvest strategies on non-target stocks. The risk assessment should include an assessment of the uncertainties with estimates of stock productivity for the target stocks.</li> </ul> <p><b>80 Scoring Guidepost</b></p> <ul style="list-style-type: none"> <li>• There is adequate information to identify the harvest and production strategies required to maintain the high productivity of the target stocks.</li> <li>• There is adequate information to estimate the relative productivity of the non-target stocks where the fishery harvests may represent a significant component of those non target stocks.</li> </ul>

	<ul style="list-style-type: none"> <li>• The harvest limitations for target stocks take into consideration the impacts on non target stocks and the uncertainty of the productivity for these stocks.</li> </ul> <p><b>60 Scoring Guidepost</b></p> <ul style="list-style-type: none"> <li>• The available information and analyses are adequate to identify the harvest limitations and production strategies required to maintain the productivity of the majority of target stocks.</li> <li>• The relative productivity of the non-target stocks is considered in the management strategy, where the fishery harvests may represent a significant component of those non-target stocks.</li> </ul> <p><b>SCORE 70</b></p> <p>The Kuskokwim area presently has insufficient information to calculate productivity of the tributary stocks. Instead, SEG escapement objectives have been developed to conserve the stocks, including Stocks of Concern. While these data are generally sufficient to protect the stocks, additional effort is needed to develop productivity estimates for the entire watershed. Since 2001 and 2002, mark-recapture techniques have been used to estimate the abundance of Chinook, chum, sockeye, and coho salmon at a point near the village of Kalskag and estimates of the Holitna River drainage escapement. Additionally salmon production below Kalskag are primarily from 3 large rivers, 2 of which have weirs (Tuluksak and Kwethluk). GSI techniques will be used beginning in 2006 to obtain more stock-specific harvest information. With continued monitoring, these data may be used to estimate productivity.</p>
<b>AFDF Action Plan</b>	<p>The array of escapement weir projects and aerial surveys provide the information for addressing escapement monitoring and escapement goal development. ADF&amp;G has reported to AFDF that it has funded initiatives to operate these weirs/aerial surveys concurrent with drainage wide abundance estimates. The combination of these will serve as the vehicle for developing correlations between tributary escapements and total escapement (Chinook, chum and coho salmon) that will allow future estimates of total escapement from the weir/aerial surveys alone.</p> <p>ADF&amp;G has reported to AFDF that it has sought and will continue to seek funding for these projects however funding for these initiatives is extramural (i.e., AYK-SSI, OSM) and ADF&amp;G cannot guarantee that funding will continue indefinitely. By July 2008, AFDF will provide the assessment team with a summary of funding requests submitted by ADF&amp;G, and timelines for continued operations.</p>
<b>Conclusion from 1st Surveillance Report</b>	<p>At the original re-assessment, each requirement of the Scoring Guidepost was partially met.</p> <p>Since then, ADF&amp;G has developed sustainable escapement goals for key stocks. Test fishery data and escapement monitoring data are used to manage the fishery in order to achieve the escapement goal. These data are generally sufficient to protect most target and non-target stocks as long as the current monitoring efforts continue to be funded.</p> <p>Therefore the requirements of the 80 Scoring Guidepost are considered to be fully met, Performance Indicator 1.1.2.4 is re-scored at 80 and the condition closed. However, future assessments will continue to monitor whether escapement monitoring projects have continued to operate effectively and collect the necessary data.</p>

<b>Condition 46</b>	<p><b>Condition of Certification 46 (related to Conditions 43, 44, 45, 47, 48, 50 &amp; 51):</b></p> <p>Continue efforts to improve annual escapement assessments and improve escapement goals.</p>
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	[Kuskokwim]
<b>Assessed Activity</b>	<p>This Condition relates principally to Indicator 1.1.3.2</p> <p><b>100 Scoring Guidepost</b></p> <ul style="list-style-type: none"> <li>• The Target Reference Point (TRP) or operational equivalents for target species have been reviewed and found to be scientifically defensible and appropriate by management authorities such as the NMFS, USFW, and the ADF&amp;G.</li> <li>• There is general agreement among regional fisheries scientist outside the management system that the TRP's or operational equivalents are appropriate.</li> <li>• The TRP's or operational equivalents for the target stocks take into account variability in the productivity of each component of the target stock and productivity of non-target stocks.</li> </ul> <p><b>80 Scoring Guidepost</b></p> <ul style="list-style-type: none"> <li>• There is no significant scientific disagreement regarding the TRP's or operational equivalents used by the management system to formulate management decision for the fishery.</li> <li>• The TRP's or operational equivalents for the target stocks take into account variability in the productivity of each component of the target stock and the productivity of non-target stocks.</li> </ul> <p><b>60 Scoring Guidepost</b></p> <ul style="list-style-type: none"> <li>• There is general agreement among fisheries scientist within the management system that the TRP's or operational equivalents are appropriate for the target stocks.</li> <li>• Target reference points have been defined for the majority of target stocks harvested in the fishery and these target reference points are not scientifically disputed.</li> <li>• The management system has taken into account the relative productivity of non-target stocks when setting the TRP's or operational equivalents for the majority of target stocks.</li> </ul> <p><b>SCORE 70</b></p> <p>Escapement goal ranges (SEGs) established for indicator stocks fit the definition of a Target Reference Point (TRP) as the desirable fishery level that management actions should achieve. Escapement goals were evaluated by ADF&amp;G in 2004. Escapement goals have been developed for 12 Chinook stocks, 3 sockeye stocks, 4 summer chum stocks (including some substocks), and 3 coho stocks. There are an additional 26 stocks where escapement data are being collected (weir or aerial survey). Most escapement goals are sustainable escapement goals (SEG). The escapement goals are based on historical data that incorporates variability in returns. As of March 2006, ADF&amp;G, through a public process, has begun review of escapement goals for the 2007 BOF meeting. A draft report has been available for public review since March 2006 in which three additional Chinook escapement goals are recommended, two are recommended for revision and 1 is recommended to be discontinued for a new total of 14 goals. Two SEGs (one Chinook and one sockeye) are being revised as BEGs (Brannian et al., in preparation). ADF&amp;G notes that it plans to continue to build its long-term database of stock productivity, and it will review escapement goals in preparation for the 2007 and 2010 Board of Fisheries cycle.</p>
<b>AFDF Action Plan</b>	<p>AFDF has been advised by ADF&amp;G that it reviews assessment data and escapement goals every three years, coincident with the Board of Fisheries cycle. New information from recently completed and ongoing studies is included in these escapement goal reviews. The review for the Arctic-Yukon-Kuskokwim Region (including Kuskokwim and Norton Sound) was completed prior to the January 2007 Board of Fisheries meeting and is available from the ADF&amp;G website. AFDF will provide this report to the assessment team. Efforts to improve assessments and analysis of escapement are detailed in that report as well as other ancillary reports. This effort will continue on a three cycle with the next review to be completed in 2010.</p>



	AFDF will provide these reports to the surveillance team as they are generated, starting in 2007.
<b>Conclusion from 1st Surveillance Report</b>	<p>At the original re-assessment, each requirement of the Scoring Guidepost was partially met. With regard to these requirements, the surveillance team considers that current escapement goals are reasonable for sustaining harvests and runs and the ADF&amp;G continues to monitor and manage the fishery to meet such escapement goals. The intent of both parts of the guidepost has therefore been met whilst ADFG continues these critical activities.</p> <p>Therefore the requirements of the 80 Scoring Guidepost are considered to be fully met, Performance Indicator 1.1.3.2 is re-scored at 80 and the condition closed.</p>

## Certification Unit 13 – Norton Sound

<b>Condition 47</b>	<p><b>Condition of Certification 47 (related to Conditions 43, 44, 45, 46, 48, 50 &amp; 51):</b></p> <p>Provide review and explanation that monitored stocks (indicator/index) provide a sufficient estimate of escapements for all stocks in the region. [Norton Sound]</p>
<b>Assessed Activity</b>	<p>This Condition relates principally to Indicator 1.1.1.4</p> <p><b>100 Scoring Guidepost</b></p> <ul style="list-style-type: none"> <li>• The status of the indicator stocks is well correlated with the stocks that are most at risk from a conservation point of view, not just correlated with the most productive stocks in the region.</li> <li>• The indicator stocks used have been reviewed and found to be scientifically defensible and appropriate by management authorities such as the NMFS, USFW, and the ADF&amp;G.</li> <li>• There is general agreement among regional fisheries scientists outside the management system that the indicator stocks are appropriate.</li> <li>• The relationships between indicator stocks and stocks of interest are assessed every three to five years.</li> </ul> <p><b>80 Scoring Guidepost</b></p> <ul style="list-style-type: none"> <li>• There is some evidence of coherence between the status of indicator stocks and the status of other stocks they represent within the management unit.</li> <li>• There is no significant scientific disagreement regarding the indicator stocks used by the management system to formulate management decisions for the fishery.</li> </ul> <p><b>60 Scoring Guidepost</b></p> <ul style="list-style-type: none"> <li>• There is some scientific basis for the indicator stocks used in the management of the fishery.</li> </ul> <p><b>SCORE 75</b></p> <p>All stocks (subdistricts) and most substocks (streams) have some form of monitoring, although data collection has increased in recent years. Escapements are monitored by counting projects (Kent 2006) and aerial surveys (Kohler et. al. 2005). Radio telemetry projects conducted since 1998 on several streams and species provide estimates of the proportionate contributions of intensively monitored escapement indices to the total escapement (Wuttig 1999; Estensen et. al. 2005; Joy et. al. 2005; Todd et. al. 2005). According to ADF&amp;G, the North River tower count represents approximately 40% of the Unalakleet Chinook salmon escapement, the Niukluk River tower count represents an estimated 30% of the Fish River drainage chum salmon escapement, and North River tower count represents about 10% of the Unalakleet drainage chum salmon escapement.</p>
<b>AFDF Action Plan</b>	<p>AFDF will submit a report, produced by ADF&amp;G in December 2008, with a detailed explanation of how monitored stocks provide a sufficient estimate of escapement in Norton Sound.</p>
<b>Conclusion from 1st Surveillance Report</b>	<p>At the original re-assessment, the first requirement of the Scoring Guidepost was partially met, the second fully met.</p> <p>With regard to these requirements, the recent reports and continued data collection by ADFG provide evidence for meeting both requirements of this SG. Therefore the requirements of the 80 Scoring Guidepost are considered to be fully met, Performance Indicator 1.2.1 is re-scored at 80 and the condition closed.</p>

<b>Condition 48</b>	<p><b>Condition of Certification 48 (related to Conditions 43, 44, 45, 46, 47, 50 &amp; 51):</b></p> <p>Continue efforts to improve annual escapement assessments and continue efforts to improve escapement objectives [Norton Sound]</p>
<b>Assessed Activity</b>	<p>This Condition relates principally to Indicator 1.1.2.2</p> <p><b>100 Scoring Guidepost</b></p> <ul style="list-style-type: none"> <li>• Estimates are available for the annual escapement for each stock unit harvested in the fishery.</li> <li>• In-season escapement data are collected for all stock units and used to regulate the fishery.</li> <li>• Estimates are available for the annual escapement and natural spawning of all enhanced (e.g., hatchery) fish.</li> </ul> <p><b>80 Scoring Guidepost</b></p> <ul style="list-style-type: none"> <li>• Estimates are available for the annual escapement of each target stock harvested in the fishery.</li> <li>• Fishery independent indicators of spawning abundance are available for the non-target species harvested in the fishery.</li> <li>• In-season escapement data are collected for the target stocks and used to regulate the fishery.</li> <li>• Estimates are available for the annual escapement and natural spawning of enhanced (e.g., hatchery) fish, where enhanced fish are a significant component of the fishery, and where the release locations can have a reasonable probability of affecting the management of natural populations.</li> </ul> <p><b>60 Scoring Guidepost</b></p> <ul style="list-style-type: none"> <li>• Escapement estimates for target stocks are available, where escapement estimates are necessary to protect the target stock from overexploitation.</li> <li>• Fishery independent indicators of abundance are available for non-target stocks where the fishery harvests may represent a significant component of the harvest of that stock.</li> <li>• Capabilities exist to make estimates of the escapement and natural spawning of enhanced (e.g., marked hatchery) fish.</li> </ul> <p><b>SCORE 73</b></p> <p>Monitoring of spawning escapements has expanded in recent years due to concerns over stock production and productivity. Escapements on many streams are monitored by aerial surveys, weirs, counting tower, and telemetry (Estensen and Cartusciello 2005, BLM 2002, Kawerak 2006). Coho salmon are often difficult to enumerate by air because weather is poor for flying during August and September. New escapement projects have improved upon monitoring of coho escapement. Accuracy of chum escapements can be impacted by the presence of numerous pink salmon, especially in recent years when pink salmon are abundant. However, ADF&amp;G has relied on nearby streams with towers or weirs to gather more accurate data on chum escapement (ADF&amp;G 2006a).</p>
<b>AFDF Action Plan</b>	<p>AFDF has been advised by ADF&amp;G that it reviews assessment data and escapement goals every three years, coincident with the Board of Fisheries cycle. New information from recently completed and ongoing studies is included in these escapement goal reviews. The review for the Arctic-Yukon-Kuskokwim Region (including Kuskokwim and Norton Sound) was completed prior to the January 2007 Board of Fisheries meeting and is available from the ADF&amp;G website. AFDF will provide this report to the assessment team. Efforts to improve</p>

	assessments and analysis of escapement are detailed in that report as well as other ancillary reports. This effort will continue on a three cycle with the next review to be completed in 2010. AFDF will provide these reports to the surveillance team as they are generated, starting in 2007.
<b>Conclusion from 1st Surveillance Report</b>	<p>At the original re-assessment, the first and third bullet point requirements of the Scoring Guidepost was partially met, the second fully met, and the fourth not relevant.</p> <p>With regard to these requirements, ADF&amp;G are monitoring escapement and the methodology continues to improve. Test fisheries and in-season escapement are used as an independent means to access stock status. Escapement data (weirs aerial) are available for non-target species such as pink salmon.</p> <p>Therefore the requirements of the 80 Scoring Guidepost are considered to be fully met, Performance Indicator 1.1.2.2 is re-scored at 80 and the condition closed.</p>

<b>Condition 49</b>	<p><b>Condition of Certification 49 (same as Conditions 8, 16, 22, 32, 39, 42, 59, 61):</b></p> <p>Evaluate existing age-sex-size information to determine if fisheries are exerting significant selectivity; implement adequate age-sex-size sampling in fisheries and of several spawning stocks to continue a data base for long-term evaluation of potential fishery selectivity. [Norton Sound]</p>
<b>Assessed Activity</b>	<p>This Condition relates principally to Indicator 1.1.2.3</p> <p><b>100 Scoring Guidepost</b></p> <ul style="list-style-type: none"> <li>• Annual monitoring programs collect data on the age and size of the catch and escapement for target and non-target stocks where there is a clear scientific basis for collecting these data.</li> </ul> <p><b>80 Scoring Guidepost</b></p> <ul style="list-style-type: none"> <li>• Periodic monitoring programs collect data on the age and size of the catch and escapement for target stocks, and for non-target stocks where the fishery harvests may represent a significant component of the harvest of those non-target stocks.</li> <li>• There is a scientific basis for the frequency of the sampling program to collect age and size data where there is a clear scientific basis for collecting these data.</li> </ul> <p><b>60 Scoring Guidepost</b></p> <ul style="list-style-type: none"> <li>• The information on age and size of catch and escapement is adequate, where there is general scientific agreement that these data are important to assess the status of the stocks or adjust fisheries management decisions For example: information on the age distribution of coho salmon harvests would not be considered important for stock assessment or fisheries management decisions whereas age information would be important for the assessment and management related to most Chinook fisheries. Monitoring programs should be in place to detect changes in the size of the fish harvested for each salmon species.</li> </ul> <p><b>SCORE 75</b></p> <p>Monitoring programs collect data on the age, sex and size of the catch and escapement for most directed fisheries, at least in recent years. A data recovery project is underway in the Norton Sound area to gather these data and organize them in a centralized database (L. Brannian, ADF&amp;G, pers. Comm.). Under the new WASSIP project, sampling for GSI of coastal subsistence harvests is planned for 2006 and 2007.</p>
<b>AFDF Action</b>	ASL sampling of fisheries and select spawning stocks is expected to continue over the long

<b>Plan</b>	<p>term in each certification unit. The intensity of sampling will be dependent on available funding and identified concerns. ADF&amp;G currently maintains comprehensive ASL sampling in all these fisheries; however these programs may be expanded as appropriate.</p> <p>AFDF will provide a report compiled by ADF&amp;G of existing ASL data by the end of 2009 that will evaluate the consequences of selective fishing.</p>
<b>Conclusion from 1st Surveillance Report</b>	<p>The Surveillance Team evaluated the evidence available for this issue against the requirements of the original scoring guideposts, as well as the condition and action plan. It is considered that data collection has now improved sufficiently and ADFG collects age and size information on target stocks when there is a fishery.</p> <p>This is considered sufficient to meet the intent of the 80 Scoring Guidepost for this Performance Indicator. This PI is now re-scored at 80 and the condition closed.</p>

<b>Condition 50</b>	<p><b>Condition of Certification 50 (related to 43, 44, 45, 46, 47, 48, 51):</b></p> <p>Continue efforts to improve annual escapement assessments and continue efforts to improve escapement objectives [Norton Sound].</p>
<b>Assessed Activity</b>	<p>This Condition relates principally to Indicator 1.1.2.4</p> <p><b>100 Scoring Guidepost</b></p> <ul style="list-style-type: none"> <li>• Scientifically defensible productivity estimates (e.g. stock/recruitment relationships) have been derived for all target stocks and the relative productivity of non-target stocks is known.</li> <li>• Risk assessment has been conducted to determine the impact of alternative harvest strategies on non-target stocks. The risk assessment should include an assessment of the uncertainties with estimates of stock productivity for the target stocks.</li> </ul> <p><b>80 Scoring Guidepost</b></p> <ul style="list-style-type: none"> <li>• There is adequate information to identify the harvest and production strategies required to maintain the high productivity of the target stocks.</li> <li>• There is adequate information to estimate the relative productivity of the non-target stocks where the fishery harvests may represent a significant component of those non target stocks.</li> <li>• The harvest limitations for target stocks take into consideration the impacts on non target stocks and the uncertainty of the productivity for these stocks.</li> </ul> <p><b>60 Scoring Guidepost</b></p> <ul style="list-style-type: none"> <li>• The available information and analyses are adequate to identify the harvest limitations and production strategies required to maintain the productivity of the majority of target stocks.</li> <li>• The relative productivity of the non-target stocks is considered in the management strategy, where the fishery harvests may represent a significant component of those non-target stocks.</li> </ul> <p><b>SCORE 67</b></p> <p>Most watersheds in Norton Sound have incomplete information to calculate productivity estimates. The data recovery project may provide additional information for calculating productivity. Telemetry data are now used to estimate drainage-wide escapements in some areas. However, commercial catches are often from mixed stocks to an unknown extent causing difficulties to assign harvest to stream of origin. GSI of Chinook harvests in Eastern Norton Sound coastal waters is anticipated in the near future, according to ADF&amp;G.</p>

<b>AFDF Action Plan</b>	<p>ASL sampling of fisheries and select spawning stocks is expected to continue over the long term in each certification unit. The intensity of sampling will be dependent on available funding and identified concerns. ADF&amp;G currently maintains comprehensive ASL sampling in all these fisheries; however these programs may be expanded as appropriate.</p> <p>AFDF will provide a report compiled by ADF&amp;G of existing ASL data by the end of 2009 that will evaluate the consequences of selective fishing.</p>
<b>Conclusion from 1st Surveillance Report</b>	<p>At the original re-assessment, the first and third bullet point requirements of the Scoring Guidepost was partially met and the second not met.</p> <p>With regard to these requirements, ADF&amp;G are developing new escapement goals based on new brood tables. These data will contribute to strategies to sustain harvests, although studies show that these stocks are not highly productive probably due to their extreme latitude. Escapement and harvest data continues to be collected for all species. The surveillance team consider that existing low harvest rates for non-target stocks mean that productivity estimates for these is not required.</p> <p>Therefore the requirements of the 80 Scoring Guidepost are considered to be fully met, Performance Indicator 1.1.2.4 is re-scored at 80 and the condition closed.</p>

