



Global TRUST
DELIVERING CERTAINTY

MSC FISHERY ASSESSMENT REPORT:

Public Certification Report

**THE CANADIAN HIGHLY MIGRATORY SPECIES FOUNDATION (CHMSF) BRITISH
COLUMBIA NORTH PACIFIC ALBACORE (*Thunnus alalunga*) TUNA FISHERY**

AND

**THE AMERICAN WESTERN FISHBOAT OWNERS ASSOCIATION (WFOA) NORTH
PACIFIC ALBACORE (*Thunnus alalunga*) TUNA FISHERIES**

Date of Submission: 22nd March 2010

MSC FISHERY ASSESSMENT REPORT



Client Name	The Canadian Highly Migratory Species Foundation (CHMSF) British Columbia										
Fishery Unit 1	<ul style="list-style-type: none">• <u>Species</u>: Albacore tuna <i>Thunnus alalunga</i>;• <u>Geographical Area</u>: North Pacific Ocean;• <u>Method of Capture</u>: Troll & Jig										
Client Name	The Western Fishboat Owners Association (WFOA) USA										
Fishery Unit 2	<ul style="list-style-type: none">• <u>Species</u>: Albacore tuna <i>Thunnus alalunga</i>;• <u>Geographical Area</u>: North Pacific Ocean;• <u>Method of Capture</u>: Troll & Jig										
Fishery Unit 3	<ul style="list-style-type: none">• <u>Species</u>: Albacore tuna <i>Thunnus alalunga</i>;• <u>Geographical Area</u>: North Pacific Ocean;• <u>Method of Capture</u>: Pole & line										
Report Issue	<table border="1"><tr><td></td><td>Client Report</td></tr><tr><td></td><td>Peer Review</td></tr><tr><td></td><td>Public Comment Draft Report</td></tr><tr><td>X</td><td>Final Report and Determination</td></tr><tr><td></td><td>Public Certification Report</td></tr></table>		Client Report		Peer Review		Public Comment Draft Report	X	Final Report and Determination		Public Certification Report
	Client Report										
	Peer Review										
	Public Comment Draft Report										
X	Final Report and Determination										
	Public Certification Report										
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SUMMARY

This assessment was of:

- The Canadian Highly Migratory Species Foundation (CHMSF) British Columbia North Pacific Albacore (*Thunnus alalunga*) Tuna Fishery and,
- The American Western Fishboat Owners Association (WFOA) North Pacific Albacore (*Thunnus alalunga*) Tuna Fisheries

Each fishery is defined as follows:

The Canadian Highly Migratory Species Foundation (CHMSF) British Columbia North Pacific Albacore (*Thunnus alalunga*) Tuna Fishery

- Species: Albacore tuna *Thunnus alalunga*;
- Geographical Area: North Pacific Ocean;
- Method of Capture: Troll & Jig
- Stock: The stock under assessment is the North Pacific albacore stock. It is recognised that this fisheries represents a relative small proportion of the total fishing effort on this stock. As a consequence the status of the North Pacific stock as a whole is assessed, together with fishing practices and consequences within the CHMSF pole & line fleet only;
- Management: When operating in International waters, Albacore occur within the jurisdictions of both the Inter-American Tropical Tuna Commission (IATTC) and the Commission for the Conservation and Management of Highly Migratory Fish Stocks in the Western and Central Pacific Ocean (WCPFC).

When operating in the Canadian EEZ the fishery is under domestic management of Fisheries and Ocean Canada (DFO). When operating in the US EEZ the fishery is under US jurisdiction and operates under the requirements of the Canada/US Tuna Treaty

- Client Group: Canadian Highly Migratory Species Foundation (CHMSF) member vessels and vessels recognised by CHMSF. Any vessels joining the unit of certification must recognise any requirements of MSC certification applied to CHMSF vessels

**The American Western Fishboat Owners Association (WFOA) North Pacific Albacore
(*Thunnus alalunga*) Tuna Fisheries**

- Species: Albacore tuna *Thunnus alalunga*;
- Geographical Area: North Pacific Ocean;
- Method of Capture: Pole & line and Troll & Jig
- Stock: The stock under assessment is the North Pacific albacore stock. It is recognised that this fisheries represents a relative small proportion of the total fishing effort on this stock. As a consequence the status of the North Pacific stock as a whole is assessed, together with fishing practices and consequences within the WFOA pole & line and Troll & Jig fleet only;
- Management: When operating in International waters, Albacore occur within the jurisdictions of both the Inter-American Tropical Tuna Commission (IATTC) and the Western and Central Pacific Fisheries Commission (WCPFC). When operating in the US EEZ the fishery is under domestic management of the Pacific Fishery Management Council.

When operating in the Canadian EEZ the fishery is under Canadian jurisdiction and operates under the requirements of Fisheries and Oceans Canada (DFO) and the Canada/US Tuna Treaty

- Client Group: Western Fishboat Owners Association (WFOA) member vessels and vessels recognised by WFOA. Any vessels joining the unit of certification must recognise any requirements of MSC certification applied to WFOA vessels

The assessment was carried out by the Certification Body Global Trust Certification, the assessment team were as follows:

- Lead Assessor: **Dr Antonio Hervás.** Dr. Hervás is Global Trust Fisheries Manager responsible for Marine Stewardship Certification Programs. He is an established fisheries scientist specialized in quantitative stock assessment methods and the design of management strategies for the sustainable exploitation of fish resources
- Lead Auditor: **Mr. Dave Garforth.** Mr. Garforth is the Technical Director of Global Trust. Mr. Garforth is a lead IRCA approved and CoC/traceability auditor
- Expert Advisors:
 - **Dr. Max Stocker.** Dr. Stocker is a scientist with 30 years of extensive experience in fisheries science providing conservation advice for management.
 - **Mr. Ronnan Cosgrove.** Ronan is a fisheries scientist with the Irish Sea Fisheries Board (BIM). Working in the area of tuna fisheries management for the last 5 years, he is an active member of the International Commission for the Conservation of Atlantic Tunas (ICCAT) working group on albacore tuna.

The assessment followed set procedures as described in the MSC Fishery Certification Methodology Version 6. Key stages of the assessment were:

- **Stage 1: Fishery Announcement and Assessment Team Formation**
 - Stakeholder Notification: Fisheries enters full assessment- 19th February 2009
 - Stakeholder Notification: Assessment team nominations - 16th April 2009
 - Stakeholder Notification: Assessment team confirmation - 8th May 2009
 - Stakeholder Notification: Assessment team revision - 25th June 2009
- **Stage 2: Building the Assessment Tree**
 - Stakeholder Notification: Draft assessment tree released for comment - 13th March 2009
- **Stage 3: Information gathering, stakeholder meetings and scoring**
 - Stakeholder Notification: Site Visit scheduled - 16th April 2009
- **Stage 4: Client and peer review**
 - Stakeholder Notification: Peer reviewers proposed - 16th September 2009
 - Confirmation of peer reviewers - 1st October 2009
- **Stage 5: Public review of the draft assessment report**
 - Public comment draft report - 27th November 2009
- **Stage 6: Final report and Determination**

Following the initial stage of wider stakeholder review, stakeholder consultation and the peer review comments the Final Report and Determination by the Certification Committee, is now released for potential objections.

The Certification Committee of Global Trust has determined that:

- **The Canadian CHMSF North Pacific Albacore Tuna Fishery by Troll and Jig is awarded certification to the Marine Stewardship Council Sustainable Fishing Standard.**
- **The USA WFOA North Pacific Albacore Tuna Fishery by Troll and Jig is awarded certification to the Marine Stewardship Council Sustainable Fishing Standard.**
- **The USA WFOA North Pacific Albacore Tuna Fishery by Pole and Line is awarded certification to the Marine Stewardship Council Sustainable Fishing Standard.**

Based on these recommendations, Global Trust Certification Ltd. hereby publicly announces its intention to Certify each Fishery Unit listed above and upon issue of a certificate, each clients shall have the right to claim the fishery as a 'Well Managed and Sustainable Fishery' in accordance with the MSC Principles and Criteria for Sustainable Fishing. Fishery material thereof is deemed eligible for entry into the MSC Chain of Custody according to requirements.

SUMMARY OF SCORES

The three Units of Certification achieved a score of 80 or above on each of the three MSC Principles independently and did not score less than 60 against any Indicator.

Principle (P)	Unit of Certification No.1	Unit of Certification No.2	Unit of Certification No.3	
P 1-Target Species	85.6	85.6	85.6	PASS*
P2- Ecosystem	96.7	97.0	96.3	PASS
P3- Management	91.75	92.3	92.3	PASS

* Although the assessment team found the three Units of Certification in overall compliance, it also found the performance of the three Units of Certification on one performance indicator (PI 1.1.2) to be below the established compliance mark (Score of 80). This is described in Section 8 of this Report.

Significant strengths of the fisheries in relation to the MSC standard derive from the intrinsically low-impact nature of the gears used (Pole & Line and Troll & Jig).

Fishing using troll & jig method for albacore consists of towing artificial lures with barbless hooks behind a fishing vessel at a speed of about 6 knots. Individual lines are generally 3 to 20 fathoms long. An artificial feathered jig with a barbless double hook is attached to each line. Fish are caught one at a time on the trolling line and, upon striking the jig, are retrieved immediately with a hydraulic gurdy or line-puller, or by hand pulling. Usually about 8-14 lines may be trolled by an albacore fishing vessel, however, typically not all lines are pulled during heavy fishing activity. Trolling vessels customarily operate with a captain and one or sometimes two crew.

In pole & line fishing, fishers use a stout pole, formerly constructed of bamboo and now made of fiber-glass or a high-technology composite, with a short line that has a single barbless hook with either an artificial lure or live bait. Schools of albacore are usually located by trolling and the vessel is stopped near the school of albacore, which is kept close to the vessel by throwing small amounts of live fish chum, preferably northern anchovy. Each pole & line set-up is used by an individual fisher to catch one fish at a time that is lifted aboard the vessel. Vessels usually carry about three to six pole-and-line fishers and a captain, who usually also ‘throws’ chum.

The main weakness of the fishery found during the assessment is the lack of definition of target and limit reference points for the assessment of the stock status. Although the quality of the stock assessment was considered of very good, an agreement on the reference points to be used for the assessment of the stock status has not yet been reached among member States of the two international management organizations (the IATTC and the WCPFC). Monitoring programs to collect information about the biology of the species and fishery data are well established and the stock assessment procedures are well defined and under constant review for its improvement. However, the scientific community is asking for guidance in the definition of target and limit reference points and this has not yet been given. Despite the lack of explicit reference points, the

stock status is considered “healthy” as temporal trends in Biomass, Spawning Stock Biomass and Recruitment indicates that the stock cannot be defined as depleted.

As a highly migratory species, management of the fisheries and stock are under the auspices of international organizations within which member States can negotiate agreements on a variety of regulatory mechanisms. However, member States have the responsibility to implement management conservation measures. In the case of these albacore pole & line and Troll & Jig fisheries, this occurs primarily through the US Pacific Fishery Management Council and the Department of Fisheries and Ocean for the US and Canada, respectively.

In the US, the US Pacific Fishery Management Council has developed the Fisheries Management Plan for US West Coast Fisheries for Highly Migratory Species (HMS FMP). This Fisheries Management Plan establishes goals and objectives for management and defines regulatory actions, if needed. In Canada, Fisheries and Oceans, Canada has developed the Pacific Region Integrated Fisheries Management Plan, which also establishes goals and objectives for management and defines regulatory actions, if needed. Management is considered appropriate to the US and Canadian Fisheries.

As a standard requirement of the MSC certification methodology, the fishery shall be subject to (as a minimum) annual surveillance audits. These audits shall be publicised and reports made publicly available. Also, the fishery attained a score of below 80 against Performance Indicator 1.1.2 (Reference Points). The assessment team has therefore set a condition for continuing certification that the CHMSF and the WFOA, as the two clients for certification are required to address. The condition is applied to improve performance to at least the 80 level within a period set by the certification body but no longer than the term of the certification.

The condition is raised because the appropriateness of the reference point used is unknown to ensure the long term productivity of the stock. Currently explicit reference points have not yet been defined. As a result of this, the International Scientific Committee has requested further guidance on the selection and application of biological reference points (BRPs) and the conditions that have been assigned to each Client have specific objectives to promote and support these requests. Also latest conservation advice indicates that, based on the projection of current fishing mortality (interpreted in this assessment as the target reference point), the fishing mortality rate should be reduced. It is recognised that defining explicit reference points is not under the control of the CHMSF and the WFOA and therefore action required of the CHMSF and the WFOA have been defined (also refer to Section 8).

The Condition is summarised here (also refer to Section 8 of this Report).

The Canadian Highly Migratory Species Foundation

1. CHMSF to promote and support:

The management actions put forward, notably limitation on effort. Communications supporting such management measures should be made to Fisheries and Oceans Canada; IATTC; and WCPFC (Northern Committee).

- a. Records of communications and responses should be provided by CHMSF to Global Trust ;
- b. ISC request to management authorities for guidance on the definition and application of biological reference points (BRPs) in order to facilitate response to requests for conservation advice. Communications supporting ISC request should be made to appropriate organisations. Records of communications and responses should be provided by CHMSF to Global Trust.

2. CHMSF to provide a summary to Global Trust on Canada's responses to IATTC/WCPFC management resolutions, as provided by Fisheries and Oceans Canada and Federal Government of Canada, when such materials become available.
3. Should the existing resolution be withdrawn following the ISC conservation advice, then point 1.a would be considered closed.
4. Should ISC existing request (1.b) be withdrawn then 1.b would be considered closed.
5. If additional resolutions are proposed, then these should be supported as in 1 above.
6. If additional guidance, related to the definition of biological reference points, is requested from the ISC, then these should be supported as in 1.b above.

Timeline for Condition:

- Point1. If still appropriate, should be pursued immediately upon certification;
- Point2. CHMSF should provide this information within 6 months of certification;
- Point5. Should further resolutions be passed by IATTC/WCPFC in this regard, supportive actions should be initiated at the earliest possible opportunity thereafter; and
- Point6. Should further guidance be requested by the ISC in this regard, supportive actions should be initiated at the earliest possible opportunity thereafter.

The Western Fishboat Owners Association

1. WFOA to promote and support:
 - a. The management actions put forward, notably limitation on effort. Communications supporting such management measures should be made to appropriate organisations. Records should be provided by WFOA of communications and responses.
 - b. ISC request to management authorities for guidance on the definition and application of biological reference points (BRPs) in order to facilitate response to requests for conservation advice. Communications supporting ISC request should be made to appropriate organisations. Records should be provided by WFOA of communications and responses.
2. WFOA to provide a summary to Global Trust on US's responses to IATTC/WCPFC management resolutions, as provided by NMFS and/or Pacific Fishery Management Council, when such materials become available.
3. Should the existing resolution be withdrawn following the ISC conservation advice, then point 1.a would be considered closed.
4. Should ISC existing request (1.b) be withdrawn then 1.b would be considered closed.
5. If additional resolutions are proposed, then these should be supported as in 1 above.
6. If additional guidance, related to the definition of biological reference points, is requested from the ISC, then these should be supported as in 1.b above.

Timeline for Condition:

- Point1. If still appropriate, should be pursued immediately upon certification;
- Point2. WFOA should provide this information within 6 months of certification;
- Point5. Should further resolutions be passed by IATTC/WCPFC in this regard, supportive actions should be initiated at the earliest possible opportunity thereafter; and
- Point6. Should further guidance be requested by the ISC in this regard, supportive actions should be initiated at the earliest possible opportunity thereafter.

1 INTRODUCTION.

This report sets out the results of the assessment of: (1) The Canadian Highly Migratory species Foundation (CHMSF) British Columbia North Pacific Albacore Tuna Fishery and (2) the American Western Fish Boat Owners Association (WFOA) North Pacific Albacore Tuna Fisheries¹ against the Marine Stewardship Council Principle and Criteria for Sustainable Fishing.

1.1 The Unit of Certification

The MSC Guidelines to Certification Bodies specify that the unit of certification is “The fishery or fish stock (= biologically distinct unit) combined with the fishing method/gear and practice (= vessel(s) pursuing the fish of that stock) and management framework”.

The fishery is not conducted under any controversial unilateral exemption to any international agreements. The fishery does not use destructive fishing practices such as poisons or dynamite, these are illegal within the management country.

The fisheries proposed for certification are defined in Tables 1-3.

¹ Fisheries: The North Pacific albacore (*Thunnus alalunga*) stock targeted by two fishing methods (i.e. Pole & Line and Troll & Jig)

Table 1. Unit of Certification No.1

Unit of Certification No.1	
Species	<i>Thunnus alalunga</i>
Common Name	Albacore Tuna
Geographical Range of Fishing Operation	Canadian EEZ and North Pacific
Stock	North Pacific
Method of capture	Troll/ Jig
Management System	When operating in International waters, Albacore occur within the jurisdictions of both the Inter-American Tropical Tuna Commission (IATTC) and the Commission for the Conservation and Management of Highly Migratory Fish Stocks in the Western and Central Pacific Ocean (WCPFC). When operating in the Canadian EEZ the fishery is under domestic management of Fisheries and Ocean Canada (DFO). When operating in the US EEZ the fishery is under US jurisdiction and operates under the requirements of the Canada/US Tuna Treaty
Client Group	Canadian Highly Migratory Species Foundation (CHMSF) member vessels and vessels recognised by CHMSF. Any vessels joining the unit of certification must recognise any requirements of MSC certification applied to CHMSF vessels

Table 2. Unit of Certification No.2

Unit of Certification No.2	
Species	<i>Thunnus alalunga</i>
Common Name	Albacore Tuna
Geographical range of fishing operation	US EEZ, and North Pacific
Stock	North Pacific
Method of capture	Troll/Jig
Management System	When operating in International waters, Albacore occur within the jurisdictions of both the Inter-American Tropical Tuna Commission (IATTC) and the Western and Central Pacific Fisheries Commission (WCPFC). When operating in the US EEZ the fishery is under domestic management of the Pacific Fishery Management Council. When operating in the Canadian EEZ the fishery is under Canadian jurisdiction and operates under the requirements of Fisheries and Oceans Canada (DFO) and the Canada/US Tuna Treaty
Client Group	Western Fishboat Owners Association (WFOA) member vessels and vessels recognised by WFOA. Any vessels joining the unit of certification must recognise any requirements of MSC certification applied to WFOA vessels

Table 3. Unit of Certification No.3

Unit of certification No.3	
Species	<i>Thunnus alalunga</i>
Common Name	Albacore Tuna
Geographical range of fishing operation	US EEZ, and North Pacific
Stock	North Pacific
Method of capture	Pole & Line
Management System	When operating in International waters, Albacore occur within the jurisdictions of both the Inter-American Tropical Tuna Commission (IATTC) and the Western and Central Pacific Ocean Fisheries Commission (WCPFC). When operating in the US EEZ the fishery is under domestic management of the Pacific Fishery Management Council. When operating in the Canadian EEZ the fishery is under Canadian jurisdiction and operates under the requirements of Fisheries and Oceans Canada (DFO) and the Canada/US Tuna Treaty
Client Group	Western Fishboat Owners Association (WFOA) member vessels and vessels recognised by WFOA. Any vessels joining the unit of certification must recognise any requirements of MSC certification applied to WFOA vessels

2 BACKGROUND TO THE FISHERIES

2.1 Biology of the Target Species

Albacore tuna (*Thunnus alalunga*) is a highly migratory tuna found in all of the global oceans and Mediterranean Sea. In the Pacific Ocean there are two separate and distinct stocks of albacore, one in the North Pacific and the other in the South Pacific.

Albacore tuna mature at approximately 5 years or at about 85 cm and has a lifespan of about 10 to 12 years. Growth rates are moderate, with fork lengths at first birthday nearly 40 cm. Fecundity is estimated to be 0.8 to 2.6 million eggs per spawning. In the North Pacific spawning. North Pacific Albacore spawn from March through to July on grounds located in the Western and Central Pacific Ocean in subtropical waters between about 10° to 25° N latitudes.

In general, the bulk of the juvenile albacore recruiting into the North Pacific fisheries first enters the Japanese western Pacific fisheries off Japan and then moves eastward. Recovery of tagged juveniles (ages 1 to 5) indicates that fish tagged off Japan appear in the North American fishery; movement is along the North Pacific Transition Zone. Albacore tagged off North America seem to move across the Pacific during the fall and appear in the Japanese late-winter/spring fisheries near Japan. These fish then appear to migrate back to North America. There are few tag returns of mature fish. Based on catch patterns it would seem that adults move to lower latitudes. In addition to this general pattern of movement there may be variations associated with recruitment. It appears that a small portion of the population may spawn further east than the bulk of the population and first enter the fishery off North America.

Albacore, like other tunas, have a number of physiological and morphological specializations that adapt them to a fast, continuous swimming lifestyle in the pelagic open ocean environment. The most notable of this is a “counter current multiplier system” (heat exchanger) which allows them to regulate their body temperatures. The Albacore tuna body temperature may be as much as 15° above ambient temperature. Their metabolic rates are 2 to 10 times higher than most other bony fishes, and they have very large eyes for detecting prey and specialized fins and body form to reduce drag. Albacore are opportunistic carnivores and as adults have few predators, although they may be preyed on by large marine mammals, sharks, and billfish.

2.2 History of the Fisheries

2.2.1 The Canadian Fishery

(From Holmes, 2009), the Canadian albacore tuna fishery began in 1939 with experimental fishing by 15 vessels off British Columbia and Washington. This fishery was promoted by the Department of Fisheries in an attempt to provide an alternative to the boom and bust cycle of the pilchard fishery. Most of the vessels engaged in the fishery in these early years were seine vessels rather than troll vessels. Conversion to a troll fishery occurred much later, although even in the early years it appears that the majority of catch was occurring in coastal waters off of Oregon and Washington. Canadian landings were quite low (<100 tonnes) until the late 1960s through mid-1970s when well over 1,000 t were landed annually. The modern troll fishery begins in 1995 with a rapid ramping of catch and effort

Fishing activity is dependent on price, ocean and weather conditions, albacore availability, the strength of other fisheries, particularly the salmon fishery, and fuel costs. Effort in the coastal fishery normally peaks in August and September, following the salmon season for trollers.

2.2.2 The U.S Fisheries

The U.S. surface troll fishery for albacore has been operating since early 1900's in the North Pacific. Fishers commenced targeting on seasonally migrating albacore in near Shore Ocean waters off southern California to meet the needs of a tuna cannery established there. The troll fishery gradually spread northwards, but was restricted to waters off California until the late 1930's, when it extended to waters off the states of Oregon and Washington, and eventually to waters off British Columbia, Canada. Traditionally until the late 1970's, the troll fishery usually began operating in early July, when migrating albacore approach the west coast of North America, and was primarily conducted in near shore oceanic waters. From 1961 through 1979, approximately 99% of the reported U.S. catches of North Pacific albacore were made within 200 miles of the North American coast, with 84% off the U.S. coast and 9% and 7% in the jurisdictional waters of Mexico and Canada, respectively. Since the late 1970's, U.S. albacore fishers with larger vessels begin troll fishing in the early spring months on the high seas. Some of these vessels operate as far west as the International Dateline and beyond, to extend the fishing season by intercepting albacore migrating towards the coast of North America and locating high catch rate areas. The extent of the albacore migration is variable and a significant characteristic of the U.S. surface fishery is the wide north-south variation in the geographical locations of the most productive fishing grounds. Uniquely, a large proportion of this variability is at the multi-decade rather than the inter-year time scale.

The estimated number of vessels landing albacore peaked at more than 2,000 in the mid-1970's. However, fewer vessels have been active in recent years. During the past five years the number of U.S. troll vessels that landed albacore ranged from 652 to 870, with vessels smaller than about 17 m outnumbering larger vessels by approximately two to one.

The history of the U.S. pole-and-line fishery for albacore differs somewhat from that of the troll fishery, and is linked to the U.S. tropical tuna fishery for yellowfin, bigeye, and skipjack tunas. The pole-and-line method of catching albacore also began in the early 1900's with vessels operating within a one-day run from port to provide product for a tuna cannery located in southern California. A poor catch of albacore in 1918 forced pole-and-line boats to shift to fishing for tropical yellowfin and skipjack to fill the cannery's demand for tuna. In subsequent years even though the availability of albacore may have been high, the amount of pole-and-line effort expended for albacore was thereafter greatly influenced by events in the tropical tuna fishery. Today there are, fewer than about 200 U.S. vessels using this fishing method for catching North Pacific albacore.

2.2.3 Historical Landings

Total Pacific-wide albacore catches since the 1950's have ranged from 70,000 to 150,000 tonnes per year, mostly taken by Asian long line as well as Pole & Line vessels.

Landings by the Canadian fleet in the North Pacific troll fishery have ranged from 2,734 tonnes in 1999 to 7,856 tonnes in 2004, with an average catch of 5,378 tonnes over this period. In 2008, the

total reported catch was 5,478 tones, of which 202 tonnes was caught in Canadian waters.

The U.S. surface troll & jig and pole & line fisheries account for approximately 17% of the North Pacific albacore landed by all nations. Landings by the U.S fleet in the North Pacific by these fishing methods since 1996 have ranged from 8,400 to 17,000 tonnes per year. In 2008, the total reported catch was 10,200 tonnes.

2.2.4 Vessels

Two different albacore trolling vessels types, which are also often called ‘jig vessels’, can be distinguished in the Canadian and USA albacore fisheries; (1) smaller vessels generally fishing in coastal waters within the 200 nautical miles limit and (2) larger vessels fishing on the high seas as well as on near shore waters. Smaller vessels range from approximately 10 m to 18 m in length (35 to 60 feet) and hold capacities that vary from about 5 to 30 tonnes. Large vessels range from 17 m to 30 m in length (> 60 feet) with capacities from about 40 to 100+ tonnes. In the USA most vessels have refrigerated fish holds employing various types of refrigeration (spray brine, plates, coils, and blast methods), but some smaller vessels may use ice to keep catches fresh. Canadian vessels only have freezer units on-board.

In the USA, pole & line vessels, which may also be called ‘bait boats’, are generally about the same size range and hold capacities as the larger size class of trolling vessels. All have refrigerated fish holds, some with blast or plate freezing and others with refrigerated brine systems. Pole-and-line vessels also have capabilities to conduct troll fishing and may shift back and forth between these types of fishing depending on the fishing conditions and/or the availability of live fish for ‘chum’ and bait. Bait fishing generally occurs later in the North Pacific season , where and when albacore tend to school up and occurs closer to shore. Bait fishing beyond 200 miles generally does not occur because of logistics of carrying live bait these distances.

In Canada, Approximately 350 vessels have participated in the albacore fishery in at least one year since 1995. Historically, 1 to 5 vessels operated in the South Pacific, 5 to 20 vessels in waters outside the Canadian and USA EEZs to as far west as 150°E in the North Pacific, up to 179 vessels in waters of the USA EEZ, and from 20 to 30 vessels in Canadian waters. In 2007 the Canadian fleet was estimated at 198 vessels. Only 110 Canadian vessel are eligible to fish in U.S. EEZ in 2009 and onwards under the USA/Canada treaty provisions.

In the USA, the estimated number of vessels landing albacore peaked at more than 2,000 in the mid-1970’s. However, fewer vessels have been active in recent years. During the past five years the number of U.S vessel that landed albacore ranged from 650 to 870, with vessel in the range 10-15 m in length outnumbering larger vessel by approximately two to one. The drop in numbers is mainly due to attrition of vessels and owners.

2.3 Fishing Methods

2.3.1 Troll & Jig fishing method

Fishing using troll & jig method for albacore consists of towing artificial lures with barbless hooks behind a fishing vessel at a speed of about 6 knots. Individual lines are generally 3 to 20 fathoms long and often constructed from 1/8" braided nylon line, with a 1-6 fathom leader made from 150-400 pound test nylon monofilament, to which is attached an artificial feathered jig with a barbless double hook. Fish are caught one at a time on the trolling line and, upon striking the jig, are retrieved immediately with a hydraulic gurdy or line-puller, or by hand pulling. Usually about 8-14 lines may be trolled by an albacore fishing vessel, however, typically not all lines are pulled during heavy fishing activity. Trolling vessels customarily operate with a captain and one or sometimes two crew.

2.3.2 Pole & Line fishing method

In pole & line fishing, fishers use a stout pole, formerly constructed of bamboo and now made of fiber-glass or a high-technology composite, with a short line that has a single barbless hook with either an artificial lure or live bait. Schools of albacore are usually located by trolling and the vessel is stopped near the school of albacore, which is kept close to the vessel by throwing small amounts of live fish chum, preferably northern anchovy. Each pole-and-line set-up is used by an individual fisher to catch one fish at a time that is lifted aboard the vessel. Vessels usually carry about three to six pole-and-line fishers and a captain, who usually also 'throws' chum.

Main differences between fishing methods/operations can be summarized as follow:

1. Troll & Jig method is moving along at 5-6 knots dragging gear on the surface where the pole and line method is more stationary although it does move with the school but much slower.
2. Pole & Line method makes use of live bait for chum requiring the vessels to harvest it in coastal estuaries themselves or purchase from bait haulers.

Fishing with Troll & Jig uses generally no bait but rather 10 to 15 feather or plastic jigs with double non-barbed hooks which are trolled behind the boat at 5-6 knots on the surface. Occasionally, fishermen try to 'chum' albacore with frozen chunks of dead anchovies. However this practice is not needed as part of the troll & jig fishing method. Troll & Jig fishing method uses a non-significant quantity of bait, 95% of troll/jig fishermen carry no bait and those that do use approximately 100 pounds every two weeks.