<b>Condition 51</b>	<p><b>Condition of Certification 51 (related to Conditions 43, 44, 45, 46, 47, 48 and 50)</b></p> <p>Continue efforts to improve annual escapement assessments and continue efforts to improve escapement objectives [Norton Sound]</p>
<b>Assessed Activity</b>	<p>This Condition relates principally to Indicator 1.1.3.2.</p> <p><b>100 Scoring Guidepost</b></p> <ul style="list-style-type: none"> <li>• The Target Reference Point (TRP) or operational equivalents for target species have been reviewed and found to be scientifically defensible and appropriate by management authorities such as the NMFS, USFW, and the ADF&amp;G.</li> <li>• There is general agreement among regional fisheries scientist outside the management system that the TRP's or operational equivalents are appropriate.</li> <li>• The TRP's or operational equivalents for the target stocks take into account variability in the productivity of each component of the target stock and productivity of non-target stocks.</li> </ul> <p><b>80 Scoring Guidepost</b></p> <ul style="list-style-type: none"> <li>• There is no significant scientific disagreement regarding the TRP's or operational equivalents used by the management system to formulate management decision for the fishery.</li> <li>• The TRP's or operational equivalents for the target stocks take into account variability in the productivity of each component of the target stock and the productivity of non-target stocks.</li> </ul> <p><b>60 Scoring Guidepost</b></p> <ul style="list-style-type: none"> <li>• There is general agreement among fisheries scientist within the management system that the TRP's or operational equivalents are appropriate for the target stocks.</li> <li>• Target reference points have been defined for the majority of target stocks harvested in the fishery and these target reference points are not scientifically disputed.</li> <li>• The management system has taken into account the relative productivity of non-target stocks when setting the TRP's or operational equivalents for the majority of target stocks.</li> </ul>

	<p><b>SCORE 70</b></p> <p>Escapement goal ranges (SEGs and BEGs) established for indicator stocks fit the definition of a Target Reference Point (TRP) as the desirable fishery level that management actions should achieve. Escapement goals were evaluated by ADF&amp;G in 2004. They will be reviewed again in 2007 in accordance with the triennial Board of Fisheries meeting cycle. Escapement goals have been developed for six Chinook stocks, six pink salmon stocks, two sockeye stocks, 13 chum stocks (including some substocks), and three coho stocks. Most escapement goals are considered sustainable escapement goals (SEG).</p>
<b>AFDF Action Plan</b>	<p>AFDF has been advised by ADF&amp;G that it reviews assessment data and escapement goals every three years, coincident with the Board of Fisheries cycle. New information from recently completed and ongoing studies is included in these escapement goal reviews. The review for the Arctic-Yukon-Kuskokwim Region (including Kuskokwim and Norton Sound) was completed prior to the January 2007 Board of Fisheries meeting and is available from the ADF&amp;G website. AFDF will provide this report to the assessment team. Efforts to improve assessments and analysis of escapement are detailed in that report as well as other ancillary reports. This effort will continue on a three cycle with the next review to be completed in 2010. AFDF will provide these reports to the surveillance team as they are generated, starting in 2007.</p>
<b>Conclusion from 1st Surveillance Report</b>	<p>At the original re-assessment, both requirements of the Scoring Guidepost were partially met.</p> <p>With regard to these requirements, ADF&amp;G continues to collect escapement data and to evaluate escapement goals that take into account the variability in productivity.</p> <p>Therefore the requirements of the 80 Scoring Guidepost are considered to be fully met, Performance Indicator 1.1.3.2 is re-scored at 80 and the condition closed.</p>

<b>Condition 52</b>	<p><b>Condition of Certification 52 (same as Condition 64 &amp; 69 and related to Condition 40):</b></p> <p>Action Plans should identify fishery specific objectives for recovery and provide an anticipated timeframe for meeting the objectives. (same as for Condition under Principle 2, Indicator 2.3.1 and Principle 3, Indicator 3.4.1.2.[Norton Sound])</p>
<b>Assessed Activity</b>	<p>This Condition relates principally to Indicator 1.2.1.</p> <p><b>100 Scoring Guidepost</b></p> <ul style="list-style-type: none"> <li>• There are comprehensive and pre-agreed responses to low stock size that utilize a range of management measures to ensure rapid recovery.</li> <li>• Stocks are allowed to recover to the TRP before commercial fisheries are permitted that target these stocks.</li> <li>• The management system does not use artificial propagation as a substitute for maintaining or recovering wild stocks.</li> </ul> <p><b>80 Scoring Guidepost</b></p> <ul style="list-style-type: none"> <li>• In the event of severe depletion, recovery plans are developed and implemented to facilitate the recovery of the depleted stocks within 3 reproductive cycles.</li> <li>• Stocks are allowed to recover to more than 150% of the LRP for abundance before any fisheries are permitted that target these stocks.</li> </ul> <p><b>60 Scoring Guidepost</b></p> <ul style="list-style-type: none"> <li>• In the event of severe depletion, recovery plans are developed and implemented to</li> </ul>

	<p>facilitate the recovery of the depleted stocks within 5 reproductive cycles</p> <ul style="list-style-type: none"> <li>• Stocks are allowed to recover to more than 125% of the LRP for abundance before any fisheries are permitted that target these stocks.</li> </ul> <p><b>SCORE 70</b></p> <p>Action Plans have been developed for each Stock of Concern in Norton Sound. The plans review stock status, escapement goals, habitats factors, expanding fisheries, current management practices, research, and actions to improve stock status. The Action Plans did not identify a time frame for recovery if actions are implemented. However, stocks of concern are reviewed by the public, ADF&amp;G and Board of Fisheries every three years. Thus a scheduled review is in policy to determine continuation as stocks of concern, to assess how Action Plans are working and to make changes to Action Plans to continue addressing stocks of concern. The Action Plans did not incorporate information on the harvests of Norton Sound chum salmon in the False Pass fishery and actions that are taking place in that region to conserve AYK chum salmon.</p> <p>A formal process for recognizing recovery and removal from the list of stocks of concern is not contained in regulation. The definitions for stocks of concern in the SSFP are relative to a 'chronic inability' clause, defined as a "four to five year period which is approximately the generation time of most salmon species", which serves as an appropriate benchmark for the designations. In the absence of other complexities particular to a specific situation, ADF&amp;G is comfortable with recognizing recovery as meeting escapement or yield objectives for a stock of concern in a majority of the previous five years, and would recommend removal as a stock of concern under those conditions. However, a formal review process involving ADF&amp;G and Board of Fisheries with public input is followed to make the formal determination of removal from a list of stocks of concern.</p>
<b>AFDF Action Plan</b>	<p>Whenever a stock of concern is established, an action plan is required (5 AAC 39.22 – Policy for Management of Sustainable Salmon Fisheries SSFP). Action plans for the most recent Board of Fisheries cycle will be provided by December 1, 2007. For stocks that require action plan, i.e. Norton Sound, AFDF will provide the assessment team with the action plan and timeline for anticipated recovery, reviewed and approved by ADF&amp;G after that date.</p>
<b>Conclusion from 1st Surveillance Report</b>	<p>At the original re-assessment, both requirements of the Scoring Guidepost were partially met.</p> <p>With regard to these requirements, ADFG has developed recovery action plans that meet the intent of the 80 guidepost. Although the plans do not have specific timelines for recovery, they do, appropriately, require additional analysis by ADFG and the Board of Fisheries every three years. The second bullet point is not considered applicable to an escapement goal based salmon fishery.</p> <p>Therefore the requirements of the 80 Scoring Guidepost are considered to be fully met, Performance Indicator 1.2.1 is re-scored at 80 and the condition closed.</p>



## Certification Unit 14 – Kodiak

<b>Condition 53</b>	<b>Condition of Certification 53:</b> Examine the strength of correlations between stocks in the Kodiak area. [Kodiak]
<b>Assessed Activity</b>	<p>This Condition relates principally to Indicator 1.1.1.4.</p> <p><b>100 Scoring Guidepost</b></p> <ul style="list-style-type: none"> <li>• The status of the indicator stocks is well correlated with the stocks that are most at risk from a conservation point of view, not just correlated with the most productive stocks in the region.</li> <li>• The indicator stocks used have been reviewed and found to be scientifically defensible and appropriate by management authorities such as the NMFS, USFW, and the ADF&amp;G.</li> <li>• There is general agreement among regional fisheries scientists outside the management system that the indicator stocks are appropriate.</li> <li>• The relationships between indicator stocks and stocks of interest are assessed every three to five years.</li> </ul> <p><b>80 Scoring Guidepost</b></p> <ul style="list-style-type: none"> <li>• There is some evidence of coherence between the status of indicator stocks and the status of other stocks they represent within the management unit.</li> <li>• There is no significant scientific disagreement regarding the indicator stocks used by the management system to formulate management decisions for the fishery.</li> </ul> <p><b>60 Scoring Guidepost</b></p> <ul style="list-style-type: none"> <li>• There is some scientific basis for the indicator stocks used in the management of the fishery.</li> </ul> <p><b>SCORE 75</b></p> <p>Major sockeye and all Chinook systems are monitored by weir for escapement. Many of the pink and chum streams and most minor sockeye systems are monitored by aerial survey. Some of the road system and larger remote coho systems are monitored. We have not seen analyses attempting to correlate trends in abundance, productivity, or escapement between stocks or spawning populations. However, recent research in the North Pacific suggests productivity of nearby stocks is correlated and that this correlation breaks down with distance. Correlations between escapements (and/or runs) of monitored stocks would help confirm this analysis.</p>
<b>AFDF Action Plan</b>	ADF&G has reported to AFDF that this work is ongoing. Correlations between stocks and streams will be examined to develop indexed escapement goals rather than attempting to count total escapements. The index would also be correlated to past total escapements with a correction factor. This work will be ready for presentation to the Board of Fisheries and to the assessment team by AFDF during the Board's +2007/08 cycle of meetings.
<b>Conclusion from 1st Surveillance Report</b>	Progress on this Condition is on-target. This Condition remains open and is expected to be closed out following the publication of the Finkle and Vining report in early 2009 and review during the second annual MSC surveillance audit.
<b>AFDF Actions</b>	ADF&G reviewed correlations between stocks and streams in order to develop indexed escapement goals for the Kodiak area. The results are published in "Finkle, H. and I.W. Vining. 2009. Determination of aerial survey index streams used to assess salmon stocks in the Westward Region. ADF&G, Fishery Data Series No. 09-09, Anchorage."
<b>Observations</b>	This condition, which involves correlation between indicator stocks, is specific to pink and

	<p>chum salmon because essentially all sockeye and Chinook are monitored in the Kodiak area. Coho streams that tend to have more fishing effort are monitored, but commercial effort on moist coho streams is relatively low. Status of pink and chum salmon in the region requires the monitoring of a subset of streams (81 chum streams, 67 pink streams), called indicator streams, because not all streams can be reliably monitored (481 pink streams, 520 chum streams). ADF&amp;G conducted a formal analysis to evaluate the degree to which indicator stocks are correlated and they published the findings and made them available online (Finkle and Vining 2009). The analysis showed that pink and chum salmon indicator stream escapements were highly correlated, 1987-2007. Some of the smaller populations were excluded from the analysis because ADF&amp;G felt they may not contribute significantly to management decisions. This analysis supports the fulfilment of the condition. However, the report also states that these results may be used to select the “best” indicator streams should budget cuts cause fewer streams to be monitored. In light of this, the report also encourages monitoring of streams “outside” of the normal indicator stocks because it recognizes that trends may change over time.</p>
<b>Conclusion</b>	<p>On the basis of the following scoring guideposts the score associated with Performance Indicator 1.1.1.4 is adjusted as follows:</p> <p><b>100 Scoring Guidepost</b></p> <ul style="list-style-type: none"> <li>• The status of the indicator stocks is well correlated with the stocks that are most at risk from a conservation point of view, not just correlated with the most productive stocks in the region.</li> <li>• The indicator stocks used have been reviewed and found to be scientifically defensible and appropriate by management authorities such as the NMFS, USFW, and the ADF&amp;G.</li> <li>• There is general agreement among regional fisheries scientists outside the management system that the indicator stocks are appropriate.</li> <li>• The relationships between indicator stocks and stocks of interest are assessed every three to five years.</li> </ul> <p><b>80 Scoring Guidepost</b></p> <ul style="list-style-type: none"> <li>• There is some evidence of coherence between the status of indicator stocks and the status of other stocks they represent within the management unit.</li> <li>• There is no significant scientific disagreement regarding the indicator stocks used by the management system to formulate management decisions for the fishery.</li> </ul> <p>The first bullet under the 80 Guidepost was scored as a half and the second as full credit during the recertification assessment.</p> <p>The analysis and report prepared by ADF&amp;G on pink and chum salmon satisfies the first bullet under the 80 Guidepost. The intent of the guidepost is therefore met and the Condition can be rescored at 80. The condition is closed out and the issues associated with this PI will be part of the overall review of the ongoing operation of this fishery during audits. Coho was not included as part of this condition because effort on commercial fishing on coho salmon is low. Additional coho indicator stocks would be necessary if fishing effort for coho salmon increased.</p>

<b>Condition 54</b>	<p><b>Condition of Certification 54 (same as Condition 55):</b></p> <p>Evaluate status of Kodiak chum salmon to determine if they should be classified as a Stock of Concern, then follow up with an appropriate action plan to recover stocks as needed. [Kodiak]</p>
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<b>Assessed Activity</b>	<p>This Condition relates principally to Indicator 1.2.1</p> <p><b>100 Scoring Guidepost</b></p> <ul style="list-style-type: none"> <li>• There are comprehensive and pre-agreed responses to low stock size that utilize a range of management measures to ensure rapid recovery.</li> <li>• Stocks are allowed to recover to the TRP before commercial fisheries are permitted that target these stocks.</li> <li>• The management system does not use artificial propagation as a substitute for maintaining or recovering wild stocks.</li> </ul> <p><b>80 Scoring Guidepost</b></p> <ul style="list-style-type: none"> <li>• In the event of severe depletion, recovery plans are developed and implemented to facilitate the recovery of the depleted stocks within 3 reproductive cycles.</li> <li>• Stocks are allowed to recover to more than 150% of the LRP for abundance before any fisheries are permitted that target these stocks.</li> </ul> <p><b>60 Scoring Guidepost</b></p> <ul style="list-style-type: none"> <li>• In the event of severe depletion, recovery plans are developed and implemented to facilitate the recovery of the depleted stocks within 5 reproductive cycles</li> <li>• Stocks are allowed to recover to more than 125% of the LRP for abundance before any fisheries are permitted that target these stocks.</li> </ul> <p><b>SCORE 70</b></p> <p>There are no Stocks of Concern in Kodiak. ADF&amp;G typically has a good strategy for recovering depleted stocks. However, some Kodiak chum stocks salmon have not meet escapement goals for a number of years and they have not been identified as a Stock of Concern. ADF&amp;G notes that chum salmon will be examined for potential Stock of Concern status in the 2007/2008 Board of Fisheries meeting.</p>
<b>AFDF Action Plan</b>	<p>Evaluation of stock status is an ongoing activity. Efforts to that effect have increased on the Northwest District chum salmon stocks to see if they should be classified as a Stock of Concern. Because of the limited fishing in the District, aerial survey efforts have been minimal in recent years as resources were directed to other priority areas where harvests actually occur. Aerial survey efforts in the NW District stocks were increased this year (2007), and as anticipated higher chum salmon escapements were observed, and escapement goals were met. This work will be presented to the Board of Fisheries and provided to the assessment team by AFDF during the Kodiak Board cycle (2007-2008).</p>
<b>Conclusion from 1st Surveillance Report</b>	<p>Progress is on-target. ADF&amp;G and the Board of Fisheries have considered whether or not chum salmon should be classified as a stock of concern. This Condition remains open until the ADF&amp;G are able to demonstrate with adequate quality data that the stock has recovered, as a minimum, to the aggregate escapement goal. A new Kodiak chum escapement goal analysis should be produced by spring 2011. This condition will be reviewed by the surveillance team in the fourth surveillance audit.</p>
<b>AFDF Actions</b>	<p>A preliminary analysis of the Kodiak chum salmon escapement goal has been developed and will be presented to the Board in the fall of 2010. A final analysis will then be prepared.</p>
<b>Observations</b>	<p>ADF&amp;G completed a detailed analysis of chum indicators stocks in the Kodiak and adjacent regions (see Condition 53; Finkle and Vining 2009). This analysis may be used by ADF&amp;G when evaluating escapement goals for chum salmon in 2011.</p>
<b>Conclusion</b>	<p>This condition appears to be on target and it is anticipated that the condition can be closed out in 2011 when ADF&amp;G conducts its review of chum salmon escapement goals in the Kodiak</p>

	Management Area.
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<b>Condition 55</b>	<p><b>Condition of Certification 55 (same as Condition 54):</b></p> <p>Evaluate status of Kodiak chum salmon to determine if they should be classified as a Stock of Concern, then follow up with an appropriate action plan to recover stocks as needed. [Kodiak]</p>
<b>Assessed Activity</b>	<p>This Condition relates principally to Indicator 1.2.2.</p> <p><b>100 Scoring Guidepost</b></p> <ul style="list-style-type: none"> <li>• There is general agreement among regional fisheries scientist outside the management system that the methods of estimating escapements and exploitation rates for the target stocks are scientifically defensible.</li> <li>• Management actions have reduced fishing as the target stocks approach the LRP and fisheries have only resulted in escapements that approach or are below the LRP escapement goal in one year in a period of the most recent 10 consecutive years, for any of the target stocks.</li> </ul> <p><b>80 Scoring Guidepost</b></p> <ul style="list-style-type: none"> <li>• There is general agreement among regional fisheries scientist inside the management system that the methods of estimating escapements and exploitation rates for the target stocks are scientifically defensible.</li> <li>• Management actions have reduced fishing as the target stocks approach the LRP and fisheries have only resulted in escapements that approach or are below the LRP escapement goal in one year in a period of the most recent 5 consecutive years, for any of the target stocks.</li> </ul> <p><b>60 Scoring Guidepost</b></p> <ul style="list-style-type: none"> <li>• There is general agreement among regional fisheries scientist inside the management system that the methods of estimating escapements and exploitation rates for the majority of target stocks are scientifically defensible.</li> <li>• Management actions have reduced fishing as the target stocks approach the LRP and fisheries have only resulted in escapements that approach or are below the LRP escapement goal in no more than two years in a period of the most recent 5 consecutive years, for the majority of the target stocks.</li> </ul> <p><b>SCORE 70</b></p> <p>The methods used to estimate escapement of each species is reasonable given the number of streams occupied by each species, i.e., aerial surveys for species that spawn in numerous small streams (pink, chum, and coho). More effort could be made to estimate escapement of coho, which spawn later than the other species but logistics and costs of such surveys are prohibitive; most coho streams are monitored early in the season and key stocks are monitored more intensely. Most species have met the escapement goal during the past 10 years, except chum salmon. Some chum stocks (districts) have not met escapement goals in 5 or 6 to 7 of the past 10 years (Eastside, Northeast, Mainland), although the East side stock has recovered during past 3 years. Harvest rates on chum have been high in some years and areas. ADF&amp;G notes that chum salmon will be examined for potential Stock of Concern status in the 2007/2008 Board of Fisheries meeting.</p>
<b>AFDF Action Plan</b>	<p>Evaluation of stock status is an ongoing activity. Efforts to that effect have increased on the Northwest District chum salmon stocks to see if they should be classified as a Stock of Concern. Because of the limited fishing in the District, aerial survey efforts have been minimal in recent years as resources were directed to other priority areas where harvests actually occur.</p>

	Aerial survey efforts in the NW District stocks were increased this year (2007), and as anticipated higher chum salmon escapements were observed, and escapement goals were met. This work will be presented to the Board of Fisheries and provided to the assessment team by AFDF during the Kodiak Board cycle (2007-2008).
<b>Conclusion from 1st Surveillance Report</b>	Progress is on-target. ADF&G and the Board of Fisheries have considered whether or not chum salmon should be classified as a stock of concern. This Condition remains open until the ADF&G are able to demonstrate with adequate quality data that the stock has recovered, as a minimum, to the aggregate escapement goal. A new Kodiak chum escapement goal analysis should be produced by spring 2011. This condition will be reviewed by the surveillance team in the fourth surveillance audit.
<b>AFDF Actions</b>	A preliminary analysis of the Kodiak chum salmon escapement goal has been developed and will be presented to the Board in the fall of 2010. A final analysis will then be prepared.
<b>Observations</b>	ADF&G completed a detailed analysis of chum indicators stocks in the Kodiak and adjacent regions (see Condition 53; Finkle and Vining 2009). This analysis may be used by ADF&G when evaluating escapement goals for chum salmon in 2011.
<b>Conclusion</b>	This condition appears to be on target and it is anticipated that the condition can be closed out in 2011 when ADF&G conducts its review of chum salmon escapement goals in the Kodiak Management Area.

## Certification Unit 15 - Chignik

<b>Condition 56</b>	<p><b>Condition of Certification 56:</b></p> <p>Collect age, sex, and length data for chum salmon, or provide a written explanation and justification that illustrates that the fishery-specific harvests are not a significant component of the overall harvest of the stocks. [Chignik]</p>
<b>Assessed Activity</b>	<p>This Condition relates principally to Indicator 1.1.2.3</p> <p><b>100 Scoring Guidepost</b></p> <ul style="list-style-type: none"> <li>• Annual monitoring programs collect data on the age and size of the catch and escapement for target and non-target stocks where there is a clear scientific basis for collecting these data.</li> </ul> <p><b>80 Scoring Guidepost</b></p> <ul style="list-style-type: none"> <li>• Periodic monitoring programs collect data on the age and size of the catch and escapement for target stocks, and for non-target stocks where the fishery harvests may represent a significant component of the harvest of those non-target stocks.</li> <li>• There is a scientific basis for the frequency of the sampling program to collect age and size data where there is a clear scientific basis for collecting these data.</li> </ul> <p><b>60 Scoring Guidepost</b></p> <ul style="list-style-type: none"> <li>• The information on age and size of catch and escapement is adequate, where there is general scientific agreement that these data are important to assess the status of the stocks or adjust fisheries management decisions For example: information on the age distribution of coho salmon harvests would not be considered important for stock assessment or fisheries management decisions whereas age information would be important for the assessment and management related to most Chinook fisheries. Monitoring programs should be in place to detect changes in the size of the fish harvested for each salmon species.</li> </ul> <p><b>SCORE 70</b></p> <p>Monitoring programs collect data on the age, sex and size of the catch and escapement for all directed fisheries on sockeye and to a lesser extent for Chinook and coho salmon. These data are used to reconstruct brood tables and stock-recruitment relationships and to forecast future run sizes. Sockeye genetic data have been collected on the spawning grounds. The cost of sampling chum at the canneries is approximately \$22,000, according to ADF&amp;G. However, the review teams note that such sampling could be achieved in about two or three days by a team of 2 or 3 people.</p>
<b>AFDF Action Plan</b>	<p>AFDF will provide the assessment team with information compiled by ADF&amp;G from data it has gathered, and provide a report to the surveillance team by the end of 2010 providing a written explanation and justification that illustrates that the fishery specific harvests are not a significant component of the overall harvest of the stock.</p>
<b>Conclusion from 1st Surveillance Report</b>	<p>Progress on this Condition is on-target. This Condition remains open and is expected to be closed out following provision of further reports in 2009 and review during the second annual MSC surveillance audit. It is recommended that the regional report described by the ADF&amp;G clearly states how it will contribute to the meeting of this Condition and also how it is consistent with the ADF&amp;G Action Plan.</p>
<b>AFDF Actions</b>	<p>ADF&amp;G published a response to the conditions “Witteveen, M.J. and M.A. Stichert. 2008. Documentation of Marine Stewardship Council conditions for the Chignik Area Salmon Fishery. ADF&amp;G, Regional Information Report 4K08-12, Kodiak.”</p>

<b>Observations</b>	ADF&G produced a report that explains why they do not collect age, sex, and length data for chum salmon (Wittveen and Stichert 2008). Chum salmon harvests are minor in comparison to sockeye salmon harvests and typically there are no directed fisheries for chum salmon in the Chignik Management Area. Collection of ASL data is expensive, according to ADF&G. Chum spawning escapements are monitored and escapement levels remain high according to the report. Future assessments should consider whether effort on chum salmon has increased, thereby providing the need for ASL sampling.
<b>Conclusion</b>	<p>On the basis of the following scoring guideposts the score associated with Performance Indicator 1.1.2.3 is adjusted as follows:</p> <p><b>80 Scoring Guidepost</b></p> <ul style="list-style-type: none"> <li>• Periodic monitoring programs collect data on the age and size of the catch and escapement for target stocks, and for non-target stocks where the fishery harvests may represent a significant component of the harvest of those non-target stocks.</li> <li>• There is a scientific basis for the frequency of the sampling program to collect age and size data where there is a clear scientific basis for collecting these data.</li> </ul> <p>This indicator received half credit for each of the 80 guideposts during the recertification assessment. ADF&amp;G has now justified the lack of ASL sampling in the Chignik area and the fishery meets the criteria of both bullets under the 80 Guidepost. Pi 1.1.2.3 is re-scored at 80. The condition is closed out and the issues associated with this PI will be part of the overall review of the ongoing operation of this fishery at audits.</p>

<b>Condition 57</b>	<p><b>Condition of Certification 57:</b></p> <p>Provide technical documentation for recent changes in run reconstruction data used to determine stock productivity. This should include: 1) methods used to alter Chignik sockeye catch data since the early 1970s, 2) changes in reported catch database, and 3) changes in the brood tables. [Chignik]</p>
<b>Assessed Activity</b>	<p>This Condition relates principally to Indicator 1.1.3.2</p> <p><b>100 Scoring Guidepost</b></p> <ul style="list-style-type: none"> <li>• The Target Reference Point (TRP) or operational equivalents for target species have been reviewed and found to be scientifically defensible and appropriate by management authorities such as the NMFS, USFW, and the ADF&amp;G.</li> <li>• There is general agreement among regional fisheries scientist outside the management system that the TRP's or operational equivalents are appropriate.</li> <li>• The TRP's or operational equivalents for the target stocks take into account variability in the productivity of each component of the target stock and productivity of non-target stocks.</li> </ul> <p><b>80 Scoring Guidepost</b></p> <ul style="list-style-type: none"> <li>• There is no significant scientific disagreement regarding the TRP's or operational equivalents used by the management system to formulate management decision for the fishery.</li> <li>• The TRP's or operational equivalents for the target stocks take into account variability in the productivity of each component of the target stock and the productivity of non-target stocks.</li> </ul> <p><b>60 Scoring Guidepost</b></p> <ul style="list-style-type: none"> <li>• There is general agreement among fisheries scientist within the management system that the TRP's or operational equivalents are appropriate for the target stocks.</li> </ul>

	<ul style="list-style-type: none"> <li>• Target reference points have been defined for the majority of target stocks harvested in the fishery and these target reference points are not scientifically disputed.</li> <li>• The management system has taken into account the relative productivity of non-target stocks when setting the TRP's or operational equivalents for the majority of target stocks.</li> </ul> <p><b>SCORE 75</b></p> <p>Escapement goal ranges (SEGs and BEGs) established for indicator stocks fit the definition of a Target Reference Point (TRP) as the desirable fishery level that management actions should achieve. Escapement goals were evaluated by ADF&amp;G in 2004. The mid-point escapement goals for both Black Lake and Chignik Lake stocks were lowered with little explanation for the change. Historical sockeye catch data were changed and documentation of this analysis is partially contained in (Bouwens and Poetter 2006a) and additional information will be provided in the next AMR, according to ADF&amp;G. The Black Lake escapement goal appeared to be lowered from 400,000 spawners to 375,000 spawners; the Chignik Lake escapement goal was lowered from 250,000-300,000 spawners to 225,000 spawners. This apparent change may be related the switch in management from in-season estimation of stock composition to a fixed 50:50 ratio of sockeye stock on July 4.</p> <p>We note that the "early run" includes sockeye that rear in Chignik Lake (Black R tributary fish) and these fish should included in the Chignik Lake Run. Sockeye productivity estimates may be compromised in the future because ADF&amp;G no longer uses scale pattern analysis or other methods to identify changing stock proportions during the season (instead mean value is used). ADF&amp;G (unpublished analysis) claims that stock composition estimates based on scale patterns were not significantly different from the mean date (July 4). However, we note that the 50:50 date during the past 17 years has been more than 10 days away from the assumed July 4 date during 7 years (40% of years). This large deviance could lead to significant error in stock composition. ADF&amp;G notes that the cost of implementing scale pattern analysis was \$22,000, which exceeded the ADF&amp;G budget. This seems to be a small cost for managing a multi-million dollar fishery.</p>
<b>AFDF Action Plan</b>	ADF&G has reported to the AFDF that prior to 2004 the Chignik District sockeye salmon catches were appointed to early and late run stocks using scale pattern analysis. Beginning in 2004, catch was apportioned by fixed date. This change was based on the concurrence of the appointments using the SPA method and those using the fixed date method. Note that the run reconstructions prior to 2004 were not altered, thus no changes in the historical reported catch database or in the brood tables occurred. Technical documentation required by this condition is in a report produced by ADF&G that will be provided to the assessment team by AFDF in July 2007.
<b>Conclusion from 1st Surveillance Report</b>	Progress on this Condition is on-target. Most documentation of changes in management have been published. It is noted that a new regional information report (4K08-12) has recently become available. This Condition remains open and is expected to be closed out following review of currently available information during the second annual MSC surveillance audit.
<b>AFDF Actions</b>	ADF&G published a response to the conditions "Witteveen, M.J. and M.A. Stichert. 2008. Documentation of Marine Stewardship Council conditions for the Chignik Area Salmon Fishery. ADF&G, Regional Information Report 4K08-12, Kodiak."
<b>Observations</b>	ADF&G produced a report that explains why ADF&G made some changes to the historical brood table for Chignik sockeye salmon (Wittveen & Stichert 2008). The purpose of this condition was to ensure that such changes were documented because the Chignik sockeye dataset, which extends back to 1922, represents one of the most valuable salmon production sets in the world. Thus, it is critical to document changes in the dataset.
<b>Conclusion</b>	On the basis of the following scoring guideposts the score associated with Performance Indicator 1.1.3.2 is adjusted as follows:



	<p><b>80 Scoring Guidepost</b></p> <ul style="list-style-type: none"> <li>• There is no significant scientific disagreement regarding the TRP's or operational equivalents used by the management system to formulate management decision for the fishery.</li> <li>• The TRP's or operational equivalents for the target stocks take into account variability in the productivity of each component of the target stock and the productivity of non-target stocks.</li> </ul> <p>This indicator received half credit for the first guidepost and full credit for the second during the recertification assessment.</p> <p>The ADF&amp;G report satisfies the intent of 80 guidepost. Performance Indicator 1.1.3.2 is re-score at 80 and the Condition closed out.</p>
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## Certification Unit 16 – Peninsula / Aleutian Islands

<b>Condition 58</b>	<p><b>Condition of Certification 58:</b></p> <p>Provide a report that defines the geographic range of all target stocks and provide an explanation of how escapements for all target stocks are adequately monitored through direct or indirect means. [Peninsula]</p>
<b>Assessed Activity</b>	<p>This Condition relates principally to Indicator 1.1.1.3.</p> <p><b>100 Scoring Guidepost</b></p> <ul style="list-style-type: none"> <li>• The geographic range for harvests of each stock unit in the fishery is estimated and documented each year.</li> <li>• The information on the geographic range of harvests is monitored during the fishing season and used when making in-season management decisions.</li> </ul> <p><b>80 Scoring Guidepost</b></p> <ul style="list-style-type: none"> <li>• The geographic range for harvests of target stocks is defined.</li> <li>• The information on the geographic range of the harvests of target stocks is monitored during the fishing season and is sufficient to prevent the over harvesting of these stocks.</li> <li>• The information available on the geographic range for harvest of non-target stocks is sufficient to prevent the over harvesting of these stocks.</li> </ul> <p><b>60 Scoring Guidepost</b></p> <ul style="list-style-type: none"> <li>• The information available on the geographic range for harvests of target or non-target stocks is sufficient to prevent the over harvesting for the majority of the stocks within each stock unit.</li> </ul> <p><b>SCORE 77</b></p> <p>Tagging and GSI studies have shown that nonlocal stocks contribute to several of the area's fisheries. As a result, salmon fisheries in this part of Alaska have been intensely scrutinized and regulated through the Alaska Board of Fisheries process due to concerns from various user groups from other parts of Alaska. ADF&amp;G fishery managers carefully track harvest and escapement trends on an in-season basis to regulate these fisheries according to Alaska Board of Fisheries approved management plans. Although there is limited stock-specific harvest information currently available on an annual basis, harvest data are available for some of the area's fisheries directed at local stocks, specifically for Nelson River Chinook and sockeye salmon and Bear Lake late-run sockeye salmon.</p> <p>Harvest data are compiled over fishing districts to represent harvest for aggregated stock groups of local pink and chum salmon stocks. In summary, information on the geographic range of harvests is sufficient to prevent overharvesting the area stocks. Harvests are monitored during the fishing season, but the geographic range for harvests of all target stocks is not completely defined, and therefore not all 80 scoring guideposts are met for this indicator.</p>
<b>AFDF Action Plan</b>	<p>Information on stocks harvested in the South Alaska Peninsula June fishery, SEML sockeye, post June chum, pink and coho fisheries is based on tagging, genetics, run timing, proximity of stocks and location of fisheries. Similar information exists for the North Peninsula fisheries; however for northern areas of North Peninsula and South Peninsula post June sockeye, additional stock identification studies may be required. AFDF has been advised that sample collection for both sockeye and chum salmon in these areas is ongoing as a part of ADF&amp;Gs overall research program.</p>

	AFDF will provide information compiled by ADF&G on stocks harvested in these fisheries as well as a review of escapement monitoring for those stocks. AFDF anticipates a report will be produced by ADF&G in 2010.
<b>Conclusion from 1st Surveillance Report</b>	Progress is on-target. Once genetic samples taken in the WASSIP Program have been analyzed, exploitation rates in the Peninsula/Aleutian fishery can be estimated. These exploitation rates will provide evidence as to whether or not this fishery represents a meaningful source of mortality to non local stocks. This information will be reviewed by the surveillance team in the third surveillance audit (2010).
<b>AFDF Actions</b>	Sampling in the Western Alaska Salmon Stock Identification Project took place from 2006 through 2009. A final report describing the methods and results of the sampling will be completed in summer of 2010. Processing of the fishery samples will begin in the fall of 2010 and a report is expected to be completed prior to 2012. #
<b>Observations</b>	ADF&G has developed a comprehensive plan to examine stock composition of chum and sockeye salmon in mixed stock fisheries in western Alaska. Genetic baselines were developed and sampling was conducted in 2006-2009 (Eggers et al. in press). ADF&G reports observed escapement levels compared with escapement goals in Area Management Reports (Hartill & Murphy 2010; Poetter <i>et al.</i> 2009). The Area Management Reports are up to date and available online.
<b>Conclusion</b>	Progress is satisfactory and on target to meet this condition. Detailed genetic stock identification studies have been conducted and will be reported in 2010. Reports that contain escapement information through the 2009 season are available online.

<b>Condition 59</b>	<p><b>Condition of Certification 59 (same as Conditions 8, 16, 22, 32, 39, 42, 49, &amp; 61):</b></p> <p>Evaluate appropriate existing age-sex-size information on sockeye and chum to determine if fisheries are exerting significant selectivity; continue ASL sampling in fisheries and of several spawning stocks to continue a database for long-term evaluation of potential fishery selectivity. [Peninsula]</p>
<b>Assessed Activity</b>	<p>This Condition relates principally to Indicator 1.1.2.3</p> <p><b>100 Scoring Guidepost</b></p> <ul style="list-style-type: none"> <li>• Annual monitoring programs collect data on the age and size of the catch and escapement for target and non-target stocks where there is a clear scientific basis for collecting these data.</li> </ul> <p><b>80 Scoring Guidepost</b></p> <ul style="list-style-type: none"> <li>• Periodic monitoring programs collect data on the age and size of the catch and escapement for target stocks, and for non-target stocks where the fishery harvests may represent a significant component of the harvest of those non-target stocks.</li> <li>• There is a scientific basis for the frequency of the sampling program to collect age and size data where there is a clear scientific basis for collecting these data.</li> </ul> <p><b>60 Scoring Guidepost</b></p> <ul style="list-style-type: none"> <li>• The information on age and size of catch and escapement is adequate, where there is general scientific agreement that these data are important to assess the status of the stocks or adjust fisheries management decisions For example: information on the age distribution of coho salmon harvests would not be considered important for stock assessment or fisheries management decisions whereas age information would be important for the assessment and management related to most Chinook fisheries. Monitoring programs should be in place to detect changes in the size of the fish harvested for each salmon species.</li> </ul>

	<p><b>SCORE 75</b></p> <p>ASL data are collected from all major sockeye salmon systems with weirs (escapement) as well as from selected sockeye harvests (Tschersich et al 2005; Tschersich and Foster 2006), to enable brood tables to be constructed and maintained. Sockeye smolt age composition data are collected from Bear River and Sandy River when possible. Coho escapement ASL data has been collected from Mortensens Creek in some recent years. Test fishery catches are also sampled for ASL data. Reductions in ASL sampling of other species and fisheries have occurred in recent years, due to changing priorities for the available funding.</p>
<b>AFDF Action Plan</b>	<p>ASL sampling of fisheries and select spawning stocks is expected to continue over the long term in each certification unit. The intensity of sampling will be dependent on available funding and identified concerns. ADF&amp;G currently maintains comprehensive ASL sampling in all these fisheries; however these programs may be expanded as appropriate.</p> <p>AFDF will provide a report compiled by ADF&amp;G of existing ASL data by the end of 2009 that will evaluate the consequences of selective fishing.</p>
<b>Conclusion from 1st Surveillance Report</b>	<p>The Surveillance Team evaluated the evidence available for this issue against the requirements of the original scoring guideposts, as well as the condition and action plan.</p> <p>ADF&amp;G has a long history of collecting ASL data from the commercial harvest and from the spawning stocks. While specific gear selectivity studies have not been undertaken, ADF&amp;G's historical data and current data collection efforts are adequate to monitor the stocks for changes or trends that might occur as a result of fishing selectivity or management actions. In this case, this is considered sufficient to meet the intent of the 80 Scoring Guidepost for this Performance Indicator. The Department's score would likely improve if they were to complete the analysis of historical ASL data and evaluate the selectivity issue as indicated in their action plan.</p> <p>This PI is therefore re-scored at 80 and the condition closed.</p>

<b>Condition 60</b>	<p><b>Condition of Certification 60:</b></p> <p>Identify all data and analyses used to set harvest and production strategies for fisheries in the area. [Peninsula]</p>
<b>Assessed Activity</b>	<p>This Condition relates principally to Indicator 1.1.2.4</p> <p><b>100 Scoring Guidepost</b></p> <ul style="list-style-type: none"> <li>• Scientifically defensible productivity estimates (e.g. stock/recruitment relationships) have been derived for all target stocks and the relative productivity of non-target stocks is known.</li> <li>• Risk assessment has been conducted to determine the impact of alternative harvest strategies on non-target stocks. The risk assessment should include an assessment of the uncertainties with estimates of stock productivity for the target stocks.</li> </ul> <p><b>80 Scoring Guidepost</b></p> <ul style="list-style-type: none"> <li>• There is adequate information to identify the harvest and production strategies required to maintain the high productivity of the target stocks.</li> <li>• There is adequate information to estimate the relative productivity of the non-target stocks where the fishery harvests may represent a significant component of those non target stocks.</li> </ul>