On the other hand, pole & line fishing requires the vessel to locate a school by either sonar or trolling a few jigs until fish bite at which time the vessel stops and one person throws live anchovies from a live bait tank on deck into the school to hold the fish around the stern of the bait-boat. In terms of quantities, Pole-and-Line Boats use significantly higher quantity of bait, compared to Troll/Jig.

2.4 Ecosystem Characteristics

Pacific albacore generally occur in the epipelagic zone of tropical, sub tropical and temperate zones of the open ocean and tend to be associated with temperature and plankton fronts as these are areas of primary production and can attract prey species. Adult fish can however dive to depths in excess of 200 metres in search of prey. Albacore is generally considered as a top predator, feeding on prey species such as northern anchovy, Pacific saury and squid, but may also be a prey species to other large pelagic animals. Trolling and pole and line fishing operations are carried out at or close to the surface of the ocean. No contact is made with the seabed and contact with the epipelagic zone is minimal because of the minimal dimensions of the fishing gear.

2.4.1 Bycatch, Retained and ETP species

The occurrence of bycatch in troll & jig and pole & line operations is considered to be minimal in fisheries throughout the world. Incidental bycatch species in Pacific fisheries include skipjack tuna, dolphinfish, yellowtail and blue shark with a total bycatch rate of around 1% or less. Species which have no commercial value may be returned to the sea alive as fish are caught individually, immediately after hooking, and barbless hooks are commonly used, so stress and injuries can be kept to a minimum. Depending on fishing license conditions, some bycatch species which are commercially valuable may be retained onboard. In addition Northern anchovy is used as bait and is therefore a retained species, predominantly in the pole & line fishery, and to a lesser extent in the troll & jig fishery. The Northern Anchovy stock is considered to be sustainable with a relatively small rate of removal by fisheries due to low commercial value. No bycatch of endangered or threatened species has been reported in logbook or independent observer data from these fisheries. If an ETP species is caught, then the animal may be returned to the sea live for the same reasons as unwanted bycatch species; caught individually, immediately after hooking with barbless hooks.

2.5 Fishing Locations and Administrative Boundaries

Albacore are distributed throughout much of North Pacific Ocean. Fishing locations for albacore include the areas: between about 25° N and 55° N latitudes in the coastal margin off North America, between 10° N and 45° N latitudes across the mid-ocean region, and between 25° and 40° N latitudes off the coast of Japan. The Canadian and USA North Pacific Troll & Jig and Pole & Line albacore fisheries takes place in eastern North Pacific waters extending to 200 miles off the coast of North America and in high seas waters in a band extending across the North Pacific to about 1500 E longitude. The Domestic Management Authority of the Canadian and U.S albacore fisheries are Fisheries and Ocean Canada (DFO) and the Pacific Fishery Management Council (PFMC), respectively. International management of the North Pacific albacore resource is shared by two international fisheries commissions: the Inter American Tropical Tuna Commission (IATTC) for waters east of 150° W longitude, and the Western and Central Pacific Fisheries Commission (WCPFC) for waters west of

150° W longitude. Regulations for international management of North Pacific albacore are based on recommendations by the staff or scientific committees of the IATTC and WCPFC, and are implemented by the member and cooperating countries. Further information on the domestic and international administrative context is given in Section 3.

3 ADMINISTRATIVE CONTEXT

3.1 Legislation

Legislation for the North Pacific Albacore Tuna is distinguished at international and national level.

3.1.1 International

Article 64 of the United Nations Convention of the Law of the Sea (1982) which states: "*The coastal State and other States whose nationals fish in the region for the highly migratory species....shall cooperate directly or through appropriate international organizations with a view to ensuring conservation and promoting the objective of optimum utilization of such species throughout the region, both within and beyond the exclusive economic zone. In regions for which no appropriate international organization exists, the coastal State and other States whose nationals harvest these species in the region shall cooperate to establish such an organization and participate in its work.*

Following requirements of the Article 64 of the United Nations Convention of the Law of the Sea, international organizations which have Pacific albacore under their jurisdiction are the Inter-American Tropical Tuna Commission (IATTC) and the Commission for the Conservation and Management of Highly Migratory fish Stocks in the Western and Central Pacific Ocean (WCPFC).

The Inter-American Tropical Tuna Commission (IATTC)

The IATTC, established in 1950 (Convention for the establishment of an Inter-American Tuna Tropical Commission, 1949), is responsible for the conservation and management of fisheries for tunas and other species taken by tuna-fishing vessels in the eastern Pacific Ocean (see 2.3). IATTC was created through formal ratification of treaties by the member states, which include the United States (Table 4).

Currently, Canada is a cooperating non-party of the IATTC. IATTC resolution C-04-02 & resolution A-04-08, establish the criteria for attaining the status of cooperating non-Party. These criteria include requirements relating to the provision of information, compliance with conservation and management measures, and participation in meetings.

Table 4. Member states of the IATTC.

Colombia	France	Nicaragua	Spain
Costa Rica	Guatemala	Panama	United States
Ecuador	Japan	Peru	Vanuatu
El Salvador	Mexico	Republic of Korea	Venezuela

The Western and Central Pacific Fisheries Commission (WCPFC)

The WCPFC was established recently, by the Convention for the Conservation and Management of Highly Migratory Fish Stocks in the Western and Central Pacific Ocean (WCPF Convention) which entered into force on 19 June 2004.

The WCPFC is responsible for the conservation and management of fisheries for tunas and other species taken by tuna-fishing vessels in the western Pacific Ocean (see 2.3). The United States and Canada are members of the WCPFC (Table 5).

Table 5. Members of the WCPFC.

Australia	Federated States of Micronesia	Korea	Palau	Chinese Taipei
China	Fiji	Republic of Marshall Islands	Papua New Guinea	Tonga
Canada	France	Nauru	Philippines	Tuvalu
Cook Islands	Japan	New Zealand	Samoa	United States of America
European Community	Kiribati	Niue	Solomon Islands	Vanuatu

3.1.1.1 Regulation

The IATTC and WCPFC are international institutions where member States can negotiate agreements on regulatory instruments. Implementation of agreed regulatory instruments is the responsibility of the Member State.

3.1.2 Canada

The Fisheries Act is federal legislation that deals with the management of Canada's fisheries resources and the conservation and protection of fish and fish habitat. It was established to manage and protect Canada's fisheries resources. As federal legislation, the Fisheries Act supersedes provincial legislation when the two conflict.

The Government of Canada's authority over fish and fish habitat arose from the Constitution Act (1982) that established the respective roles and authority of the Government of Canada and provincial governments. The Fisheries Act provides the authority to Fisheries and Oceans Canada (DFO) to preserve and protect seacoast and inland fisheries. The IFMP (DFO, 2009) states:

"The legislative controls for the tuna fishery are derived from the *Fisheries Act*, *Coastal Fisheries Protection Act*, *Fishery (General) Regulations*, *Pacific Fishery Regulations*, 1993, and Conditions of licence. These controls are designed to conserve and protect tuna stocks as well as ensure Canada meeting its' commitments to the *Canada-USA Albacore Tuna Treaty*, *United Nations Law of the Sea (UNCLOS)* requiring precautionary approaches as well as Canada's commitment to the *United Nations Straddling Fish Stocks and Highly Migratory Fish Stocks Agreement (UNFA)*, and the *WCPFC*."

Fish processors and buyers are licensed by the Province of British Columbia under its *Fisheries Act*.

3.1.2.1 Regulation

The implementation of regulations (international and national) for the albacore troll & jig fishery in Canada occurs primarily through the Fisheries and Oceans Canada (DFO). Integrated fisheries management plans (IFMP) for Pacific albacore are developed annually by DFO, in consultation with the fishing industry through their representatives on a Tuna Advisory Board. The TAB includes balanced representation from the commercial sectors, including the coastal fleet, high seas fleet; and processors, and other interested parties (i.e. First Nations, recreational, NGOs).

3.1.3 The United States

The Magnuson-Stevens Fishery Conservation and Management Act provides fishery management policy directives, national standards for US fishery management and provides the enabling legislation to create regional fishery management councils which promulgate regulations addressing domestic management objectives. The specific councils which address the albacore troll & jig and pole & line fisheries are the Pacific Fishery Management Council and to a lesser extent the Western Pacific Fishery Management Council. Additional national US legislation that must be addressed by the Councils when promulgating regulations are:

- The Endangered Species Act,
- The Marine Mammal Protection Act,
- The National Environmental Policy Act
- The Administrative Procedures Act.

3.1.3.1 Regulation

The implementation of regulations (international and national) for the Albacore Troll & Jig and Pole & Line fisheries in the US occurs primarily through the Pacific Fishery Management Council (PFMC). The Fishery Management Plan for US West Coast Fisheries for Highly Migratory Species (HMS FMP) is produced by the council for the management of the Troll & Jig and Pole & Line fisheries. The HMS FMP establishes objectives for management and defines regulatory actions. Regulations are promulgated by the National Oceanic and Atmospheric Administration (NOAA) through the National Marine Fisheries Services (NMFS) via formal rule-making procedures. Additionally, the states of

Washington, Oregon and California have their own regulatory apparatus for managing albacore within state waters. The production of the HMS FMP by the council ensures that state-federal management is not incompatible.

3.1.4 The US-Canada Albacore treaty

The treaty between the governments of Canada and the U.S. on Pacific Coast Albacore Tuna Vessels and Port Privileges was signed in 1981. Under the Tuna Treaty, Canadian and USA fish harvesters may fish northern Pacific albacore tuna in the other country's 200 mile EEZ. The treaty also allows Canadian vessels to use certain U.S. ports to obtain supplies and services and to land fish, and it allows U.S. vessels to use certain Canadian ports for the same purposes. The Tuna Treaty also provides for the exchange of catch, effort and scientific information in order to inform management decisions and better understand the albacore tuna stocks that migrate off the west coasts of the USA and Canada.

This agreement between the two governments was amended in 2002, and codified by law in April 2004. The amendment was made to establish a three year limitation regime providing for a phased reduction in access by vessels of each country to the EEZ of the other.

In 2007, the Government of Canada and the USA did not formally meet to discuss the Tuna Treaty. As a result, a default access level was applied for the 2007/2008 and 2008/2009 fishery. The 2008/2009 fishery was the fifth year that the Tuna Treaty limitations were applied.

On December, 2008, Canadian and US officials met and initialled amendments to the Canada-U.S. Pacific Albacore Tuna Treaty with a view to having the new regime in force for the 2009 Fishing Season. In 2009, the treaty was renewed for a period of 3 years with the possible extension of one or more years.

3.2 Management Responsibilities and Interactions

The international management of the North Pacific albacore stock is shared by two international organisations: the Inter-American Tropical Tuna Commission (IATTC) for waters east of 150° W longitude, and the Western and Central Pacific Fisheries Commission (WCPFC) for waters west of 150° W longitude. The IATTC and WCPFC have legal authority within their administrative boundaries.

Domestically, for the US troll & jig and pole & line albacore fisheries management is through the Highly Migratory Species Fishery Management Plan (HMS FMP) of the Pacific Fishery Management Council (PFMC), and for the Canadian troll & jig albacore fisheries management is through the Integrated Fisheries Management Plan (IFMP) of the Department of Fisheries and Ocean Canada (DFO).

The IATTC and the WCPFC has a firm foundation of guidelines, procedures, and regulations, as well as a strong scientific program under the leadership of their Scientific Committees.

The WCPFC format for conducting scientific studies is different than that of the IATTC, which has an independent staff. The WCPFC conducts its science through a Scientific Committee (SC) and a Technical and Compliance Committee (TCC). Scientists of the Secretariat of the Pacific Community (SPC) are responsible for leading much of the scientific research utilized by the Committees. The SC is required to work closely with the International Scientific Committee (ISC), which has certain responsibilities for scientific investigation of highly migratory species in the north Pacific area. Because of differences over how tunas should be managed in the northern portions of the Convention's region, a Northern Committee was established to deal with management and conservation issues to the north of 20°N. The Northern Committee refers conservation recommendations on northern species to the WCPFC where they will be considered.

The work of the IATTC independent scientific staff focuses on: (1) studying the biology of the tunas and related species of the eastern Pacific Ocean with a view to determining the effects that fishing and natural factors have on their abundance. (2) To recommend appropriate conservation measures so that the stocks of fish can be maintained at levels which afford maximum sustainable catches. (3) to collect information on compliance with Commission resolutions.

The ISC for Tuna and Tuna-like Species in the North Pacific Ocean conduct stock assessment as well as enhance scientific research and cooperation for the conservation and rational utilization of tuna and tuna-like species of the North Pacific Ocean.

The Committee is made up of Members (Table 6) from coastal states and fishing entities of the region and coastal states and fishing entities with vessels fishing for highly migratory species (HMS) in the North Pacific Ocean, and permanent observers (Table 7) from relevant intergovernmental fishery and marine science organizations, recognized by all members. Its functions are to regularly assess and analyze fishery and other relevant information concerning the species covered; prepare reports of its findings or conclusions on the status of the species covered, including trends in population abundance, developments in fisheries, and conservation needs. It promotes research cooperation and collaboration among members by developing proposals for conduct of and, to the extent possible, coordinates international and national programs of research addressing the species

covered. Furthermore, it takes into account the work and findings of other relevant technical and scientific organizations in execution of its functions.

Table 6. Members of the International Scientific Committee for Tuna and Tuna-like Species in the North Pacific Ocean (ISC).

Canada	The United States of America
Chinese Taipei	Japan
Republic of Korea	Mexico
People's Republic of China	

Table 7. Permanent Observers of the International Scientific Committee for Tuna and Tuna-like Species in the North Pacific Ocean (ISC).

The Inter-American tropical Tuna Commission (IATTC)	Food and Agriculture Organization of the United Nations (FAO)
North Pacific Marine Sciences Organization (PICES)	Secretariat of the Pacific Community (SPC)

Research and assessment of the North Pacific albacore resource is carried out by the ISC Albacore Working Group (ISC ALBWG). This is an ad hoc working group that has existed for more than 20 years, consisting of scientists from various nations that exploit North Pacific albacore. The Working Group organizes and prioritizes the scientific research needed to monitor and assess the stock and periodically they conduct assessments.

The Albacore Working Group of the ISC now meets once or twice per year regarding investigations related to the North Pacific albacore population stock status and related biological and ecological research. The ISC ALBWG is a continuation of the former North Pacific Albacore Workshop that was active for about three decades.

There is a signed Memorandum Of Understanding between the WCPFC and the ISC whereby the Northern Committee of the WCPFC may adopt requests to ISC for scientific information and advice regarding HMS fish stocks occurring mostly north of 20°N, including North Pacific albacore.

The WCPFC Northern Committee is made up of WCPFC members from coastal states and fishing entities of the region and coastal states and fishing entities with vessels fishing for HMS in the region, and permanent observers from relevant intergovernmental fishery and marine science organizations recognized by all members.

Scientists from the IATTC and the SPC which represent the WCPFC participate on the ISC Albacore Working Group. Furthermore, the IATTC and WCPFC review ALBWG ISC stock assessment for its approval and adoption of management measures directed to the conservation of the North Pacific albacore tuna stock.

North Pacific management measures adopted by the IATTC and the WCPFC are passed to the respective member countries that conduct fishing operations on Pacific albacore for implementation.

4 STOCK ASSESSMENT

4.1 Monitoring of Stock Status

The North Pacific stock has been monitored through the assessment work of the North Pacific Albacore Working Group (NPALBWG) from 1975 - 2004. More recently this function has been taken on by the ISC Albacore Working Group (ISC – ALBWG).

Monitoring of the stock consists of collecting appropriate catch data, collating and analyzing effort data through catch-per-unit-effort (CPUE) analysis, conventional tagging and limited archival/pop-up tagging. Additionally, the ISC - ALBWG coordinates biological research needs and disseminates research results and statistics to cooperating scientists and the management bodies. Research results are available to the public at-large.

4.2 Modelling

The current assessment is based upon Virtual Population Analysis (VPA) methods in which catch, catch-at-age, and indices of abundance (standardized catch-per-effort data, CPUE) are statistically fit by a backward projection model. The major assumptions of VPA are that catch-at-age are estimated without error and are complete, i.e. that catches-at-age are available from all fishing sectors, and that the standardized catch-per-effort indices are proportional to the abundance of the age-groups that are selected by the gear from which the CPUE is derived.

The ISC - ALBWG has recognized for some time that it would be desirable to have an assessment method for North Pacific albacore that takes Catch at Length as input (rather than Catch at age). During the most recent assessment, alternative modeling approaches were explored, most notably Stock Synthesis II (SS2). In addition to utilizing CPUE data, the SS2 approach uses statistical forward projection methods in which catch-at-age can be measured with error and data need not to be complete for all sectors. Conversely, this method requires explicit modeling of the stock-recruitment relationship and of the age or size selectivity by the fisheries.

Stock Synthesis III (SS3) was released in February 2009. SS3 has new features that may be useful for the next NPALB assessment, e.g. ability to handle more general size frequency categories; more flexible natural mortality function. Members of the ALBWG have examined the performance of length-based SS3 using the North Pacific albacore data from the latest stock assessment carried out in 2006. Further information is available in Lee & Conser (2009) and Kai (2009).

The ALBWG will use the length-based SS3 modeling platform for the next stock assessment scheduled for 2011 (ISC, 2009).

4.3 Stock Status & Management Advice

The International Scientific Committee conducts the stock assessment and provides conservation advice for management. The latest stock assessment was carried out in 2006. Since then the ALB WG has carried out annual analysis to update the conservation advice for the management of the North Pacific albacore tuna. The next full stock assessment is due to be carried out in 2011. Boxes 1-3 show stock assessment results on stock status and subsequent conservation advice given by the ISC for years 2007-2009.

Box 1. ISC 7 Plenary Conservation Advice

Previous scientific advice, based on the 2004 stock assessment, recommended that current fishing mortality rate (F_{cur}) should not be increased. It was noted that management objectives for the IATTC and WCPFC are based on maintaining population levels which produce maximum sustainable yield. Due to updating, and improvements and refinements in data and models used in the 2006 stock assessment, it is now recognized that F_{cur} (0.75) is high relative to most of the F_{cur} reference points (see PI 1.1.2). On the other hand, the same analysis indicates that the current estimate of the SSB is the second highest in history but that keeping the current F_{cur} would gradually reduce the SSB to the long-term average by the mid 2010s (see PI 1.1.1). Therefore, the recommendation of not increasing F_{cur} from current level (F_{cur} (2002-2004)=0.75) is still valid. However, with the projection based on the continued current high F_{cur} , the fishing mortality rate will have to be reduced. The degree to which, when and how reductions should occur will depend on which reference points are selected and the desired probability and practicability of success of attaining these reference points in a timeframe to be agreed. The ISC requires additional guidance on these issues from the management authorities in a timely manner to work further on these issues.

Box 2. ISC 8 Plenary Conservation Advice

The advice provided by the ISC7 still holds pending the results of a new stock assessment currently scheduled for 2010.

That is:

"Previous scientific advice, based on the 2004 stock assessment, recommended that current fishing mortality rate (F) should not be increased. It was noted that management objectives for the IATTC and WCPFC are based on maintaining population levels which produce maximum sustainable yield. Due to updating, and improvements and refinements in data and models used in the 2006 stock assessment, it is now recognized that F_{cur} (0.75) is high relative to most of the F reference points (see PI 1.2.1). On the other hand, the same analysis indicates that the current estimate of the SSB is the second highest in history but that keeping the current F would gradually reduce the SSB to the long-term average by the mid 2010s (see PI 1.1.1). Therefore, the recommendation of not increasing F from current level ($F_{cur}(2002-2004)=0.75$) is still valid. However, with the projection based on the continued current high F, the fishing mortality rate will have to be reduced. The degree to which, when and how reductions should occur will depend on which reference points are selected and the desired probability and practicability of success of attaining these reference points in a timeframe to be agreed. The ISC requires additional guidance on these issues from the management authorities in a timely manner to work further on these issues. "

However, based on analyses conducted by the ALBWG since ISC7, the following points are highlighted:

1. Estimated probabilities of the SSB remaining above the SSB reference points as calculated in the last stock assessment (2006) were modestly underestimated;
2. Because the realized catch in 2007 was less than that assumed in the projections, the F in 2007 may have been less than the "current F" (0.75 yr-1);
3. Further guidance on the selection and application of biological reference points (BRPs) and their condition is requested in order to facilitate response to requests for conservation advice. In particular, clarification of the timeframe (e.g. short-term versus long-term) for projections; and the specific types of reference points to be used (e.g. limit and/or target and based on which parameters) would be useful.

Box 3. ISC 9 Plenary Conservation Advice

After discussion of the ALBWG conclusions (Annex 9) and consideration of comments raised by Plenary members, the ISC offers no new conservation advice for North Pacific albacore above and beyond that which was provided to ISC7 in July 2007, pending the results of a new stock assessment, planned for 2011. To reiterate, the advice provided at ISC7 was:

"Previous scientific advice, based on the 2004 stock assessment, recommended that current fishing mortality rate (F) should not be increased. It was noted that management objectives for the IATTC and WCPFC are based on maintaining population levels which produce maximum sustainable yield. Due to updating, and improvements and refinements in data and models used in the 2006 stock assessment, it is now recognized that F_{cur} (0.75) is high relative to most of the F reference points [commonly used in fisheries management] (see PI 1.2.1).

On the other hand, the same analysis indicates that the current estimate of the SSB is the second highest in history but that keeping the current F would gradually reduce the SSB to the long-term average by the mid 2010s (see PI 1.1.1). Therefore, the recommendation of not increasing F from current level ($F_{cur}(2002-2004)=0.75$) is still valid. However, with the projection based on the continued current high F , the fishing mortality rate will have to be reduced."

The NC adopted an interim management objective at NC4 (September 2008) to maintain the spawning stock biomass (SSB) above the average level of its 10 historically lowest points (ATHL) with a probability of 50% until reference points are established. The associated F -based threshold (FSSB-ATHL) was not estimated during the last stock assessment, but the ISC-ALBWG was requested to conduct its assessments, and to express the results of its assessments, such that they include the information necessary to achieve this interim management objective.

Based on analyses conducted by the ALBWG since ISC8, the following points are highlighted:

1. The ISC9 Plenary notes that there is increasing uncertainty concerning the status of North Pacific albacore in the absence of a new stock assessment.
2. The estimated value of FSSB-ATHL is 0.75 yr-1 for a 25-year projection period using fishery data through 2008. This value is similar to the most recent estimate of F ($F_{2002-2004} = 0.75$ yr-1) from the last stock assessment.
3. The ALBWG did not determine the proximity of F_{2008} to this reference point.
4. The ALBWG has generally interpreted FSSB-ATHL as a limit reference point, however, further guidance is required from the Northern Committee to clarify whether FSSB-ATHL is considered a target or limit reference point. If FSSB-ATHL is intended to be a limit reference point, then further consideration about the probability of falling below the threshold may be needed.

5 FISHERIES MANAGEMENT

5.1 Management Unit

The management unit is the North Pacific albacore stock. This management unit has been defined on the basis of the distribution concentrations of the fish and the fisheries (see 2.1). While east-west distributions are fairly extensive, the distribution of albacore spawning is limited to subtropical waters between about 10° to 25° N latitudes. For assessment and management purposes, the north-south boundary between albacore stocks is considered to be the equator. There does not appear to be significant mixing across this boundary. The management unit definition is currently without controversy.

5.2 Management Objectives

The North Pacific Albacore occur within the jurisdictions of both the Inter-American Tropical Tuna Commission (IATTC) and the Commission for the Conservation and Management of Highly Migratory Fish Stocks in the Western and Central Pacific Ocean (WCPFC). While jurisdictions overlap relative to albacore, the conservation and management objectives of the two organizations are similar and compatible. Important aspects of these objectives are: maintenance of the long-term sustainability of the resource (i.e. MSY), prevent overfishing, recover overfished stocks should they occur, apply the precautionary approach when data are uncertain and incorporate ecosystem concerns into management where appropriate.

5.3 Consultative Process

The consultative process for North Albacore is extensive at both the scientific and management levels. First, reliance is put on the efforts and history of the ISC - ALBWG to generate the primary assessments. Additionally, the Interim Scientific Committee (ISC) is a formal scientific body made up of scientists from countries throughout the Pacific which reviews tuna assessments and research in the Pacific. Additionally, the ISC may well evolve into the formal scientific committee supporting the WCPFC on matters related to North Pacific species.

Also, the IATTC has a permanent scientific staff for tuna research and assessment. While they have not led the albacore stock assessment of the ISC - ALBWG, they are a member of the WG and have cooperated in the processes. They, also, have the responsibility to review the assessment work and to interpret the results in terms of management advice for their commission.

The management process responded by the IATTC approving Resolution C-05-02 (Box 4) in which the member countries agreed to assure that effort does not increase (i.e. a cap has been put on fishing mortality), to develop measures to limit the effort and to accelerate the catch reporting process so that monitoring can be more efficient and timely. The WCPFC responded with a similar resolution (Box 5) to make actions compatible for North Pacific Albacore throughout its range.

In 2008, at its fourth regular session, the Northern Committee (NC) of the WCPFC considered the concept of an interim management objective for the North Pacific Albacore that would, in essence, maintain the spawning stock biomass in the range of its historical fluctuation until reference points are established (Box 6).

Box 4. Resolution C-05-02 of The Inter-American Tropical Tuna Commission (IATTC)

The Inter-American Tropical Tuna Commission (IATTC), having responsibility for the scientific study of tunas and tuna-like fishes of the eastern Pacific Ocean, and for the formulation of recommendations to the Contracting Parties, cooperating non-Parties, fishing entities and regional economic integration organizations (CPCs) with regard to the conservation and management of these resources,

Observing that the best scientific evidence on North Pacific albacore tuna from the International Scientific Committee for Tuna and Tuna-like Species in the North Pacific Ocean indicates that the species is either fully exploited, or may be experiencing fishing mortality above levels that are sustainable in the long term, and

Taking note that the IATTC staff has said that the stock assessment for Northern Pacific albacore tuna suggests a need for management measures to avoid increases in fishing mortality, and

Recognizing the importance of working with the Commission for the Conservation and Management of Highly Migratory Fish Stocks in the Western and Central Pacific Ocean (WCPFC), as provided for in Article XXIV of the Antigua Convention, in order to manage North Pacific albacore tuna throughout its migratory range, and

Recalling further Article 22(4) of the WCPFC Convention that provides for cooperation with the IATTC regarding fish stocks that occur in the convention areas of both organizations;

The IATTC therefore resolves that:

1. The total level of fishing effort for North Pacific albacore tuna in the Eastern Pacific Ocean not be increased beyond current levels.
2. The CPCs shall take necessary measures to ensure that the level of fishing effort by their vessels fishing for North Pacific albacore tuna is not increased;
3. All CPCs shall report all catches of North Pacific albacore tuna by gear type to the IATTC every six months.
4. The Director shall, in coordination with other scientific bodies conducting scientific reviews of this stock, monitor the status of North Pacific albacore tuna and report on the status of the stock at each annual meeting;
5. The CPCs shall consider future actions with respect to North Pacific albacore tuna as may be warranted based on the results of such future analysis.
6. The CPCs call upon the members of the WCPFC to consider, at the earliest opportunity, taking such action as may be necessary to ensure the effective conservation and management of North Pacific albacore tuna throughout its range including, in particular, measures to ensure that fishing effort on the stock in the WCPFC area does not increase and, as necessary, measures to reduce fishing effort to levels commensurate with the long-term sustainability of the resource.
7. The Commission through the Director shall communicate with the WCPFC and request them to take similar measures.
8. The provisions of paragraph 2 shall not prejudice the rights and obligations under international law of those coastal CPCs in the EPO whose current fishing activity for northern Pacific albacore tuna is limited, but that have a real interest in, and history of, fishing for the species, that may wish to develop their own fisheries for northern Pacific albacore tuna in the future

Box 5. Conservation and Management Measures (CMM 05-03) of The Western and Central Pacific Fisheries Commission (WCPFC)

The Western and Central Pacific Fisheries Commission (WCPFC),

Observing that the best scientific evidence on North Pacific albacore from the International Scientific Committee for Tuna and Tuna-like Species in the North Pacific Ocean indicates that the species is either fully exploited, or may be experiencing fishing mortality above levels that are sustainable in the long term, and

Recalling further Article 22(4) of the WCPFC Convention that provides for cooperation with the IATTC regarding fish stocks that occur in the Convention Areas of both organizations and

Recognizing that the Inter-American Tropical Tuna Commission (IATTC) adopted, at its 73rd meeting, conservation and management measures on North Pacific albacore;

Adopts, in accordance with the Article 10 of the WCPFC Convention that:

- 1. The total level of fishing effort for North Pacific albacore in the Convention Area north of the equator shall not be increased beyond current levels.**
- 2. The Members, Cooperating Non-Members and participating Territories (hereinafter referred to as CCMs) shall take necessary measures to ensure that the level of fishing effort by their vessels fishing for North Pacific albacore in the WCPFC Convention Area is not increased beyond current levels;**
- 3. All CCMs shall report all catches of North Pacific albacore to the WCPFC every six months, except for small coastal fisheries which shall be reported on an annual basis. Such data shall be reported to the Commission as soon as possible and no later than one year after the end of the period covered.**
- 4. All CCMs shall report annually to the WCPFC Commission all catches of albacore north of the equator and all fishing effort north of the equator in fisheries directed at albacore. The reports for both catch and fishing effort shall be made by gear type. Catches shall be reported in terms of weight. Fishing effort shall be reported in terms of the most relevant measures for a given gear type, including at a minimum for all gear types, the number of vessel-days fished**
- 5. The Northern Committee shall, in coordination with International Scientific Committee for Tuna and Tuna-like Species in the North Pacific Ocean and other scientific bodies conducting scientific reviews of this stock, including the WCPFC Scientific Committee, monitor the status of North Pacific albacore and report to the Commission on the status of the stock at each annual meeting, and make such recommendations to the Commission as may be necessary for their effective conservation.**
- 6. The Commission shall consider future actions with respect to North Pacific albacore based on recommendations of the Northern Committee.**
- 7. The CCMs shall work to maintain, and as necessary reduce, the level of fishing effort on North Pacific albacore within the Convention Area commensurate with the long-term sustainability of the stock.**
- 8. The WCPFC Executive Director shall communicate this resolution to the IATTC and request that the two Commissions engage in consultations with a view to reaching agreement on a consistent set of conservation and management measures for North Pacific albacore, and specifically, to propose that both Commissions adopt as soon as practicable uniform conservation and management measures and any reporting or other measures needed to ensure compliance with agreed measures.**

9. The provisions of paragraph 2 shall not prejudice the legitimate rights and obligations under international law of those small island developing State Members and participating territories in the Convention Area whose current fishing activity for North Pacific albacore is limited, but that have a real interest in, and history of, fishing for the species, that may wish to develop their own fisheries for North Pacific albacore in the future.
10. The provisions of paragraph 9 shall not provide a basis for an increase in fishing effort by fishing vessels owned or operated by interests outside such small island developing State Members or participating territories, unless such fishing is conducted in support of efforts by such Members and territories to develop their own domestic fisheries.

Box 6. Interim Management Objectives for the North Pacific Albacore (2008)

At its fourth regular session, the Northern Committee (NC) considered the concept of an interim management objective for North Pacific albacore that would, in essence, maintain the spawning stock biomass in the range of its historical fluctuation until reference points are established. It is proposed that the following be adopted as an interim management objective for the stock.

For this purpose of formulating, and recommending to the Commission, conservation and management measures for the North Pacific albacore stock, the NC agrees to adopt and achieve an interim management objective for the stock, as described in the following paragraphs.

1. The interim management objective for North Pacific albacore is to maintain the spawning stock biomass (SSB) above the average level of its 10 historically lowest points (hereinafter referred to as "the Level"):
2. In the case that current fishing mortality rate would likely cause SSB to fall below the Level, the NC shall formulate conservation and management recommendations to reduce the fishing mortality rate as needed to attain the interim objective, taking account of social and economic factors.
3. Achievement of the interim management objective will not preclude the NC from formulating and recommending conservation and management measures that would achieve additional objectives, particularly those stipulated in the Convention or otherwise adopted by the Commission.
4. The NC will develop more permanent objectives for recommendation to the Commission, specifically reference points that fulfil the provisions of Article 6 of the Convention.
5. The ISC is requested to conduct its assessments of the North Pacific albacore stock, and to express the results of its assessments, such that they include the information necessary to achieve this interim management objective.

6 STANDARD USED

The MSC Principles and Criteria for Sustainable Fisheries form the standard against which the fishery is assessed and are organised in terms of three Principles. Principle 1 addresses the need to maintain the target stock at a sustainable level; Principle 2 addresses the need to maintain the ecosystem in which the target stock exists, and Principle 3 addresses the need for an effective fishery management system to fulfil Principles 1 and 2 and ensure compliance with national and international regulations. The Principles and their supporting Criteria are presented below.

Principle 1

A fishery must be conducted in a manner that does not lead to over-fishing or depletion of the exploited populations and, for those populations that are depleted, the fishery must be conducted in a manner that demonstrably leads to their recovery²:

Intent:

The intent of this Principle is to ensure that the productive capacities of resources are maintained at high levels and are not sacrificed in favour of short term interests. Thus, exploited populations would be maintained at high levels of abundance designed to retain their productivity, provide margins of safety for error and uncertainty, and restore and retain their capacities for yields over the long term.

Criteria:

1. The fishery shall be conducted at catch levels that continually maintain the high productivity of the target population(s) and associated ecological community relative to its potential productivity.
2. Where the exploited populations are depleted, the fishery will be executed such that recovery and rebuilding is allowed to occur to a specified level consistent with the precautionary approach and the ability of the populations to produce long-term potential yields within a specified time frame.
3. Fishing is conducted in a manner that does not alter the age or genetic structure or sex composition to a degree that impairs reproductive capacity.

² The sequence in which the Principles and Criteria appear does not represent a ranking of their significance, but is rather intended to provide a logical guide to certifiers when assessing a fishery. The criteria by which the MSC Principles will be implemented will be reviewed and revised as appropriate in light of relevant new information, technologies and additional consultations

Principle 2

Fishing operations should allow for the maintenance of the structure, productivity, function and diversity of the ecosystem (including habitat and associated dependent and ecologically related species) on which the fishery depends.

Intent:

The intent of this Principle is to encourage the management of fisheries from an ecosystem perspective under a system designed to assess and restrain the impacts of the fishery on the ecosystem.

Criteria:

1. The fishery is conducted in a way that maintains natural functional relationships among species and should not lead to trophic cascades or ecosystem state changes.
2. The fishery is conducted in a manner that does not threaten biological diversity at the genetic, species or population levels and avoids or minimises mortality of, or injuries to endangered, threatened or protected species.
3. Where exploited populations are depleted, the fishery will be executed such that recovery and rebuilding is allowed to occur to a specified level within specified time frames, consistent with the precautionary approach and considering the ability of the population to produce long-term potential yields.

Principle 3

The fishery is subject to an effective management system that respects local, national and international laws and standards and incorporates institutional and operational frameworks that require use of the resource to be responsible and sustainable.

Intent:

The intent of this Principle is to ensure that there is an institutional and operational framework for implementing Principles 1 and 2, appropriate to the size and scale of the fishery.

A. Management System Criteria:

1. The fishery shall not be conducted under a controversial unilateral exemption to an international agreement.

The management system shall:

2. Demonstrate clear long-term objectives consistent with MSC Principles and Criteria and contain a consultative process that is transparent and involves all interested and affected parties so as to consider all relevant information, including local knowledge. The impact of fishery management decisions on all those who depend on the fishery for their livelihoods,

including, but not confined to subsistence, artisanal, and fishing-dependent communities shall be addressed as part of this process.

3. Be appropriate to the cultural context, scale and intensity of the fishery – reflecting specific objectives, incorporating operational criteria, containing procedures for implementation and a process for monitoring and evaluating performance and acting on findings.
4. Observe the legal and customary rights and long term interests of people dependent on fishing for food and livelihood, in a manner consistent with ecological sustainability.
5. Incorporates an appropriate mechanism for the resolution of disputes arising within the system³.
6. Provide economic and social incentives that contribute to sustainable fishing and shall not operate with subsidies that contribute to unsustainable fishing.
7. Act in a timely and adaptive fashion on the basis of the best available information using a precautionary approach particularly when dealing with scientific uncertainty.
8. Incorporate a research plan – appropriate to the scale and intensity of the fishery – that addresses the information needs of management and provides for the dissemination of research results to all interested parties in a timely fashion.
9. Require that assessments of the biological status of the resource and impacts of the fishery have been and are periodically conducted.
10. Specify measures and strategies that demonstrably control the degree of exploitation of the resource, including, but not limited to:
 - a. setting catch levels that will maintain the target population and ecological community's high productivity relative to its potential productivity, and account for the non-target species (or size, age, sex) captured and landed in association with, or as a consequence of, fishing for target species;
 - b. identifying appropriate fishing methods that minimise adverse impacts on habitat, especially in critical or sensitive zones such as spawning and nursery areas;
 - c. providing for the recovery and rebuilding of depleted fish populations to specified levels within specified time frames;
 - d. mechanisms in place to limit or close fisheries when designated catch limits are reached;
 - e. establishing no-take zones where appropriate.

3 Outstanding disputes of substantial magnitude involving a significant number of interests will normally disqualify a fishery from certification.

11. Contains appropriate procedures for effective compliance, monitoring, control, surveillance and enforcement which ensure that established limits to exploitation are not exceeded and specifies corrective actions to be taken in the event that they are.

B. Operational Criteria

Fishing operation shall:

12. Make use of fishing gear and practices designed to avoid the capture of non-target species (and non-target size, age, and/or sex of the target species); minimise mortality of this catch where it cannot be avoided, and reduce discards of what cannot be released alive;
13. Implement appropriate fishing methods designed to minimise adverse impacts on habitat, especially in critical or sensitive zones such as spawning and nursery areas;
14. Not use destructive fishing practices such as fishing with poisons or explosives;
15. Minimise operational waste such as lost fishing gear, oil spills, on-board spoilage of catch etc;
16. Be conducted in compliance with the fishery management system and all legal and administrative requirements;
17. Assist and co-operate with management authorities in the collection of catch, discard, and other information of importance to effective management of the resources and the fishery.

7 ASSESSMENT TEAM PERFORMANCE EVALUATION

7.1 The Scoring Methodology

The MSC Principle and Criteria set out the requirements for a certified fishery. The certification methodology adopted by the MSC involves the interpretation of these Principles and Criteria into specific Performance Indicators against which the performance of the fishery can be measured according to pre-specified guideposts. The default assessment tree developed by the MSC (Figure 1) includes 31 Performance Indicators and constitutes the default assessment tree developed by the MSC.

The weights that shall be assigned to each component (e.g. Harvest Strategy, By-catch, ETP, Fishery-Specific Management System) and PI within the assessment tree structure is shown in Table 8. Each level of the assessment tree shall sum to 1. Equal weighting shall be given to each branch of the Assessment Tree that lies at the same Level.

At the Level of the Performance Indicator, the performance of the fishery is assessed as a ‘score’. In order for the fishery to achieve certification, an overall weight average score of 80 is necessary for each of the three Principles and no Indicator should score less than 60. Accordingly, 100 represents a theoretically ideal level of performance and 60 a measureable shortfall.

The Scoring Guideposts (SGs) identify the level of performance necessary to achieve 100, 80 (a pass score), and 60 scores for each Performance Indicator.

The scoring methodology is fully explained in the MSC Fisheries Assessment Methodology. It can be summarized as follows:

- Scoring is a qualitative process, involving discussion between team members and arrival at a joint agreed score. Scores should be normally assigned in divisions of 5 points;
- The only narrative guidance that is available is at 60, 80 and 100 SGs. Intermediate scores must therefore reflect;
- A failure to meet all the scoring issues 4 specified in a SG
- The following system should then be used to determine the overall score for the PI from the scores of the different scoring issues. This system combines a primary approach based on the combination of scores achieved by the individual scoring issues (the a) to i) list below):
 - a) Score = 60: all issues meet SG60, and only SG60. Any scoring issues within a PI which fails to reach SG60, represents a failure against the MSC standard and no score shall be assigned;

4 Scoring issues: The different parts of a single scoring guidepost, where more than one part exists covering related but different topics.

- b) 65: all issues meet SG60; a few achieve higher performance, at or exceeding SG80, but most do not meet SG80;
- c) 70: all issues meet SG60; some achieve higher performance, at or exceeding SG80, but some do not meet SG80 and require intervention action to ensure they get there;
- d) 75: all issues meet SG60; most achieve higher performance, at or exceeding SG80; only a few fail to achieve SG80 and require intervention action;
- e) 80: all issues meet SG80;
- f) 85: all issues meet SG80; a few achieve higher performance, but most do not meet SG100;
- g) 90: all issues meet SG80; some achieve higher performance at SG100 but some do not;
- h) 95: all issues meet SG80; most achieve higher performance, at SG100; only a few fail to achieve SG100;
- i) 100: all issues meet SG100.

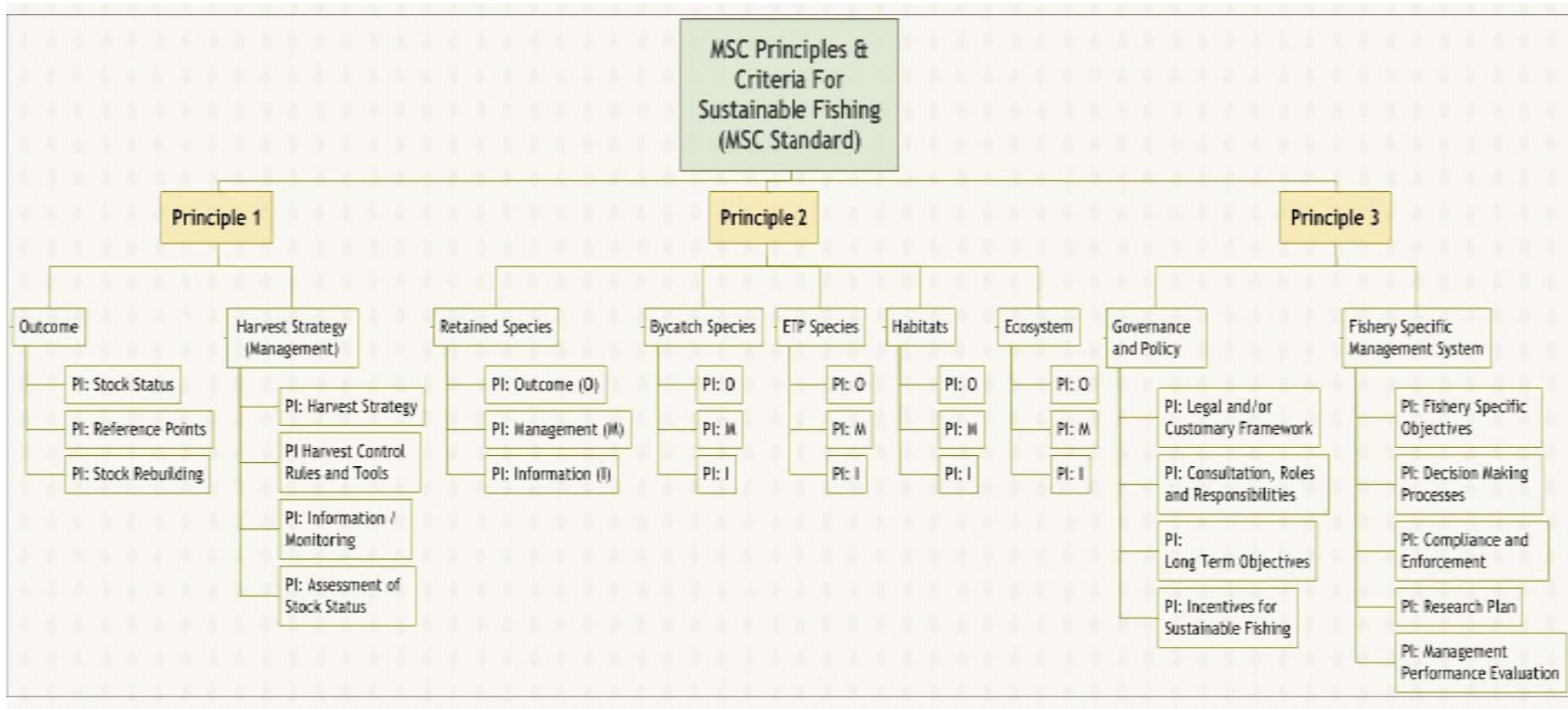


Figure 1. MSC Default Assessment Tree

Table 8. The weights that shall be assigned to each component (e.g. Harvest Strategy, By-catch, ETP, Fishery-Specific Management System) and PI within the assessment tree structure is shown in Figure 1

Principle	Wt (L1)	Component	Wt (L2)	PI No.	Performance Indicator (PI)	Wt (L3)	Weight in Principle
One	1	Outcome	0.5	1.1.1	Stock status	Either 0.5	<u>Or</u> 0.333 0.1667
				1.1.2	Reference points	0.5	0.333 0.1667
				1.1.3	Stock rebuilding	0.333	0.1667
		Management	0.5	1.2.1	Harvest strategy	0.25	0.125
				1.2.2	Harvest control rules & tools	0.25	0.125
				1.2.3	Information & monitoring	0.25	0.125
				1.2.4	Assessment of stock status	0.25	0.125
Two	1	Retained species	0.2	2.1.1	Outcome	0.333	0.0667
				2.1.2	Management	0.333	0.0667
				2.1.3	Information	0.333	0.0667
		By-catch species	0.2	2.2.1	Outcome	0.333	0.0667
				2.2.2	Management	0.333	0.0667
				2.2.3	Information	0.333	0.0667
		ETP species	0.2	2.3.1	Outcome	0.333	0.0667
				2.3.2	Management	0.333	0.0667
				2.3.3	Information	0.333	0.0667
		Habitats	0.2	2.4.1	Outcome	0.333	0.0667
				2.4.2	Management	0.333	0.0667
				2.4.3	Information	0.333	0.0667
Three	1	Governance and policy	0.5	3.1.1	Legal & customary framework	0.25	0.125
				3.1.2	Consultation, roles & responsibilities	0.25	0.125
				3.1.3	Long term objectives	0.25	0.125
				3.1.4	Incentives for sustainable fishing	0.25	0.125
		Fishery specific management system	0.5	3.2.1	Fishery specific objectives	0.2	0.1
				3.2.2	Decision making processes	0.2	0.1
				3.2.3	Compliance & enforcement	0.2	0.1
				3.2.4	Research plan	0.2	0.1
				3.2.5	Management performance evaluation	0.2	0.1

7.2 Evaluation Team

Dr. Antonio Hervás (Lead Assessor)

Dr. Antonio Hervás is Global Trust Fisheries Manager responsible for Marine Stewardship Certification Programs. He is an established fisheries scientist specialised in quantitative stock assessment methods and the design of management strategies for the sustainable exploitation of fish resources. Dr. Antonio Hervás holds a PhD in Fisheries Stock Assessment Methods. From 2001 to 2008 he worked as a fisheries scientist for the assessment of the Mollusc Stocks of Ireland at Trinity College Dublin and the Marine Science-Martin Ryan Institute at the National University of Ireland, Galway. During this time Dr. Antonio Hervás was an active member of the National Shellfish Management Framework with responsibilities on providing the scientific advice on the status of mollusc stocks for their management.

Mr. Ronan Cosgrove.

Ronan is a fisheries scientist with the Irish Sea Fisheries Board (BIM). Working in the area of tuna fisheries management for the last 5 years, he is an active member of the International Commission for the Conservation of Atlantic Tunas (ICCAT) working group on albacore tuna. He is responsible for collation and submission of Ireland's national tuna data and has contributed to research carried out by the group through work on standardised CPUE analyses and tagging studies. He also managed an International collaboration between BIM and the Tuna Research and Conservation Centre (TRCC), California, from 2003 – 2005, which resulted in 3 giant bluefin tuna being successfully tagged and tracked with pop up satellite tags for the first time in the North East Atlantic. Ronan is also involved in research in by-catch mitigation measures. He was heavily involved in the pan European project NECESSITY (Nephrops and Cetacean Species Selection Information and Technology) 2005 – 2007, is a member of the International Council for the Exploration of the Sea (ICES) Study Group for By-catch of Protected Species (SBYC), and continues to work extensively on the assessment and development of acoustic deterrent devices in gillnet and pelagic trawl fisheries.

Mr. Dave Garforth

Dave Garforth, BSC, HDip. (Applied Science), MSC has been involved in fisheries and aquatic resources for over 20 years. He has been engaged directly in the enforcement of fisheries legislation as a SOAFED (then DAF's) Fishery Officer operating in the UK. Duties included vessel monitoring, statistical assessment and routine surveillance for demersal, shellfish and pelagic fisheries and transhipments. Commercial fisheries experience includes fishery quality standards development and market auctioning at Belgium based PEFA, global industrial fishery supply for agri and aquaculture (Nutreco) and operational management. Currently, based at Global Trust as a lead technical expert in fisheries and aquaculture and a lead IRCA approved and CoC/traceability auditor. Fisheries research experience at universities of Hull, UK and Cork, Ireland including reviews of salmon fisheries in the UK using fixed engines and nets, sea trout fishery sampling, assessment on the western seaboard of Ireland, and catch per unit effort studies for static gears under the Operational Research Programme for Fisheries and Aquaculture.

Dr. Max Stocker.

Dr. Stocker is a scientist with 30 years of extensive experience in fisheries science. He is currently proprietor of Stocker & Associates Consultants conducting Marine Stewardship Council certification projects. Dr. Stocker acted as marine fisheries consultant under contract with Fisheries and Oceans Canada (DFO) to provide scientific advice on highly migratory species in the Pacific Ocean. He was the lead Canadian scientist for highly migratory species for the Western and Central Pacific Fisheries Commission (WCPFC) and the Inter-American Tropical Tuna Commission (IATTC). He served as co-chair of the Stock Assessment Working Group of the Scientific Committee of the WCPFC and chairs the ISC Albacore Working Group. From 1978-2006 Dr. Stocker held the position of research scientist with DFO at the Pacific Biological Station conducting population dynamic studies, conducting peer reviewed stock assessments of many marine species, and communicating results to fisheries managers and stakeholders. He authored and co-authored over 90 scientific papers and reports, and made over 50 presentations in national and international scientific meetings.

Dr. Stocker chaired the Pacific Scientific Advice Review Committee (PSARC) for many years and edited and published over 30 advisory documents on the stock status of marine species and the implications of harvest management on these stocks. Additionally, Dr. Stocker served as in-house stock assessment consultant to the New Zealand Fishing Industry Board in the early 1990s conducting peer reviewed stock assessments, participating in the peer review process, and advising the Board on inshore and deepwater fisheries.

7.3 Previous Certifications Evaluations

The North Pacific albacore tuna stock targeted with Troll & Jig and Pole & Line as fishing methods and the American Albacore Fishing Association as client group has been previously evaluated against the MSC standard. Full information regarding the certification assessment of this fishery can be obtained at <http://www.msc.org/track-a-fishery/certified/pacific/aafa-pacific-albacore-tuna-north>

7.4 Public Consultation

Public announcement of the progression of the assessment were made as follow:

Date	Purpose	Media
19-Feb-2009	Fishery Enters Full Assessment	Notification on the MSC Website Advertisement in press
13-March-2009	Draft assessment tree released for comments	Advertisement on the MSC website
16-April-2009	Assessment Team Nominations	Notification on the MSC website
16-April-2009	Site Visit Scheduled	Notification on the MSC website Direct Email/Letter
8-May-2009	Assessment Team Confirmation	Notification on the MSC Website
19-29-May-2009	Assessment Visit	Meetings
25-June-2009	Assessment Team Revision	Notification on the MSC Website
16-September	Peer Reviewer Proposed	Notification on the MSC website Direct Email/Letter
1-October-2009	Confirmation of Peer Reviewers	Notification on the MSC website
	Notification of Public Comment Draft report	Notification on the MSC website Direct Email/Letter
	Notification of Final Report	Notification on the MSC website Direct Email/Letter

7.5 Stakeholder Consultation

At the time that this assessment was undertaken, the North Pacific albacore tuna stock targeted with Troll & Jig and Pole & Line as fishing methods and AAFA as client group had been previously assessed against the MSC standard. Thus, the results of the previous assessment report formed an important background for this assessment.

The two clients (CHMSF and WFOA) provided information, documents, and list of stakeholders as required by Global Trust. This served to allow the assessment team to collect general information on the fisheries, identify gaps on information required for the assessment and also to identify key stakeholders for the information gathering exercise.

Following the collation of general information on the fishery, a number of meetings with key stakeholders who expressed an interest to meet were scheduled by the team to fill in information gaps and to explore and discuss areas of concern. Meetings were held in Canada (British Columbia), and the U.S (Oregon, Washington, and California) as follows:

Table 9. Meetings held during the site visit/information gathering phase of the assessment.

Name	Affiliation	Date (May 2009)	Location	Venue
British Columbia Visit				
Members of CHMSF	CHMSF	19th	Vancouver	Granville Island Hotel
Scott Wallace	David Suzuki Foundation	20th	Vancouver	WWF Offices
Ernie Cooper	WWF	20th	Vancouver	WWF Offices
Cynthia Johnson	DFO	20th	Vancouver	DFO Offices
Gill Harpreet				
John Holmes				
Robert Martinolich				
Sandy Argue	Consultant	20th	Vancouver	DFO Offices
Karl N. Johnson	Fisherman (WFOA)	21st	Vancouver	Vancouver Harbour
Oregon & Washington Visit				
Members of Client Group	WFOA	22nd	Portland	Embassy Hotel
Mike Burner	Pacific Fishery Management Council	22 nd	Portland	PFMC Offices
Pierre Marchand	Ilwaco Fish	23rd	Ilwaco, (Washington)	Ilwaco Fish Offices
Corey Niles	Washington Dept. Of Fish and Wildlife	26th	Olympia	Natural Resources Building Offices
Michele Culver				
Henry Cheng				
Rod More	West Coast Seafood Processor Association	27th	Portland	Embassy Hotel Portland Hotel
Larz Malony	Pacific Group	27th	Portland	Embassy Hotel Portland Hotel
Buck Boston				
Cyreis Schmitt	The Oregon Dept of Fish and Wildlife	27th	Portland	Embassy Hotel Portland Hotel
California				
Rick Deriso	IATTC	28th	La Jolla	IATTC Offices
Brian Hallman				
Martin Hall				
Craig Herberer				
Russ Vetter	NMFS-SW	28th	Carlsbad	NMFS Offices
Suzi Kohin				
John Childers				
Hui-hua Lee				
Natalie Webster	AAFA	29 th	La Jolla	Empress Hotel
Henry Bissell				
Peter Flourney	WFOA	29th	La Jolla	Empress Hotel
John Lagrange				

7.6 Tracking and Tracing of Fish and Fish Products

7.6.1 The Canadian Highly Migratory Species Foundation (CHMSF) British Columbia North Pacific Albacore (*Thunnus alalunga*) Tuna Fishery.

The Actual Eligibility Date for The CHMSF British Columbia North Pacific Albacore (*Thunnus alalunga*) Tuna Fishery is the 1st of June of 2009 as initially proposed at the start of the assessment and after the Public Comment draft Report was published on 27th November 2009.

7.6.1.1 Traceability within the Fishery

The extent of certification of The CHMSF British Columbia North Pacific Albacore Tuna Fishery is defined by the Unit of Certification:

- Species: *Thunnus alalunga*
- Geographic area: North Pacific
- Method of Capture: Troll & Jig
- Eligible Fishers: CHMSF member vessels and Canadian vessels recognised by CHMSF. Any vessels joining the unit of certification will recognise any requirements of MSC certification that applies to CHMSF vessels.

CHMSF Eligibility Criteria of recognition of vessels:

Any “Canadian flagged” vessels can apply to join the CHMSF Certificate if they have privileges to fish tuna under Canadian Fisheries Regulation. Vessels must sign an agreement that they abide by the CHMSF Platinum Quality Assurance Criteria – which addresses issues such as by catch, troll gear, barbless hooks, logbook, and criteria. (The use of this gear and documentation such as logbooks, and sales slip, hail, etc. are also part of the condition of license for these vessels). Landing slips from vessel and throughout COC will indicate Vessel MSC Certifier numbers. The list of eligible vessels will be maintained, up-dated, and made available for certificate purposes on the CHMSF website <http://www.canadianalbacoretuna.com/sustainability.html>. In addition each time a vessel is added or deleted to the Certificate all vessels and buyers/processors are notified electronically of a change.

Mechanism to recognize vessels is as follows:

On certification:

- All vessels that have joined the CHMSF Certificate will be issued a copy of the CHMSF–MSC Certificate. Each vessel will be assigned a numeric identifier which is unique to that vessel.
- Vessels are required by agreement to have a copy of their Certificate and/or their unique identifier number on board during fishing activities.
- The unique vessel identifier number must be on each transaction of tuna sold including the Logbook-Fish slips-Labels

The Canadian Pacific Albacore Logbook

As a condition for license, all vessels fishing for albacore must record the catch in the Canadian Pacific Albacore Tuna Logbook (Table 10). Relevant information recorded for traceability purposes includes; vessel name and registration number, method of capture, location fished in a daily basis and number of pieces of fish caught. All vessels land their catch directly. Under Canadian Regulation it is illegal to tranship at sea.

The risk for the eligible vessel to fish outside of unit of certification was found to be low. Historically any Canadian catches of the South Pacific albacore have generally occurred around French Polynesia and are landed in Papeete, therefore, do not enter the Canadian Processor stream. Also, there is a clear separation of seasonal activity between the fisheries of South Pacific and North Pacific albacore. Canadian vessels catch North Pacific albacore between June and October. This is controlled by the bilateral treaty for those Canadian vessels fishing in US waters and by the presence of fish, which do not occur in Canadian waters outside of the June-October timeframe. Albacore Tuna from Southern Pacific stocks are caught between January-March.

The procedures defined to label each batch landed with the CHMSF vessel identifier has been proposed to ensure that fish are landed under the certificate in operation.

Table 10. Canadian Pacific Albacore Tuna Logbook.