	<ul style="list-style-type: none"> <li>• The harvest limitations for target stocks take into consideration the impacts on non target stocks and the uncertainty of the productivity for these stocks.</li> </ul> <p><b>60 Scoring Guidepost</b></p> <ul style="list-style-type: none"> <li>• The available information and analyses are adequate to identify the harvest limitations and production strategies required to maintain the productivity of the majority of target stocks.</li> <li>• The relative productivity of the non-target stocks is considered in the management strategy, where the fishery harvests may represent a significant component of those non-target stocks.</li> </ul> <p><b>SCORE 75</b></p> <p>Detailed productivity data are available for a subset of stocks, including Nelson River (Chinook and sockeye) and Bear River late run sockeye, and aggregated pink and chum salmon stocks (Nelson et al 2006). The lack of stock-specific harvest data limits development of BEG quality data for other systems, but a variety of data (escapement, spawning habitat, limnology models, etc) are available to develop escapement goals for additional stocks in the area. Information is sufficient to maintain current productivity of target stocks.</p>
<b>AFDF Action Plan</b>	ADF&G has reported to AFDF that this work has been completed. The relevant reports will be provided by AFDF to the assessment team before the annual audit in 2008.
<b>Conclusion from 1st Surveillance Report</b>	<p>At the original re-assessment, the first and third requirements of the Scoring Guidepost was partially met, the second fully met. With regard to these requirements, surveillance team note that if non-local stocks are target stocks (as implied in condition 58), the third bullet point is not applicable and should have been noted as such in the original scoring. The reports listed above identify the harvest and production strategies to maintain high productivity of target stocks.</p> <p>Therefore the requirements of the 80 Scoring Guidepost are considered to be fully met, Performance Indicator 1.1.2.4 is re-scored at 80 and the condition closed.</p>

<b>Condition 61</b>	<p><b>Condition of Certification 61 (same as Conditions 8, 16, 22, 32, 39, 42, 49, &amp; 59):</b></p> <p>Evaluate appropriate existing age-sex-size information to determine if fisheries are exerting significant selectivity; continue ASL sampling in fisheries and of several spawning stocks to continue a database for long-term evaluation of potential fishery selectivity. [Peninsula]</p>
<b>Assessed Activity</b>	<p>This Condition relates principally to Indicator 1.3.1.</p> <p><b>100 Scoring Guidepost</b></p> <ul style="list-style-type: none"> <li>• There is comprehensive knowledge of the effect of fishing on biological characteristics such as the age, size, sex and genetic structure of the target stocks and the impact of changes in these factors on the reproductive capacity of the target stocks.</li> <li>• Management actions are consistent with maintaining healthy target stocks relative to biological characteristics such as age, size, sex and genetic structure of all target stocks.</li> <li>• Enhanced fish are identified and managed as separate target stocks.</li> </ul> <p><b>80 Scoring Guidepost</b></p> <ul style="list-style-type: none"> <li>• The knowledge of the effect of fishing on biological characteristics such as the age, size, sex and component stocks is adequate to detect threats to the reproductive capacity of the target stocks.</li> <li>• Management actions are consistent with maintaining healthy target stocks relative to</li> </ul>

	<p>biological characteristics such as age, size, sex and genetic structure of all target stocks.</p> <ul style="list-style-type: none"> <li>• The management system includes provisions to minimize any adverse impacts to the genetic structure of wild (un-enhanced) stocks that may be due to the enhancement of other stocks.</li> </ul> <p><b>60 Scoring Guidepost</b></p> <ul style="list-style-type: none"> <li>• The knowledge of the effect of fishing on the biological characteristics such as age, size, sex and component stocks is adequate to detect threats to the reproductive capacity of the majority of target stocks.</li> <li>• Management actions are consistent with maintaining healthy target stocks relative to biological characteristics such as age, size, sex or genetic structure for the majority of target stocks.</li> <li>• The management system includes provisions to minimize the major adverse impacts for the majority of wild (un-enhanced) stocks that may be due to the enhancement of other stocks.</li> </ul> <p><b>SCORE 65</b></p> <p>Information on biological characteristics such as the age, size and sex of salmon provides a reasonable basis for detection of fishing threats to the reproductive capacity of target stocks. ADF&amp;G collects biological data for sockeye salmon, which is used in construction of brood tables. Historical ASL data are available for other species. Management tends to harvest stocks over time in proportion to abundance in order to reduce chance of over-harvesting stocks.</p>
<b>AFDF Action Plan</b>	<p>ASL sampling of fisheries and select spawning stocks is expected to continue over the long term in each certification unit. The intensity of sampling will be dependent on available funding and identified concerns. ADF&amp;G currently maintains comprehensive ASL sampling in all these fisheries; however these programs may be expanded as appropriate.</p> <p>AFDF will provide a report compiled by ADF&amp;G of existing ASL data by the end of 2009 that will evaluate the consequences of selective fishing.</p>
<b>Conclusion from 1st Surveillance Report</b>	<p>The Surveillance Team evaluated the evidence available for this issue against the requirements of the original scoring guideposts, as well as the condition and action plan.</p> <p>The second part of this Condition, i.e. continue ASL sampling in fisheries and of several spawning stocks to continue a database for long-term evaluation of potential fishery selectivity, is open-ended. Given that the ADF&amp;G is continuing to maintain a comprehensive sampling program the surveillance team consider that this part of the condition has been satisfied but should be subject to review and confirmation as a matter of course at future surveillance audits.</p> <p>ADF&amp;G has a long history of collecting ASL data from the commercial harvest and from the spawning stocks. While specific gear selectivity studies have not been undertaken, ADF&amp;G's historical data and current data collection efforts are adequate to monitor the stocks for changes or trends that might occur as a result of fishing selectivity or management actions. This satisfies the 80 scoring guidepost. The score would likely improve if the ADFG were to complete the analysis of historical ASL data and evaluate the selectivity issue as indicated in their action plan.</p> <p>This PI is therefore re-scored at 80 and the condition closed.</p>

## Principle 2 Related Conditions

<b>Condition 62</b>	<p><b>Condition of Certification 62:</b></p> <p>Support additional investigations of hatchery chum straying into natural production areas, including streams that are close to release sites and some streams distant from release sites.</p>
<b>Assessed Activity</b>	<p>This Condition relates principally to Indicator 2.2.2.</p> <p><b>100 Scoring Guidepost</b></p> <ul style="list-style-type: none"> <li>• Hatchery programs (state, federal, tribal, local) have undergone a formal peer review process that evaluated hatchery practices for their ability to minimize hatchery effects on natural spawning salmon populations caused by interbreeding between hatchery and natural salmon, competition for food and space (juveniles and adults), and predation by juvenile hatchery salmon on natural salmon fry.</li> <li>• Effects of hatchery interactions with natural salmon have been investigated and documented in the watersheds. Stocks outside the watershed are not utilized in the hatcheries.</li> <li>• Recommendations of the peer review process have been implemented by the hatcheries and interactions are minimal.</li> </ul> <p><b>80 Scoring Guidepost</b></p> <ul style="list-style-type: none"> <li>• Hatchery programs (state, federal, tribal, local) have undergone an internal review process that evaluated hatchery practices for their ability to minimize hatchery effects on natural spawning salmon populations caused by interbreeding between hatchery and natural salmon, competition for food and space (juveniles and adults), and predation by juvenile hatchery salmon on natural salmon fry.</li> <li>• Effects of hatchery interactions with natural salmon have been investigated and documented in most watersheds. Stocks outside the watershed are not utilized in the hatcheries.</li> <li>• Recommendations of the review have been implemented by the hatcheries and interactions are mostly minimal.</li> </ul> <p><b>60 Scoring Guidepost</b></p> <ul style="list-style-type: none"> <li>• Hatchery programs (state, federal, tribal, local) follow general guidelines to minimize effects on natural spawning salmon populations caused by interbreeding between hatchery and natural salmon, competition for food and space (juveniles and adults), and predation by juvenile hatchery salmon on natural salmon fry.</li> <li>• Effects of hatchery interactions with natural salmon are generally known in most watersheds. Stocks outside the watershed are not utilized in the hatcheries.</li> <li>• Attempts have been made to minimize adverse interactions between hatchery and natural salmon.</li> </ul> <p><b>SCORE 70</b></p> <p>In Southeast Alaska, hatchery chum represent 59%, whereas hatchery Chinook, sockeye, and coho represent approximately 14-20% of the total common property commercial catch. Terminal hatchery fishing areas and release areas of hatchery salmon are typically located away from salmon streams. However a small number of chum hatcheries are located near salmon streams, e.g., SE Cove and Gunnuk Creek (creeks 16, 17), Amalga Harbor (creek 44), Boat Harbor (creeks 79, 80). The status of many chum stocks is less certain because chum escapements are difficult to enumerate. Although many chum have received CWT or otolith</p>

	<p>marks (and used to evaluate contribution to catch), streams have not been monitored for contributions by hatchery strays. Although straying of other salmon species tends to be greatest in streams close to the release site, the Team was concerned because chum salmon in Prince William Sound reportedly strayed great distances from the release sites. Since no data have been collected on SEAK streams, the Team was concerned that chum may be straying long distances in SEAK. The Team recognizes that most hatcheries are located away from streams, but some data collection is needed to evaluate this concern because hatchery chum production is the greatest component of the chum fishery in SEAK.</p> <p>Joyce (see Appendix 5 of main report) noted that the straying rates of salmon in PWS may not be well understood and that there are many concerns about the data that is available on the subject to date. Joyce also notes, and the assessment team agrees, that a peer reviewed study is needed on chum salmon.</p> <p>PWSAC provided comments (also in Appendix 5 of main report) that a wider body of information exists than may have been available to the assessment team. It is not possible to say which studies the assessment team may not have received; however, nothing in the specific comments suggested studies that would cause the assessment team to re-assign the score to this indicator. Again, the assessment team made repeated requests of the client (ADF&amp;G) for studies to answer this and other hatchery related questions. ADF&amp;G provided a number of reports. If reports were omitted, it was not purposeful. If there are studies that show that this indicator should be scored higher and the condition eliminated, these studies can be made available during the first surveillance audit and the condition closed out without further work.</p>
<b>AFDF Action Plan</b>	<p>AFDF believes that this condition is being met by ADF&amp;G activities directed at meeting Conditions 3, 11, 15 and 24.</p> <p>AFDF has been informed that initial investigations into straying of hatchery fish into wild stock spawning areas have occurred in Prince William Sound for pink and chum salmon and in Kodiak for sockeye salmon as part of ADF&amp;G's normal research program. ADF&amp;G has reported that additional work will be carried out as part of meeting Conditions 3, 11, 15 and 24. Based on the results of these studies, ADF&amp;G will assess the need to continue, expand or reduce the scope of these studies, and provide AFDF with this assessment. A summary of ADF&amp;G's findings and its estimate of further work will be provided to AFDF as the other conditions are met. AFDF will provide this needs assessment to the surveillance team as received.</p>
<b>Conclusion from 1st Surveillance Report</b>	<p>Significant progress is being made on this important condition. Given progress to date, we expect this condition will be fulfilled before the expiry of the certificate. However, as noted above, a key report will not be finalized until June 2012, therefore the condition may not be fully evaluated until that time. Nevertheless, this Condition is on-target for completion during the present certification period.</p> <p>The initial results indicate high stray rates of chum salmon in Prince William Sound. A key consideration for a future surveillance audit will be to evaluate the response of ADF&amp;G and the hatcheries to minimize interactions between hatchery and wild salmon on the spawning grounds, as stated in the ADF&amp;G wild salmon policy documents.</p> <p>The ADF&amp;G finfish genetics policy states that, "Gene flow from hatchery fish straying and intermingling with wild stocks may have significant detrimental effects on wild stocks. First priority will be given to protection of wild stocks from possible harmful interactions with introduced stocks." (Davis 1985). Towards this end, ADF&amp;G, in association with the PWSAC created the Prince William Sound/Copper River Comprehensive Salmon Plan agreement. This plan stresses the protection of wild stocks in management and hatchery practices and states that, "the proportion of hatchery salmon straying into wild-stock streams must remain below 2% of the wild-stock escapement over the long term."</p>
<b>AFDF Actions</b>	<p>ADF&amp;G has implemented studies of hatchery chum salmon straying in the two major hatchery producing areas: Southeast Alaska and Prince William Sound. The studies are detailed in the</p>



	ADF&G activities for conditions 3, 11 and 15 for Southeast Alaska and 24 and 25 for Prince William Sound.
<b>Observations</b>	<p>ADF&amp;G has undertaken studies of chum and pink salmon straying in Prince William Sound and chum salmon in SEAK. Preliminary findings were presented at the Hatchery/Wild Salmon Conference in Portland Oregon in May 2010. Findings indicate high stray rates, especially in streams near hatcheries (e.g., within 50 km in SEAK).</p> <p>ADF&amp;G is also evaluating the potential change in genetic composition of chum salmon in Prince William Sound as a result of straying from hatcheries. This study, which is just underway, will use genetic material from chum scales prior to and after production of hatchery chum salmon. This study has promise to be very informative. It is scheduled to be completed by June 30, 2012 (Brenner &amp; Habicht 2008).</p>
<b>Conclusion</b>	<p>Progress is satisfactory and on target to the extent that ADF&amp;G is conducting studies to address issues involving stray hatchery salmon. However, preliminary results indicate the potential for significant interactions between hatchery and wild salmon on the spawning grounds. The condition therefore remains open.</p> <p>The studies mentioned in the observations, above, satisfy the intent of the condition, but the resulting information may not be sufficient to meet the scoring guidelines of this and other indicators if stray rates are high and if genetic composition has changed over time. ADF&amp;G is considering how they may incorporate these new findings when setting and evaluating achievement of escapement goals for wild salmon in Prince William Sound and SEAK. This type of analysis is unique and we suspect that it may not be completed before the end of the year four surveillance audit.</p> <p>The client should work with ADF&amp;G to determine any courses of action that the managers will be advocating in reviewing these new hatchery stray data, and how fast such work can be accomplished, prior to the next audit.</p>

<b>Condition 63</b>	<p><b>Condition of Certification 63:</b></p> <p>Implement effective hatchery management practices needed to minimize hatchery impacts on the genetic diversity and productivity of wild pink and chum stocks in Prince William Sound. Effective measures will include: 1) evaluate various on site and remote release strategies to identify those that cause significant straying of hatchery-produced fish into natural production areas, 2) substantially reduce undesirable straying by improving or eliminating appropriate strategies, and 3) avoidance of hatchery selection practices that alter genetic and life history characteristics of the hatchery stocks relative to the local wild stocks. [Prince William Sound]</p>
<b>Assessed Activity</b>	<p>This Condition relates principally to Indicator 2.2.2.</p> <p><b>100 Scoring Guidepost</b></p> <ul style="list-style-type: none"> <li>• Hatchery programs (state, federal, tribal, local) have undergone a formal peer review process that evaluated hatchery practices for their ability to minimize hatchery effects on natural spawning salmon populations caused by interbreeding between hatchery and natural salmon, competition for food and space (juveniles and adults), and predation by juvenile hatchery salmon on natural salmon fry.</li> <li>• Effects of hatchery interactions with natural salmon have been investigated and documented in the watersheds. Stocks outside the watershed are not utilized in the hatcheries.</li> <li>• Recommendations of the peer review process have been implemented by the hatcheries and interactions are minimal.</li> </ul> <p><b>80 Scoring Guidepost</b></p>

	<ul style="list-style-type: none"> <li>• Hatchery programs (state, federal, tribal, local) have undergone an internal review process that evaluated hatchery practices for their ability to minimize hatchery effects on natural spawning salmon populations caused by interbreeding between hatchery and natural salmon, competition for food and space (juveniles and adults), and predation by juvenile hatchery salmon on natural salmon fry.</li> <li>• Effects of hatchery interactions with natural salmon have been investigated and documented in most watersheds. Stocks outside the watershed are not utilized in the hatcheries.</li> <li>• Recommendations of the review have been implemented by the hatcheries and interactions are mostly minimal.</li> </ul> <p><b>60 Scoring Guidepost</b></p> <ul style="list-style-type: none"> <li>• Hatchery programs (state, federal, tribal, local) follow general guidelines to minimize effects on natural spawning salmon populations caused by interbreeding between hatchery and natural salmon, competition for food and space (juveniles and adults), and predation by juvenile hatchery salmon on natural salmon fry.</li> <li>• Effects of hatchery interactions with natural salmon are generally known in most watersheds. Stocks outside the watershed are not utilized in the hatcheries.</li> <li>• Attempts have been made to minimize adverse interactions between hatchery and natural salmon.</li> </ul> <p><b>SCORE 74</b></p> <p>This fishery meets the 60 scoring guideposts for this indicator but does not meet the 80 scoring guideposts. Hatchery programs follow general guidelines to minimize effects on natural spawning populations caused by interbreeding, competition, or predation with or by hatchery fish. Stocks outside the watershed are not utilized in the hatcheries. Attempts have been made to minimize adverse interaction between hatchery and natural salmon. However, the internal review process by ADF&amp;G of hatchery practices for their ability to minimize hatchery effects on natural spawning salmon populations caused by interbreeding between hatchery and natural salmon, competition for food and space (juveniles and adults), and predation by juvenile hatchery salmon on natural salmon fry appears incomplete. The potential for significant interactions has been identified in certain areas such as the North Pacific Gulf. Wertheimer et al. (2004) point out that such competition could cause a body size reduction in returning adults.</p> <p>The current scientific literature identifies a variety of potentially adverse impacts of hatcheries on wild fish (NRC 1996, Flagg et al. 2000, Bilby et al. 2003, HSRG 2003, Brannon et al. 2004, Utter 2004, Mobrand et al. 2005, Nickum et al. 2005, Oosterhout et al. 2005). Potential adverse impacts include: 1) unsustainable fishing rates on commingled wild stocks, 2) Natural spawning by hatchery fish spawning which replaces wild fish and confounds status assessments, 3) decreases in natural diversity and productivity through inbreeding depression, outbreeding depression, or domestication in the hatchery, 4) ecological effects of competition or predation, and 5) fish health problems through increased horizontal or vertical transmission of pathogens. Several of these factors may be significant in PWS, others may not, and still others have not been fully evaluated.</p> <p>Hatchery practices could alter the genetic and life history patterns of at least some hatchery stocks. An early-returning hatchery run of pink salmon was selected using an early run broodstock in the northeast part of PWS by a local private non-profit aquaculture corporation and similar to the wild early returners, these fish return about two weeks before substantial runs of wild salmon (Smoker et al. 2000). This provides an opportunity to avoid the mixed stock harvest problem but creates a new problem if significant numbers of this altered stock spawns in wild production areas. Significant shifts in hatchery stocks to a later run timing would pose similar risks. Many hatcheries do not regularly incorporate wild fish into their broodstock (ADF&amp;G, unpublished) which heightens risks of divergence of the wild and</p>
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	<p>hatchery stock as a result of selective breeding or mortality, domestication, or a founder effect in the hatchery. Joyce (see Appendix 5 of main report) makes the case that wild salmon are not stopped from intermingling with hatchery broodstock. He asserts this allows mixing to help lessen the risk of domestication and founder effect in the hatchery. The assessment team was not provided with any direct studies or analyses that specifically show what the level mixing is between hatchery and wild fish, or if the level of mixing is enough to mitigate concerns.</p> <p>A growing body of evidence indicates that large-scale enhancement of pink and chum salmon might be affecting wild stocks through competition. Wertheimer et al. (2004) concluded that competition with hatchery fish has significantly reduced average body size at return and productivity of wild pink salmon stocks in PWS. In other regions, ocean growth of pink salmon is sometimes inversely related to their own abundance and survival of chum, Chinook, and sockeye appears to be reduced in years of high pink salmon abundance (Ruggerone et al. 2003, Ruggerone and Goetz 2004, Ruggerone and Nielsen 2004, Ruggerone et al. 2005). Increases in salmon abundance since the early 1970s have occurred due to increases in chum, sockeye, and pink salmon populations throughout Alaska, Russia, and Japan. The contribution of PWS hatchery production to the overall increase of salmon in the North Pacific is small (ADF&amp;G, unpublished data).</p> <p>PWSAC comments to the assessment team state that the statement [hatcheries do not regularly incorporate wild fish into their broodstock] is not incorrect, yet notes that the effects (so some do exist) may be limited as the straying of wild fish into the hatchery broodstock would lessen the risk. Although one could postulate that this is the case, there would need to be direct studies and evidence presented to the assessment team to justify the assertion. No such evidence was presented. Again, the score could be improved for this indicator if such evidence is presented during the annual surveillance, and the condition closed out if such evidence is available that specifically addresses all aspects of the condition.</p> <p>In contrast Virgil Umphenour and Jack Schultheis presented comments to the assessment team that raised a number of concerns about hatchery production, including increases competition for food in ocean waters, decreased size of fish in numerous age classes due to lack of food availability, overproduction of hatcheries to capture roe markets with little regard to the effects of overproduction, and decreased quality of fish due to changes in the physiology of hatchery raised fish. Again, the data to show absolutely that decreased size of salmon in specific age classes is due to competition for food, and is directly related to hatchery overproduction was not presented to the assessment team. There appears to be a more established correlation with quality of fish meat in hatchery fish, which reduces the usefulness of the meat. This appears linked with concerns that hatchery production is increasing primarily to capitalize on the roe markets. However, the concern is not in market dynamics over fish sales, but in market dynamics in the roe market as well as in the unknown and unintended consequences of putting a significantly larger number of hatchery fish into the oceans which has the potential to create a competitive environment that will cause long term effects to wild salmon.</p> <p>All of these issues have relevance, but finding unequivocal data and analysis to be able to establish cause and effect is difficult. To that end, the assessment team interprets the MSC standard as one looking to see if management under uncertainty is precautionary. Given the comments received about information available, the assessment scores can be improved.</p> <p>However, the fishery does not fully meet the 80 benchmark for performance due to uncertainty, and the assessment team believes the condition assigned is still appropriate.</p>
<b>AFDF Action Plan</b>	<p>AFDF has been told that ADF&amp;G recently conducted an Internal Review of Prince William Sound Aquaculture Corporation (PWSAC) hatchery operations and developed an action plan to help improve those operations. The Action Plan has been provided by AFDF after the first annual surveillance. AFDF believes that Condition 63 will also be met through meeting Conditions 66 and 67, which call for formal hatchery reviews and a comprehensive, formal, written and externally reviewed evaluation of how the enhancement programs in Prince William Sound protect and sustain the genetic structure and productivity of natural stocks in</p>