2009 CANADIAN PACIFIC ALBACORE TUNA LOG BOOK										
VESSEL NAME:						CAPTAIN:				Submission Deadline
Date (mm-dd)	Time (hh:mm)	Latitude (xx yy)	Longitude (xxx yy)		Water Temp (F)	Species (see cover)	Number of Fish	Avg Wt per Fish (lbs)	By-Catch Released (Y or blank=N)	
						ALB				November 12, 2009
	START									FIN:
		N S	E W							VRN:
	STOP									HAIL #
Length (cm)										
	START					ALB				TRIP:
		N S	E W							GEAR:
	STOP									JIGS:
Length (cm)										DAYS FISHED:
	START					ALB				
		N S	E W							OFF LOAD
	STOP									PORT:
Length (cm)										BUYER:
	START					ALB				DATE:
		N S	E W							FISH (PCS):
	STOP									WEIGHT (LBS):
Length (cm)										SALES SLIP:
	START					ALB				DOCK SALES - PERSONAL USE
		N S	E W							(PCS):
	STOP									
Length (cm)										PAGE OF FOR TRIP
DATE:										
DATE:	COMMENT -INTERACTIONS:									
DATE:	COMMENT -INTERACTIONS:									

7.6.1.2 At-Sea Processing

Under Canadian Regulation it is illegal to process at sea.

7.6.1.3 Point of Landing

All fish must be landed at a “Landing Stations” licensed under the *Fisheries Act* (Province of British Columbia), except:

- Fish sold directly to the public under authority of a fish harvester’s vending licence issued under the *Fisheries Act* (Province of British Columbia).
- Fish landed in the USA.

Canadian fishing vessels that are licensed to fish albacore tuna in waters of the USA are authorized pursuant to Article III of the Tuna Treaty to enter, land their catches, sell or tranship their catch, obtain fuel, supplies, repairs and equipment at the following ports.

- Bellingham, Washington
- Westport, Washington

- Astoria, Oregon
- Newport, Oregon
- Coos Bay, Oregon
- Eureka, California

In Canada fish are landed at “Landing Stations” rather than specific ports, as not all ports have facilities for landing fish.

Landings stations are licensed by the Province under the s.13 of the *Fisheries Act* (BC). Anyone operating a fish buying station is licensed by the Province, and a complimentary requirement in the *Fish Inspection Regulations* (BC) that a person must not buy or attempt to buy fish from a harvester unless they are licensed as a buyer or broker.

A current list of licensed facilities and license holders would be through the BC Ministry of Agriculture and Lands. Below is their fisheries licensing page
<http://www.agf.gov.bc.ca/fisheries/licences/main.htm#seafood>

When a Fish landing station is designated by the Ministry, it becomes a Federal Condition of the Tuna Licence that observers are appointed to review the landings.

The CHMSF is preparing a list of preferred “Landing stations” by its MSC Certificate buyers/processors and will post that list on the CHMSF website once completed. However, this does not exempt landings to other designated landings stations.

There is an exception in legislation that harvesters are permitted to sell their own catch directly to a member of the public for that person's personal use if the harvester holds a fisherman's vending license issued under the *Fisheries Act* (BC). (There is a Federal requirement in the Pacific Fishery Regulations that salmon and herring is landed at a fish buying station, but the Provincial License is relied on for the federal definition).

The physical requirements that facilities must meet (i.e. sanitary conditions) are set out in the *Fish Inspection Regulations* (BC).

Fish Slips

At first point of landing a Fish Slip is generated by the vessel master (Figure 2). Information recorded on the Fish slip includes; vessel name, vessel registration number vessel master name and tally man, landed weight (lbs) of each species, method of dressing the catch, days fished by area, date landed, name of buying station/processor and price per pound on a fish slip for each landing.

① BOOK/CASH FISH (SMALL FORM) <i>Public Sale</i> COMPANY NAME & ADDRESS ►		<i>or Buying Company or Frozen for later sale or Personal Use</i>																																																																																																																											
FISHERMAN'S NAME <i>Operator or License Holder</i>	ADDRESS	② C.F.V. 39999	113601 AREA OF CATCH DAYS FISHING 29-3 / 1 29-7 / 1 ③ TOTAL 2																																																																																																																										
Operator or License holder address		BOAT NAME <i>Boat Name</i>	④ GEAR: GILLNET <input type="checkbox"/> SEINE <input type="checkbox"/> TROLL <input type="checkbox"/> ICE <input type="checkbox"/> TROLL FREEZER <input type="checkbox"/> OTHER _____																																																																																																																										
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Figure 2. Fish Slip generated at first point of landing

This will also include the unique MSC vessel identifier number.

7.6.1.4 Eligibility to enter Chain of Custody

On successful MSC certification of **CHMSF**, the following members (Table 11) will be MSC-certified as a sustainable and well managed fishery, and products from this fishery would be eligible for the MSC eco-label.

Table 11. List of eligible vessels (date 23/10/2009)

Vessel	VRN	Company	Contact
NOOTKA LADY	23462	TEAGUE FISHING CORP.	250-743-5184
ARCTIC FOX II	25125	L.T.D. FISHING LTD.	250-743-5184
RED SKY I	30632	RED SKY FISHING	250-338-9172
ESTEVAN	311124	MANDALA HOLDINGS LTD.	250-334-3789
DAWN VENTURE	24462	GERALD CLARK	250-478-9840
HARVEST MOON III	20070	TRISTEC INDUSTRIES LTD.	250-888-4894
HATTA III	23658	HATTA ENT. LTD.	250-479-6213
PAKALOT	23188	S.H.S. MARINE LTD.	250-724-1262
PARR FOUR	26354	3 AMIGOS SEAFOODS LTD.	604-583-6833
LOFOTEN II	23864	SIMPSON FISHING LTD.	604-583-6833
ENTERPRISE V	29735	SIMPSON ENTERPRISES LTD.	604-583-6833
HI-EAST II	22413	HI-EAST FISHING LTD.	604-583-6833
BEAUFORT SEA	28120	WESPAK FISHERIES LTD	250-724-3784
OCEAN PROVIDER	23703	WESPAK FISHERIES LTD	250-724-3785
AMY USEN	323544	R. MICHAELS INC.	250-418-0560
WESTERLY	23285	GARNET GREEN HOLDINGS	
LASQUETI STORM	29569	WEST POINT FISHING LTD.	250-752-6161
SEA RANGER	25307	BUSBY ENTERPRISES LTD.	250-389-2974
PRINCE OF DENMARK	23263	OLD SPICE FISHING CO. LTD	250-246-4506
REDEEMER	30767	B&B FISHING LTD.	250-721-0790
KAL-ANNE	24294	496852 BC LTD.	250-721-0790
TANTRUM #1	29477	WARRIOR ENTERPRISES LTD.	760-774-1308
VIKING QUEEN	24974	HEGGLUND FISHING CO. LTD.	250-642-5094
TAM-O-SHANTER	25553	TAM-O-SHANTER FISHING CO.	604-524-6793
STRIDER KING	30025	SOONER ENTERPRISES LTD.	250-724-0733
RAINBOW ISLE	24153	LUND FISHING COMPANY	604-862-7250
PACIFIC HUNTER	23059	B&S FISHING LTD.	250-830-8936
PACHENA No. 1	20352	KANOP FISHING CO. LTD.	604-328-3266
FREEDOM CHARGER	29294	TRIANGLE SEAFOODS CORP	250-703-3491
SUMMER BREEZE II	25356	PACIFIC WILD FISHING LTD.	250-716-6940
JEANETTE DAWN	22950	CHALLENGER ENTERPRISES LTD.	250-480-9577
SEA HUNTER	22123	CEALEX ENTERPRISES LTD.	250-480-9577
NERKA #1	22538	TIAN ENTERPRISES LTD.	250-468-5241
OPTIMIST No. 1	24013	DEGREEF ENTERPRISES LTD.	250-744-1186
CHIEF WAMISH	25839	ESTEVAN MARINE GROUP LTD.	250-724-2807
OLD SALT	21968	OLD SALT FISHING CO. LTD.	604-277-2724
COLD FISH	23103	HIGHBALL FISHING COMPANY LTD.	250-888-9856
SHARLA DAWN	28588	TROY SAWYER	250-616-1399

The Canadian Highly Migratory Foundation will update the client group members at any time there is a change in the composition of such. Updated client group members can be found at:

<http://www.canadianalbacoretuna.com/sustainability.html>

A written “agreement to designate party on MSC certification” has been developed by the CHMSF which will be used to recognize new eligible vessels.

All albacore will have to be unloaded at a “licensed buying station” and through buyers/processors who have joined the CHMSF MSC Certificate and this will be cross referenced through the buyers/processors COC Certifier.

For those MSC Vessels who sell publically (whole unprocessed fish) – details of fishing and sales transaction must be identified both in mandatory logbook, and sales slip which are submitted to governments and cross references.

7.6.2 The American Western Fishboat Owners Association (WFOA) North Pacific Albacore (*Thunnus alalunga*) Tuna Fisheries.

The Actual Eligibility Date for The American WFOA North Pacific Albacore (*Thunnus alalunga*) Tuna Fisheries is the 27th of May 2009 following the date of publication of the Publication Draft Report (the 27th of November 2009).

7.6.2.1 Traceability within the Fishery

The extent of certification of The American WFOA North Pacific Albacore Tuna fisheries is defined by the following Units of Certification:

Unit of certification with troll/Jig as a method of capture:

- Species: *Thunnus alalunga*
- Geographic area: North Pacific
- Method of Capture: Troll & Jig
- Eligible Fishers: WFOA member vessels and US vessels recognised by WFOA.

Any vessels joining the unit of certification must recognise any requirements of MSC certification applied to WFOA vessels.

Unit of certification with Pole and Line as a method of capture:

- Species: *Thunnus alalunga*
- Geographic area: North Pacific
- Method of Capture: Pole & Line
- Eligible Fishers: WFOA member vessels and US vessels recognised by WFOA.

Any vessels joining the unit of certification must recognise any requirements of MSC certification applied to WFOA vessels

WFOA Eligibility Criteria of recognition of vessels:

All valid WFOA member vessels are eligible and all U.S vessels with Highly Migratory Species (HMS) permit, fishing only by pole & line and Troll/Jig methods are eligible.

Under the Fisheries Management Plan of the Pacific Fisheries Management Council, all fishing pelagic species are required to have a federal HMS permit, this can be obtained from the North Marine Fisheries Service of the albacore permitted vessels. The vessels using pole & line and/or troll/Jig must be inspected before a permit can be granted. These vessels using pole & line and Troll & Jig have an ID number.

The official list of vessels that hold the permit for HMS for pole & line and troll/Jig methods can be obtained from NMFS. WFOA will circulate this list to all buyers and processors at first place of sale.

Within the fishery the US Pacific Albacore Tuna Logbook represents the formal and legal basis to recording of catches which forms the basis of the traceability system.

US Pacific Albacore Tuna Logbook

As a condition for license, all vessels fishing for albacore must record the catch in the US Tuna Logbook (Figure 3). Relevant information recorded for traceability purposes includes; vessel name and registration number, method of capture, location and number of pieces fish caught.

Since the assessment of WFOA client group contains two gear types, there is a risk of mixing of fish caught by these two gear types. If both gear types become certified, there is less issue. However, in the event of only one gear type becoming certified, or one gear type losing certification, then there is an increased burden on the fishery to ensure catches of tuna are kept separate and identifiable. Due to the presence of two units of certification we have two risk scenarios with regard traceability:

1. High Risk Scenario: In the case where only one method of capture gets certified against the MSC standard, or one method loses certification, the catch from Troll/Jig and Pole/Line would be required to be identified by the method of captured at the first point of landing.
2. Low Risk Scenario: Both Units of certification receive and retain certification against the MSC Standard. In this case a single certificate can be issued for both Units of Certifications and therefore the catch originated from both method of captured can be treated as a whole.

Both options are possible, although only one certificate will be issued for both Units of Certification and therefore the risk scenario described above is, presently, determined as low.

Although there is no evidence of transhipment occurring, it has occurred in the past and it is allowed by regulation. Prior to 2002 vessels used to tranship on the high seas mainly to the US canners in America Samoa.

The risk for the eligible vessel to fish outside of unit of certification was found low. Fishing for albacore in the North Pacific and South Pacific is separated by season and distance. Most vessels fishing in the South Pacific generally have specialty markets and unload fish in Tahiti or elsewhere at least 3 months before any albacore fishing occurs in the North Pacific.

Also, vessels logbook indicates which regions albacore were caught in. Thus, traceability is maintained through buyers' records and the NMFS 370 form "tuna dolphin" location of catch report filed at unloading.

U.S. PACIFIC ALBACORE FISHING INFORMATION															Form LS							
VESSEL NAME	LAURA MARIE			COAST GUARD DOCUMENT NO. 1234567				RADIO CALL SIGN	WXY1234		HSFCA PERMIT NUMBER	123456										
CAPTAIN'S NAME	JOHN DOE			STATE MARINE BOARD NO. (e.g. WN1234AB)							HMS PERMIT NUMBER	123456										
DEPARTURE PORT	NEWPORT			ARRIVAL PORT	ILWACO			PORT(S) LANDED	ILWACO			AT SEA TRANSSHIPPING										
DEPARTURE DATE	7 / 4 / 1999 (MM/DD/YYYY)			ARRIVAL DATE	8 / 2 / 1999 (MM/DD/YYYY)			POUNDS LANDED	43,057			DATE:	TRANSHIPPER	AMOUNT								
DATE	GEAR CODE	FISHING CODE		LATITUDE	LONGITUDE		ALBACORE CATCH			# GILLINES	# BAITED	# DISCARDED	# SNAPS	SEA TEMP (F)	BYCATCH			COMMENTS (No. gill net vessels in area, % gill net marked fish, amount of bait and birds in area, transhipments, dumped albacore, etc.)				
MONTH	DAY	DEG.	MIN	N/S	DEG.	MIN	EW	NO KEPT	DISCARD NO.	AvgWT (lb)				SPECIES	NO KEPT	DISCARD NO.						
7	4	44	40	N	126	22	W	0	0	0	0	0	0	62	1 CALM 2 MODERATE 3 ROUGH 4 UNWORKABLE	0	0	LEFT AT 10:00AM				
7	5	44	52	N	138	15	W	0	0	-	20	0	15	0	61.8	1 CALM 2 MODERATE 3 ROUGH 4 UNWORKABLE	RUNNING TO OFFSHORE AREA					
7	6	45	03	N	142	16	W	15	3	12	20	0	15	0	61.4	1 CALM 2 MODERATE 3 ROUGH 4 UNWORKABLE	3 PEANUTS DUMPED					
7	7	45	12	N	146	08	W	33	2	14	20	0	15	0	61.8	1 CALM 2 MODERATE 3 ROUGH 4 UNWORKABLE						
7	8	45	17	N	148	06	W	21	0	13	10	0	15	0	61.2	1 CALM 2 MODERATE 3 ROUGH 4 UNWORKABLE						
7	9	45	03	N	148	12	W	42	0	13	20	0	15	0	61.8	1 CALM 2 MODERATE 3 ROUGH 4 UNWORKABLE	SKIPJACK	0	5	GOOD BIRD SIGNS		
7	10	45	01	N	148	50	W	68	0	14	20	0	15	0	61.8	1 CALM 2 MODERATE 3 ROUGH 4 UNWORKABLE	SKIPJACK	0	1	LOTS OF MARKS. NOT MANY BITERS		

I certify that the above information is complete and accurate to the best of my knowledge Signature: John Doe Date: 8 / 3 / 1999

INSERT FOLDED BACK COVER UNDER YELLOW COPY

NOAA 88-197 (07/04) OMB 0648-0223 (3/31/2005)

Figure 3. US Pacific Albacore Tuna Logbook

7.6.2.2 At-Sea processing

Currently processing at sea does not occur due to market requirements. However, there are provisions in the WCPFC to tranship on the high seas for albacore vessels with stringent requirements and observers required.

Prior to 2002 U.S vessels did tranship on the high seas mainly to the U.S. canners in American Samoa. At that time observers were hired to watch both loading of the ships and unloading in American Samoa. All weights were recorded and vessels catches were separated.

Detailed records are kept on any trans-shipping at sea from the time it is unloaded from the fishing vessel to the receiving vessel. This has been weight of the fish, vessel, vessel operator, etc. WFOA when contracting carriers has never allowed non-member albacore onto the vessel, thus WFOA maintain that point of control. Once onboard all fish are separate by vessel and once in port and observer checks and cross references all these factors once again. Vessels also are required to fill out NMFS 370 forms and Certificates of Origin.

Heading, gutting, loining, steaking, are allowed with certain state and federal restrictions. Individual vessels that undertake processing at sea would have to enter Chain of Custody at the point of "processing".

7.6.2.3 Point of Landing

Most ports on the west coast of the U.S can receive albacore, the only restrictions are freight access, unloading, and processing facilities thus landing ports are listed below:

Major landing Ports:

- Westport, WA
- Ilwaco, WA
- Astoria, OR
- Warrenton, OR
- Newport, OR
- Bellingham, WA
- Coos Bay, OR
- Eureka, CA
- San Pedro, CA
- Moss Landing, CA

Minor landing Ports:

- Garabaldi, OR
- Florence, OR
- Brookings, OR
- Ft. Bragg, CA
- Bodega Bay, CA
- Half Moon Bay, CA

- San Francisco, CA
- Seattle, WA
- San Diego, CA
- Neah Bay, WA
- South Bend, WA

Pursuant to the Tuna Treaty, USA fishing vessels are authorized to enter, land their catches, sell or tranship their catch, obtain fuel, supplies, repairs and equipment at the following Canadian ports:

- Coal Harbour
- Port Hardy
- Prince Rupert
- Victoria
- Vancouver
- Ucluelet

Fish Slips

At first point of landing a Fish Slip is generated by the vessel master (Figure 2). Fish slips record vessel name, vessel registration number vessel master name and tally man, landed weight (lbs) of each species, method of dressing the catch, days fished by area, date landed, name of buying station/processor and price per pound on a fish slip for each landing.

7.6.2.4 Eligibility to enter Chain of Custody

The Client Group for the American WFOA North Pacific Albacore Tuna Fisheries is defined as: WFOA member vessels and U.S vessels recognized by WFOA. Any vessels joining the unit of certification must recognize any requirements of MSC certification applied to WFOA vessels. An agreement to designate party on MSC certification will be used to recognize eligible vessels.

Any U.S. HMS - albacore permitted albacore fishing vessel fishing albacore in the North Pacific by troll or pole and line methods is defined as eligible. As mentioned previously NMFS maintains and updates this list and it is available to WFOA and processors.

The Chain of Custody begins when fish are landed off a vessel recognized as being under the certification ie U.S. pole & line and troll/Jig albacore. The albacore will have to be unloaded at a “designated party” facility as contracted by the certifier (WFOA). The same applies to off vessel sales and unloading across docks where ownership of the fish is retained by the vessel owner. Once it is landed the buyer processor will have to obtain a Chain of Custody certificate to be eligible under the MSC Programme.

7.7 Evaluation Results

Principle 1

Component: Outcome

PI 1.1.1: Stock Status

PI 1.1.1: Stock Status		
The stock is at a level which maintains high productivity and has a low probability of recruitment overfishing		
SG60 It is <u>likely</u> that the stock is above the point where recruitment would be impaired.	SG80 It is <u>highly likely</u> that the stock is above the point where recruitment would be impaired. The stock is at or fluctuating around its target reference point.	SG100 There is a <u>high degree of certainty</u> that the stock is above the point where recruitment would be impaired. There is a <u>high degree of certainty</u> that the stock has been fluctuating around its target reference point, or has been above its target reference point, <u>over recent years</u> .

Score

Unit Of Certification ID	Fishery Name	Fishing Method	Score
1	CHMSF British Columbia North Pacific Albacore Tuna	Troll & Jig	80
2	American WFOA North Pacific Albacore Tuna	Troll & Jig	80
3	American WFOA North Pacific Albacore Tuna	Pole & Line	80

A score of **80** was achieved by all units of certification based on the following:

- It is highly likely that the stock is above the point where recruitment would be impaired.
- The stock is at or fluctuating around its target reference point.

Rationale
(All Units of certification)

Issue 1 addresses the likelihood that the stock is above the point where recruitment would be impaired.

It is highly likely that the stock is above the point where recruitment would be impaired. Evidence of this can be summarized as follows:

- Current level of Spawning Stock Biomass (SSB) and information on temporal trends in spawning biomass levels and subsequent recruitment
- Temporal trends in recruitment over the last two decades
- Recent $F_{2002-2004} = 0.75$ correspond to a level at which good recruitment has been observed (ISC, 2007)

Spawning stock biomass has experienced fluctuations around the modeled time series average of 100,000 mt (ISC 7/Annex 5) (Figure 3). The 2006 stock assessment indicated that SSB increased from 2002 (73,000 mt) to 2005 (113,000 mt). The estimated spawning stock size in 2006 of about 153,000 mt is approximately 53% above the overall time series average (1966-2005) (ISC 7/Annex 5).

Estimates of stock biomass and subsequent recruitment at age 1 (Nineteenth North Pacific Albacore Workshop, 2004) (Figure 4) indicates that stock is above the level at which recruitment would be impaired.

Temporal trends in recruitment also indicate that recruitment is not at risk of failure. Recruitment has fluctuated around the long term average of 27.5 million fish over the past two decades (ISC, 2007/Annex 5) (Figure 5).

The Assessment Team considered as highly likely that the stock is above the point where recruitment would be impaired. Issue 1 did not meet Scoring Guidepost 100 based on the uncertainty about the current stock status of North Pacific albacore in relation to the level of recruitment after 2005 (ISC, 2009).

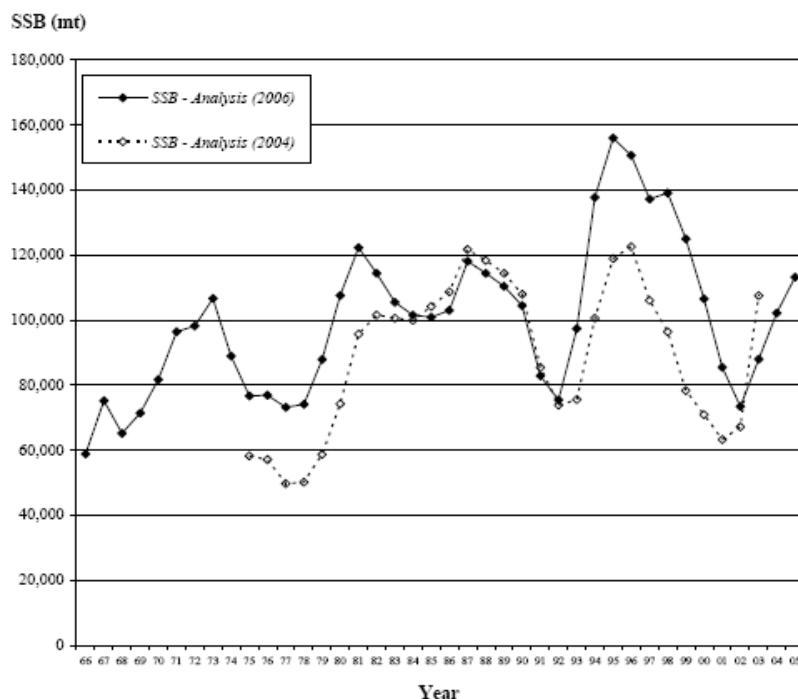


Figure 3. Spawning stock biomass (SSB, mt) time series (1966-05) for North Pacific albacore (Analysis 2006). Final estimated time series from the previous North Pacific Albacore Workshop (2004) is also presented (Analysis 2004, 1975-03)⁵

5. Differences between 2004 and 2006 analysis are due to changes made to the catch-at-age data from Japan. The Assessment team did not consider this discrepancy between the two analyses relevant to the evaluation of the fishery against PI 1.1.1. The analysis carried out in year 2006 was evaluated for the purposes of the MSC assessment.

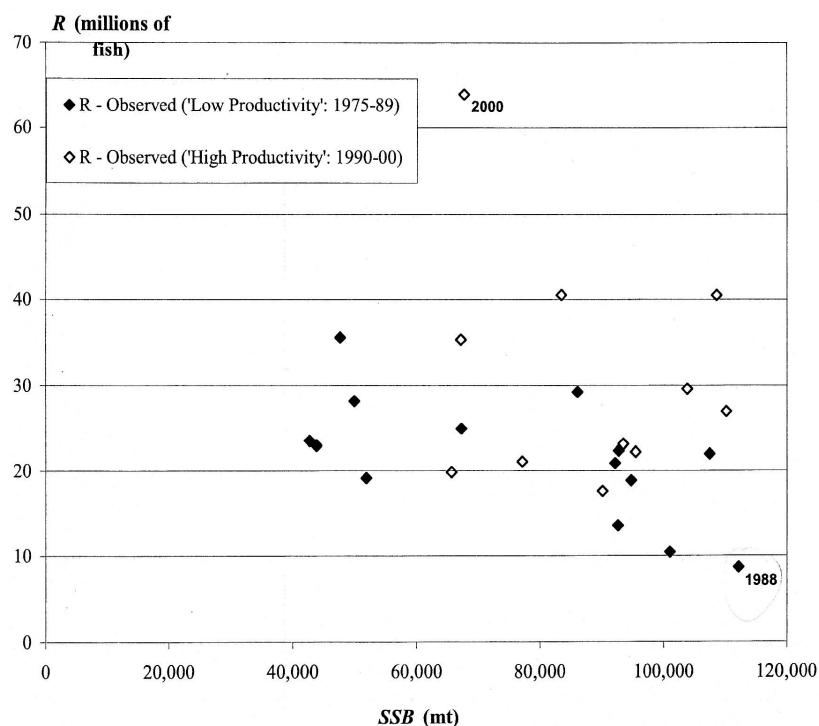


Figure 4. Estimates of spawning stock biomass and subsequent recruitment at age 1 for North Pacific albacore. Estimates of recruitment in 2000 (largest R in 'high productivity' period 1990-00) and 1988 (smallest recruitment in 'low productivity' period 1975-89) are noted (source: Conser et al, 2005)⁶.

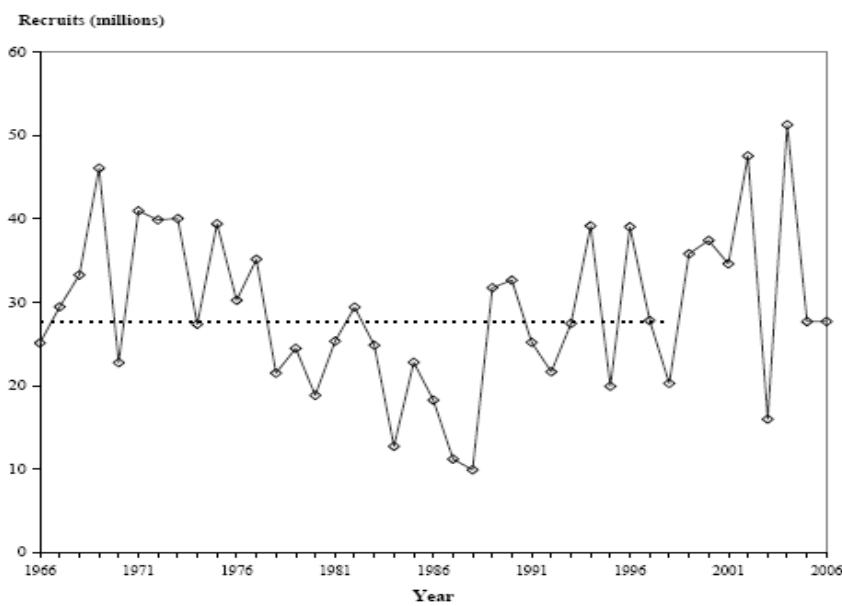


Figure 5. Recruitment (age-1 fish in millions) time series of North Pacific albacore (1966-98). Mean (1966-98) recruitment is presented as horizontal dashed line. Figure in 2005 and 2006 were derived from the mean recruitment.

6 Estimates of SSB and subsequent R presented in figure 4 were estimated in the 19th North Pacific Albacore Workshop in 2004. Analysis carried out in 2004 indicated that the stock experienced two, broad productivity periods; a low productivity period from 1975-1989 and a high period 1990-2000.

Issue 2 evaluates the stock status in relation to the target reference point.

The population is being fished at roughly F17%SPR (i.e., F2002-2004 = 0.75). Boxes 1-3 show conservation advice given by the ISC on the stock status for years 2007-2009, which can be summarized as follows: "Previous scientific advice, based on the 2004 stock assessment, recommended that current fishing mortality rate (F) should not be increased. It was noted that management objectives for the Inter-American Tropical Tuna Commission (IATTC) and the Western and Central Pacific Fisheries Commission (WCPFC) are based on maintaining population levels which produce maximum sustainable yield. Due to updating, and improvements and refinements in data and models used in the 2006 stock assessment, it is now recognized that $F_{current}$ (0.75) is high relative to most of the F reference points used traditionally in fisheries management (see PI 1.1.2). On the other hand, the same analysis indicates that the current estimate of the SSB is the second highest in history (Figure 7) but that keeping the current F would gradually reduce the SSB to the long-term average by the mid 2010s (Figure 6-7). Therefore, the recommendation of not increasing F from current level ($F_{current}$ (2002-2004) = 0.75) is still valid. However, with the projection based on the continued current high F the fishing mortality rate will have to be reduced. The degree to which, when and how reductions should occur will depend on which reference points are selected and the desired probability and practicability of success of attaining these reference points in a time frame to be agreed. The ISC requires additional guidance on these issues from the management authorities in a timely manner to work further on these issues."

Current conservation and management measures for the North Pacific albacore tuna (IATTC Resolution C-05-02 and WCPFC Conservation and Management Measures CMM 05-03) states: '*The total level of fishing effort for North Pacific albacore tuna in the Eastern Pacific Ocean not be increased beyond current levels*' and follows latest ISC conservation advice (ISC, 2009).

Based on conservation advice shown in Boxes 1-3 and conservation and management measures, the assessment team concluded the following; F17% SPR (i.e., F2002-2004 = 0.75) is being used currently as Target Reference Point and the stock has been at or fluctuating around the target reference points since 2004. Therefore issue 2 SG80 was met.

The assessment team agreed that issue 2 SG 100 was not met due to the uncertainty related to the long term productivity of the stock. This uncertainty is mainly due to:

- $F_{current}$ (0.75) is high relative fishing mortality rate based reference points mostly used traditionally in fisheries assessment (see PI 1.1.2)
- With the projection based on the continued current high F, the fishing mortality rate should be reduced

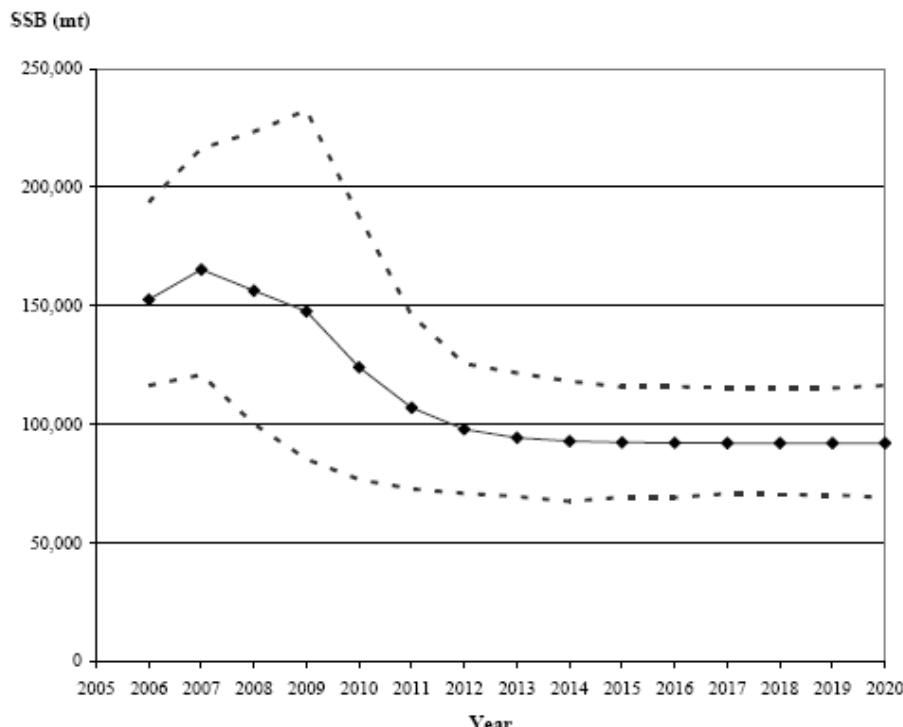


Figure 6. Stochastic projection (2006-20) of spawning stock biomass (SSB, mt) for North Pacific albacore (Analysis 2006). Dashed lines represent 80% CI.

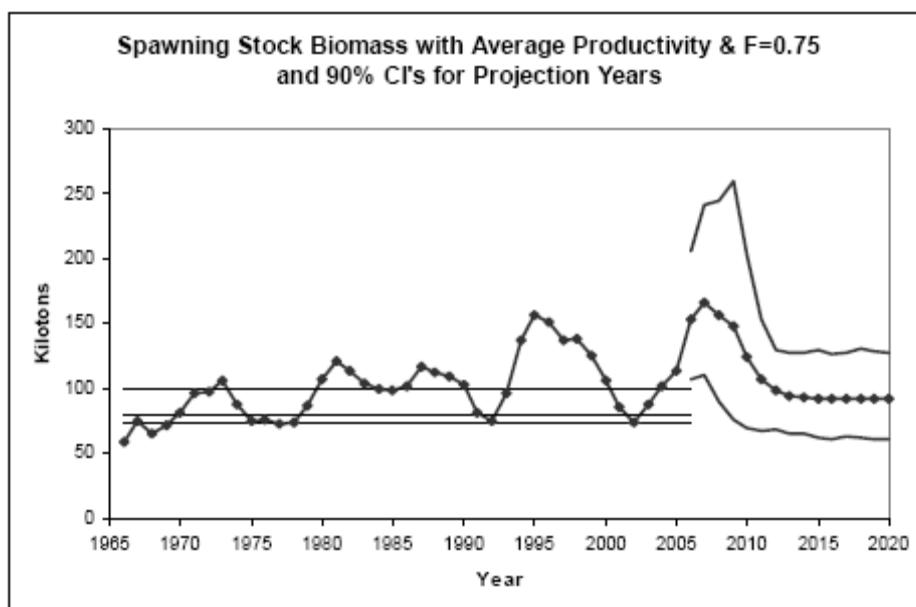


Figure 7. Spawning stock biomass estimates (SSB) for the assessment period (1966-2005) and for the projection period (2006-2020). Confidence intervals (90%) for the projection period are also displayed. The three horizontal lines (from top to bottom) represent the median SSB over the assessment period, the 25th percentile, and the 10th percentile, respectively. The stock projections were done using the 'current' F=0.75 and with annual recruitment (R) drawn randomly from the R_s estimated over the 1966-98 period (average R = 27.75 million fish).

PI 1.1.2: Reference points

PI 1.1.2: Reference Points		
Limit and Target reference points are appropriate for the stock		
SG60	SG80	SG100
Generic limit and target reference points are based on justifiable and reasonable practice appropriate for the species category.	<p>Reference points are appropriate for the stock and can be estimated.</p> <p>The limit reference point is set above the level at which there is an appreciable risk of impairing Reproductive capacity.</p> <p>The target reference point is such that the stock is maintained at a level consistent with BMSY or some measure or surrogate with similar intent or outcome.</p> <p>For low trophic level species, the target reference point takes into account the ecological role of the stock.</p>	<p>Reference points are appropriate for the stock and can be estimated.</p> <p>The limit reference point is set above the level at which there is an appreciable risk of impairing reproductive capacity following consideration of relevant <u>precautionary issues</u>.</p> <p>The target reference point is such that the stock is maintained at a level consistent with BMSY or some ensure or surrogate with similar intent or outcome, <u>or a higher level</u>, and takes into account relevant precautionary issues such as the ecological role of the stock with a high degree of certainty.</p>

Score

Unit Of Certification ID	Fishery Name	Fishing Method	Score
1	CHMSF British Columbia North Pacific Albacore Tuna	Troll & Jig	75
2	American WFOA North Pacific Albacore Tuna	Troll & Jig	75
3	American WFOA North Pacific Albacore Tuna	Pole & Line	75

A score of **75** was achieved by all units of certification based on the following scoring issues:

- The appropriateness of the reference points is unknown
- The limit reference point is set above the level at which there is an appreciable risk of impairing reproductive capacity
- The target reference point is such that the stock is maintained at a level consistent with B_{MSY} or some measure or surrogate with similar intent or outcome

Rationale (All Units of certification)

Performance Indicator 1.1.2 measures the appropriateness of the target and limit reference points used to assess stock status.

Implicitly, reference points are appropriately defined.

Internationally, the harvest strategy has been defined by the Antigua Convention of the Inter-American Tropical Tuna Commission (IATTC), and the Convention on the Conservation and Management of Highly Migratory Fish Stocks of the Western and Central Pacific (WCPFC).

The objective of these conventions is to ensure the long-term conservation and sustainable use of the fish stocks covered by these conventions, in accordance with the relevant rules of international law.

The Harvest Strategy Framework is based on the precautionary approach. The legal framework for the precautionary approach is embodied in a number of international agreements of which the USA and Canada are signatories:

- UN Convention of the Law of the Sea (1982)
- Rio Declaration on Environment and Development (1992)
- FAO Code of Conduct for Responsible Fisheries (1995)
- UN Fish Stocks Agreement UNFA (1995)

Article 6, Annex II of UNFA provides the guidelines for the application of the precautionary approach:

- *"Fishery management strategies shall ensure that the risk of exceeding limit reference points is very low ... [and] target reference points are not exceeded on average."*
- *The fishing mortality rate which generates maximum sustainable yield should be regarded as a minimum standard for limit reference points.....For overfished stocks, the biomass which would produce maximum sustainable yield can serve as a rebuilding target*
- *When information for determining reference points for a fishery is poor or absent, provisional reference points shall be set. Provisional reference points may be established by analogy to similar and better-known stocks*

The WCPFC Convention and the Antigua Convention of IATTC follows Article 6 (Annex II) of UNFA for the application of the precautionary approach.

Figure 8 shows a generic framework for the application of the precautionary approach that follows Article 6 (Annex II) of the UNFA (Richards and Schnute, 1999). The generic approach consider limit and target reference points in an implicit manner.

Zone 1 is defined as the desired state and occurs when the stock is above the Stock reference level and removals are below the Removal reference level. Zone 2 is defined as overexploitation state and occurs when the stock is above the Stock reference level but removals are above the Removal reference level. Zone 3 is defined as overexploited state and occurs when the stock is below the stock reference level and removals should be restricted to allow a high probability of moving to Zone 1. Zone 4 is defined as unacceptable state and occurs when the stock is below the Stock minimum acceptable level

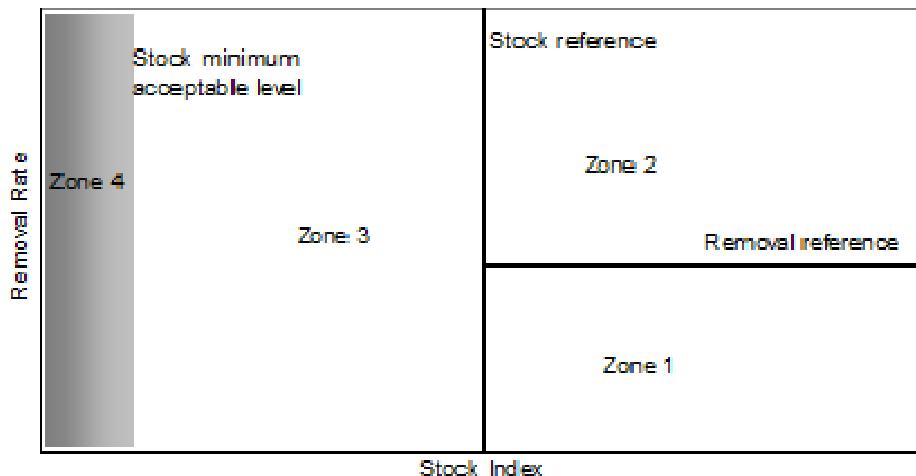


Figure 8. Description of the Generic Framework for the Precautionary Approach.

Clauses of relevancy of the WCPFC Convention Text and IATTC Antigua Convention, in relation to PI 1.1.2, are presented in Box 7 and Box 8 respectively.

Box 7. Clauses of the WCPFC Convention Text of Relevancy to PI 1.1.2

Article 6 (Application of the precautionary approach) of the WCPFC convention text: "*In applying the precautionary approach, the members of the Commission shall:*

- *Apply the guidelines set out in Annex II of the agreement And determine ... stock specific reference points and the action to be taken if they are exceeded;*
- *Take into account, inter alia, uncertainties relating to the size and productivity of the stocks, reference points, stock condition in relation to such reference points...*

Article 5 (Principles and measures for conservation and management) of the WCPFC Convention text "*In order to conserve and manage highly migratory fish stocks in the Convention Area in their entirety, the members of the Commission shall, in giving effect to their duty to cooperate in accordance with the 1982 Convention, the Agreement and this Convention:*

- (a) *adopt measures to ensure long-term sustainability of highly migratory fish stocks in the Convention Area and promote the objective of their optimum utilization;*
- (b) *ensure that such measures are based on the best scientific evidence available and are designed to maintain or restore stocks at levels capable of producing maximum sustainable yield,;*
- (c) *apply the precautionary approach in accordance with this Convention and all relevant internationally agreed standards and recommended practices and procedures.....*

Box 8. Clauses of the IATTC Antigua Convention Text of relevancy to PI 1.1.2

Article IV (Application of the Precautionary Approach): "*1. The members of the Commission, directly and through the Commission, shall apply the precautionary approach, as described in the relevant provisions of the Code of Conduct and/or the 1995 UN Fish Stocks Agreement, for the conservation, management and sustainable use of fish stocks covered by this Convention".*

Article VII (Functions of the Commission) of the Antigua Convention state: '*The Commission shall perform the following functions, giving priority to tunas and tuna-like species:.....*

....adopt measures that are based on the best scientific evidence available to ensure the long-term conservation and sustainable use of the fish stocks covered by this Convention and to maintain or restore the populations of harvested species at levels of abundance which can produce the maximum sustainable yield, inter alia, through the setting of the total allowable catch of such fish stocks as the Commission may decide and/or the total allowable level of fishing capacity and/or level of fishing effort for the Convention Area as a whole;

Implicitly, limit reference points are defined for the North Pacific albacore tuna. However criteria for the adoption of explicit limit and target reference points for north Pacific albacore have not yet been adopted by the WCPFC and the IATTC (Preliminary report ISC 8, 2008).

In the interim the ISC has begun to explore options for the definition of target and limit reference points (Conser *et al*, 2005; ISC 2007). These are as follow:

Candidates Reference Points

At the Plenary Session of the Fifth Meeting of the ISC in 2005, on a request for scientific advice, '*the governments of Japan and the USA requested scientific advice from the 5th ISC related to North Pacific albacore. More specifically, the letter posed the following question: "What is the level (or dynamic range) of fishing mortality (F) that will maintain the stock within the range of spawning stock biomass (SSB) that we have experienced over the assessment period (1975-2003)?'*' Thus, fishing mortality-based reference points designed to ensure that SSB in future years remains within the range of the historically 'observed SSB' were estimated at two different probability levels (Table 12) (Conser *et al*, 2005).

Conser *et al* (2005) F_{SSB} -based reference points estimates for consideration included:

- minimum 'observed';
- lower 10th percentile;
- lower 25th percentile;
- Median.

Estimates of F_{SSB} -based reference points were presented as candidates limit reference point by the ALBWG (ISC 2007 & ISC 2008). In addition F_{max} and $F_{20\%}$ were also presented as candidate limit reference points by the ALBWG ISC (ISC, 2007 & 2008).

ALBWG ISC (ISC 2007 & 2008) conservation advice recommended supporting precautionary-based fishing practices. Thus, the ALB Working Group felt that the thresholds based on the lower 10th percentile, lower 25th percentile, and median represented the most robust and ultimately, precautionary thresholds that should be considered (Table 12) (ISC 2007, Annex 5).

Table 12. Fishing Mortality-Based Reference Points.

SSB Threshold Desired	Probability Level Desired		
		50%	95%
Minimum Observed SSB	F SSB-Min	0.81	0.64
Lower 10th Percentile	F SSB-10%	0.70	0.55
Lower 25th Percentile	F SSB-25%	0.66	0.51
Median	F SSB-50%	0.56	0.39

Candidates Target Reference Points

The ALBWG reviewed potential target reference points that could be utilized for the North Pacific Albacore (ISC 7; Annex 5: Table 5a). The computation of target reference points was limited to examination of current levels of fishing mortality (F) relative to a suite of candidate biological target reference points (Table 13). Candidate reference points presented by the ALBWG include the most commonly used reference points for contemporary fisheries management, where a stock recruitment relationship cannot be estimated.

Table 13. Candidates Target Reference Points Proposed by the ALBWG (ISC 7, Annex 5)

Candidates TRP	Target F (yr -1)	SSBMSY Proxy
F40%	0.32	226
F35%	0.38	198
F0.1	0.45	171
F30%	0.45	169

Reference Points set by Management

Performance Indicator 1.1.2 measures the appropriateness of the target and limit reference points set by management.

Current conservation and management measures for the North Pacific albacore tuna (IATTC Resolution C-05-02 and WCPFC Conservation and Management Measures CMM 05-03) states: '*The total level of fishing effort for North Pacific albacore tuna in the Eastern Pacific Ocean not be increased beyond current levels*' and follows latest ISC conservation advice (ISC, 2009).

Based on conservation advice shown in Boxes 1-3 and conservation and management measures, the assessment team concluded that the current fishing mortality rate ($F_{2002-2004} = 0.75$) is being used as Target Reference Point in order to harvest the North Pacific Stock following the precautionary approach, as described above.

Basis for the decision of not increasing fishing effort above current levels

The current conservation and management measure, which set fishing mortality at a level above those presented as candidate reference points by the ISC, was justified by the IATTC as follows during the stakeholder consultation:

Candidate reference points presented by the ALBWG include the most commonly used reference points for contemporary fisheries management, where a stock recruitment relationship can be estimated. There does not appear to be a relationship between spawners and recruits over the range of stock sizes observed for the North Pacific albacore tuna. Therefore B_{MSY} corresponds to F_{max} from a yield per recruit (YPR) analysis. The YPR as a function of F is a nearly flat topped curve with F_{max} occurring at a very large value of F (i.e. 2.07, ISC, 2007/Annex 5). Thus, the current conservation recommendation of not increasing F above current levels (i.e. $F=0.75$) is considered to be precautionary by the IATTC in the sense that its value is well below F_{max} and corresponds to a level of fishing mortality, at which good recruitment to the albacore stock have been observed during years 1975-2005.

The interim management objective adopted by the WCPFC

In 2008, at its fourth regular session, the Northern Committee (NC) considered the concept of an interim management objective for the North Pacific Albacore (Box 6) that would, in essence, maintain the spawning stock biomass in the range of its historical fluctuation until reference points are established (The WCPFC, Northern Committee, Fourth Regular Session, September 2008).

The interim management objective for the North Pacific albacore is to maintain the SSB above the average level of its 10 historically lowest point ($F_{SSB-ATH}$) (with probability greater than 50%) (time series of annual SSB levels from 1966 through 2005, as estimated in the latest formal stock assessment of the ISC). The estimated value of $F_{SSB-ATH}$ is 0.75 yr-1 for a 25-year projection period using fishery data through 2008. This value is similar to the most recent estimate of F ($F_{2002-2004} = 0.75$ yr-1) from the last stock assessment (ISC, 2009).

Based on background information presented above to score this Performance Indicator, each issue is scored as follows:

Issue 1 SG 60:

The assessment team considered that this issue was met, as generic limit and target reference points are used based on justifiable and reasonable practice appropriate for the species. The implicit use of limit and target reference points, together with the use of management measures based on maintaining population levels which produce maximum sustainable provide evidence to meet issue 1 SG 60

Issue 1 SG 80:

The Assessment Team determined that this issue **was not met** as the appropriateness of the Target Reference Point used is unknown based on evidence provided. The reason for this determination can be summarized as follows:

- Criteria for the adoption of explicit limit and target reference points for north Pacific albacore have not yet been adopted by the WCPFC and the IATTC (Preliminary report ISC 8, 2008) ;
- There is not yet an agreement among IATTC and WCFPC member parties of whether $F=0.75$ should be defined as limit or target, therefore;
- Conservation advice given by the ISC in years 2007-2009 states that with the projection based on the continued current high F , the fishing mortality rate will have to be reduced' (Box 3) and;
- High priority has been given by the ISC to further developing limit and target reference points (ISC, 2007; ISC, 2008; ISC, 2009) for their definition for international management.

A score of less than 80 (75) has resulted in a condition set for each of the respective clients which must be agreed in order that the fishery remain eligible for certification(refer to Section 8).

Issue 2 SG 80

Implicitly the limit reference point is defined to avoid recruitment failure. Explicitly the adoption of the management measure *not increasing fishing mortality from current levels* corresponds to a level of fishing mortality, at which good recruitment to the albacore stock have been observed during years 1975-2005.

Issue 3 SG 80:

Implicitly the target reference point is defined to maintain the population at MSY. Explicitly the adoption of the management measure *not increasing fishing mortality from current levels* is based on the precautionary approach following Yield per Recruit Analysis and the lack of an apparent stock recruitment relationship.

PI 1.1.3: Stock Rebuilding

PI 1.1.3: Stock Rebuilding		
Where the stock is depleted, there is evidence of stock rebuilding.		
SG60	SG80	SG100
<p>Where stocks are depleted rebuilding strategies which have a <u>reasonable expectation</u> of success are in place.</p> <p>Monitoring is in place to determine whether they are effective in rebuilding the stock within a <u>specified</u> timeframe.</p>	<p>Where stocks are depleted rebuilding strategies are in place.</p> <p>There is <u>evidence</u> that they are rebuilding stocks, or it is highly likely based on simulation modeling or previous performance that they will be able to rebuild the stock within a specified timeframe.</p>	<p>Where stocks are depleted, strategies are <u>demonstrated</u> to be rebuilding stocks continuously and there is strong evidence that rebuilding will be complete within the <u>shortest practicable</u> timeframe.</p>

Not applicable as stock is not considered depleted.

Component Harvest Strategy (management)

PI 1.2.1: Harvest Strategy

PI 1.2.1: Harvest Strategy		
There is a robust and precautionary harvest strategy in place		
SG60	SG80	SG100
<p>The harvest strategy is <u>expected</u> to achieve stock management objectives reflected in the target and limit reference points.</p> <p>The harvest strategy is <u>likely</u> to work based on prior experience or plausible argument.</p> <p><u>Monitoring</u> is in place that is expected to determine whether the harvest strategy is working.</p>	<p>The harvest strategy is responsive to the state of the stock and the elements of the harvest strategy <u>work together</u> towards achieving management objectives reflected in the target and limit reference points.</p> <p>The harvest strategy may not have been fully tested but monitoring is in place and <u>evidence</u> exists that it is achieving its objectives.</p>	<p>The harvest strategy is responsive to the state of the stock and is <u>designed</u> to achieve stock management objectives reflected in the target and limit reference points.</p> <p>The performance of the harvest strategy has been <u>fully evaluated</u> and evidence exists to show that it is achieving its objectives including being clearly able to maintain stocks at target levels.</p> <p>The harvest strategy is periodically reviewed and improved as necessary.</p>

Score

Unit Of Certification ID	Fishery Name	Fishing Method	Score
1	CHMSF British Columbia North Pacific Albacore Tuna	Troll & Jig	95
2	American WFOA North Pacific Albacore Tuna	Troll & Jig	95
3	American WFOA North Pacific Albacore Tuna	Pole & Line	95

A score of **95** was achieved by all units of certification based on the following scoring issues:

- The harvest strategy is responsive to the state of the stock and is designed to achieve stock management objectives reflected in the target and limit reference points-SG100.
- The harvest strategy may not have been fully tested but monitoring is in place and evidence exists that it is achieving its objectives. A score of 100 was not given as the target levels are implicit (B_{MSY}) and the stock status in relation to the target levels are not known-SG80.
- The harvest strategy is periodically reviewed and improved as necessary-SG100.

Rationale (All Units of Certification)

Issue 1 SG 80

Before scoring Issue 1 SG 100, the assessment team agreed that the harvest strategy was working toward achieving its objectives, as monitoring programs are in place (see PI 1.2.3) and latest conservation advice (PI 1.1.1) determined that current fishing effort is not increasing.

In order to score Issue 1 SG 100, the design of the harvest strategy was assessed:

Internationally, the harvest strategy has been defined by the Antigua Convention of the Inter-American Tropical Tuna Commission (IATTC), and the Convention on the Conservation and Management of Highly Migratory Fish Stocks of the Western and Central Pacific (WCPFC).

The objective of these conventions is to ensure the long-term conservation and sustainable use of the fish stocks covered by these conventions, in accordance with the relevant rules of international law. In order to achieve the overall objective the convention texts define the harvest strategy framework, which must be implemented through the Pacific Region Integrated Tuna Fisheries Management Plan (IFMP) and the Fisheries Management Plan for U.S West Coast Fisheries for Highly Migratory Species (HMS FMP) in Canada and the United States, respectively.

The Harvest Strategy is based on the precautionary approach. The legal framework for the precautionary approach is embodied in a number of international agreements of which the USA and Canada are signatories:

- UN Convention of the Law of the Sea (1982)
- Rio Declaration on Environment and Development (1992)
- FAO Code of Conduct for Responsible Fisheries (1995)
- UN Fish Stock Agreement UNFA (1995)
- US and CANADA Albacore treaty

Article 6, Annex II of UNFA provides the guidelines for the application of the precautionary approach.

The WCPFC Convection and the Antigua Convention of IATTC follows Article 6 (Annex II) of UNFA for the application of the precautionary approach. The WCPFC convention states (Article 6 of the WCPFC convention text) *"In applying the precautionary approach, the members of the Commission shall:*

- *Apply the guidelines set out in Annex II of the agreement And determine ... stock specific reference points and the action to be taken if they are exceeded;*
- *Take into account, inter alia, uncertainties relating to the size and productivity of the stocks, reference points, stock condition in relation to such reference points...*

In Canada (Unit of Certification No.1) the Harvest Strategy is implemented by Fisheries and Ocean Canada (DFO) and is defined in the Pacific Region Integrated Tuna Fisheries Management Plan. The Harvest Strategy is periodically reviewed by the Tuna Advisory Board. The management objective is to ensure conservation and protection of albacore tuna stocks through the application of scientific management principles applied in a risk adverse and precautionary manner based on best scientific advice available. This is achieved by using best scientific advice on the status of the stock, which is provided through a fishery monitoring program (see PI 1.2.3) and stock assessment (see PI 1.2.4), and a framework for control rules and management actions (tools) (see PI 1.2.2).

In the USA (Unit of Certification No 2&3) the Magnuson-Stevens Fishery Conservation and Management Act is the principal law governing marine fisheries in the United States. The Act includes national standards for management and outlines the contents of fishery management plans. The Harvest Strategy is implemented and reviewed periodically through the Pacific Fisheries Management Council and is defined in the Fisheries Management Plan for U.S West Coast Fisheries for Highly Migratory Species. Management goals and objectives of the Fisheries Management Plan include implementing a harvest strategy which achieves maximum sustainable yield. This is achieved by using best scientific advice on the status of the stock, which is provided through a fishery monitoring program (see PI 1.2.3), stock assessment (see PI 1.2.4), and a framework for control rules and management actions (tools) (see PI 1.2.2).

Issue 2 SG 80

Although the harvest strategy may not be fully tested, monitoring is in place and evidence exists that it is achieving its objectives. As described in Issue 1 SG 80, monitoring programs in place (see PI 1.2.3) and latest conservation advice (PI 1.1.1) show that current fishing effort is not increasing.

PI 1.2.2: Harvest Control Rules and Tools

Score

PI 1.2.2: Harvest Control Rules and Tools		
There are well defined and effective harvest control rules in place		
SG60	SG80	SG100
<p><u>Generally understood</u> harvest control rules are in place that are consistent with the harvest strategy and which act to reduce the exploitation rate as limit reference points are approached.</p> <p>There is <u>some evidence</u> that tools used to implement harvest control rules are appropriate and effective in controlling exploitation.</p>	<p><u>Well defined</u> harvest control rules are in place that are consistent with the harvest strategy and ensure that the exploitation rate is reduced as limit reference points are approached.</p> <p>The <u>selection</u> of the harvest control rules takes into account the main uncertainties.</p> <p><u>Available evidence</u> indicates that the tools in use are appropriate and effective in achieving the exploitation levels required under the harvest control rules.</p>	<p><u>Well defined</u> harvest control rules are in place that are consistent with the harvest strategy and ensure that the exploitation rate is reduced as limit reference points are approached.</p> <p>The <u>design</u> of the harvest control rules take into account a wide range of uncertainties.</p> <p><u>Evidence clearly shows</u> that the tools in use are effective in achieving the exploitation levels required under the harvest control Rules.</p>

Unit Of Certification ID	Fishery Name	Fishing Method	Score
1	CHMSF British Columbia North Pacific Albacore Tuna	Troll & Jig	80
2	American WFOA North Pacific Albacore Tuna	Troll & Jig	80
3	American WFOA North Pacific Albacore Tuna	Pole & Line	80

A score of **80** was achieved by all units of certification based on the following scoring issues:

- Well defined harvest control rules are in place that are consistent with the harvest strategy and ensure that the exploitation rate is reduced as limit reference points are approached
- The selection of the harvest control rules takes into account the main uncertainties
- Available evidence indicates that the tools in use are appropriate and effective in achieving the exploitation levels required under the harvest control rules.

Rationale (All Units of Certification)

The international framework for the application of the precautionary approach sets the definition of the harvest control rules. Figure 8 shows a generic framework for the application of the precautionary approach that follows Article 6 (Annex II) of the UNFA (Richards and Schnute, 1999).

Zone 1 is defined as the desired state and occurs when the stock is above the Stock reference level and removals are below the Removal reference level. Zone 2 is defined as overexploitation state and occurs when the stock is above the Stock reference level but removals are above the Removal reference level. Zone 3 is defined as overexploited state and occurs when the stock is below the stock reference level and removals should be restricted to allow a high probability of moving to Zone 1. Zone 4 is defined as unacceptable state and occurs when the stock is below the Stock minimum acceptable level.