	the area as well as updating the PWS regional management and enhancement plan.
<b>Conclusion from 1st Surveillance Report</b>	<p>The first bullet point of the 80 Scoring guidepost was partially achieved in the original assessment. While the Prince William Sound Aquaculture Corporation internal review nearly satisfies this guidepost, the Valdez Fisheries Development Association hatchery was not included in this review. The second bullet point was achieved in the original assessment. The third bullet point was only partially met in the original assessment, and cannot be fully met until the recommendations of the review have been implemented. Therefore the Condition remains open and will be re-evaluated at the next annual audit to determine the degree that the internal review actions have been implemented.</p> <p>Progress on this Condition is on-target. This Condition remains open and is expected to be closed out following review during the second annual MSC surveillance audit.</p>
<b>AFDF Actions</b>	<p>All three of these conditions relate to hatchery management in Prince William Sound. All are concerned with reviewing hatchery practices with respect to providing adequate protection for wild salmon stocks. ADF&amp;G is organizing a program that will do a statewide review of how current programs are consistent with current scientific information on hatchery risks to wild stocks, statewide policies, and hatchery practices in other regions of Alaska. A new position has been created that is focusing first on consistency with policies, regulations and hatchery practices. ADF&amp;G is beginning with the Kodiak area and will follow with Cook Inlet, Prince William Sound, then finally with Southeast.</p> <p>ADF&amp;G has not provided a timeline for achieving this, however, it will be necessary to complete this prior to providing a revised management plan for Prince William Sound. In addition, ADF&amp;G is currently collecting data as part of Condition 25 that will be instrumental for addressing the issues in Conditions 63 and 67.</p>
<b>Observations</b>	<p>The Department conducted an internal review of the Prince William Sound Aquaculture Association (PWSAC) in 2007. This review was published in (Lewis, 2009). This review contained an action plan with clear performance measures. The action plan is reviewed and updated annually (Josephson, 2010). The formal periodic review of PWS hatcheries is scheduled for 2010.</p> <p>PWSAC has recently submitted permit alteration requests (PARs) to the Department for increasing production at the Gulkana, Main Bay and Armin F Koernig hatcheries. The Department stated its position in opposition to these PARs in a memorandum to the Prince William Sound Regional Planning Team (RPT), (Regnart &amp; Hasbrouck, 2010) The RPT has yet to act on the PARs.</p> <p>Precautionary straying thresholds were established in the PWS Phase III Salmon Plan of 2%. Studies to date have shown that pink salmon straying rates vary as a function of the distance from the hatchery where fish are returning to. Based on studies conducted in 1998 straying rates exceeded the 2% threshold out to 93 km from the AFK hatchery. When other facilities (WHN and Cannery Creek) were included in the model, a majority of the PWS spawning streams would have straying rates exceeding the 2% threshold. Researchers concluded that; 1) in some years, hatchery pink salmon greatly exceed threshold levels in a majority of PWS streams, and 2) strays being counted in the wild stock escapement surveys are causing ADF&amp;G to overestimate wild stock productivity. Utter (2004) also suggested that, in general, straying could affect the genetic diversity of wild salmon stocks, especially when wild stocks are heterogeneous. Chum salmon straying was modeled from release levels ranging from 76 million to 146 million from 1997 to 2009. In the Monte Carlo simulation there was no chance for the lowest release level (76 million) to be below the 25 straying threshold, and at larger releases there is no chance of being below a 5% straying threshold. Researchers concluded that current average release levels (approx 128 million chums) are too large to maintain straying below a 5% threshold in the spawning escapement. (Moffitt, 2010c).</p> <p>Progress on collection of stray hatchery sockeye salmon is on target for close out in the 4th audit, but available data raise an issue about potentially high stray rates in some years.</p>

	<p>ADF&amp;G has been collecting data on sockeye straying to Coghill and Eshamy river weirs for several years (S. Moffitt, ADF&amp;G, pers. comm.). Main Bay Hatchery sockeye are identified by thermal marks. Identification of hatchery fish at the weirs does not necessarily mean that the fish has strayed to natural spawning areas because it could migrate back downstream to reach the hatchery. In most years, &lt;2% of the sampled sockeye at the weirs are hatchery origin. However, in 2007, approximately 22% of the fish were hatchery origin. According to ADF&amp;G, Prince William Sound Aquaculture Association that the high proportion of hatchery fish at Eshamy weir was caused by closure of the southern part of the Eshamy District closed for most of the season.</p> <p>ADF&amp;G has also sampled other streams for hatchery sockeye salmon &amp; they found high proportions of hatchery sockeye salmon, especially in 2007. ADF&amp;G is planning to prepare a report, possibly during winter 2010-2011. It is noteworthy that in 2010 ADF&amp;G approved a 22% increase in sockeye releases from main Bay Hatchery (total 12.4 million egg take). Given the increased hatchery production of sockeye salmon and high potential stray rates in 2007, it is important to track straying sockeye salmon and to identify whether hatchery sockeye production interferes with sustainability and management of wild sockeye salmon.</p>
<b>Conclusion</b>	<p>When scored by the certification team, indicator 2.2.2 fell short of the first and third bullet points for the 80 scoring guide post due to lack of a formal review process and implementation plan. The Department has made significant progress through its review of the PWSAC hatchery program and annual review and follow-up of the action plans that resulted from this review. Additionally, the application of the Department's Genetics Policy is an ongoing effort in the process of evaluating proposed changes to the production plans for the PWS hatcheries.</p> <p>Uncertainties remain as to the current PWSAC permit alteration requests; however the Department's stated position and analysis (Regnart &amp; Hasbrouck 2010) is consistent with the protection of wild stocks and minimization of genetic consequences from hatchery practices. This is consistent with Department regulatory policy found in the Sustainable Salmon fisheries Policy (5 AAC 39.222 (c)(1)(D) (ADF&amp;G 2000).</p> <p>Further uncertainty exists in regard to the ability to minimize effects on wild stocks caused by hatchery fish interbreeding with wild fish (third bullet point in the 80 scoring guidepost). It will not be possible to assess if the impacts due to straying are minimal until the genetic study (Brenner &amp; Habicht 2008) is completed in June 2012.</p> <p>Although waiting for the results of the genetics study in 2012 will mean that closing this condition would be behind schedule as laid out in the original assessment, the audit team considered that progress against the condition is satisfactory to the extent that ADF&amp;G is attempting to evaluate the genetic structure and sustainability of natural stocks in PWS, and because determining the impact of hatchery fish on those wild stocks is a highly complex issue. Because of this complexity, the assessment team has proposed a new milestone and timescale for this condition of the genetics study being completed by June 2012 and the PWS hatchery review being completed by May 2013.</p>

## Principle 2 Related Conditions: All Certification Units

<b>Condition 64</b>	<p><b>Condition of Certification 64 (same as Condition 69):</b></p> <p>Action Plans should identify fishery specific objectives for recovery and provide an anticipated timeframe for meeting the objectives. [all areas]</p>
<b>Assessed Activity</b>	<p>This Condition relates principally to Indicator 2.3.1.</p> <p><b>100 Scoring Guidepost</b></p> <ul style="list-style-type: none"> <li>• The management plans and escapement goals have been shown to have a high (&gt;80%) probability of achieving a long-term recovery of depleted non-target stocks using risk analysis.</li> <li>• Historic data have been thoroughly examined to ensure fisheries restoration objectives are based on the likely habitat capacity, rather than on trends that cover only the most recent decades, thus avoiding the “moving baseline” syndrome.</li> <li>• Monitoring and assessment programs are established to determine with a high degree of confidence and in a timely manner that recovery is occurring.</li> <li>• Proposed management strategies have been reviewed and found to be scientifically defensible and appropriate by ADF&amp;G, USFW, and NMFS.</li> <li>• The management system supports the collection of data on non-fishing related human activity in the development of recovery plans for non-target stocks.</li> </ul> <p><b>80 Scoring Guidepost</b></p> <ul style="list-style-type: none"> <li>• The management system includes assessment of plans for the recovery of non-target stocks to levels substantially above established LRPs.</li> <li>• Objectives for recovery have at least some consideration of historic documents on stock abundance.</li> <li>• The management system has a reasonable (&gt;60%) probability of achieving long-term recovery of depleted non-target stocks.</li> <li>• Monitoring and assessment programs are established to determine with a high degree of confidence and in a timely manner that recovery is occurring.</li> <li>• Escapement goals will be revised periodically to accommodate new data indicating success or failure of existing recovery plans.</li> <li>• The management system considers the impact of non-fishing related human activity in the development of recovery plans for non-target stocks.</li> </ul> <p><b>60 Scoring Guidepost</b></p> <ul style="list-style-type: none"> <li>• The management system attempts to prevent extirpation of non-target stocks and does have rebuilding strategies for the majority of the stocks.</li> <li>• The management system has at least a 50% probability of achieving long-term recovery of depleted non-target stocks.</li> <li>• The management system has a strategy for periodic revisiting escapement goals to respond to new data on recovery success or failure for the majority of the stocks.</li> </ul> <p><b>SCORE 75</b></p> <p>ADF&amp;G has a protocol, established in state regulations, for identifying and classifying depleted stocks, which it calls Stocks of Concern. Classification is based on a continuing or</p>

	<p>anticipated inability (chronic inability) to reach yield or escapement thresholds over a four to five year period. There are three Stock of Concern categories: 1) yield concern in which a stock is meeting its escapement goal but consistently failing to provide harvests, 2) management concern in which a stock is failing to meet its escapement goal, and 3) conservation concern in which a stock is near its sustainable. ADF&amp;G identifies Stocks of Concern for potential adoption by the Board of Fisheries. Presently, there are 5 stocks classified as yield concern, 3 stocks classified as management concern, and zero stocks classified as conservation concern. Stocks classified as a conservation concern would trigger identification of the “sustainable escapement threshold (SET)” which could be identified as the lowest escapement observed for which there is direct evidence of surplus production in the next generation. SET, which might be considered a Limit Reference Point, have not been established for any stock in Alaska.</p> <p>Classification as a Stock of Concern triggers the development of an Action Plan to recover the stock. ADF&amp;G and the Board of Fisheries collaborate in the development and review of Action Plans, which are produced for each identified Stock of Concern. Actions identified to recover a stock vary from stock to stock. Often the actions involve collection of more accurate escapement or harvest data (AYK region subsistence), reduction in harvests using time and are closures (Hugh Smith sockeye, Kvichak sockeye), and re-analyses of escapement goals. The Action Plans provide background information, including habitat issues, and summarize actions to be taken, but they do not identify a time frame in which the stock is likely to recover based on the actions taken. However, the lack of a time frame for recovery is ameliorated to some extent because ADF&amp;G and the Board review action plans every three years during the state’s triennial Board cycle. In some cases (AYK chum) the Action plan did not incorporate issues involving interceptions in the False Pass fishery or the Bering Sea pollock fishery. The MSC Team is aware that the Board of Fisheries is taking some action to minimize bycatch of AYK chum in the False Pass fishery while allowing harvests of healthy stocks to continue. Actions have also taken place in the pollock fishery to reduce bycatch of chum and Chinook salmon.</p> <p>Four stocks of concern have been removed from the list. Some of the “delistings” did not result from increased escapement and adult returns, rather the escapement goals were lowered or stocks were combined. According to ADF&amp;G, changes in escapement goals were based on improved information and scientific evaluations. While there seems to be a reason for reducing the escapement goal and delisting the Stocks of Concern, this approach must be carefully evaluated to ensure that stock productivity and abundance is maintained.</p> <p>No salmon stocks in Alaska are listed under the Endangered Species Act. However, some ESA salmon are captured in Southeast Alaska fisheries as the fish migrate south. The percentage of total harvest of these stocks taken in Alaska is small compared with harvests in British Columbia and the lower states (<a href="http://www.nwr.noaa.gov/Salmon-Harvest-Hatcheries">www.nwr.noaa.gov/Salmon-Harvest-Hatcheries</a>). Incidental take of these listed salmon is managed by ADF&amp;G and NOAA Fisheries on an annual basis. The Secretary of Commerce must approve the fishery management plan before fishing can begin each year.</p>
<b>AFDF Action Plan</b>	<p>Whenever a stock of concern is established, an action plan is required (5 ACC 39.222 – Policy for Management of Sustainable Salmon Fisheries SSFP). ADF&amp;G has reported to AFDF that it has a statutory commitment to getting the escapement onto the spawning grounds to recover stocks of concern. The only mechanism available with which managers can achieve this objective is control harvest. To meet this condition, AFDF will provide a report, produced by ADF&amp;G before the second audit, that describes those stocks for which an action plan is required and setting out the harvest objectives intended to accomplish recovery. ADF&amp;G will include an anticipated timeframe for recovery recognising that stock depletions may be due to uncontrollable factors such as changing freshwater or marine productivity and consequently estimates of recovery timeframes may be inaccurate. Recovery will be monitored and reported annually starting one generation after plan implementation (2 years for pink salmon, 3 years for chum, coho and sockeye salmon and 5 years for Chinook salmon).</p>
<b>Conclusion from</b>	<p>The condition remains open until the ADF&amp;G provides the report that describes the stocks for</p>

<b>1st Surveillance Report</b>	<p>which an action plan has been developed, sets out the harvest objectives associated with the action plan for each respective stock of concern, and provides some perspective on timelines for recovery for the respective stocks of concern. This is anticipated in the second annual surveillance audit. It is anticipated that the condition will be closed out if the report shows that 60% or more of action plans developed since the implementation of 5 AAC 39.222 have demonstrably returned escapement abundance to, within, or, above the TRP for the stock of concern.</p> <p>Progress on this Condition is on-target. This Condition remains open and is expected to be closed out following review during the second annual MSC surveillance audit.</p>
<b>AFDF Actions</b>	<p>A single report was not prepared as Stocks of Concern are an ongoing process that is addressed at each Board of Fisheries meeting. At that time ADF&amp;G produces a memo that outlines causes and any action plan. These reports are posted on the Board's website for 2008 and 2009.</p> <p>The Board did not explicitly set timelines, rather deferring to the judgment of ADF&amp;G as each situation was expected to be different. ADF&amp;G's expectations are that stocks listed due to a management concern will be removed as a stock of concern after one life cycle or possibly become a yield concern. Moving from a yield concern to no concern is more difficult to predict since causes of a lack of yield are generally not within the department's control. In those cases ADF&amp;G prescribes a management and research plan aimed at determining if there is any action that can be taken to restore yield (change escapement goal, improve counting, identify undocumented harvest, etc.) within two to three life cycles.</p>
<b>Observations</b>	<p>The rules for action plans for stocks of concern are found in the Board's Policy for the Management of Sustainable Salmon Fisheries. The Board did not explicitly set timelines, rather deferring to the judgment of ADF&amp;G as each situation was expected to be different. ADF&amp;G's expectations are that stocks listed due to a management concern will be removed as a stock of concern after one life cycle or possibly become a yield concern. Moving from a yield concern to no concern is more difficult to predict since causes of a lack of yield are generally not within the department's control. In those cases ADF&amp;G prescribes a management and research plan aimed at determining if there is any action that can be taken to restore yield (change escapement goal, improve counting, identify undocumented harvest, etc.) within two to three life cycles.</p> <p>The Stocks of Concern are reviewed every three years, each time the area they are in comes before the Board. At each meeting ADF&amp;G prepares a report specific to the area. These reports are posted on the Board's website for 2008 and 2009. They can also be provided.</p> <p>A single report was not prepared as Stocks of Concern are an ongoing process that is addressed at each Board of Fisheries meeting. At that time ADF&amp;G produces a memo that outlines causes and any action plan. The process that ADF&amp;G has adopted should constitute fulfillment of the condition.</p>
<b>Conclusion</b>	<p>On the basis of the following scoring guideposts the score associated with the Performance Indicator 2.3.1 has been adjusted as follows:</p> <p><b>80 Scoring Guidepost</b></p> <ul style="list-style-type: none"> <li>• The management system includes assessment of plans for the recovery of non-target stocks to levels substantially above established LRPs.</li> <li>• Objectives for recovery have at least some consideration of historic documents on stock abundance.</li> <li>• The management system has a reasonable (&gt;60%) probability of achieving long-term recovery of depleted non-target stocks.</li> <li>• Monitoring and assessment programs are established to determine with a high degree of confidence and in a timely manner that recovery is occurring.</li> </ul>



	<ul style="list-style-type: none"> <li>• Escapement goals will be revised periodically to accommodate new data indicating success or failure of existing recovery plans.</li> <li>• The management system considers the impact of non-fishing related human activity in the development of recovery plans for non-target stocks</li> </ul> <p>The ADF&amp;G process for identifying Stocks of Concern and developing Action Plans for Stocks of Concern meets the intent of this condition and the intent of the 80 scoring guideposts. The ADF&amp;G process is precautionary in that a Stock of Concern (yield) is initially identified when a stock is meeting its escapement goal but has not produced sufficient harvest in recent years. Most existing Stocks of Concern fall into the yield concern category &amp; Action Plans have been developed and reviewed via the Board of Fisheries process every three years. Some stocks have not consistently met their escapement goal or target reference point for several recent years, leading to a Management Concern designation and development of an Action Plan to examine and correct factors that may have caused the low spawning escapement. Action Plans typically do not specify time for recovery of the stock, as specified in the MSC guideposts. However, the Assessment Team believes that the intent of the timeframe requirement is fulfilled by the review every three years of 1) stock status via annual monitoring, 2) the Action Plan, and 3) escapement goal by ADF&amp;G and the Board of Fisheries.</p> <p>The PI has therefore been re-scored at 80 and the Condition closed out.</p>
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## Principle 3 Related Conditions: All Certification Units