The generic framework for the application of the precautionary approach is translated for the North Pacific albacore into exploitation rules described by:

1. IATTC Resolution C-05-02 (Box 7)
2. WCPFC Conservation and Management Measures-2005-03.(Box 8)
3. WCPFC Northern Committee Fourth regular Session: An interim Management Objective for the North Pacific Albacore (Box 6)
4. Pacific Region Integrated Tuna Fisheries Management Plan for Canada (Unit of Certification No1) and the Fishery management Plan for U.S West Coast Fisheries for Highly Migratory Species (Unit of Certification No2&3)(Box 9)

Exploitation rules described in 1-4 are considered to follow the precautionary approach, taking into account main uncertainties.

The mechanisms to ensure the effectiveness of the control rules established internationally are under national control. In Canada and the USA tools used to ensure that current effort is not increasing above current levels, are provided by enforcement and monitoring programs. There is evidence that compliance with conditions of license is high (HMS FMP, 2007; IFMP, 2009).

In Canada (Unit of Certification No. 1), although there is not a limitation in the number of licenses for Canadian registered vessels fishing in Canadian waters, the management system has the capacity to decrease fishing effort if necessary. In addition most of the Canadian fishing effort occurs in USA waters, effort that is controlled through the Canadian/USA treaty.

In the USA (Unit of Certification No 2&3), mechanisms to implement harvest limitations (output controls) and effort limitation (input controls) exist through the Pacific Management Council, and effort limitation is implemented through permitting limitations.

Evidence given by stock effort monitoring programs, and stock assessment outputs, indicates that tools in use to limit fishing effort are effective in achieving exploitation levels required ($F = 0.75$) by management.

Box 9. Objectives to prevent overfishing and achieve optimum yield described in the Fisheries Management Plan.

Control Rules as required by the Magnuson Stevens Act

The FMP states “ *National Standard Guidelines, as required by the Magnuson-Stevens Act....were developed to assist implementing the Act and introduced the terms “Control Rule” and “Status Determination Criteria” (SDC) relative to the requirements of National Standard 1 (NS 1). The control rule specifies how a fishery is to be managed depending upon stock status relative to the SDCs, which are biological benchmarks or thresholds. There are two SDCs: the Maximum Fishing Mortality Threshold (MFMT) and the Minimum Stock Size Threshold (MSST).....The Magnuson-Stevens Act...requires NMFS to notify Congress when the stock is approaching the overfished condition (i.e., if there is overfishing and the stock is expected to be overfished within two years) and when it is overfished. Fishery managers must then take appropriate remedial action: in the case of approach to being overfished, harvest rates must be reduced below MFMT; in the case of being overfished, a rebuilding plan must be prepared within one year to rebuild the stock. The rebuilding plan must bring the stock back to the level producing maximum (or optimal) sustainable yield within a specified time period. The Guidelines call for precautionary management, i.e., use of conservative control rules with remedial action to begin even if the overfishing/overfished status cannot be established with certainty”-*

PI 1.2.3: Information/Monitoring

PI 1.2.3: Information/monitoring		
Relevant information is collected to support the harvest strategy		
SG60	SG80	SG100
<p><u>Some</u> relevant information related to stock structure, stock productivity and fleet composition is available to support the harvest strategy.</p> <p>Stock abundance and fishery removals are monitored and at least one indicator is available and monitored with sufficient frequency to support the harvest control rule.</p>	<p><u>Sufficient</u> relevant information related to stock structure, stock productivity, fleet composition and other data is available to support the harvest strategy.</p> <p>Stock abundance and fishery removals are <u>regularly monitored at a level of accuracy and coverage consistent with the harvest control rule</u>, and one or more indicators are available and monitored with sufficient frequency to support the harvest control rule.</p> <p>There is good information on all other fishery removals from the stock.</p>	<p>A <u>comprehensive range</u> of information (on stock structure, stock productivity, fleet composition, stock abundance, fishery removals and other information such as environmental information), including some that may not be directly relevant to the current harvest strategy, is available.</p> <p>All information required by the harvest control rule is monitored with high frequency and a high degree of certainty, and there is a good understanding of the inherent <u>uncertainties</u> in the information [data] and the robustness of assessment and management to this uncertainty.</p>

Score

Unit Of Certification ID	Fishery Name	Fishing Method	Score
1	CHMSF British Columbia North Pacific Albacore Tuna	Troll & Jig	100
2	American WFOA North Pacific Albacore Tuna	Troll & Jig	100
3	American WFOA North Pacific Albacore Tuna	Pole & Line	100

A score of **100** was achieved by all units of certification based on the following scoring issues:

- Information (such as environmental information), including some that may not be directly relevant to the current harvest strategy, is available
- All information required by the harvest control rule is monitored with high frequency and a high degree of certainty, and there is a good understanding of the inherent uncertainties in the information and the robustness of assessment and management to this uncertainty.

Rationale (All Units of Certification)

The assessment team examined whether the data used for the assessment of the North Pacific albacore stock met the needs of the model used (VPA). As described in Section 4 of the report, catch, catch-at-age data, and indices of abundance are used in the application of the VPA model. The ISC ALBWG did not identify that the assumption "*catch-at age are available from all fishing sectors*" as a main source of uncertainty. The uncertainty of age data, and therefore catch-at-age data has been acknowledged by the ALBWG; however this is not due to a lack of research input and rather something inherent of the biology of the species. In addition, uncertainty associated with ageing is accounted for when producing stock assessment results (ISC, 2007/Annex 5).

Information on stock structure, stock productivity, fleet composition, stock abundance, and fishery removals is available to support the harvest strategy.

Stock Structure

The species is highly migratory making trans-oceanic migrations. Complete geographical range of the stock, including ontogenetic and seasonal patterns of migrations, is understood and verified by conventional and archival tagging studies. Seasonal variability in migrations are reasonably well described (Laurs and Lynn, 1977; Momoko *et al*, 2008).

Conventional tagging studies have been carried out in the North Pacific. Tagging results are not directly incorporated in assessment at present because recoveries are limited and not well distributed in space and time.

Stock Productivity

Age and growth parameters of North Pacific albacore have been estimated by analyzing hard parts (e.g., scales and otoliths). However estimations are from Suda (1966) (ISC, 2007) and the ALBWG (2009) reported that there is a strong need to update this information. Currently age estimations are carried out by evaluations of size distributions of the landed catch, and tag-recapture studies (NMFS website).

Size composition of landings, monitored in the USA since early 1960's, is used to detect and monitor spatial and temporal shifts and trends in age composition of catches (SAFE report).

Most of the Canadian catches are landed in USA ports and therefore monitoring of size composition at Canadian ports has not been carried out. In 2009, Canada has implemented a domestic on-board size sampling program to improve the collection of length data from the Canadian fishery (Holmes, personal communication).

Stock Abundance

Continuous logbook records for Canadian fisheries provide fishery dependent CPUE indices for estimating and monitoring the relative abundance composition of the stock (Stocker et al, 2007). Fishery dependent information from the Canadian fishery, as well as from other nations harvesting North Pacific albacore are used at North Pacific Albacore Workshops, to monitor and evaluate trends in North Pacific albacore stock status. (Holmes, 2009)

Recruitment has been monitored on a North Pacific stock basis through the international North Pacific Albacore Workshop series that was begun in 1974, and was recently shifted to the North Pacific Albacore Working Group of the International Scientific Committee for Tuna and Tuna-like Species in the North Pacific (ISC). The stock assessment has generated a long time series of data on recruitment trends.

Coordinated research is ongoing on recruitment variability and factors affecting recruitment of the North Pacific albacore stock. Progress is being made in this area, but its predictive ability is currently limited.

Fleet Composition

For the Canadian troll/jig fishery (Unit of Certification No.1), all fishing methods and gear types employed by vessels operating in fisheries on North Pacific albacore are known and information is available on geographic areas of use, notably fishing locations are recorded in logbooks. All Canadian vessels fishing for North Pacific albacore are regulated by the Pacific Region IFMP, which include legal definitions for gear types and authorise its use, any gear not authorised is illegal. Fleet characteristics are well described in the Annual Reports on Canada of the WCFPC.

For the US pole & line and troll & jig fisheries (Unit of Certifications No.2&3), all fishing methods and gear types employed by vessels operating in fisheries on North Pacific albacore are known and information is available on geographic areas of use; notably fishing locations are recorded in logbooks. All US vessels operating in the North Pacific albacore fishery are mandated by the High Seas Fishing Compliance Act to have a Federal permit if they fish seaward of the U.S. EEZ. In addition, if they operate in the US EEZ, or land fish caught in the US EEZ or adjacent high seas waters, in any of the west coast states or Hawaii, they are regulated by the Pacific Fishery Management Council or Western Pacific Fishery Management Council, respectively. Both councils have Highly Migratory Species Fishery Management Plans that include legal definitions for gear types and authorize its use; any gear not authorised is illegal. Fishery Evaluation (SAFE) reports are prepared annually for the HMS FMPs and include data on the size and composition of the fleets exploiting albacore.

Fishery Removals

Systems for accurately recording landings for the Canadian fisheries are in place. Data are verified by comparing logbooks with sales records. Likewise systems are in place for recording landings made by other nations operating on the North Pacific stock. Landings data from all fisheries operating on the North Pacific stock have regularly been exchanged among fisheries scientists from the various countries that operate fisheries, through the North Pacific Albacore Workshop, with the time series going back to 1952 (ISC 8, 2008). Estimates of discards are available from observer records, which show that discards are quite low; observer information is limited, but consistent (Childer, 2008).

Other Information

Migration and availability are key factors for this species. There is an extensive body of multidisciplinary research findings on marine environmental influences on albacore in the North Pacific; research is ongoing (Glaser, 2009). Results clearly demonstrate environmental variability over broad spatial (ocean basin large-scale to local meso-scale) and temporal (many decade to days) scales affects albacore stock dynamics including distribution, migration rates and routes, relative abundance, availability, and vulnerability to capture. Environmental variability affecting albacore may result from long-scale to local oceanic processes. Relationships of migration, availability and vulnerability to oceanography are well described. Albacore are not a main prey species; and there are no known critically dependent predators.

PI 1.2.4: Assessment of Stock Status

PI 1.2.4: Assessment of Stock Status		
There is an adequate assessment of the stock status		
SG60	SG60	SG60
<p><u>Some</u> relevant information related to stock structure, stock productivity and fleet composition is available to support the harvest strategy.</p> <p>Stock abundance and fishery removals are monitored and at least one indicator is available and monitored with sufficient frequency to support the harvest control rule.</p>	<p><u>Sufficient</u> relevant information related to stock structure, stock productivity, fleet composition and other data is available to support the harvest strategy.</p> <p>Stock abundance and fishery removals are <u>regularly monitored at a level of accuracy and coverage consistent with the harvest control rule</u>, and one or more indicators are available and monitored with sufficient frequency to support the harvest control rule.</p> <p>There is good information on all other fishery removals from the stock.</p>	<p>A <u>comprehensive range</u> of information (on stock structure, stock productivity, fleet composition, stock abundance, fishery removals and other information such as environmental information), including some that may not be directly relevant to the current harvest strategy, is available.</p> <p><u>All information</u> required by the harvest control rule is monitored with high frequency and a high degree of certainty, and there is a good understanding of the inherent <u>uncertainties</u> in the information [data] and the robustness of assessment and management to this uncertainty.</p>

Score

Unit Of Certification ID	Fishery Name	Fishing Method	Score
1	CHMSF British Columbia North Pacific Albacore Tuna	Troll & Jig	100
2	American WFOA North Pacific Albacore Tuna	Troll & Jig	100
3	American WFOA North Pacific Albacore Tuna	Pole & Line	100

A score of **100** was achieved by all units of certification based on the following scoring issues:

- The assessment is appropriate for the stock and for the harvest control rule and takes into account the major features relevant to the biology of the species and the nature of the fishery.
- The assessment takes into account uncertainty and is evaluating stock status relative to reference points in a probabilistic way.
- The assessment has been tested and shown to be robust and alternative hypotheses and assessment approaches have been rigorously explored.
- The assessment has been internally and externally peer reviewed

Rationale (All Units of Certification)

North Pacific Albacore stock assessments have been conducted by the International Scientific Committee for Tuna and Tuna-like Species in the North Pacific Ocean (ISC) and its predecessor, the North Pacific Albacore Workshop for the last several decades. The most recent assessment was conducted in December of 2006 (ISC, 2007). The ISC charge is to provide scientific advice for management of North Pacific albacore through assessments and the associated activities of collating and maintaining international data bases, coordinating biological research (including the setting of research priorities) and facilitating the development of assessment methods. The ISC is the principal scientific body providing input to both the WCPFC and the IATTC.

The current assessment is based upon Virtual Population Analysis (VPA) methods in which catch, catch-at-age, and indices of abundance (standardized catch-per-effort data, CPUE) are statistically fit by a backward projection model. The methodology is well-known and used in many assessment arenas. Assumptions of the method are also well-known, as are the ramifications of deviations from those assumptions. The major assumptions of VPA are that catch-at-age are estimated without error and are complete, i.e. that catches-at-age are available from all fishing sectors, and that the standardized catch-per-effort indices are proportional to the abundance of the age-groups that are selected by the gear from which the CPUE is derived.

General linear modeling methods were used for standardizing CPUE Spatial, seasonal and other effects were examined to determine if their impact on the index of abundance was likely related to abundance or other factors.

Although biological reference points are not used in an explicit manner by management yet, the ISC has explored candidate explicit limit and target reference points in a probabilistic manner (see PI 1.1.1).

The ALBWG has recognized for some time that it would be desirable to have an assessment method for North Pacific albacore that takes Catch at Length as input (rather than Catch at age). During the most recent assessment, alternative modeling approaches were explored, most notably Stock Synthesis II (SS2). In addition to utilizing CPUE data, the SS2 approach uses statistical forward projection methods in which catch-at-age can be measured with error and data need not complete for all sectors. Conversely, this method requires explicit modeling of the stock-recruitment relationship and of the age or size selectivity by the fisheries.

Stock Synthesis III (SS3) was released in February 2009. SS3 has new features that may be useful for the next North Pacific albacore assessment, e.g. ability to handle more general size frequency categories; more flexible natural mortality function. Members of the ALBWG have examined the performance of length-based SS3 using the NPALB data from the 2006 stock assessment (ISC/09-1/ALBWG/05 and ISC/09-1/ALBWG/06).

The ALBWG will use the length-based SS3 modeling platform for the next stock assessment scheduled for 2011 (ISC, 2009). On this the ISC ALBWG decided:

.....To ensure a smooth transition from the 2006 assessment, the ADAPT-VPA model should be used in conjunction with SS3 for the 2010 stock assessment. In addition to the data preparations needed for the SS3 modelling, three additional years of Catch at Age (2006-08) will be required for all fisheries.

Stock assessment procedures are internally peer reviewed by the constituents of each nation represented at the Albacore Working Group (ISC 7/Annex 5).

The international nature of the IATTC and the WCPFC constitutes a rigorous and external review process. A peer review of the stock assessment is carried out by both organizations before adopting conservation and management advice (IATTC, 2008; WCPFC, 2008).

Principle 2

Component Retained Species

P.I 2.1.1 Outcome Status

P.I 2.1.1 Retained Species; Outcome Status		
The fishery does not pose a risk of serious or irreversible harm to the retained species and does not hinder recovery of depleted retained species.		
SG60	SG80	SG100
Main retained species are <u>likely</u> to be within biologically based limits or if outside the limits there are <u>measures</u> in place that are <u>expected</u> to ensure that the fishery does not hinder recovery and rebuilding of the depleted species. If the status is poorly known there are measures or practices in place that are expected to result in the fishery not causing the retained species to be outside biologically based limits or hindering recovery.	Main retained species are <u>highly likely</u> to be within biologically based limits, or if outside the limits there is a <u>partial strategy of demonstrably effective</u> management measures in place such that the fishery does not hinder recovery and rebuilding.	There is a <u>high degree of certainty</u> that retained species are within biologically based limits. Target reference points are defined and retained species are at or fluctuating around their target reference points.

Score

Unit Of Certification ID	Fishery Name	Fishing Method	Score
1	CHMSF British Columbia North Pacific Albacore Tuna	Troll & Jig	100
2	American WFOA North Pacific Albacore Tuna	Troll & Jig	100
3	American WFOA North Pacific Albacore Tuna	Pole & Line	90

A score of **100** was achieved by **Unit of Certification No1** based on the following:

- The occurrence of retained species is considered to be exceptionally rare and negligible in its impact.

A score of **100** was achieved by **Unit of Certification No2** based on the following

- No main retained species

A score of **90** was achieved by **Unit of Certification No.3** based on the following scoring issues:

- There is a high degree of certainty that retained species are within biologically based limits.
- Main retained species are highly likely to be within biologically based limits, or if outside the limits there is a partial strategy of demonstrably effective management measures in place such that the fishery does not hinder recovery and rebuilding.

Rationale

Unit Of Certification ID	Fishery Name	Fishing Method	Score
1	CHMSF British Columbia North Pacific Albacore Tuna	Troll & Jig	100

Canadian trolling vessels are only permitted to land albacore tuna under their Section 68 license in US waters where the majority of fishing is carried out. Canadian vessels operating in Canadian waters are obliged to maintain a harvest log of all harvest operations and any retained species and provide this information to the DFO (PRIFMP, 2009). Retention is considered to be exceptionally rare and negligible in its impact and the fishery scores 100 for component Retained species (Point 7.2.3 in the MSC guidance document).

Unit Of Certification ID	Fishery Name	Fishing Method	Score
2	American WFOA North Pacific Albacore Tuna	Troll & Jig	100

The US FMP requires all commercial vessels to maintain and submit logbooks to NMFS (US HMS FMP). Albacore troll vessels catch minor amounts of other non targeted pelagic fish species that are usually caught during transit to or from the fishing grounds and may be retained. The most common species that are incidentally caught include skipjack tuna (*Katsuwonus pelamis*), mahi mahi (*Coryphaena hippurus*), yellowtail (*Seriola lalandi*), Eastern Pacific bonito (*Sarda chiliensis*), bigeye tuna (*Thunnus obesus*), and bluefin tuna (*Thunnus thynnus*) (Childers and Betcher, 2008 – South West Fisheries Science Centre) and incidental catches of these species are typically very low (ISC, 2009/Annex 6). No ‘main’ retained species which are caught during fishing operations are known to occur in the fishery. Trolling vessels are known to use frozen anchovies on occasion to attract albacore to the artificial jigs/fishing lures. No quantitative data are available on the amount of anchovies used in this manner but the quantities are considered to be small and insignificant in terms of impact on the anchovy stock. No ‘main’ retained species therefore occur and the fishery scores 100 for component Retained species (Point 7.2.3 in the MSC guidance document).

Unit Of Certification ID	Fishery Name	Fishing Method	Score
3	American WFOA North Pacific Albacore Tuna	Pole & Line	90

Albacore pole & line fisheries are acknowledged to have very low levels of bycatch species with a documented average discard rate of 0.1% in global pole & line fisheries for tuna and other highly migratory species (FAO, 2005). Data on retained species caught during fishing operations are collected by US mandatory logbook, and onboard observers collected bycatch data from US pole & line vessels between 2004 – 2006 which verified the occurrence of insignificant levels (less than 1%) of overall bycatch (retained and/or discarded non target species) in the Pacific albacore fishery (NMFS, 2007). The quantities of non target species which are retained onboard can be considered as minor given the low overall observed bycatch rate (retained and/or discarded non target species) and no main retained species, caught during fishing operations, occur in the fishery.

Live anchovies are, however, retained onboard as bait in the Pole and line fishery and can be considered as a 'main' retained species. Northern Anchovy is a monitored species under the US Coastal Pelagic Species (CPS) Fisheries Management Plan (FMP). Most of the US landings come from California (SAFE 2008). The recommended default Maximum Sustainable Yield (MSY) control rule gives an Allowable Biological Catch (ABC) for the entire Northern Anchovy - northern sub population of 25% of the MSY catch but MSY has not been estimated in recent years as a stock assessment has not been deemed required under the monitoring program (CPS FMP, 2009). The stock is considered to be sustainable with minimal impact from harvest for the live bait fishery (pers. Comm. Mike Burner, Staff Officer Pacific Fisheries Management Council (PFMC). Quantitative evidence is not available which demonstrate that the stock is within biological limits. Strong justification exists, however, in terms of extensive monitoring of landings, larval abundance, environmental variables (pers. Comm. Mike Burner, PFMC) and the existence of an extensive framework on 'Point of Concern' which triggers full stock assessment if required (Pacific Fishery Management Council, 2009), of very low risk of serious or irreversible harm to the stock.

P.I 2.1.2 Management Strategy

P.I 2.1.2 Retained Species; Management Strategy		
There is a strategy in place for managing retained species that is designed to ensure the fishery does not pose a risk of serious or irreversible harm to retained species.		
SG60	SG80	SG100
<p>There are <u>measures</u> in place, if necessary, that are expected to maintain the main retained species at levels which are highly likely to be within biologically based limits, or to ensure the fishery does not hinder their recovery and rebuilding.</p> <p>The measures are considered <u>likely</u> to work, based on plausible argument (eg, general experience, theory or comparison with similar fisheries/species).</p>	<p>There is a <u>partial strategy</u> in place, if necessary that is expected to maintain the main retained species at levels which are highly likely to be within biologically based limits, or to ensure the fishery does not hinder their recovery and rebuilding.</p> <p>There is some <u>objective basis for confidence</u> that the partial strategy will work, based on some information directly about the fishery and/or species involved.</p> <p>There is <u>some evidence</u> that the partial strategy is being <u>implemented successfully</u>.</p>	<p>There is a <u>strategy</u> in place for managing retained species.</p> <p>The strategy is mainly based on information directly about the fishery and/or species involved, and <u>testing supports high confidence</u> that the strategy will work.</p> <p>There is <u>clear evidence</u> that the strategy is being <u>implemented successfully</u>, and intended changes are occurring.</p> <p>There is some evidence that the strategy is <u>achieving its overall objective</u>.</p>

Score

Unit Of Certification ID	Fishery Name	Fishing Method	Score
1	CHMSF British Columbia North Pacific Albacore Tuna	Troll & Jig	100
2	American WFOA North Pacific Albacore Tuna	Troll & Jig	100
3	American WFOA North Pacific Albacore Tuna	Pole & Line	100

A score of **100** was achieved by the **Unit of Certification No1** based on the following:

- The occurrence of retained species is considered to be exceptionally rare and negligible in its impact and the fishing unit scores 100 for the component Retained species

A score of **100** was achieved by the **Unit of Certification No.2** based on the following:

- No 'main' retained species occur and the fishing unit scores 100 for the component Retained species

A score of **100** was achieved by the **Unit of Certification No.3** based on the following scoring issues:

- There is a strategy in place for managing retained species.
- The strategy is mainly based on information directly about the fishery and/or species involved, and testing supports high confidence that the strategy will work.
- There is clear evidence that the strategy is being implemented successfully, and intended changes are occurring.
- There is some evidence that the strategy is achieving its overall objective.

Rationale

Unit Of Certification ID	Fishery Name	Fishing Method	Score
1	CHMSF British Columbia North Pacific Albacore Tuna	Troll & Jig	100

Canadian trolling vessels are only permitted to land albacore tuna under their Section 68 license in US waters where the majority of fishing is carried out. Canadian vessels operating in Canadian waters are obliged to maintain a harvest log of all harvest operations and any retained species and provide this information to the DFO (PRIFMP, 2009). Retention is considered to be exceptionally rare and negligible in its impact and the fishery scores 100 for component Retained species (Point 7.2.3 in the MSC guidance document).

Unit Of Certification ID	Fishery Name	Fishing Method	Score
2	American WFOA North Pacific Albacore Tuna	Troll & Jig	100

Not Applicable.

Unit Of Certification ID	Fishery Name	Fishing Method	Score
3	American WFOA North Pacific Albacore Tuna	Pole & Line	100

There is a strategy in place for managing Northern anchovy under the Coastal Pelagic Species Fishery Management Plan; the annual SAFE report includes all available information that may be used to determine if a point-of-concern exists e.g. overfishing or if a stock should be considered for Active management. Active management is not currently required for the Northern Anchovy stock. The Californian Department of Fish and Game (CDFG) operates a Live Bait Log for live bait fishers and an extensive time series extending back over 40 years on anchovy landings is used in monitoring the fishery (SAFE 2008). Therefore the strategy is based on information directly about the fishery and 'testing' under evaluation by the Pacific Fishery Management Council supports 'high confidence' that the strategy will work. Monitored fisheries data provide 'clear evidence' that the strategy is being 'implemented successfully' and there is some evidence from historical fisheries data that the strategy is 'achieving its overall objective' which is sustainability of the stock.

P.I 2.1.3 Information/ Monitoring

P.I 2.1.3 Retained Species; Information/ Monitoring		
Information on the nature and extent of retained species is adequate to determine the risk posed by the fishery and the effectiveness of the strategy to manage retained species.		
SG60	SG80	SG100
<p><u>Qualitative information</u> is available on the amount of main retained species taken by the fishery.</p> <p>Information is <u>adequate to qualitatively</u> assess outcome status with respect to biologically based limits.</p> <p>Information is adequate to support <u>measures</u> to manage <u>main</u> retained species.</p>	<p><u>Qualitative information</u> and some quantitative information are available on the amount of main retained species taken by the fishery.</p> <p>Information is <u>sufficient</u> to estimate outcome status with respect to biologically based limits.</p> <p>Information is adequate to support a <u>partial strategy</u> to manage <u>main</u> retained species.</p> <p>Sufficient data continue to be collected to detect any increase in risk level (e.g. due to changes in the outcome indicator scores or the operation of the fishery or the effectiveness of the strategy).</p>	<p>Accurate and verifiable information is available on the catch of all retained species and the consequences for the status of affected populations.</p> <p>Information is <u>sufficient</u> to <u>quantitatively</u> estimate outcome status with a <u>high degree of certainty</u>.</p> <p>Information is adequate to support a <u>comprehensive strategy</u> to manage retained species, and evaluate with a <u>high degree of certainty</u> whether the strategy is achieving its objective.</p> <p>Monitoring of retained species is conducted in sufficient detail to assess ongoing mortalities to all retained species.</p>

Score

Unit Of Certification ID	Fishery Name	Fishing Method	Score
1	CHMSF British Columbia North Pacific Albacore Tuna	Troll & Jig	100
2	American WFOA North Pacific Albacore Tuna	Troll & Jig	100
3	American WFOA North Pacific Albacore Tuna	Pole & Line	100

A score of **100** was achieved by the **Unit of Certification No.1** based on the following:

- The occurrence of retained species is considered to be exceptionally rare and negligible in its impact

A score of **100** was achieved by the **Unit of Certification No.2** based on the following:

- No 'main' retained species occur

A score of **100** was achieved by the **Unit of Certification No.3** based on the following scoring issues:

- Accurate and verifiable information is available on the catch of all retained species and the consequences for the status of affected populations.
- Information is sufficient to quantitatively estimate outcome status with a high degree of certainty.
- Information is adequate to support a comprehensive strategy to manage retained species, and evaluate with a high degree of certainty whether the strategy is achieving its objective.
- Monitoring of retained species is conducted in sufficient detail to assess ongoing mortalities to all retained species.

Rationale

Unit Of Certification ID	Fishery Name	Fishing Method	Score
1	CHMSF British Columbia North Pacific Albacore Tuna	Troll & Jig	100

Canadian trolling vessels are only permitted to land albacore tuna under their Section 68 license in US waters where the majority of fishing is carried out. Canadian vessels operating in Canadian waters are obliged to maintain a harvest log of all harvest operations and any retained species and provide this information to the DFO (PRIFMP, 2009). Retention is considered to be exceptionally rare and negligible in its impact and the fishery scores 100 for component Retained species (Point 7.2.3 in the MSC Fisheries Assessment Methodology).

Unit Of Certification ID	Fishery Name	Fishing Method	Score
2	American WFOA North Pacific Albacore Tuna	Troll & Jig	100

Not Applicable

Unit Of Certification ID	Fishery Name	Fishing Method	Score
3	American WFOA North Pacific Albacore Tuna	Pole & Line	100

Detailed information on the nature and extent of retained species (northern anchovy) in the pole & line fishery exists. Almost all of the US northern anchovy landings in 2007 were from California with 12,116 mt landed in this state. A time series of the live bait harvest in California dates back to 1939 and shows landings of 700 mt in 2007 (SAFE Report). On this basis all of the issues of SG 100 are met providing a score of 100 for this PI.

Bycatch Component

PI 2.2.1 Outcome Status

PI 2.2.1 Bycatch; Outcome Status		
The fishery does not pose a risk of serious or irreversible harm to the bycatch species or species groups and does not hinder recovery of depleted bycatch species or species groups		
SG60	SG80	SG100
Main bycatch species are <u>likely</u> to be within biologically based limits, or if outside such limits there are mitigation <u>measures</u> in place that are <u>expected</u> to ensure that the fishery does not hinder recovery and rebuilding. If the status is poorly known there are measures or practices in place that are expected result in the fishery not causing the bycatch species to be biologically based limits or hindering recovery.	Main bycatch species are <u>highly likely</u> to be within biologically based limits or if outside such limits there is a <u>partial strategy of demonstrably effective mitigation</u> measures in place such that the fishery does not hinder recovery and rebuilding	There is a <u>high degree of certainty</u> that bycatch species are within biologically based limits

Score

Unit Of Certification ID	Fishery Name	Fishing Method	Score
1	CHMSF British Columbia North Pacific Albacore Tuna	Troll & Jig	100
2	American WFOA North Pacific Albacore Tuna	Troll & Jig	100
3	American WFOA North Pacific Albacore Tuna	Pole & Line	100

A score of **100** was achieved by the **all Units of Certification** based on the following:

- The occurrence of bycatch species is considered to be exceptionally rare and negligible in its impact

Rationale

Unit Of Certification ID	Fishery Name	Fishing Method	Score
1	CHMSF British Columbia North Pacific Albacore Tuna	Troll & Jig	100

No ‘main’ bycatch species are known to occur in the fishery with total bycatch comprised of approximately 0.002% of the total catch weight in 2008 according to logbook data (Holmes, 2009). No independent data on bycatch are available for the Canadian troll fishery but data are available from US contracted onboard observers who collected data from US vessels employing the same fishing method in the same fishing area targeted by Canadian fishermen and this verifies the occurrence of insignificant levels of bycatch in the Pacific albacore fishery (NMFS, 2007). Therefore bycatch is exceptionally rare and negligible in its impact and the fishery meets SG 100.