<b>Condition 65</b>	<p><b>Condition of Certification 65 (related to Conditions 38 and 41):</b></p> <p>Develop a method for specifically setting an LRP that is comparable to the SET (Sustainable Escapement Threshold) outlined in the Sustainable Escapement Goal Policy (see Condition under Principle 3, Indicator 3.1.1). In addition, conduct an external review of the definitions, triggers, and actions associated with identifying and listing/delisting stocks of concern. [All]</p>
<b>Assessed Activity</b>	<p>This Condition relates principally to Indicator 3.1.1.</p> <p><b>100 Scoring Guidepost</b></p> <ul style="list-style-type: none"> <li>• Management objectives are clearly defined for all of the target stocks and are consistent with the MSC criteria for a well-managed fishery.</li> <li>• Harvest rates and escapement goals are precisely set for each target stock unit in the fishery, as qualified by relevant environmental factors.</li> <li>• Target Reference Points and Limit Reference Points for the natural stock are clearly defined and documented for each target stock unit in the fishery.</li> <li>• Harvest controls are effective with respect to the attainment of management objectives for each target stock unit in the fishery.</li> <li>• The management system provides estimates for all catches, landings and bycatch in a timely manner.</li> </ul> <p><b>80 Scoring Guidepost</b></p> <ul style="list-style-type: none"> <li>• Management objectives are clearly defined for most of the target stocks and are consistent with the MSC criteria for a well-managed fishery.</li> <li>• Target Reference Points and Limit Reference Points for the natural stock are clearly defined and documented for each target stock unit in the fishery.</li> <li>• Harvest rates and escapement goals are set for target stocks or target species in the fishery, as qualified by relevant environmental factors.</li> <li>• Harvest controls are precise and effective for major target stocks or target species in the fishery.</li> <li>• The management system provides estimates for all major catches, landings, and bycatch in a timely manner</li> </ul> <p><b>60 Scoring Guidepost</b></p> <ul style="list-style-type: none"> <li>• Management objectives are clearly defined and consistent with MSC criteria for a well-managed fishery for the majority of target stocks.</li> <li>• Harvest controls are effective for the majority of the fisheries on target stocks.</li> <li>• The management system provides for the estimation of catch, landing, and bycatch for the majority of the fisheries.</li> </ul> <p><b>SCORE 76</b></p> <p>Management objectives are clearly defined for most of the target stocks and are consistent with the MSC criteria for a well-managed fishery. Harvest rates and escapement goals are set for target stocks or target species in the fishery, as qualified by relevant environmental factors. Harvest controls are precise and effective for major target stocks or target species in the</p>

	fishery. The management system provides estimates for all major catches, landings, and bycatch in a timely manner. Target reference points are defined by policy. Escapement goal ranges are represented as the operational equivalent of a limit reference point but lower bounds are not effectively treated as a true limit reference point where fishing is curtailed. There are numerous examples where lower bounds have been reduced concurrent with declining numbers, although these changes represent improvements made in the scientific basis for escapement goals. The Sustainable Salmon Fisheries Policy identifies a LRP concept (SET) but this threshold has not been applied in practice. The fishery does not meet the 80 scoring guidepost with respect to definition and documentation of limit reference points.
<b>AFDF Action Plan</b>	AFDF believes that this condition will be met as part of meeting Conditions 38 and 41
<b>Conclusion from 1st Surveillance Report</b>	<p>It is the Department's regulatory and constitutional policy to set escapement goals based upon high sustained yields. The lower bounds of these escapement goals is well above the escapement level that would put a stock at risk of being unable to recover to healthy stock level. In practice the Department aggressively manages fisheries to achieve those goals. The sustainable salmon fisheries policy provides for the development of action plans when stocks are depleted.</p> <p>In light of the findings above, and the fact that the current operation of the fishery is in line with recent MSC guidance (Fisheries Assessment Methodology v1) the assessment team consider that the requirements of the 80 scoring guidepost are met by the fishery as it currently operates. In line with MSC requirements, PI 3.1.1 is now re-scored at 85 and this condition closed.</p>

<b>Condition 66</b>	<p><b>Condition of Certification 66 (related to Condition 67):</b></p> <p>Establish and implement a mechanism for periodic formal evaluations of each hatchery program for consistency with statewide policies and prescribed management practices. This would include a specific evaluation of each program relative to related policies and management practices. [All]</p>
<b>Assessed Activity</b>	<p>This Condition relates principally to Indicator 3.1.10</p> <p><b>100 Scoring Guidepost</b></p> <ul style="list-style-type: none"> <li>• The management agencies have a peer reviewed written plan that establishes protocol for all hatchery programs with respect to practices that sustain the genetic structure and productivity of the natural stocks.</li> <li>• The hatcheries mark all production with coded-wire-tags (CWTs) or other suitable marks such that reliable and meaningful estimates of hatchery composition of the catch and escapement can be computed.</li> </ul> <p><b>80 Scoring Guidepost</b></p> <ul style="list-style-type: none"> <li>• The management agencies have an agreement that establishes protocol for all hatchery programs with respect to practices that sustain the genetic structure and productivity of the natural stocks.</li> <li>• The hatcheries mark all production with coded-wire-tags (CWTs) or other suitable marks such that reliable and meaningful estimates of hatchery composition of the catch and escapement can be computed.</li> </ul> <p><b>60 Scoring Guidepost</b></p> <ul style="list-style-type: none"> <li>• All hatchery programs employ practices that do not negatively affect the genetic structure and productivity of the natural stocks.</li> </ul>

	<ul style="list-style-type: none"> <li>• The hatcheries mark the majority of production with coded-wire-tags (CWTs) or other suitable marks such that the presence and/or absence of hatchery produced fish can be detected in the catch and escapement.</li> </ul> <p><b>SCORE 75</b></p> <p>ADF&amp;G has identified a variety of policies, statutes, and regulations that are applicable to hatcheries. These include the FRED Division Statute (1971), PNP hatchery permitting Statute (1974), regional planning statute (1976), Board of Fisheries hatchery management policy (1978), fish transport regulations (1981), PNP regulations (1985), genetics policy (1985), pathology policy (1988), wild and enhanced stock statute (1992), sockeye salmon culture policy (1994), BOF sustainable salmon fisheries policy (2000). Key policies and guidance include:</p> <ol style="list-style-type: none"> <li>1) The Policy for Management of Mixed Stock Salmon Fisheries (5AAC 39.220.) accords the highest use priority to the conservation of wild salmon stocks. Application of the policy is by the managers of the salmon fisheries.</li> <li>2) Procedures for permitting of salmon hatcheries and release of fish into state waters include purposely locating hatcheries away from important wild production streams, and a rigorous permitting process for release of hatchery-produced salmon into state waters – Fish Transport Permits – under Alaska Administrative Code, Chapter 5, Section 41.040. The Development Section in Commercial Fisheries has oversight of the private nonprofit (PNP) salmon hatchery program. Development Section makes routine inspections of hatcheries to insure compliance with all state policies and procedures. Development Section can recommend to the Commissioner of ADF&amp;G to alter, suspend, or revoke a PNP permit if a wild stock(s) is jeopardized (AS 16.10.430.). Development Section can recommend to the Commissioner of ADF&amp;G to alter or deny an FTP if a wild stock(s) is jeopardized (5AAC 41.040.).</li> <li>3) The ADF&amp;G Genetics Policy can be broken into three guiding principles. The first and foremost principal (protection of wild stocks) is paramount. The second and third principals are the restriction of stock transports by ADF&amp;G Fish Transport Permits, and the maintenance of genetic variability within the hatchery salmon stocks, respectively. Application of the Genetics Policy is done by the Genetics Section in the Division of Commercial Fisheries. Genetics Section has oversight review of Private Nonprofit (PNP) salmon hatchery applications and the Fish Transport Permits (FTP) needed by hatcheries to make annual releases. Concerns of a possible adverse genetic impact on a wild stock would trump a hatchery release – a hatchery permit would not be issued or the FTP re-issued. Genetics Section last invoked the Genetics Policy to deny the proposed remote release of chum salmon at Nelson Bay in PWS in 2004; it was denied because the proposed source for the brood stock was not local.</li> <li>4) Policies and Guidelines of the Alaska Fish and Shellfish Health and Disease Control is the controlling document for fish health in PWS salmon hatcheries. The chief principal of the policy is to minimize the risk of contributing to the spread of disease to any wild stock. Application of the policy is done by the Fish Pathology Section in the Division of Commercial Fisheries. Fish Pathology Section has oversight review of the FTPs needed by hatcheries to release fish. Hatcheries are required to contact Fish Pathology Section for permission to release fish into the wild. Concerns of a possible adverse impact on the health of a wild stock would trump a hatchery release – an FTP would not be issued or re-issued. Additionally, the Fish Pathology Section performs routine inspections of hatcheries to insure adherence to policy.</li> </ol> <p>This indicator is not applicable to Bristol Bay, Peninsula, Yukon, Kuskokwim, Kotzebue, Norton Sound, Chignik, and Yakutat fisheries owing to absence of significant hatchery production of salmon in these areas.</p> <p>For the rest of the units of certification excluding Prince William Sound (see below), the fisheries do not meet the 80 scoring guidepost with respect to the effectiveness of agreements</p>
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	<p>for implementation of hatchery protocols that sustain genetic structure and the productivity of natural stocks. Most enhancement programs in Alaska are operated by private nonprofit programs that are often closely allied with commercial fishery interests. The management agencies have a series of agreements that establish protocols for hatchery programs consistent with current policies although it is unclear whether agreements and policies are being effectively implemented in every case.</p> <p>Hatchery guidelines and directives are widely scattered among a variety of statutes, policies, and permits and as a result are sometimes unclear. Comprehensive reviews of each hatchery program relative to guidelines and directives are limited. All hatcheries must submit annual operating management plans, which receive extensive departmental review. Any proposed changes to permitted activities must undergo formal department review. However, this annual review is focused primarily on established practices and any proposed changes. It is unclear whether established practices are subjected to a specific point by point evaluation relative to related policies and guidelines. It is unclear whether practices that might predate more recent policies and guidelines have been subject to a rigorous review. The effectiveness of coordination mechanisms between ADF&amp;G and the hatchery programs for addressing implementation issues are unclear. One notable exception is that marking of all production is now common practice in many places and will provide reliable and meaningful estimates of hatchery composition of the catch and allow escapement to be computed.</p>
<b>AFDF Action Plan</b>	<p>ADF&amp;G, in concert with hatchery operators, has oversight for annual management plans for each hatchery. These plans are reviewed and amended as necessary to maintain consistency with current policies, regulations and fishery management plans. Hatcheries are also subject to biennial pathology inspections to ensure compliance with disease policies. Additionally, all fish and egg transport permits are reviewed for consistency with all applicable plans, regulations and policies when they are approved. To formalise this process, ADF&amp;G has reported to AFDF that it will establish and implement a mechanism for additional periodic formal evaluation of hatchery programs and regional plans. This condition will be phased in using a 5 year rotational review for hatcheries, beginning with Kodiak; the evaluations included in each year's rotation will be provided by AFDF to the certifying body each January.</p>
<b>Conclusion from 1st Surveillance Report</b>	<p>ADF&amp;G has made significant progress on this condition as illustrated by the effort put forward to conduct the PWSAC internal review.</p> <p>Progress is on-target. We anticipate this condition to be fulfilled once the new positions are filled and the periodic review process is more clearly articulated and implemented.</p> <p>This will be reviewed by the surveillance team in the fourth surveillance audit.</p>
<b>AFDF Actions</b>	<p>ADF&amp;G has completed a reorganization of the Fisheries Monitoring, Permitting and Development section. The restructuring included designating the Section Chief a position on all of the Regional Planning Teams in order to provide consistent policy guidance and hiring a position to do a systematic review of each area's compliance with state statutes, regulations and policies (see ADF&amp;G activities for conditions 63 and 67).</p>
<b>Observations</b>	<p>During the 2008 performance audit the Department's presented the structure for a new program to oversee hatchery operations and compliance with applicable statutes, regulations and policies. This program has been staffed and the Department is beginning to implement the program described in the 2008 audit report. The periodic review process will start in the Kodiak Region (2010) and progress to Cook Inlet (2011), Prince William Sound (2012), Northern Southeast Alaska (2013) and Southern Southeast Alaska (2014). The review will include permits, Basic Management Plans (BMPs), Annual Management Plans (AMPs), Fish Transport Permits (FTP), Annual Reports, carcass disposal logs and other relevant documents. An effort is being made to standardize structure and content of controlling documents such as BMPs and AMPs. A policy is being drafted for FTPs and is expected to be completed in October 2010 (Josephson, 2010).</p> <p>Subsequent audit teams should verify that the periodic reviews are being conducted on the</p>

	prescribed schedule and consistent with pertinent policies and good management practices.
<b>Conclusion</b>	<p>On the basis of the following scoring guideposts the score associated with the Performance Indicator 3.1.10 has been adjusted as follows:</p> <p><b>80 Scoring Guidepost</b></p> <ul style="list-style-type: none"> <li>• The management agencies have an agreement that establishes protocol for all hatchery programs with respect to practices that sustain the genetic structure and productivity of the natural stocks.</li> <li>• The hatcheries mark all production with coded-wire-tags (CWTs) or other suitable marks such that reliable and meaningful estimates of hatchery composition of the catch and escapement can be computed.</li> </ul> <p>Through implementation of the new program described above, the Department has satisfied the first bullet point and the PI is re-scored at 80. The condition is closed out and the issues associated with this PI will be part of the overall review of the ongoing operation of this fishery at audits.</p>

<b>Condition 67</b>	<p><b>Condition of Certification 67 (will be met as part of Condition 66):</b></p> <p>Complete a comprehensive, formal, written, and externally-reviewed evaluation of how the enhancement programs in Prince William Sound protect and sustain the genetic structure and productivity of natural stocks in the area. The review should include an explanation of how the current programs are consistent with current scientific information on hatchery risks to wild stocks, statewide policies, and hatchery practices in other regions of Alaska. Based on this review, update the comprehensive regional management and enhancement plan to include appropriate policies, objectives, and practices comparable to those identified in the comprehensive enhancement plan for southeast Alaska. [Prince William Sound]</p>
<b>Assessed Activity</b>	<p>This Condition relates principally to Indicator 3.1.10</p> <p><b>100 Scoring Guidepost</b></p> <ul style="list-style-type: none"> <li>• The management agencies have a peer reviewed written plan that establishes protocol for all hatchery programs with respect to practices that sustain the genetic structure and productivity of the natural stocks.</li> <li>• The hatcheries mark all production with coded-wire-tags (CWTs) or other suitable marks such that reliable and meaningful estimates of hatchery composition of the catch and escapement can be computed.</li> </ul> <p><b>80 Scoring Guidepost</b></p> <ul style="list-style-type: none"> <li>• The management agencies have an agreement that establishes protocol for all hatchery programs with respect to practices that sustain the genetic structure and productivity of the natural stocks.</li> <li>• The hatcheries mark all production with coded-wire-tags (CWTs) or other suitable marks such that reliable and meaningful estimates of hatchery composition of the catch and escapement can be computed.</li> </ul> <p><b>60 Scoring Guidepost</b></p> <ul style="list-style-type: none"> <li>• All hatchery programs employ practices that do not negatively affect the genetic structure and productivity of the natural stocks.</li> <li>• The hatcheries mark the majority of production with coded-wire-tags (CWTs) or other</li> </ul>

	<p>suitable marks such that the presence and/or absence of hatchery produced fish can be detected in the catch and escapement.</p> <p><b>SCORE Between 60 and 80 – see text below</b></p> <p>The fisheries in this unit of certification barely meet the 60 scoring guidepost for this indicator.</p> <p>Hatchery programs employ practices and are operated under agreements designed to protect the genetic structure and productivity of the natural stocks. However, it is unclear whether existing hatchery protocols and agreements have provided adequate protection for wild stocks in Prince William Sound.</p> <p>The PWS hatchery program has not been subjected to a formal and comprehensive review or analysis of consistency with current policies. Given the controversy surrounding the effects of the Prince William Sound enhancement program and significant evidence that adverse effects may be occurring, the lack of a comprehensive review of this program is particularly noteworthy.</p> <p>A PWS regional plan produced in 1994 was intended to provide guidance. However, the plan has not been updated based on new information and many of the measures included in the plan do not appear to have been rigorously applied. For instance, it has been known for some time that current stray rates of hatchery pink and chum salmon exceed objectives in regional plan (pg 26: 2%). The PWS plan indicates a response to violations will be to determine whether and to what extent the hatchery program should be modified to reduce the rate of straying or to conduct further research to improve confidence in the estimate of acceptable straying. However, it is not apparent that adequate modifications to hatchery management practices have been implemented. The plan also identifies biological constraints whereby the growth rates of juvenile salmon during the early marine period must be density independent over the long term and abundance of juvenile salmon predators must be independent of juvenile salmon abundance over the long term. As pointed out earlier, studies by Cooney (1993) and Willette et al. (1999) provide such evidence. The plan also delineates a set of studies that were determined to be necessary to evaluate the effect of remote release programs on wild stocks. However, Ashe (2005) reported that in at least one case (Port Chalmers remote release study), no formal study plan was developed and an accurate and unbiased straying evaluation was never completed.</p> <p>Comments received from PWSAC suggest that the citation of Ashe (2005) is correct, but that the publication provided to the assessment team was incorrect in some of its statements. Joyce, in his comments to the assessment team, also makes this point. Joyce states, “Coded Wire Tags were used at the time of this stocking as the means to differentiate between hatchery and natural stocks of salmon in PWS. A study plan was developed to examine streams for coded wire tagged chum salmon carcasses. Large numbers of salmon need to be examined to recover sufficient tags for a statistically valid sample. As found in Sharp and Peckham (1994), the recovery of only a few coded wire tags does not supply sufficient statistical power to draw conclusions. A straying study was conducted using coded wire tagged chum salmon by examining the commercial harvest from the Northern and Eastern Districts for chum salmon with tag codes released at Port Chalmers. Only one Port Chalmers tagged chum salmon was found in this commercial catch (Joyce and Riffe 1998). Examining spawned salmon carcasses in streams in these areas would limit the sample sizes and possible not recover any coded wire tags. Also, Habicht et al. (1998) indicated that coded wire tags may be a causative agent in salmon straying. A study plan using otolith marked salmon was determined to be more reliable assuming that weather conditions permit the transfer of the properly marked fish to Port Chalmers. Some chum salmon carcasses have been looked at as evident from the internal ADF&amp;G memos mentioned in earlier comments.</p> <p>Tim Joyce (see Appendix 5 of main report – public comments to the assessment team) also states, “The hatcheries have funded some of the straying research. Some simple modifications of current regulations to allow the hatcheries to remove the late arriving fish from the water</p>
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	<p>would reduce the amount of stray fish. The sockeye salmon hatchery at Main Bay has changed from multiple broodstocks to only producing one stock of salmon with middle summer run timing. This change reduced the overlap with pink salmon returns to that district. That change also eliminated the overlap with the natural Eshamy sockeye salmon stock. As stated earlier the straying studies that have been accomplished so far have indicated in some selected streams particularly close to the hatcheries straying rates exceed the arbitrary 2% guideline for pink salmon. However, Sharp et al. (1994) provides information that indicates the natural stocks of pink salmon stray at much higher rates than 2%. This is a good goal, but it simply may not be obtainable with pink salmon. Research has been done and more is planned for the future So these statements fail to consider much of the past and present conditions.” This provides further support for the assessment team’s concern that adequate actions have not been taken to mitigate straying of hatchery fish where these factors come into play.</p> <p>Again, the information made available has not changed the concern that further evaluation and management of hatcheries is needed. If there are studies that show that the measures in place are protecting all wild stock that could be effected, then a revised score of 80 or above would be appropriate. This information should be brought to the attention of the assessment team at the first annual surveillance, where it can be fully reviewed. If it is adequate information to address the condition and the indicator, the condition should be closed out without any further costs or work for ADF&amp;G.</p>
<b>AFDF Action Plan</b>	<p>AFDF will interface with ADF&amp;G while, in cooperation with the PWS/CBR Regional Planning Team and PWSAC, they conduct a review of the PWS enhancement programs. Revisions of the PWS comprehensive plan may or may not result from this review. AFDF will provide the surveillance team with periodic updates in developments stemming from this review as advised by ADF&amp;G.</p> <p>AFDF believes that this Condition will be met as part of meeting Condition 66.</p>
<b>Conclusion from 1st Surveillance Report</b>	<p>The first bullet point requirement of the 80 scoring guide post was only partially achieved in the original assessment and remains only partially achieved at this time. An internal review of the Valdez Fisheries Development Association Solomon Gulch Hatchery should be conducted to complete the review of PWS hatchery programs. This condition shall be re-evaluated at the next annual audit to determine the degree that the PWSAC internal review actions have been implemented as well as the development of the periodic review process identified in condition 66.</p> <p>Progress on this Condition is on-target. This Condition remains open and is expected to be closed out following review during the second annual MSC surveillance audit.</p>
<b>AFDF Actions</b>	<p>This condition relates to hatchery management in Prince William Sound and is concerned with reviewing hatchery practices with respect to providing adequate protection for wild salmon stocks. ADF&amp;G is organizing a program that will do a statewide review of how current programs are consistent with current scientific information on hatchery risks to wild stocks, statewide policies, and hatchery practices in other regions of Alaska. A new position has been created that is focusing first on consistency with policies, regulations and hatchery practices. ADF&amp;G is beginning with the Kodiak area and will follow with Cook Inlet, Prince William Sound, then finally with Southeast.</p> <p>ADF&amp;G has not provided a timeline for achieving this, however, it will be necessary to complete this prior to providing a revised management plan for Prince William Sound. In addition, ADF&amp;G is currently collecting data as part of Condition 25 that will be instrumental for addressing the issues in Conditions 63 and 67.</p>
<b>Observations</b>	<p>The periodic formal review of hatchery programs described under condition 66 will not be implemented for Prince William Sound until 2012. The Department conducted an internal review of the Prince William Sound Aquaculture Association (PWSAC) in 2007. This review was published in Lewis (2009). This review contained an action plan with clear performance measures. The action plan is reviewed and updated annually (Josephson, 2010). This review</p>