Unit Of Certification ID	Fishery Name	Fishing Method	Score
2	American WFOA North Pacific Albacore Tuna	Troll & Jig	100

The US FMP requires all commercial vessels to maintain and submit logbooks to NMFS (US HMS FMP). Albacore troll vessels catch minor amounts of other pelagic fish species that are usually caught during transit to or from the fishing grounds. The most common species that are incidentally caught include skipjack tuna (*Katsuwonus pelamis*), mahi mahi (*Coryphaena hippurus*), yellowtail (*Seriola lalandi*), Eastern Pacific bonito (*Sarda chiliensis*), bigeye tuna (*Thunnus obesus*), and bluefin tuna (*Thunnus thynnus*) (Childers and Betcher, 2008) and incidental catches of these species are typically very low (ISC, 2009/Annex 6). NMFS contracted observers collected bycatch data from US troll vessels between 2004 – 2006 which verified the occurrence of insignificant levels of bycatch in the Pacific albacore fishery (NMFS, 2007). No ‘main’ bycatch species are known to occur, bycatch is exceptionally rare and negligible in its impact and the fishery, therefore, meets SG 100.

Unit Of Certification ID	Fishery Name	Fishing Method	Score
3	American WFOA North Pacific Albacore Tuna	Pole & Line	100

Albacore pole & line fisheries are acknowledged to have very low levels of bycatch species with a documented average discard rate of 0.1% in global pole & line fisheries for tuna and other highly migratory species (FAO, 2005). Data on bycatch are collected by US mandatory logbook and onboard observers collected bycatch data from US pole and line vessels between 2004 – 2006 which verified the occurrence of insignificant levels of bycatch in the Pacific albacore fishery (NMFS, 2007). No ‘main’ bycatch species are known to occur, bycatch is exceptionally rare and negligible in its impact and the fishery, therefore, meets SG 100.

PI 2.2.2 Management Strategy

PI 2.2.2 Bycatch; Management Strategy		
There is a strategy in place for managing bycatch that is designed to ensure the fishery does not pose a risk of serious or irreversible harm to bycatch populations.		
SG60	SG80	SG100
<p>There are <u>measures</u> in place, if necessary, which are expected to maintain main bycatch species at levels which are highly likely to be within biologically based limits or to ensure that the fishery does not hinder their recovery.</p> <p>The measures are considered <u>likely</u> to work, based on plausible argument (e.g general experience, theory or comparison with similar fisheries/species).</p>	<p>There is a <u>partial strategy</u> in place, if necessary, for managing bycatch that is expected to maintain main bycatch species at levels which are highly likely to be within biologically based limits or to ensure that the fishery does not hinder their recovery.</p> <p>There is <u>some objective basis for confidence</u> that the partial strategy will work, based on some information directly about the fishery and/or the species involved.</p> <p>There is <u>some evidence</u> that the partial strategy is being implemented successfully.</p>	<p>There is a <u>strategy</u> in place for managing and minimising bycatch.</p> <p>The strategy is mainly based on information directly about the fishery and/or species involved, and testing supports <u>high confidence</u> that the strategy will work.</p> <p>There is <u>clear evidence</u> that the strategy is being implemented successfully, and intended changes are occurring. There is some evidence that the strategy is achieving its objective.</p>

Score

Unit Of Certification ID	Fishery Name	Fishing Method	Score
1	CHMSF British Columbia North Pacific Albacore Tuna	Troll & Jig	100
2	American WFOA North Pacific Albacore Tuna	Troll & Jig	100
3	American WFOA North Pacific Albacore Tuna	Pole & Line	100

A score of 100 was achieved by all Units of Certification based on the following:

- The fishery by its nature results in exceptionally rare incidences of bycatch, has negligible impact on the bycatch species and does not pose a risk to the status of these species. Therefore a detailed strategy for minimizing bycatch is not required in the fishery and all Units of Certification meet SG100

Rationale

Unit Of Certification ID	Fishery Name	Fishing Method	Score
1	CHMSF British Columbia North Pacific Albacore Tuna	Troll & Jig	100

Canadian fishermen are obliged to complete mandatory logbooks (Pacific Region, IFMP) and provision of data on bycatch is included. These data are compiled and actively monitored by the DFO (Holmes, 2009). Fishermen generally use barbless hooks as this speeds up fishing operations and fish are landed individually so bycatch fish may be returned alive. The fishery by its nature results in exceptionally rare incidences of bycatch, has negligible impact on the bycatch species and does not pose a risk to the status of these species. Therefore a detailed strategy for minimizing bycatch is not required in the fishery and the fishery meets SG100 (See 7.1.125 in MSC Fisheries Assessment Methodology)

Unit Of Certification ID	Fishery Name	Fishing Method	Score
2	American WFOA North Pacific Albacore Tuna	Troll & Jig	100
3	American WFOA North Pacific Albacore Tuna	Pole & Line	100

US fishermen are obliged to complete mandatory logbooks (US HMS FMP) and provision of data on bycatch is included. These data are actively monitored by the NMFS. Fishermen generally use barbless hooks as this method speeds up fishing operations and fish are landed individually so bycatch fish may be returned alive. The fishery by its nature results in exceptionally rare incidences of bycatch, has negligible impact on the bycatch species and does not pose a risk to the status of these species. Therefore a detailed strategy for minimizing bycatch is not required in the fishery and the fishery meets SG100 (See 7.1.125 in MSC Fisheries Assessment Methodology).

PI 2.2.3 Information/Monitoring

PI 2.2.3 Bycatch; Information/monitoring		
Information on the nature and amount of bycatch is adequate to determine the risk posed by the fishery and the effectiveness of the strategy to manage bycatch		
SG60	SG80	SG100
Qualitative information is available on the amount of main bycatch species affected by the fishery. Information is adequate to broadly understand outcome status with respect to biologically based limits. Information is adequate to support measures to manage bycatch.	Qualitative information and some quantitative information are available on the amount of main bycatch species affected by the fishery. Information is sufficient to estimate outcome status with respect to biologically based limits. Information is adequate to support a partial strategy to manage main bycatch species. Sufficient data continue to be collected to detect any increase in risk to main bycatch species (e.g. due to changes in the outcome indicator scores or the operation of the fishery or the effectiveness of the strategy).	Accurate and verifiable information is available on the amount of all bycatch and the consequences for the status of affected populations. Information is sufficient to quantitatively estimate outcome status with respect to biologically based limits with a high degree of certainty. Information is adequate to support a comprehensive strategy to manage bycatch, and evaluate with a high degree of certainty whether a strategy is achieving its objective. Monitoring of bycatch data is conducted in sufficient detail to assess ongoing mortalities to all bycatch species.

Score

Unit Of Certification ID	Fishery Name	Fishing Method	Score
1	CHMSF British Columbia North Pacific Albacore Tuna	Troll & Jig	90
2	American WFOA North Pacific Albacore Tuna	Troll & Jig	90
3	American WFOA North Pacific Albacore Tuna	Pole & Line	90

A score of **90** was achieved by **all Units of Certification** based on the following:

- Qualitative information and some quantitative information are available on the amount of main bycatch species affected by the fishery.
- No main bycatch species occur, and bycatch is exceptionally rare and negligible in its impact, so neither information on biologically based limits nor a comprehensive management strategy to manage bycatch is required.
- An ongoing independent observer programme is not been carried out in this fishery so the last issue of SG 100 is not met.
- All issues in SG 80 are met. Two out of four issues in SG 100 are met

Rationale

Unit Of Certification ID	Fishery Name	Fishing Method	Score
1	CHMSF British Columbia North Pacific Albacore Tuna	Troll & Jig	90

Very low numbers of individual bycatch incidences are reported under mandatory logbooks which are submitted to DFO Canada. Data from logbooks showed minimal bycatch in 2008 consisting of 107.3 kg (18 fish) of mahi mahi *Coryphaena hippurus*, 1 yellowfin tuna *Thunnus albacares*, and 3.3 kg (49 fish) of yellowtail *Seriola lalandi* (Holmes, 2009) and these data are consistent with bycatch data reported in previous years (pers. Comm. John Holmes). No independent data on bycatch are available for the Canadian troll fishery but data are available from a US observer trips which collected data from US vessels employing the same fishing method in the same fishing area as Canadian fishermen. These observer data verify minimal bycatch levels in the Pacific troll fishery for albacore tuna (NMFS, 2007).

As no ongoing observer programmed is carried out in this fishery, accurate and verifiable information is not considered to be available on the amount of by-catch and the consequences for the status of affected populations so this issue scores 80. As no main bycatch species occur, and bycatch is exceptionally rare and negligible in its impact, information on biologically based limits are not required and the second issue scores 100. As no main bycatch species occur, and bycatch is exceptionally rare and negligible in its impact, a comprehensive management strategy to manage bycatch is not required so this issue scores 100. An ongoing independent observer programme is not been carried out in this fishery so the last issue of this SG is not met.

Unit Of Certification ID	Fishery Name	Fishing Method	Score
2	American WFOA North Pacific Albacore Tuna	Troll & Jig	90

US fishermen are obliged to complete mandatory logbooks (US HMS FMP) and provision of data on bycatch is included. These data are actively monitored by the NMFS (Childers and Betcher, 2008). Detailed logbook data on bycatch from Canadian fishermen engaged in the same fishery are also available. Independent observer data on bycatch are available for this fishery from 2004 – 2006 when data were collected at sea by contract observers representing a total of 51 days fishing and 5 trips. During this period a total of 6 skipjack, 1 thresher shark, 1 blue shark, 1 dolphin fish, and 49 unidentified fish from a catch of 4839 albacore tuna representing a bycatch of 1.2% of the total catch.

As no ongoing observer program is carried out in this fishery, accurate and verifiable information is not considered to be available on the amount of bycatch and the consequences for the status of affected populations so this issue scores 80. As no main bycatch species occur, and bycatch is exceptionally rare and negligible in its impact, information on biologically based limits are not required and the second issue scores 100. As no main bycatch species occur, and bycatch is exceptionally rare and negligible in its impact, a comprehensive management strategy to manage bycatch is not required so this issue scores 100. An ongoing independent observer program is not carried out in this fishery so the last issue of this SG 100 is not met.

Unit Of Certification ID	Fishery Name	Fishing Method	Score
3	American WFOA North Pacific Albacore Tuna	Pole & Line	90

US fishermen are obliged to complete mandatory logbooks (US HMS FMP) and provision of data on bycatch is included. These data are actively monitored by the NMFS (Childers and Betcher, 2008). Independent observer data on bycatch are available for this fishery combined with the Troll fishery from 2004 – 2006 when data were collected at sea by contract observers representing a total of 81 days fishing and 9 trips. During this period a total of 6 skipjack, 1 thresher shark, 2 blue shark, 1 dolphin fish, 1 yellowtail and 124 unidentified fish from a catch of 16405 albacore tuna representing a bycatch of less than 1% of the total catch (NMFS, 2007).

As no ongoing observer programmed is carried out in this fishery, accurate and verifiable information is not considered to be available on the amount of bycatch and the consequences for the status of affected populations so this issue scores 80.

As no main bycatch species occur, and bycatch is exceptionally rare and negligible in its impact, information on biologically based limits are not required and the second issue scores 100. As no main bycatch species occur, and bycatch is exceptionally rare and negligible in its impact, a comprehensive management strategy to manage bycatch is not required so this issue scores 100. An ongoing independent observer program has not been carried out in this fishery so the last issue of SG 100 is not met.

Component ETP Species

PI 2.3.1 Outcome Status

PI 2.3.1 ETP species; Outcome status		
The fishery meets national and International requirements for protection of ETP species. The fishery does not pose a risk of serious or irreversible harm to ETP species and does not hinder recovery of ETP species.		
SG60	SG80	SG100
Known effects of the fishery are likely to be within limits of national and international requirements for protection of ETP species. Known direct effects are unlikely to create unacceptable impacts to ETP species.	The effects of the fishery are known and are highly likely to be within limits of national and international requirements for protection of ETP species. Direct effects are highly unlikely to create unacceptable impacts to ETP species. Indirect effects have been considered and are thought to be unlikely to create unacceptable impacts.	There is a high degree of certainty that the effects of the fishery are within limits of national and international requirements for protection of ETP species. There is a high degree of confidence that there are no Significant detrimental effects (direct and indirect) of the fishery on ETP species.

Score

Unit Of Certification ID	Fishery Name	Fishing Method	Score
1	CHMSF British Columbia North Pacific Albacore Tuna	Troll & Jig	100
2	American WFOA North Pacific Albacore Tuna	Troll & Jig	100
3	American WFOA North Pacific Albacore Tuna	Pole & Line	100

A score of **100** was achieved by **all Unit of Certification** based on the following:

- There is a high degree of certainty that the effects of the fishery are within limits of national and international requirements for protection of ETP species.
- There is a high degree of confidence that there are no Significant detrimental effects (direct and indirect) of the fishery on ETP species.

Rationale

Unit Of Certification ID	Fishery Name	Fishing Method	Score
1	CHMSF British Columbia North Pacific Albacore Tuna	Troll & Jig	100

Canada is subject to international requirements on the protection of ETP species under the CITES/Washington Convention on International Trade in Endangered Species of Wild Fauna and Flora and national legislation such as the Species at Risk Act (DFO: www.dfo-mpo.gc.ca). Mandatory logbook data provided by Canadian fishermen which includes provision of data on any ETP species caught and US independent observer data from the same fishery do not show catch of any ETP species (Holmes, 2009, NMFS 2007) but the possibility of incidental occurrences of ETP catch occurring in the fishery is not discounted. All fish are landed individually on barbless hooks so if an incidental catches event of an ETP species occurs the animal may be returned alive.

No catch of ETPs is reported in currently available data from mandatory logbooks or independent observer reports. This suggests there is a high degree of certainty that the effects of the fishery are within limits of national and international requirements for protection of ETP species. There is a high degree of confidence that there are no significant detrimental effects (direct and indirect) of the fishery on ETP species. The fishery meets all issues of SG100 and scores 100

Unit Of Certification ID	Fishery Name	Fishing Method	Score
2	American WFOA North Pacific Albacore Tuna	Troll & Jig	100
3	American WFOA North Pacific Albacore Tuna	Pole & Line	100

The US is subject to international requirements on the protection of ETP species under the CITES/Washington Convention on International Trade in Endangered Species of Wild Fauna and Flora and national legislation such as the Endangered Species Act, the Marine Mammal Protection Act, and the Migratory Bird Treaty Act (NOAA, 2009). Mandatory logbook data provided by US fishermen includes provision of data on any ETP species and none were reported in 2007 (Childers and Betcher, 2008). US independent observer data from the same fishery do not show catch of any ETP species (NMFS 2007). All fish are landed individually on barbless hooks (<http://wfoa-tuna.org/boats/>) so if an incidental catch event of an ETP species occurs the animal may be returned alive.

No catch of ETPs was reported in independent observer reports. This suggests there is a high degree of certainty that the effects of the fishery are within limits of national and international requirements for protection of ETP species. There is a high degree of confidence that there are no significant detrimental effects (direct and indirect) of the fishery on ETP species. The fishery meets all issues of SG100 and scores 100.

PI 2.3.2 Management Strategy

PI 2.3.2 ETP species; Management Strategy		
The fishery has in place precautionary management strategies designed to: <ul style="list-style-type: none"> - meet national and international requirements; - ensure the fishery does not pose a risk of serious or irreversible harm to ETP species; - ensure the fishery does not hinder recovery of ETP species; and - minimise mortality of ETP species. 		
SG60	SG80	SG100
<p>There are measures in place that minimise mortality, and are expected to be highly likely to achieve national and international requirements for the protection of ETP species..</p> <p>The measures are considered likely to work, based on plausible argument (eg general experience, theory or comparison with similar fisheries/species).</p>	<p>There is a strategy in place for managing the fishery's impact on ETP species, including measures to minimise mortality, that is designed to be highly likely to achieve national and international requirements for the protection of ETP species.</p> <p>There is an objective basis for confidence that the strategy will work, based on some information directly about the fishery and/or the species involved.</p> <p>There is evidence that the strategy is being implemented successfully.</p>	<p>There is a comprehensive strategy in place for managing the fishery's impact on ETP species, including measures to minimize mortality, that is designed to achieve above national and international requirements for the protection of ETP species.</p> <p>The strategy is mainly based on information directly about the fishery and/or species involved, and a quantitative analysis supports high confidence that the strategy will work.</p> <p>There is clear evidence that the strategy is being implemented successfully, and intended changes are occurring. There is evidence that the strategy is achieving its objective.</p>

Score

Unit Of Certification ID	Fishery Name	Fishing Method	Score
1	CHMSF British Columbia North Pacific Albacore Tuna	Troll & Jig	80
2	American WFOA North Pacific Albacore Tuna	Troll & Jig	85
3	American WFOA North Pacific Albacore Tuna	Pole & Line	85

A score of **80** was achieved by the **Unit of Certification No.1** based on the following scoring issues:

- There is a strategy in place for managing the fishery's impact on ETP species, including measures to minimise mortality, that is designed to be highly likely to achieve national and international requirements for the protection of ETP species.
- There is an objective basis for confidence that the strategy will work, based on some information directly about the fishery and/or the species involved.
- There is evidence that the strategy is being implemented successfully

A score of **85** was achieved by the **Units of Certification No.2&3** based on the following scoring issues:

- There is a comprehensive strategy in place for managing the fishery's impact on ETP species, to minimize mortality that is designed to achieve above national and international requirements for the protection of ETP species.
- There is an objective basis for confidence that the strategy will work, based on some information directly about the fishery and/or the species involved.
- There is evidence that the strategy is being implemented successfully

Rationale

Unit Of Certification ID	Fishery Name	Fishing Method	Score
1	CHMSF British Columbia North Pacific Albacore Tuna	Troll & Jig	80

Canadian fishermen are obliged to complete mandatory logbooks (Pacific Region, IFMP, DFO Section 68 license) and provision of data on ETP species is included. These data are used to address international and national requirements. US independent observer data from the same fishery do not show catch of any ETP species (NMFS 2007) but the possibility of incidental occurrences of ETP catch occurring in the fishery is not discounted. All fish are landed individually and barbless hooks are used so if an incidental catch event of an ETP species occurs the animal may be returned alive. Mitigation measures for minimizing impacts of fisheries on bycatch and ETPs in Canadian Fisheries are outlined in Canadian Fisheries Management Plan 2009 – 2010 but these measures primarily refer to longlining as trolling is not considered to be problematic.

Logbook data verified by observer data from US boats employing the same method in the same fishing area, combined with the practice of using barbless hooks which may permit release of non target species alive, represents a strategy in place for managing the fisher's impact on ETP species. Independent observer data provides an objective basis that the strategy will work. This is based on some information about the fishery. There is evidence from the logbook data (Holmes, 2009) that the strategy is being implemented successfully. Therefore all issues in SG80 are met.

In the context of exceptionally rare incidences of ETP species being caught in this fishery, a comprehensive strategy can be considered to be in place in terms of monitoring through provision of mandatory log book data, regular analysis of these data by DFO (Holmes, 2009) and the use barbless hooks as a measure to improve the mortality of returned species. However, ongoing independent monitoring is not carried out in the fishery, nor are there more detailed guidelines on safe handling and release methods for ETP species, so it is not possible to determine if the strategy achieves 'above' national and international requirements for the protection of ETP species. The fishery fails to meet any of the SG 100 issues. Therefore the fishery scores 80 for this PI

Unit Of Certification ID	Fishery Name	Fishing Method	Score
2	American WFOA North Pacific Albacore Tuna	Troll & Jig	85
3	American WFOA North Pacific Albacore Tuna	Pole & Line	85

The HMS FMP final rule adopts measures to minimize interactions of HMS gears with protected species and to ensure that the fisheries are operating consistent with federal law. These measures include time and area closures, gear requirements, and safe handling and release techniques for protected seabirds and sea turtles. Protected species interactions for gears other than drift gillnet and longline fisheries are not major issues (US HMS FMP)

US fishermen are obliged to complete mandatory logbooks (US HMS FMP) and provision of data on ETP species is included. These data are used to address International and National requirements. Neither US logbook data (Childers and Betcher, 2008) nor independent observer data (NMFS, 2007) show catch of any ETP species. All fish are landed individually and barbless hooks are used so if an incidental catch event of an ETP species occurs the animal may be returned alive

Logbook data verified by observer data, combined with the practice of using barbless hooks permitting release of non target species alive, represents a strategy in place for managing the fisher's impact on ETP species. Independent observer data provides an objective basis that the strategy will work. This is based on some information about the fishery. There is evidence from logbook data that the strategy is being implemented successfully. Therefore all issues in SG80 are met.

In the context of exceptionally rare incidences of ETP species being caught in this fishery, a comprehensive strategy can be considered to be in place in terms of monitoring through provision of mandatory log book data, and the use of barbless hooks as a measure to improve the mortality of returned species. US fishermen also have detailed guidelines on safe handing and release methods to minimize mortality of ETP species (HMS FMP) so the strategy achieves 'above' national and international requirements for the protection of ETP species so the first issue of SG is met. Comprehensive independent monitoring data are not available however so a quantitative analysis that supports high confidence that the strategy will work is not possible. The lack of ongoing independent monitoring means that clear evidence that the strategy is being successfully implemented is not available.

On this basis the Units of Certification No2&3 score 85 for this PI.

PI 2.3.3 Information/Monitoring

PI 2.3.3 ETP species; Information/Monitoring		
Relevant information is collected to support the management of fishery impacts on ETP species, including: - information for the development of the management strategy; - information to assess the effectiveness of the management strategy; and - information to determine the outcome status of ETP species.		
SG60	SG80	SG100
Information is adequate to broadly understand the impact of the fishery on ETP species. Information is adequate to support measures to manage the impacts on ETP species.	Information is sufficient to determine whether the fishery may be a threat to protection and recovery of the ETP species, and if so, to measure trends and support a full strategy to manage impacts.	Information is sufficient to quantitatively estimate outcome status with a high degree of certainty. Information is adequate to support a comprehensive strategy to manage impacts, minimize mortality and injury of ETP species, and evaluate with a high degree of certainty whether a strategy is achieving its objectives.
Information is sufficient to qualitatively estimate the fishery related mortality of ETP species	Sufficient data are available to allow fishery related mortality and the impact of fishing to be quantitatively estimated for ETP species	Accurate and verifiable information is available on the magnitude of all impacts, mortalities and injuries and the consequences for the status of ETP species.

Score

Unit Of Certification ID	Fishery Name	Fishing Method	Score
1	CHMSF British Columbia North Pacific Albacore Tuna	Troll & Jig	80
2	American WFOA North Pacific Albacore Tuna	Troll & Jig	80
3	American WFOA North Pacific Albacore Tuna	Pole & Line	80

A score of **80** was achieved by **all Units of certification** based on the following scoring issues:

- Information is sufficient to determine whether the fishery may be a threat to protection and recovery of the ETP species, and if so, to measure trends and support a full strategy to manage impacts.
- Sufficient data are available to allow fishery related mortality and the impact of fishing to be quantitatively estimated for ETP species

**Rationale
(All Units of Certification)**

In Canada and the United States, mandatory log books include provision of data on captures of ETP species (IFMP, 2009; HMS FMP, 2007; Childers and Betcher, 2009) and some independent observer data have also been collected (NMFS, 2007). These data are sufficient to determine whether the fishery may be a threat to protection and recovery of the ETP species. The fishery is not considered to be a threat to ETP species but if it were, these data would permit analysis of trends and would support a full strategy to manage impacts. No records of ETP species being caught in this fishery occurred in independent US observer data (NMFS, 2007). However if catch of ETP does occur the data collected under the mandatory log book system should be sufficient to allow fishery related mortality and the impact of fishing to be quantitatively estimated for ETP species. The fishery therefore meets SG80.

The lack of an ongoing independent observer programme in this fisheries, however, means that the information available is not sufficient to quantitatively estimate the outcome status with a 'high degree of certainty', may not be adequate to support a comprehensive strategy to manage impact on ETP species and is not independently verifiable. The Units of Certification under assessment do not therefore meet SG 100.

Component Habitat

PI 2.4.1 Outcome Status

PI 2.4.1 Habitat; Outcome Status		
The fishery does not cause serious or irreversible harm to habitat structure, considered on a regional or bioregional basis, and function.		
SG60	SG80	SG100
The fishery is unlikely to reduce habitat structure and function to a point where there would be serious or Irreversible harm.	The fishery is highly unlikely to reduce habitat structure and function to a point where there would be serious or Irreversible harm.	There is evidence that the fishery is highly unlikely to reduce habitat structure and function to a point Where there would be serious or irreversible harm.

Score

Unit Of Certification ID	Fishery Name	Fishing Method	Score
1	CHMSF British Columbia North Pacific Albacore Tuna	Troll & Jig	100
2	American WFOA North Pacific Albacore Tuna	Troll & Jig	100
3	American WFOA North Pacific Albacore Tuna	Pole & Line	100

A score of 100 was achieved by all Units of certification based on the following scoring issue:

- There is evidence that the fishery is highly unlikely to reduce habitat structure and function to a point where there would be serious or irreversible harm.

Rationale

Unit Of Certification ID	Fishery Name	Fishing Method	Score
1	CHMSF British Columbia North Pacific Albacore Tuna	Troll & Jig	100
2	American WFOA North Pacific Albacore Tuna	Troll & Jig	100

Trolling for albacore tuna is carried out by towing up to 14 artificial jigs on individual lines of monofilament in the epipelagic zone of the open ocean (Dotson, 1980). No contact is made with the seabed and contact with the epipelagic zone is negligible because of the minimal dimensions of the fishing gear. Oceanic pelagic species such as albacore tuna are migratory and spend the majority of their lives in deep waters offshore, typically beyond the continental shelf in waters deeper than 100m. Based on limited data available for oceanic pelagic species, benthic-pelagic linkages are predictably weak (Grober-Dunsmore *et al*, 2008). Evidence exists therefore that the fishery is highly unlikely to reduce habitat structure and function to the point where there would be serious or irreversible harm.

Unit Of Certification ID	Fishery Name	Fishing Method	Score
3	American WFOA North Pacific Albacore Tuna	Pole & Line	100

Pole & Line fishing for albacore tuna is carried by deploying a single baited hook at the end of a snood/leader of heavy monofilament at the end of a fishing pole in the epipelagic zone of the open ocean. No contact is made with the seabed and contact with the epipelagic zone is negligible because of the minimal dimensions of the fishing gear. Oceanic pelagic species such as albacore tuna are migratory and spend the majority of their lives in deep waters offshore, typically beyond the continental shelf in waters deeper than 100m. Based on limited data available for oceanic pelagic species, benthic-pelagic linkages are predictably weak (Grober-Dunsmore *et al*, 2008). Evidence exists therefore that the fishery is highly unlikely to reduce habitat structure and function to the point where there would be serious or irreversible harm.

PI 2.4.2 Management Strategy

PI 2.4.2 Habitat; Management strategy		
There is a strategy in place that is designed to ensure the fishery does not pose a risk of serious or irreversible harm to habitat types.		
SG60	SG80	SG100
There are measures in place, if necessary, that are expected to achieve the Habitat Outcome 80 level of performance. The measures are considered likely to work, based on plausible argument (e.g general experience, theory or comparison with similar fisheries/habitats).	There is a partial strategy in place, if necessary, that is expected to achieve the Habitat Outcome 80 level of performance or above. There is some objective basis for confidence that the partial strategy will work, based on some information directly about the fishery and/or habitats involved. There is some evidence that the partial strategy is being implemented successfully.	There is a strategy in place for managing the impact of the fishery on habitat types. The strategy is mainly based on information directly about the fishery and/or habitats involved, and testing supports high confidence that the strategy will work. There is clear evidence that the strategy is being implemented successfully, and intended changes are occurring. There is some evidence that the strategy is achieving its objective.

Score

Unit Of Certification ID	Fishery Name	Fishing Method	Score
1	CHMSF British Columbia North Pacific Albacore Tuna	Troll & Jig	100
2	American WFOA North Pacific Albacore Tuna	Troll & Jig	100
3	American WFOA North Pacific Albacore Tuna	Pole & Line	100

A score of 100 was achieved by all Units of Certification based on the following:

- Evidence exists that the fishery is highly unlikely to reduce habitat structure and function to the point where there would be serious or irreversible harm. Therefore a management strategy is not required and the fishery scores 100 under this PI.

Rationale (All Units of Certification)

A management strategy is not required and the fishery scores 100 under this PI.