	<p>did not incorporate the Valdez Fisheries Development Association hatchery program.</p> <p>The ratio of hatchery fish to wild fish may be a limiting factor in the Department's ability to achieve wild stock escapement goals. PWS fishery managers reported that the existing management program is capable of achieving wild stock pink salmon escapement objectives through time area fishery restrictions provided that the ratio was not in excess of 4 to 5 hatchery fish to each wild fish (Regnart, 2010; Gray, 2010). When hatchery fish outnumber wild fish by a ratio of 8 or 10 to 1, the fishery is confined to small terminal harvest areas in front of the hatcheries for the entire season, resulting in congestion and reduced product quality (Regnart, 2010). Even with such restrictions it is very difficult to meet wild stock escapement goals. High ratio of hatchery fish appear to be correlated with escapements falling below the lower end of the published escapement goal ranges (Moffitt, 2010b).</p> <p>The permitted hatchery production levels in PWS have not increased substantially since 1990. The average pink salmon fry releases for PWS hatcheries averaged approximately 556 million in the 1990's and approximately 608 million over the past decade. Annual chum salmon fry releases have averaged 95 million in the 1990's and approximately 115 million over the past decade. Substantial production increases have recently been proposed by the Prince William Sound Aquaculture Association and are under review by the Regional Salmon Planning Team (Josephson, 2010). These include an increase of 103 million pink salmon eggs (22% increase in the permitted production), and 17.4 million egg increase in chum salmon eggs, and additional increases to the sockeye production at Main Bay (PWS) and Gulkana (Copper River).</p> <p>Uncertainties remain as to the current PWSAC permit alteration requests; however the Department's stated position and analysis is consistent with the protection of wild stocks and minimization of genetic consequences from hatchery practices.</p>
<b>Conclusion</b>	<p>Although closing this condition is now behind target as laid out in the re-assessment document, the audit team considered that progress against the condition is satisfactory to the extent that ADF&amp;G is attempting to evaluate the genetic structure and sustainability of natural stocks in PWS. However, there are complications and so the condition remains open.</p> <p>When scored by the certification team, indicator 3.1.10 fell short of the first bullet point for the 80 scoring guide post due to lack of a formal review process and implementation plan that establishes practices that sustain genetic structure and productivity of wild stocks. The Department has made significant progress through its review of the PWSAC hatchery program and annual review and follow-up of the action plans that resulted from this review. Additionally the application of the Department's Genetics Policy is an ongoing effort in the process of evaluating proposed changes to the production plans for the PWS hatcheries. Uncertainties remain as to the Department's ability to maintain wild stock escapement integrity in the face of high ratios of hatchery to wild fish. Further uncertainty has been introduced by permit alteration requests submitted by PWSAC to increase production levels.</p> <p>Due to the complexity of this issue it is unclear that an update of the Prince William Sound Phase III comprehensive Salmon Plan will sufficiently satisfy this condition. What is needed is further understanding of the interactions of wild and hatchery fish to satisfy the question of protection of genetic structure and productivity of wild stocks. Research programs currently underway are making progress on this issue.</p> <p>Key research that is underway includes estimation of hatchery pink, chum, and salmon strays on the spawning grounds. An important new project is the assessment of whether allele frequencies of chum salmon changed from before hatcheries to after hatchery production increased. This study is unique and will inform managers about the extent that hatchery strays may have altered the genetic characteristics of chum salmon. ADF&amp;G recognizes that stray rates of pink and chum salmon are high in Prince William Sound. To our knowledge they have not formally acknowledged how they will assess escapement goals of wild salmon in light of these stray rates but ADF&amp;G has noted that they recognize the problem. We note that NMFS (McElhany et al. 2000) has conducted research on this issue in the Pacific Northwest and that</p>

	<p>this NMFS document may be a starting point for ADF&amp;G.</p> <p>Due to the timeframes for completion of these studies, the Departments scheduled periodic review of PWS in 2012 and the updating of the PWS Comprehensive salmon plan, it is unlikely that this condition will be closed out during the certification period. In light of the complexity of the review process, the assessment team, in conjunction with the client, has proposed a new milestone and timescale for this condition of the PWS hatchery review being completed by May 2013.</p>
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<b>Condition 68</b>	<p><b>Condition of Certification 68:</b></p> <p>Publish an annual report containing program and budgetary recommendations for improving management and research of commercial salmon fisheries. [All]</p>
<b>Assessed Activity</b>	<p>This Condition relates principally to Indicator 3.2.1.</p> <p><b>100 Scoring Guidepost</b></p> <ul style="list-style-type: none"> <li>• The management system incorporates a research component that considers relevant data and information needs for formulating management strategies for all target species, and also information leading to an understanding of the dynamics of the ecosystem including data on the catch, landings and discards of non-target species.</li> <li>• The framework for research includes investigations dealing with socioeconomic impacts of the fishery.</li> <li>• The research plan responds in a timely fashion to unexpected changes in the fishery.</li> <li>• Funding is secure and sufficient to meet long-term research needs.</li> <li>• There is significant continuing progress in understanding the impact of the fishery on target and non-target species, and the ecosystem in general.</li> <li>• Research results form the basis for formulating management strategies and decisions</li> <li>• Research is regularly published in peer review journals and/or is reviewed by the management authorities.</li> </ul> <p><b>80 Scoring Guidepost</b></p> <ul style="list-style-type: none"> <li>• The management system incorporates a research component that provides for the collection and analysis of information necessary for formulating management strategies and decisions for both target and non-target species.</li> <li>• The research plan addresses concerns related to the impact of the fishery on the ecosystem.</li> <li>• The research plan addresses socioeconomic issues that result from the implementation of management.</li> <li>• The research plan is responsive to changes in the fishery.</li> <li>• Funding is adequate to support short-term research needs.</li> <li>• There is progress in understanding the impact of the fishery on target and non-target species.</li> <li>• Research results are utilized in forming management strategies.</li> <li>• Research is reviewed by the management authorities or other appropriate and technically qualified entities.</li> </ul> <p><b>60 Scoring Guidepost</b></p> <ul style="list-style-type: none"> <li>• Research provides for the collection of catch statistical and biological data for the target</li> </ul>

	<p>species.</p> <ul style="list-style-type: none"> <li>• There has been useful research on the impact of fishing on target and non-target species taken in the fishery, and on the ecosystem in general.</li> </ul> <p><b>SCORE 76</b></p> <p>The management system makes extensive use of research that provides for the collection and analysis of information necessary for formulating management strategies and decisions for both target and non-target species. A research planning process is well developed but an overarching research plan is not in place. While there is not an overall comprehensive statewide research plan, there are many research plans that cover different parts of the state or international waters (including numerous joint US/Canada plans). Research has addressed concerns related to the impact of the fishery on the ecosystem and socioeconomic issues that result from the implementation of management. Research is responsive to changes in the fishery. Funding for short-term research needs is significant. There is progress in understanding the impact of the fishery on target and non-target species. Research results are utilized in forming management strategies. Research is reviewed by the management authorities or other appropriate and technically qualified entities. In the absence of a comprehensive long term research plan, it is unclear how research priorities among subjects and regions are established and whether overarching issues are being addressed. The fishery does not meet the 80 scoring guidepost for the existence of a research plan. The development of an overarching plan would be complicated (more than one division would be involved) and potentially costly; however, there would be some value in publishing the research plans/projects on an annual basis to allow all parties to understand the issues or needs within ADF&amp;G.</p>
<b>AFDF Action Plan</b>	<p>AFDF will provide the certifying body with a report, produced by ADF&amp;G and organised by region with further sub-division as appropriate, on an annual basis. (Note: This report will consist of a compilation of each region's blue and red book submissions that are generated each year, together with a brief executive summary).</p>
<b>Conclusion from 1st Surveillance Report</b>	<p>PI 3.2.1 has eight bullet point requirements. In the original assessment the third, fourth and fifth bullet points were only partially achieved for this indicator. These related to; ecosystem impacts of the fishery, socioeconomic issues from implementation of fisheries management and responsiveness to changes in the fishery respectively. The original assessment team spoke to the need for a comprehensive overarching research plan.</p> <p>The assessment team found that the mission statement, core services and strategies outlined in the division of commercial fisheries annual budget request provide guidance for establishing research priorities. These are updated each budget cycle. While a coordinated comprehensive salmon based research plan for the Department would make its priorities more transparent to the public, it is also important to recognize that such a plan by necessity would be very general and difficult to keep current. It may not be feasible for the Department to expend the costs required to develop and maintain a comprehensive research plan and remain responsive to unanticipated fishery specific research needs. The Department's and the Division of Commercial Fisheries' missions provides an over arching directive for the protection of fisheries habitats and ecosystem function through the sustained yield principle. Socioeconomic issues relating to implementation of fisheries management programs are incorporated into these mission statements and are integral to the function of the Alaska Board of Fisheries. Timely research priorities and plans are developed in response to stock specific and fishery specific needs as addressed by the Alaska Sustainable Salmon Fisheries Policy, and receive public review through the Board of</p>

	<p>Fisheries process.</p> <p>This Performance Indicator is therefore rescored to 80 and the Condition is closed.</p>
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<b>Condition 69</b>	<p><b>Condition of Certification 69 (same as Condition 64):</b></p> <p>Same as Condition under Principle 2, Indicator 2.3.1 - Action Plans should identify fishery specific objectives for recovery and provide an anticipated timeframe for meeting the objectives. [all areas]</p>
<b>Assessed Activity</b>	<p>This Condition relates principally to Indicator 3.4.1.2.</p> <p><b>100 Scoring Guidepost</b></p> <ul style="list-style-type: none"> <li>• The management system has a formal and codified mechanism, which is adequate for restoring depleted target stocks to the TRP or equivalent high level of abundance, as qualified by relevant environmental factors.</li> <li>• The mechanism includes strict guidelines for restoring these depleted populations within a certain time frame are formalized by the management system.</li> </ul> <p><b>80 Scoring Guidepost</b></p> <ul style="list-style-type: none"> <li>• The management system includes measures, which are adequate to restore depleted populations of target stock to the TRP or equivalent high level of abundance as qualified by relevant environmental factors.</li> <li>• A time schedule for restoration, which considers environmental variability, is determined by the management system.</li> </ul> <p><b>60 Scoring Guidepost</b></p> <ul style="list-style-type: none"> <li>• The management system includes measures for restoring the majority of depleted populations of target stock to the TRP or equivalent high level of abundance.</li> </ul> <p><b>SCORE 70</b></p> <p>The management system typically includes measures for restoration of depleted populations of target stock to the TRP or equivalent high level of abundance as qualified by relevant environmental factors. Recovery actions plans do not typically include time schedules for restoration. In the absence of specific time schedules it may be unclear whether actions sufficient to achieve restoration will be implemented in a timely manner, particularly where the initial suite of actions proves to be insufficient. While the 3-year Board cycle ensures that action plans and the effectiveness of measures are closely reviewed on a regularly-scheduled basis, this process does not prescribe a time schedule for restoration or contingencies for plan adequacy. The fishery does not meet the 80 scoring guidepost with respect to specification of a time schedule for restoration of depleted stocks.</p>
<b>AFDF Action Plan</b>	<p>Whenever a stock of concern is established, an action plan is required (5 ACC 39.222 – Policy for Management of Sustainable Salmon Fisheries SSFP). ADF&amp;G has reported to AFDF that is has a statutory commitment to getting the escapement onto the spawning grounds to recover stocks of concern. The only mechanism available with which managers can achieve this objective is control harvest. To meet this condition, AFDF will provide a report, produced by ADF&amp;G before the second audit, that describes those stocks for which an action plan is required and setting out the harvest objectives intended to accomplish recovery. ADF&amp;G will include an anticipated timeframe for recovery recognising that stock depletions may be due to uncontrollable factors such as changing freshwater or marine productivity and consequently</p>

	estimates of recovery timeframes may be inaccurate. Recovery will be monitored and reported annually starting one generation after plan implementation (2 years for pink salmon, 3 years for chum, coho and sockeye salmon and 5 years for Chinook salmon).
<b>Conclusion from 1st Surveillance Report</b>	<p>At the original re-assessment, the first requirement of the Scoring Guidepost was fully met and the second requirement partially met.</p> <p>As noted above, the surveillance team considers the required 3-year review by ADFG and the Board of Fisheries and the associated action plans to meet the intent of the MSC requirement for a timeframe for recovery. The ADFG/BOF process requires evaluation and potentially further action if a stock has not recovered within three years, or a stock may be identified as recovered.</p> <p>Therefore the requirements of the 80 Scoring Guidepost are considered to be fully met and partially exceeded, Performance Indicator 3.4.1.2 is re-scored at 85 and the condition closed.</p>

<b>Any complaints against the certified operation; recorded, reviewed and auctioned</b>
No complaints were received or made known to the surveillance team.

<b>Any relevant changes to legislation or management regime</b>
There were no relevant changes in legislation found during the course of the second year of MSC certification. As of July 1 <sup>st</sup> 2008 the Habitat Division has been moved back from Department of Natural Resources to the ADF&G. The accompanying permitting statutes protecting anadromous waters have been moved back to Title 16 which is where ADF&G's statutes are housed.

## OVERALL CONCLUSIONS

<b>Overall conclusions</b>
<p>The overall management of the fishery continues to operate at least to the level observed during the re-certification assessment.</p> <p>Through the work undertaken by ADF&amp;G, appropriate measures to address the Conditions of certification raised during the MSC certification assessment against the Conditions of Certification can be summarised as follows:</p> <ol style="list-style-type: none"> <li>Conditions where requirements are deemed to have been fully met and the condition closed out: <ul style="list-style-type: none"> <li>Conditions 1, 2, 5, 6, 7, 8, 9, 10, 13, 14, 16, 17, 18, 19, 20, 21, 22, 32, 33, 34, 35, 36, 38, 39, 40, 41, 42, 43, 44, 45, 46, 47, 48, 49, 50, 51, 52, 53, 56, 57, 59, 60, 61, 64, 65, 66, 68, 69.</li> </ul> </li> <li>Conditions which remain open and are expected to be closed out at the third annual surveillance audit: <ul style="list-style-type: none"> <li>Conditions 28, 37, 58.</li> </ul> </li> <li>Conditions which remain open and are expected to be closed out at the fourth annual surveillance audit: <ul style="list-style-type: none"> <li>Conditions 4, 12, 30, 31, 31a, 54, 55.</li> </ul> </li> </ol> <p>No PI's have been re-scored at a lower level than at the original re-certification assessment. Thirty PI's have been</p>

re-scored at a higher level. Most of the remaining conditions are on-target for completion within timeframe of the current certificate, but the surveillance audit team did note that a number of conditions may not be closed out within the period of this certificate due to exceptional circumstances. The relevant conditions are listed above, and more details are provided in the text accompanying each condition.

It is concluded that MSC Certification should continue and surveillance audits continue to the same schedule.

### **Recommendations**

- As was identified in the first surveillance audit, it became apparent during this audit that not all ADF&G staff fully appreciated that aspects of their on-going or new work were directly or indirectly contributing to the fulfilment of conditions.
- It is recommended that AFDF work with the ADF&G (and with the regional aquaculture associations) to address those conditions which, although deemed not to have fallen behind in their schedules for closure in regard of the work identified initially, are at risk of failing to be closed out during the period of this certificate because of the new information being obtained and because of their complexity (Conditions 3, 11, 15, 23, 24, 25, 26, 27, 29, 62, 63, 67).
- Conditions 7, 53 and 66 were closed in this audit, but the surveillance team has made a point of highlighting the need for their periodic review.

## **INFORMATION SOURCES**

### **Organisations and/or individuals who provided comment either through meetings or correspondence**

- Richard Brenner, ADF&G
- James Browning, AFDF
- Lowell Fair, ADF&G
- Dave Gaudet, AFDF
- Dan Gray, ADF&G
- Steve Heintz, ADF&G
- John Hilsinger, ADF&G
- Jim Humphreys, MSC
- Ron Josephson, ADF&G
- Bert Lewis, ADF&G
- Steve Moffitt, ADF&G
- Andy Piston, ADF&G
- Jeff Regnart, ADF&G
- Leon Shaul, ADF&G
- William Templin, ADF&G
- Eric Volk, ADF&G

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<b>Standards and Guidelines used:</b>
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| <ol style="list-style-type: none"> <li>1. MSC Principles and Criteria for Sustainable Fishing</li> <li>2. MSC Fishery Certification Methodology Version 6. September 2006</li> <li>3. TAB Directives – all</li> </ol> |
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## Appendix 1: Conditions that remain open for the Alaska salmon fishery

The table includes the “Issue” associated with the Condition, the “Action” that the ADF&G have committed to undertake to meet the Condition and the timescale within which the Condition is expected to be closed and the Unit of Certification (UoC) to which the Condition applies.

Condition(s)	Issue	AFDF Action	Timescale	UoC affected
<b>3, 11, 15</b> Estimate contribution of hatchery chum to wild escapement in representative areas through appropriate means, such as implementing thermal otolith mass marking of all hatchery chum salmon. [Southeast]	<p><b>PI 1.1.1.5 Conditions 3 &amp; 11</b></p> <p>Natural spawning streams have not been systematically sampled to determine hatchery contribution. Fisheries are actively managed for wild escapement goals (there are 5 escapement goals according to Heintz et al. 2004), however "there is no scientific justification for the goals, because neither escapement nor harvest are reliably measured on a system-specific basis" (Heintz et al. 2004). There are no formal Biological Escapement Goals, nor are there Sustainable Escapement Goals, as recommended by the Sustainable Salmon Policy.</p> <p><b>PI 1.1.2 Condition 15</b></p> <p>Not having formal escapement goals and avoiding the Stocks of Concern process.</p>	<p>To satisfy this condition, AFDF will interface with ADF&amp;G to develop multi-year otolith sampling program to estimate contributions of hatchery chum salmon to a subset of wild escapements, including streams near significant chum salmon hatchery release sites and streams in areas more distant from those releases.</p> <p>This will require additional staff time for collecting otoliths as well as for analysis. ADF&amp;G has implemented a 3 year sampling program that will estimate contributions of hatchery chum to wild escapements for a set index of streams surrounding significant hatchery release sites throughout southeast Alaska. Field crews will sample 100 fish each from early, middle, and late run. Otoliths will be returned to the tag lab to quantify hatchery fish. The need for further work will be assessed according to the results of this sampling. A report summarising the work will be completed in July, 2011.</p> <p>The major southeast Alaska hatcheries are already otolith marking virtually all of their chum salmon production, which represents</p>	<p>These conditions were to be completed in 2011 and evaluated during 4<sup>th</sup> surveillance audit.</p> <p>Due to the need for additional work to be undertaken, it now appears likely that these conditions will not be closed out during the course of this certificate.</p>	<p>3-Southeast Drift Gill net</p> <p>11 &amp; 15 - Southeast Purse seine</p>

Condition(s)	Issue	AFDF Action	Timescale	UoC affected
		most (e.g. 83% in 2004) of the region's enhanced chum salmon releases. It would be a substantial burden on smaller facility operators to purchase and operate otolith marking technology; therefore, we will consider the need to otolith marking additional facilities' production after obtaining results from the initial studies. By July, 2011, AFDF will provide an ADF&G review of additional research needs, if any, based upon these initial studies.		
<b>4, 12</b> Develop escapement goals for chum salmon.	<b>PI 1.1.2.2 Condition 4 &amp; 12</b>  There is limited information on straying of hatchery chum salmon in Southeast Alaska and its possible impacts on wild stock production. Hatchery contributions to net natural production have not been determined. Significant straying could mask true estimates of wild chum abundance and productivity or reduce natural stock productivity throughout breeding depression of hatchery domestication.	Work is underway on this task. Existing ADF&G staff have developed sustainable escapement goals for southeast Alaska chum salmon stocks as part of the triennial escapement goal review prior to the next Alaska Board of Fisheries meeting for southeast Alaska. A published report will be available in early 2009.	To be completed in 2009 and evaluated during the 4 <sup>th</sup> surveillance audit.  This is a delay from the original aim of closing the condition in year 3, but reflects the need for additional data collection and analysis to be undertaken.	4-Southeast Drift Gill net  12 Southeast Purse seine
<b>23, 25</b>  Provide adequate data and analyses to demonstrate that hatchery and fishery management actions are sufficient to ensure that harvest of enhanced fish is not adversely affecting the wild pink, chum, sockeye, and coho stocks. Revise wild stock assessments and management as	<b>PI 1.1.1.5 Condition 23</b>  The impacts and interactions of hatchery salmon that stray into wild salmon spawning streams is still required.  An analysis of the results of straying studies in the context of the State's genetics policy and wild stock escapement goals is required. This is anticipated in the latter	Current management practices identify wild stocks in catch and fishery openings are modified as needed on a weekly basis. Escapement goals have been established for wild stocks of pink, chum, and sockeye salmon in PWS. Escapement goals have been consistently met in face of large hatchery runs of pink and chum salmon. No significant wild coho stock exists in PWS so the condition is not relevant for PWS coho salmon. AFDF will provide a report produced by ADF&G,	This was to be completed in 2009, and evaluated during 3 <sup>rd</sup> surveillance audit.  The complexity of the condition and the need for additional data collection and analysis means that this condition may now not	23-Prince William Sound seine and gill net

Condition(s)	Issue	AFDF Action	Timescale	UoC affected
appropriate.	part of 2008 and will be reviewed as part of next year's surveillance audit.	including data and analyses, by December 31, 2008	be closed out during this certificate period.	
	<b>PI 1.1.2.4 Condition 25</b>  This condition will not be achieved until the Department completes an analysis of the results of the straying studies in the context of the State's genetics policy and wild stock escapement goals.	Current management practices identify wild stocks in catch and fishery openings are modified as needed on a weekly basis. Escapement goals have been established for wild stocks of pink, chum, and sockeye salmon in PWS. Escapement goals have been consistently met in face of large hatchery runs of pink and chum salmon. No significant wild coho stock exists in PWS so the condition is not relevant for PWS coho salmon. AFDF will provide a report produced by ADF&G including data and analyses, by December 31, 2008.	This was to be completed in 2011, having been evaluated during the 4 <sup>th</sup> surveillance audit.  The complexity of the condition and the need for additional data collection and analysis means that this condition may now not be closed out during this certificate period.	25- Prince William Sound seine and gill net
<b>24</b>  Estimate the contributions of stray hatchery chum and sockeye to spawning escapements and report results.	<b>PI 1.1.2.2</b>  The fishery does not meet the 80 scoring guidepost regarding the availability of estimates of escapement and spawning of enhanced fish stocks.	AFDF has advised Moody marine Ltd that ADF&G is entering year 3 of a multi-year study of chum salmon straying. The sockeye salmon from the Main Bay hatchery are thermally marked. Study of straying Eshamy and Coghill river systems is feasible. ADF&G will conduct a three year study of sockeye salmon straying and will provide a report to AFDF when completed. The report for chum salmon is scheduled to be completed by May 30, 2008, and the report for sockeye salmon will likely be completed by May 30, 2011.	This was expected to be completed in 2011 after being reviewed by the surveillance team in the 4 <sup>th</sup> annual surveillance audit.  The complexity of the condition and the need for additional data collection and analysis means that this condition may now not be closed out during this certificate period.	Prince William Sound seine and gillnet
<b>26</b>  Review pink salmon escapement goals and management practices	<b>PI 1.1.3.2</b>  The fishery does not meet the 80 scoring guideposts with respect to the escapement	Pink salmon escapement goals and management practices are reviewed every three years. The next review will occur during the 2008/2009 Board of Fisheries cycle. This	This was to be completed in 2009, and evaluated during 3 <sup>rd</sup>	Prince William Sound seine and gillnet

Condition(s)	Issue	AFDF Action	Timescale	UoC affected
taking into account recent research results on genetic stock structure of wild pink stocks. The review should include a discussion of how the escapement goals take into account variability in the productivity of each component of the target stocks.	goals taking into account variability in the productivity of each component of the target stocks.	review will take all available research information into consideration.  While current management practices, including escapement windows and district management targets, have consistently maintained spatial and temporal distribution of escapement, refinements in management may come out of this review. AFDF will provide a report of these evaluations, produced by ADF&G, taking into account genetics data, prior to the 2008/2009 Board of Fisheries meeting.	surveillance audit.  The complexity of the condition and the need for additional data collection and analysis means that this condition may now not be closed out during this certificate period.	
<b>27</b>  Provide a written evaluation of the effects of potentially selective hatchery practices on characteristics of un-enhanced wild stocks.	<b>PI 1.3.1</b>  The knowledge of the effect of fishing on biological characteristics such as the age, size, sex and component stocks may be adequate to detect threats to the reproductive capacity of the majority of the target stocks but it is unclear if hatchery management actions are consistent with maintaining the native biological characteristics such as age, size, sex and genetic structure of all target stocks.	One of the primary concerns for hatchery practices is changing run timing. AFDF will request ADF&G to compile the long-term data on run timing for both wild and hatchery stocks and provide a report and analysis to AFDF by the end of 2008.	This was to be completed in 2009 and evaluated during 2 <sup>nd</sup> surveillance audit.  The complexity of the condition and the need for additional data collection and analysis means that this condition may now not be closed out during this certificate period.	Prince William Sound seine and gillnet
<b>28, 30, 31</b>  Continue to improve information on contributions of component stocks of sockeye and Chinook salmon to the commercial fishery by time and area and demonstrate that current harvest strategies are adequate to	<b>PI 1.1.1.3 Condition 28</b>  To evaluate if current harvest policies sufficiently protect sub-stock components.	Detailed work on timing and distribution using on-going telemetry studies in combination with the completion of genetic baselines studies and publication in 2011 escapement goal report.	To be completed in 2011. Evaluated during 4 <sup>th</sup> surveillance audit.	28-Copper/Bering seine and gill net
	<b>PI 1.1.2.2 Condition 30</b>  The fishery did not meet 80 scoring guideposts for reliable estimates of	Detailed work on timing and distribution using on-going telemetry studies in combination with the completion of genetic baselines studies and publication in 2011	To be completed in 2011. Evaluated during 4 <sup>th</sup> surveillance audit.	30-Copper/Bering seine and gill

Condition(s)	Issue	AFDF Action	Timescale	UoC affected
maintain the high productivity of all target stock components.	escapement for any target stock, fishery-independent indicators of in-season escapement, or estimates of annual escapement and natural spawning of hatchery fish.	escapement goal report.		net
	<b>PI 1.1.2.4 Condition 31</b> It is unclear whether harvest limitations for target stocks take into adequate consideration the uncertainty in productivity estimates or the variability in productivity of different components within the aggregate sockeye, chinook, and coho stocks for which this fishery is managed. The fishery does not meet the 80 scoring guideposts for productivity information required to maintain the high productivity of the target stocks.	Detailed work on timing and distribution using on-going telemetry studies in combination with the completion of genetic baselines studies and publication in 2011 escapement goal report.	To be completed in 2011. Evaluated during 4 <sup>th</sup> surveillance audit.	31- Copper/Bering seine and gill net
<b>29 TO BE COMPLETED AS PART OF (66, 67)</b> Conduct a review of the Gulkana sockeye hatchery program with emphasis on potential impacts to wild stocks.  <b>67</b> Complete a comprehensive, formal, written, and externally-	<b>PI 1.1.1.5 Condition 29</b> More years of stock allocation data from the strontium marking program in conjunction with the retrospective analysis from the genetic baseline are needed to evaluate if the presence of enhanced fish is impacting wild stocks	AFDF believes that ADF&G will provide the information to close out this condition as part of Condition 66 & 67:	This was scheduled to be completed in 2010 and evaluated during 3rd surveillance audit.  However, the need for extra data collection means that this condition is unlikely to be closed out during the course of this certificate due to its complexity.	29- Copper/Bering seine and gill net

Condition(s)	Issue	AFDF Action	Timescale	UoC affected
reviewed evaluation of how the enhancement programs in Prince William Sound protect and sustain the genetic structure and productivity of natural stocks in the area. The review should include an explanation of how the current programs are consistent with current scientific information on hatchery risks to wild stocks, statewide policies, and hatchery practices in other regions of Alaska. Based on this review, update the comprehensive regional management and enhancement plan to include appropriate policies, objectives, and practices comparable to those identified in the comprehensive enhancement plan for southeast Alaska.	<p><b>PI 3.1.10 Condition 67</b></p> <p>An internal review of the Valdez Fisheries Development Association Solomon Gulch Hatchery should be conducted to complete the review of PWS hatchery programs.</p>	AFDF will interface with ADF&G while, in cooperation with the PWS/CBR Regional Planning Team and PWSAC, they conduct a review of the PWS enhancement programs. Revisions of the PWS comprehensive plan may or may not result from this review. AFDF will provide the surveillance team with periodic updates in developments stemming from this review as advised by ADF&G.	<p>This was scheduled to be completed in 2009 and evaluated during 3<sup>rd</sup> surveillance audit.</p> <p>However, the need for additional data collection means that this condition is now unlikely to be closed out during the course of this certificate.</p>	67-Prince William Sound
<p><b>31a</b></p> <p>Refine knowledge of sub-stock structure of Copper salmon. Incorporate information as appropriate into stock productivity estimates and refinement of escapement goals.</p>	<p><b>PI 1.1.3.2</b></p> <p>The fishery does not meet the 80 scoring guideposts with respect to the escapement goals taking into account variability in the productivity of each component of the target stocks.</p>	Chinook salmon genetic stock identification studies are underway and will be continued. Gulkana hatchery sockeye are marked with strontium and recovered through sampling of the commercial fishery to ensure that hatchery contributions through time are factored into management and do not impact wild stocks. AFDF has been advised that this program will be continued. DNA baselines for sockeye salmon will need to be developed before any mixed stock fishery analysis can occur using this approach. ADF&G has advised AFDF that they will begin to develop the sockeye salmon baseline. AFDF will provide a report	To be completed in 2011. Evaluated during 4 <sup>th</sup> surveillance audit.	Copper Bering Drift Gillnet

Condition(s)	Issue	AFDF Action	Timescale	UoC affected
		by July 2009, produced by ADF&G, on Chinook salmon stock identification using DNA, sockeye salmon hatchery stock identification using strontium, and progress on sockeye salmon DNA development.		
<b>37</b> Review stock status of Susitna sockeye and develop an action plan intended to ensure achievement of Susitna sockeye escapement goals. Action plan should provide specific goals and an anticipated timeline for achieving the goals	<b>PI 1.2.1</b> The management response to depletion of Yentna sockeye does not meet the requirements of the 80 scoring guidepost with respect development and implementation of a specific plan for recovery within 3 reproductive cycles and or limitations of the fishery which allow the stock to recover to more than 150% of the LRP for abundance before any fisheries are permitted that target these stocks.	AFDF has advised the certifier that Susitna drainage sockeye salmon studies have been funded and are being conducted by ADF&G for the second year. ADF&G has also reported investigating alternative sonar technologies for monitoring escapements. In addition, the genetic stock identification work, referenced under Condition 35, will contribute to meeting this condition. Once this information is available, in late 2009, ADF&G will assess escapement goals, management implications, the need for any adjustments to management, and the need for further research and provide this information to AFDF. At present, action plans are required for stocks of concern under the terms of the Policy for Management of Sustainable Salmon Fisheries (SSFP) and are adopted by the Board of Fisheries. Once adopted, they are reviewed every three years and adjusted as needed. It is beyond the authority of the AFDF or ADF&G to modify the SSFP because that policy was adopted by the Alaska Board of Fisheries, an independent regulatory body. The results of the Susitna sonar, mark/recapture, and genetics studies in 2009 will allow a far more detailed analysis of escapement goals, which in part determine the need for an action plan, which is normally prepared as part of a stock of concern designation, if such concern is warranted.	To be completed in 2009. Evaluated during 3 <sup>rd</sup> surveillance audit.	Upper Cook Inlet Gillnet

Condition(s)	Issue	AFDF Action	Timescale	UoC affected
		Separate from the recovery plan, ADF&G will provide AFDF with an estimated timeframe for recovery, and AFDF will pass this information to the surveillance team.		
<b>54 (55)</b>  Evaluate status of Kodiak chum salmon to determine if they should be classified as a Stock of Concern, then follow up with an appropriate action plan to recover stocks as needed.	<b>PI 1.2.1 Condition 54</b>  Kodiak chum stocks salmon have not meet escapement goals for a number of years and they have not been identified as a Stock of Concern. ADF&G notes that chum salmon will be examined for potential Stock of Concern status in the 2007/2008 Board of Fisheries meeting.	A new Kodiak chum escapement goal analysis should be produced by spring 2011 (Winter 2010/2011 BOF cycle) in order for the audit team to evaluate the condition in spring 2011.	By the 4 <sup>th</sup> annual surveillance audit in 2011	Kodiak
	<b>PI 1.2.2 Condition 55</b>  Kodiak chum stocks salmon have not meet escapement goals for a number of years and they have not been identified as a Stock of Concern. ADF&G notes that chum salmon will be examined for potential Stock of Concern status in the 2007/2008 Board of Fisheries meeting.	A new Kodiak chum escapement goal analysis should be produced by spring 2011 (Winter 2010/2011 BOF cycle) in order for the audit team to evaluate the condition in spring 2011.	By the 4 <sup>th</sup> annual surveillance audit in 2011	Kodiak
<b>58</b>  Provide a report that defines the geographic range of all target stocks and provide an explanation of how escapements for all target stocks are adequately monitored through direct or indirect means.	<b>PI 1.1.1.3</b>  Harvests are monitored during the fishing season, but the geographic range for harvests of all target stocks is not completely defined, and therefore not all 80 scoring guideposts are met for this indicator	Information on stocks harvested in the South Alaska Peninsula June fishery, SEML sockeye, post June chum, pink and coho fisheries is based on tagging, genetics, run timing, proximity of stocks and location of fisheries. Similar information exists for the North Peninsula fisheries; however for northern areas of North Peninsula and South Peninsula post June sockeye, additional stock identification studies may be required. AFDF has been advised that sample collection for both sockeye and chum salmon in these areas is ongoing as a part of ADF&Gs overall	By the 3 <sup>rd</sup> annual surveillance audit in 2010	Pennisula/Aleutian



Condition(s)	Issue	AFDF Action	Timescale	UoC affected
		<p>research program.</p> <p>AFDF will provide information compiled by ADF&amp;G on stocks harvested in these fisheries as well as a review of escapement monitoring for those stocks. AFDF anticipates a report will be produced by ADF&amp;G in 2010.</p>		
<p><b>62</b></p> <p>Support additional investigations of hatchery chum straying into natural production areas, including streams that are close to release sites and some streams distant from release sites.</p>	<p><b>PI 2.2.2</b></p> <p>Straying of hatchery salmon</p>	<p>AFDF believes that this condition is being met by ADF&amp;G activities directed at meeting Conditions 3, 11, 15 and 24.</p> <p>AFDF has been informed that initial investigations into straying of hatchery fish into wild stock spawning areas have occurred in Prince William Sound for pink and chum salmon and in Kodiak for sockeye salmon as part of ADF&amp;Gs normal research program. ADF&amp;G has reported that additional work will be carried out as part of meeting Conditions 3, 11, 15 and 24. Based on the results of these studies, ADF&amp;G will assess the need to continue, expand or reduce the scope of these studies, and provide AFDF with this assessment. A summary of ADF&amp;Gs findings and its estimate of further work will be provided to AFDF as the other conditions are met. AFDF will provide this needs assessment to the surveillance team as received.</p>	<p>This was scheduled to be closed out by the 4<sup>th</sup> audit.</p> <p>ADF&amp;G is now undertaking additional work that should support the closure of this condition. There is, though, a possibility that this condition will not be closed out during the course of this certificate.</p>	All
<p><b>63</b></p> <p>Implement effective hatchery management practices needed to minimize hatchery impacts on the genetic diversity and productivity of wild pink and chum stocks in</p>	<p><b>PI 2.2.2</b></p> <p>The fishery does not fully meet the 80 benchmark for performance due to concerns as to how uncertainty is taken into account.</p>	<p>AFDF has been told that ADF&amp;G recently conducted an Internal Review of Prince William Sound Aquaculture Corporation (PWSAC) hatchery operations and developed an action plan to help improve those operations. The Action Plan has been provided</p>	<p>This condition was expected to be closed in the 3<sup>rd</sup> surveillance audit.</p> <p>However, additional data collection and</p>	Prince William Sound

Condition(s)	Issue	AFDF Action	Timescale	UoC affected
Prince William Sound. Effective measures will include: 1) evaluate various on site and remote release strategies to identify those that cause significant straying of hatchery-produced fish into natural production areas, 2) substantially reduce undesirable straying by improving or eliminating appropriate strategies, and 3) avoidance of hatchery selection practices that alter genetic and life history characteristics of the hatchery stocks relative to the local wild stocks.		by AFDF after the first annual surveillance. AFDF believes that Condition 63 will also be met through meeting Conditions 66 and 67, which call for formal hatchery reviews and a comprehensive, formal, written and externally reviewed evaluation of how the enhancement programs in Prince William Sound protect and sustain the genetic structure and productivity of natural stocks in the area as well as updating the PWS regional management and enhancement plan.	analysis is now required, such that this condition may not be closed out during the course of this certificate.	
<b>67 (related to 66)</b>  Complete a comprehensive, formal, written, and externally-reviewed evaluation of how the enhancement programs in Prince William Sound protect and sustain the genetic structure and productivity of natural stocks in the area. The review should include an explanation of how the current programs are consistent with current scientific information on hatchery risks to wild stocks, statewide policies, and hatchery practices in other regions of Alaska. Based on this review, update the comprehensive regional management and	<b>PI 3.1.10</b>  Uncertainty as to whether existing hatchery protocols and agreements have provided adequate protection for wild stocks in Prince William Sound.  The Prince William Sound hatchery program has not been subjected to a formal and comprehensive review or analysis of consistency with current policies.	AFDF will interface with ADF&G while, in cooperation with the PWS/CBR Regional Planning Team and PWSAC, they conduct a review of the PWS enhancement programs. Revisions of the PWS comprehensive plan may or may not result from this review. AFDF will provide the surveillance team with periodic updates in developments stemming from this review as advised by ADF&G.	This was scheduled to be closed at the 3 <sup>rd</sup> annual surveillance audit.  However, the schedule for PWS hatchery review means that this condition will not be closed out during the course of this certificate.	Prince William Sound

Condition(s)	Issue	AFDF Action	Timescale	UoC affected
enhancement plan to include appropriate policies, objectives, and practices comparable to those identified in the comprehensive enhancement plan for southeast Alaska.				