PI 2.4.3 Information/Monitoring

PI 2.4.3 Habitat; Information/monitoring		
Information is adequate to determine the risk posed to habitat types by the fishery and the effectiveness of the strategy to manage impacts on habitat types.		
SG60	SG80	SG100
<p>There is a basic understanding of the types and distribution of main habitats in the area of the fishery.</p> <p>Information is adequate to broadly understand the main impacts of gear use on the main habitats, including spatial extent of interaction.</p>	<p>The nature, distribution and vulnerability of all main habitat types in the fishery area are known at a level of detail relevant to the scale and intensity of the fishery.</p> <p>Sufficient data are available to allow the nature of the impacts of the fishery on habitat types to be identified and there is reliable information on the spatial extent, timing and location of use of the fishing gear.</p> <p>Sufficient data continue to be collected to detect any increase in risk to habitat (e.g. due to changes in the outcome indicator scores or the operation of the fishery or the effectiveness of the measures).</p>	<p>The distribution of habitat types is known over their range, with particular attention to the occurrence of vulnerable habitat types.</p> <p>Changes in habitat distributions over time are measured.</p> <p>The physical impacts of the gear on the habitat types have been quantified fully.</p>

Score

Unit Of Certification ID	Fishery Name	Fishing Method	Score
1	CHMSF British Columbia North Pacific Albacore Tuna	Troll & Jig	100
2	American WFOA North Pacific Albacore Tuna	Troll & Jig	100
3	American WFOA North Pacific Albacore Tuna	Pole & Line	100

A score of 100 was achieved based on the following rationale:

- The habitat is not considered to be vulnerable as evidence exists that it is highly unlikely that the habitat is altered when encounters between trolling gear and the habitat occur.

Rationale

Unit Of Certification ID	Fishery Name	Fishing Method	Score
1	CHMSF British Columbia North Pacific Albacore Tuna	Troll & Jig	100

The geographic range of fishing by the Canadian trolling fleet is well documented with 6% of effort carried out in the Canadian EEZ, 87% in the United States EEZ, and 7% in the Pacific high seas area in 2008 (Holmes, 2009). One habitat type, the epipelagic zone, occurs throughout this range in relation to this fishery. The habitat is not considered to be vulnerable as evidence exists that it is highly unlikely that the habitat is altered when encounters between trolling gear and the habitat occur (See P.I 2.4.1).

Unit Of Certification ID	Fishery Name	Fishing Method	Score
2	American WFOA North Pacific Albacore Tuna	Troll & Jig	100

The geographic range of fishing by the US trolling fleet is well documented. In 2007 the general fishing area extended from 165°W to the west coasts of the US and Canada, between approximately 33°N and 55°N in the North Pacific, and between 30 °S and 50°S and 125°W and 175°W in the South Pacific (Childers and Betcher, 2008). One habitat type, the epipelagic zone, occurs throughout this range in relation to this fishery. The habitat is not considered to be vulnerable as evidence exists that it is highly unlikely that the habitat is altered when encounters between trolling gear and the habitat occur (See P.I 2.4.1).

Unit Of Certification ID	Fishery Name	Fishing Method	Score
3	American WFOA North Pacific Albacore Tuna	Pole & Line	100

The US pole & line fishery uses anchovies as live bait as part of fishing operations. The necessity to source anchovy from coastal suppliers and to maintain the fish alive in seawater tanks onboard the pole and line vessel means that the distribution of the pole and line fleet is more limited than the distribution of the trolling fleet which is well described (Childers and Betcher, 2008). One habitat type, the epipelagic zone, occurs throughout the geographic range of this fishery. The habitat is not considered to be vulnerable as evidence exists that it is highly unlikely that the habitat is altered when encounters between pole and line gear and the habitat occur (See P.I 2.4.1).

Component Ecosystem

PI 2.5.1 Outcome Status

PI 2.5.1 Ecosystem; Outcome Status		
The fishery does not cause serious or irreversible harm to the key elements of ecosystem structure and function		
SG60	SG80	SG100
The fishery is unlikely to disrupt the key elements underlying ecosystem structure and function to a point where there would be a serious or irreversible harm.	The fishery is highly unlikely to disrupt the key elements underlying ecosystem structure and function to a point where there would be a serious or irreversible harm.	There is evidence that the fishery is highly unlikely to disrupt the key elements underlying ecosystem structure and function to a point where there would be a serious or irreversible harm.

Score

Unit Of Certification ID	Fishery Name	Fishing Method	Score
1	CHMSF British Columbia North Pacific Albacore Tuna	Troll & Jig	100
2	American WFOA North Pacific Albacore Tuna	Troll & Jig	100
3	American WFOA North Pacific Albacore Tuna	Pole & Line	100

A score of 100 was achieved by all Units of Certification based on the following scoring issue:

- There is evidence that the fishery is highly unlikely to disrupt the key elements underlying ecosystem structure and function to a point where there would be a serious or irreversible harm.

Rationale (All Units of Certification)

No major impacts have been identified in relation to retained species, bycatch, ETP species and habitat. Key ecosystem elements relative to the scale and intensity of the trolling fishery are, therefore, restricted to the target species, albacore tuna. Key elements which therefore need to be considered are: depletion of top predators and trophic cascade caused by depletion of albacore as a prey/forage species, trophic cascade effects caused by depletion of albacore as a predator, and changes in genetic diversity of albacore caused by selective fishing. Information on the effects on size composition and species biodiversity of the ecological community relates specifically in this case to the effects of fishing on albacore tuna and trophic cascade analyses for this species.

Extensive research has been carried out on albacore tuna as a top predator in Pacific tuna ecosystem and trophic status studies which primarily use the Ecopath with Ecosim model (Cox *et al*, 2002a, Cox *et al*, 2002b, Hinke *et al* 2004, Sibert *et al*, 2006). Albacore tuna is not considered to be a common forage species and the body of research which considers albacore tuna as a top predator, infers that

the fishery for albacore tuna and therefore removal of a portion of the stock as a potential forage species, is highly unlikely to adversely affect the diet of other species.

A number of studies have occurred on albacore diet since 1949, and diet has remained stable over this period. Despite a recent resurgence of Pacific sardine, only Northern anchovy and Pacific saury consistently have been important prey. The results support theoretical predictions of optimal foraging models that albacore prefer cold, near –shore waters containing anchovy and saury while minimizing time in warmer, offshore habitat of sardine. An estimated 0.1% to 5% of anchovy recruitment biomass were removed annually by albacore tuna from 2005 to 2006 and research has shown that top-down impacts of predation potentially occur, that albacore and anchovy interact strongly and populations may be sensitive to changes in the other (Glaser, 2009).

Extensive monitoring of the anchovy stock has shown the stock to be in good condition and recruitment/abundance is heavily influenced by oceanic climatic changes (SAFE, 2008, pers. Comm. Mike Burner, PFMC). Saury abundance is also heavily influenced by oceanic climatic changes (Tian *et al* 2002). Although top-down impacts of predation potentially occurs on Northern anchovy and Pacific saury, it is highly likely that these impacts are significantly outweighed by the effects of oceanic climatic conditions. This infers that the albacore fishery and therefore removal of a portion of the stock, is highly unlikely to significantly alter abundance of the main prey species.

Most stock assessments include the implicit assumption that an overfished resource will revert to its original status, the “virgin stock”, if fishing is discontinued. It now appears, however, that ‘severe overfishing’ can produce irreversible consequences (in terms of genetic diversity), which may be due to the elimination of one or more sub-populations (FAO, 2001). Analysis of stock status in P1 of this report has shown that the Pacific albacore tuna stock is not considered to be overfished and therefore genetic diversity of the overall population is unlikely to change due to current levels of fishing effort. In addition, the highly migratory behaviour of albacore tuna (Kohin *et al*, 2005), which results in wide spread dispersion throughout the Pacific should prevent sub populations from being overfished. This infers that fishing effort is highly unlikely to disrupt the genetic diversity of albacore tuna. The low impact of albacore tuna on other species in terms of trophic cascade as previously described in Principle 2 of this assessment, infers that the genetic diversity of tropic related species is also highly unlikely to be disrupted.

Based on the information provided above, there is evidence that the albacore fishery is highly unlikely to disrupt the relevant key elements (predator – prey, prey – predator relationships and genetic diversity) underlying ecosystem structure and function to a point where there would be a serious or irreversible harm

PI 2.5.2 Management Strategy

PI 2.5.2 Ecosystem; Management Strategy		
There are measures in place to ensure the fishery does not pose a risk of serious or irreversible harm to ecosystem structure and function.		
SG60	SG80	SG100
<p>There are measures in place, if necessary, that take into account potential impacts of the fishery on key elements of the ecosystem.</p> <p>The measures are considered Likely to work, based on plausible argument (eg. general experience, theory or comparison with similar fisheries/ecosystems).</p>	<p>There is a partial strategy in place, if necessary, that takes into account available information and is expected to restrain impacts of the fishery on the ecosystem so as to achieve the Ecosystem Outcome 80 level of performance.</p> <p>The partial strategy is considered likely to work, based on plausible argument (eg, general experience, theory or comparison with similar fisheries/ ecosystems).</p> <p>There is some evidence that the measures comprising the partial strategy are being implemented successfully.</p>	<p>There is a strategy that consists of a plan, containing measures to address all main impacts of the fishery on the ecosystem, and at least some of these measures are in place. The plan and measures are based on well-understood functional Relationships between the fishery and the Components and elements of the ecosystem.</p> <p>This plan provides for development of a full strategy that restrains impacts on the ecosystem to ensure the fishery does not cause serious or irreversible harm.</p> <p>The measures are considered likely to work based on prior experience, plausible argument or information directly from the fishery/ecosystems involved.</p> <p>There is evidence that the measures are being implemented successfully.</p>

Score

Unit Of Certification ID	Fishery Name	Fishing Method	Score
1	CHMSF British Columbia North Pacific Albacore Tuna	Troll & Jig	100
2	American WFOA North Pacific Albacore Tuna	Troll & Jig	100
3	American WFOA North Pacific Albacore Tuna	Pole & Line	100

A score of **100** was achieved by all Units of Certification based on the following:

- No impact has been identified on the Ecosystem from any of the key elements identified in relation to the albacore tuna fishery. Therefore no management strategy is required and the fishery therefore scores 100 under this PI.

Rationale (All Units of Certification)

No management strategy is required and the fishery therefore scores 100 under this PI.

PI 2.5.3 Information/Monitoring

PI 2.5.3 Ecosystem; Information/Monitoring		
There is adequate knowledge of the impacts of the fishery on the ecosystem.		
SG60	SG80	SG100
Information is adequate to identify the key elements of the ecosystem (e.g. trophic structure and function, community composition, productivity pattern and biodiversity). Main impacts of the fishery on these key ecosystem elements can be inferred from existing information, but have not been investigated in detail.	Information is adequate to broadly understand the functions of the key elements of the ecosystem. Main impacts of the fishery on these key ecosystem elements can be inferred from existing information, but may not have been investigated in detail. The main functions of the Components (i.e. target, Bycatch, Retained and ETP species and Habitats) in the ecosystem are known. Sufficient information is available on the impacts of the fishery on these Components to allow some of the main consequences for the ecosystem to be inferred. Sufficient data continue to be collected to detect any increase in risk level (e.g. due to changes in the outcome indicator scores or the operation of the fishery or the effectiveness of the measures).	Information is adequate to broadly understand the key elements of the ecosystem. Main interactions between the fishery and these ecosystem elements can be inferred from existing information, and have been investigated. The impacts of the fishery on target, Bycatch, Retained and ETP species and Habitats are identified and the main functions of these components in the ecosystem are understood. Sufficient information is available on the impacts of the fishery on the Components and elements to allow the main consequences for the ecosystem to be inferred. Information is sufficient to support the development of strategies to manage ecosystem impacts.

Score

Unit Of Certification ID	Fishery Name	Fishing Method	Score
1	CHMSF British Columbia North Pacific Albacore Tuna	Troll & Jig	100
2	American WFOA North Pacific Albacore Tuna	Troll & Jig	100
3	American WFOA North Pacific Albacore Tuna	Pole & Line	100

A score of **100** was achieved by all Units of certification based on the following:

- There is evidence that the fishery is highly unlikely to disrupt the key elements underlying ecosystem structure and function to a point where there would be a serious or irreversible harm.

Rationale (All Units of Certification)

Scoring Issue 1

The key elements of the ecosystem in relation to the fishery have been identified as depletion of top predators and tropic cascade caused by depletion of albacore as a prey/forage species, trophic cascade effects caused by depletion of albacore as a predator, and changes in genetic diversity of albacore caused by selective fishing (Section 2.5.1).

Extensive research has been carried out on the trophic status of albacore tuna as a top predator in Pacific tuna ecosystem using the Ecopath with Ecosim model (Cox *et al*, 2002, Cox *et al*, 2002, Hinkel *et al* 2004, Sibert *et al*, 2006), and 5 studies have been carried out on the diet of Pacific albacore tuna which provide information on the diet of albacore tuna and the impact of albacore tuna on key prey species (Glaser, 2009). Information on the top predator status of albacore tuna in the Pacific (Cox *et al*, 2002, Cox *et al*, 2002, Hinkel *et al* 2004, Sibert *et al*, 2006) implies that albacore tuna is not a major forage species.

Extensive genetic studies on albacore tuna population and sub population structures have been carried out in the Pacific (Chow, and Takeyama, 1995; Takagi, M. *et al*, 2001; Wu *et al* 2008) but long term time series of genetic data are not available. Information on stock status which shows the stock is not overfished (P1), and highly migratory behaviour of albacore tuna (Kohin *et al*, 2005) which should prevent sub populations from being overfished, does, however, infer that biological diversity of albacore tuna is not adversely affected by the fishery.

The low impact of albacore tuna on other species in terms of trophic cascade as previously described, infers that the genetic diversity of tropic related species is also highly unlikely to be disrupted.

Information available is, therefore, considered to be adequate to broadly understand the impact of the fishery on the identified key elements of the ecosystem.

Scoring Issue 2

Main interactions between the fishery and all of the key elements identified can be inferred from existing information and have been investigated.

Scoring Issue 3

No major impacts of the fishery on target, bycatch, retained and ETP species were identified and it is not necessary therefore, that the functions of these components in the ecosystem are understood.

Scoring Issue 4

No major impacts of the fishery on the Components or key elements of the ecosystem have been identified. This permits the main consequences for the ecosystem to be inferred.

Scoring Issue 5

No major ecosystem impacts have been identified in the fishery and strategies to manage ecosystem impacts are, therefore, not required

Principle 3

Component: Governance and Policy

PI 3.1.1 Legal and/or customary framework

PI 3.1.1: Legal and/or customary framework		
The management system exists within an appropriate and effective legal and/or customary framework which ensure that it: <ul style="list-style-type: none">• Is capable of delivering sustainable fisheries in accordance with MSC Principle 1 and 2• Observe the legal rights created explicitly or established by custom of people dependent on fishing for food or livelihood, and• Incorporates an appropriate dispute resolution framework		
SG60	SG80	SG100
<p>The management system is generally consistent with local, national or international laws or standards that are aimed at achieving sustainable fisheries in accordance with MSC Principles 1 and 2.</p> <p>The management system incorporates or is subject by law to a <u>mechanism</u> for the resolution of legal disputes arising within the system.</p> <p>Although the management authority or fishery may be subject to continuing court challenges, it is not indicating a disrespect or defiance of the law by repeatedly violating the same law or regulation necessary for the sustainability for the fishery.</p> <p>The management system has a mechanism to <u>generally respect</u> the legal rights created explicitly or established by custom of people dependent on fishing for food or livelihood in a manner consistent with the objectives of MSC Principles 1 and 2.</p>	<p>The management system is generally consistent with local, national or international laws or standards that are aimed at achieving sustainable fisheries in accordance with MSC Principles 1 and 2.</p> <p>The management system incorporates or is subject by law to a <u>transparent mechanism</u> for the resolution of legal disputes which is <u>considered to be effective</u> in dealing with most issues and that is appropriate to the context of the fishery.</p> <p>The management system or fishery is attempting to comply in a timely fashion with binding judicial decisions arising from any legal challenges.</p> <p>The management system has a mechanism to <u>observe</u> the legal rights created explicitly or established by custom of people dependent on fishing for food or livelihood in a manner consistent with the objectives of MSC Principles 1 and 2.</p>	<p>The management system is generally consistent with local, national or international laws or standards that are aimed at achieving sustainable fisheries in accordance with MSC Principles 1 and 2.</p> <p>The management system incorporates or is subject by law to a <u>transparent mechanism</u> for the resolution of legal disputes that is appropriate to the context of the fishery and has been <u>tested and proven to be effective</u>.</p> <p>The management system or fishery acts proactively to avoid legal disputes or rapidly implements binding judicial decisions arising from legal challenges.</p> <p>The management system has a mechanism to <u>formally commit</u> to the legal rights created explicitly or established by custom of people dependent on fishing for food or livelihood in a manner consistent with the objectives of MSC Principles 1 and 2.</p>

Score

Unit Of Certification ID	Fishery Name	Fishing Method	Score
1	CHMSF British Columbia North Pacific Albacore Tuna	Troll & Jig	90
2	American WFOA North Pacific Albacore Tuna	Troll & Jig	90
3	American WFOA North Pacific Albacore Tuna	Pole & Line	90

A score of **90** has been achieved by **all Units of Certification** based on the following scoring issues:

- The management system is generally consistent with local, national or international laws or standards that are aimed at achieving sustainable fisheries in accordance with MSC Principles 1 and 2.
- The management system incorporates or is subject by law to a transparent mechanism for the resolution of legal disputes which is considered to be effective in dealing with most issues and that is appropriate to the context of the fishery.
- The management system or fishery is attempting to comply in a timely fashion with binding judicial decisions arising from any legal challenges.
- The management system has a mechanism to formally commit to the legal rights created explicitly or established by custom of people dependent on fishing for food or livelihood in a manner consistent with the objectives of MSC Principles 1 and 2.

Rationale

Unit Of Certification ID	Fishery Name	Fishing Method	Score
1	CHMSF British Columbia North Pacific Albacore Tuna	Troll & Jig	90

The Fisheries Act is federal legislation that deals with the management of Canada's fisheries resources and the conservation and protection of fish and fish habitat. Fisheries and Oceans Canada has the responsibility to enforce the Fisheries Act and associated regulations, to address conservation, health and safety issues and to maintain proper management and control of the various fisheries

Integrated fisheries management plans (IFMP) for Pacific albacore are developed annually by Fisheries and Oceans Canada (DFO), in consultation with the fishing industry through their representatives on a Tuna Advisory Board. The TAB includes balanced representation from the commercial sectors, including the coastal fleet, high seas fleet; and processors, and other interested parties (i.e. First Nations, recreational, NGOs).

The operational framework for the North Pacific albacore tuna fishery is generally consistent with local, national and international laws or standards. Evidence of this is provided in the IFMP, the condition of license, the Canada/USA Treaty, the membership of the WCPFC and cooperating non-Party to the IATTC.

Canada is a signatory to the UN Convention on the Law of the Sea (1982), Rio Declaration (1992), FAO Code of Conduct for Responsible Fisheries (1995), UN Straddling Stocks Agreement UNFA (1995) providing further evidence demonstrating that the albacore tuna fishery management system is consistent with international laws and standards.

The IFMP describe the consultative process of the Canadian management framework. Consultation process is available through the existence of the Tuna Advisory Board, where all parties have the opportunity to express opinion on any issue. TAB operates under a consensus decision-making model. This approach tries to resolve disputes within TAB. In Canada the Fisheries Minister has the ultimate authority over resolution of disputes arising within advisory bodies. Legal avenues are available for participants through Canada's court system if DFO's decisions are not palatable

The Annual Harvest Plan of the IFMP contains mechanism to formally commit to the legal rights created explicitly or established by custom of people dependent on fishing for food: '*First Nations access to fish for food, social or ceremonial purposes is managed through communal licenses, which can permit the harvest of tuna species'*

Unit Of Certification ID	Fishery Name	Fishing Method	Score
2	American WFOA North Pacific Albacore Tuna	Troll & Jig	90
3	American WFOA North Pacific Albacore Tuna	Pole & Line	90

The Magnuson-Stevens Fishery Conservation and Management Act (as amended through 2008) is the principal law governing marine fisheries in the United States. It was originally adopted to extend control of U.S. waters to 200 nautical miles in the ocean; to phase out foreign fishing activities within this zone and to conserve and manage fishery resources.

The operational framework for the North Pacific albacore tuna fishery is generally consistent with local, national and international laws or standards. Evidence of this is provided by The Magnuson-Stevens Fishery Conservation and Management Act and the Fishery Management Plan for highly migratory species, the High Seas Fishing Compliance Act, the Tuna Conventions Act, the Canada/USA Treaty, and membership in the WCPFC and the IATTC. Other evidence that demonstrate that the USA is consistent with international laws or standards include; UN Convention on the Law of the Sea (1982), Rio Declaration (1992), FAO Code of Conduct for Responsible Fisheries (1995), UN Straddling Stocks Agreement UNFA (1995).

Evidence of the existence of a management system that incorporates transparent mechanism for the resolution of legal disputes, effective in dealing with most issues and that is appropriate to the context of the fishery is provided in the FMP. Section 1.3 of the FMP states "*The United States shall cooperate directly or through appropriate international organizations with those nations involved in fisheries for highly migratory species with a view to ensuring conservation and shall promote the achievement of optimum yield of such species throughout their range, both within and beyond the exclusive economic zone.*" The National Court provides the ultimate system for resolution of domestic disputes

Also Section 1.3 of the FMP provides evidence of the existence of a system to comply in a timely fashion with binding judicial decisions arising from any legal challenges

Section 6 of the FMP contain mechanisms to formally commit to the legal rights created explicitly or established by custom of people dependent on fishing for food: "*Pacific Coast treaty Indian tribes have treaty rights to harvest HMS in their usual and accustomed (u&a) fishing areas in U.S. waters*"

PI 3.1.2 Consultation, roles and responsibilities

PI 3.1.2: Consultation, roles and responsibilities		
The management system has effective consultation processes that are open to interested and affected parties. The roles and responsibilities of organizations and individuals who are involved in the management process are clear and understood by all relevant parties.		
SG60	SG80	SG100
Organizations and individuals involved in the management process have been identified. Functions, roles and responsibilities are generally understood. The management system includes consultation processes that obtain relevant information from the main affected parties, including local knowledge, to inform the management system.	Organizations and individuals involved in the management process have been identified. Functions, roles and responsibilities are explicitly defined and well understood for key areas of responsibility and interaction. The management system includes consultation processes that regularly seek and accept relevant information, including local knowledge. The management system demonstrates consideration of the information obtained. The consultation process provides opportunity for all interested and affected parties to be involved.	Organizations and individuals involved in the management process have been identified. Functions, roles and responsibilities are explicitly defined and well understood for all areas of responsibility and interaction. The management system includes consultation processes that regularly seek and accept relevant information, including local knowledge. The management system demonstrates consideration of the information and explains how it is used or not used. The consultation process provides opportunity and encouragement for all interested and affected parties to be involved, and facilitates their effective engagement.

Score

Unit Of Certification ID	Fishery Name	Fishing Method	Score
1	CHMSF British Columbia North Pacific Albacore Tuna	Troll & Jig	100
2	American WFOA North Pacific Albacore Tuna	Troll & Jig	100
3	American WFOA North Pacific Albacore Tuna	Pole & Line	100

A score of 100 was achieved by all Units of certification based on the following scoring issues:

- Organizations and individuals involved in the management process have been identified. Functions, roles and responsibilities are explicitly defined and well understood for all areas of responsibility and interaction.
- The management system includes consultation processes that regularly seek and accept relevant information, including local knowledge. The management system demonstrates consideration of the information and explains how it is used or not used.
- The consultation process provides opportunity and encouragement for all interested and affected parties to be involved, and facilitates their effective engagement.

Rationale

Unit Of Certification ID	Fishery Name	Fishing Method	Score
1	CHMSF British Columbia North Pacific Albacore Tuna	Troll & Jig	100

The consultative process for North Albacore is extensive at both the scientific and management levels. First, the ALBWG generate the primary assessments. The International Scientific Committee (ISC) is a formal scientific body made up of scientists from countries throughout the Pacific which reviews tuna assessments and research in the Pacific.

The IATTC has a permanent scientific staff for tuna research and assessment. While they have not led the albacore assessment of the ALBWG, they are a member and have cooperated in the processes. They, also, have the responsibility to review the assessment work and to interpret the results in terms of management advice for their commission.

Section 6.3 and 8.2 of the IFMP describe the consultation process for the management of albacore tuna in Canada. The consultation process provides evidence that organizations and individuals involved in the management process are well identified. Functions, roles and responsibilities are explicitly defined and well understood for all areas of responsibility and interaction.

As part of the consultation process, the Tuna Advisory Board meets two or three times per year to provide formal advice and make recommendations to DFO on operational decisions related to albacore harvest. Minutes of TAB meetings are posted on DFO website. In relation to seeking and accepting relevant information, including local knowledge, evidence has been provided that information about catch, effort and stock status is presented at TAB as part of the consultation process. Information from the consultation process is in stock assessment conducted by the ISC ALBWG.

Section 6.3 (consultation process) of the IFMP contain evidence that opportunity is provided for all interested and affected parties to be involved, and facilitates their effective engagement *"Stakeholders are encouraged to participate in the advisory process by expressing their interests and views through advisors or attending meeting as observers"*

Unit Of Certification ID	Fishery Name	Fishing Method	Score
2	American WFOA North Pacific Albacore Tuna	Troll & Jig	100
3	American WFOA North Pacific Albacore Tuna	Pole & Line	100

The consultative process for North PACIFIC Albacore is extensive at both the scientific and management levels. First, the ALBWG of the ISC generates the primary assessments. The International Scientific Committee (ISC) is a formal scientific body made up of scientists from countries throughout North Pacific which reviews tuna assessments and research in the North Pacific.

The IATTC has a permanent scientific staff for tuna research and assessment. While they have not led the albacore assessment of the ALBWG, they are a member and have cooperated in the processes.

They, also, have the responsibility to review the assessment work and to interpret the results in terms of management advice for their commission.

In the USA the consultation process is described in the Fisheries Management Plan for Highly Migratory Species. The consultation process provides evidence that organizations and individuals involved in the management process have a say in the proceedings. Functions, roles and responsibilities are explicitly defined and well understood for all areas of responsibility and interaction. Functions, roles and responsibilities are defined in the terms of reference of PFMC bodies and the international Committees. The PFMC process provides opportunity and encouragement for parties involved in the albacore tuna fishery to express their views. Parties can provide briefs to appropriate PFMC Committees.

The HMS FMP provides the regulatory mechanisms needed for the US albacore fishery and the mechanisms for advising the US on negotiations for access rights with other countries (Canada).

The commissions formulate overarching management regulations based upon recommendations from scientific committees or staff. Regulations are then implemented by individual member and cooperating countries. The USA is a member country of the WCPFC and IATTC.

PI 3.1.3 Long Term Objectives

PI 3.1.3: Long term objectives		
The management policy has clear long-term objectives to guide decision-making that are consistent with MSC Principles and Criteria, and incorporates the precautionary approach		
SG60	SG80	SG100
Long-term objectives to guide decision-making, consistent with MSC Principles and Criteria and the precautionary approach, are implicit within management policy.	Clear long-term objectives that guide decision-making, consistent with MSC Principles and Criteria and the precautionary approach, are explicit within management policy	Clear long-term objectives that guide decision-making, consistent with MSC Principles and Criteria and the precautionary approach, are explicit within and required by management policy.

Score

Unit Of Certification ID	Fishery Name	Fishing Method	Score
1	CHMSF British Columbia North Pacific Albacore Tuna	Troll & Jig	100
2	American WFOA North Pacific Albacore Tuna	Troll & Jig	100
3	American WFOA North Pacific Albacore Tuna	Pole & Line	100

A score of 100 was achieved by all Units of Certification based on the following scoring issue:

- Clear long-term objectives that guide decision-making, consistent with MSC Principles and Criteria and the precautionary approach, are explicit within and required by management policy.

Rationale

Unit Of Certification ID	Fishery Name	Fishing Method	Score
1	CHMSF British Columbia North Pacific Albacore Tuna	Troll & Jig	100

Canada's major marine legislation includes:

- Ocean Act
- Canada Shipping Act, 2001
- Fisheries Act
- Navigable Waters Protection Act
- Canadian Environmental Protection Act
- Canada National Conservation Areas Act
- Species at Risk Act

The Ocean Act (Paragraph 30): The National strategy will be based on the Principles of:

- a) Sustainable development, that is, development that needs of the present without compromising the ability of future generations to meet their own needs;
- b) The integrated management of activities in estuaries, coastal waters and marine waters that form part of Canada or which Canada has sovereign rights under international law; and
- c) The precautionary approach that is, erring on the side of caution.

The international legal framework for the precautionary approach is composed by:

- UN Convention of the Law of the Sea (1982)
- Rio Declaration (1982)
- FAO Code of Conduct for Responsible Fisheries (1995)
- UN Straddling Stock Assessment (1995)

The Art 6 of the UN Straddling Stock Agreement establishes the application of the precautionary approach. This is contained in Annex I & II. Article 6.2 establish that states shall be more cautious when information is uncertain unreliable or inadequate. Absence of adequate scientific information shall not be used as a reason for postponing or failing to take conservation and management measures.

Unit Of Certification ID	Fishery Name	Fishing Method	Score
2	American WFOA North Pacific Albacore Tuna	Troll & Jig	100
3	American WFOA North Pacific Albacore Tuna	Pole & Line	100

The Magnuson-Stevens Fishery Conservation and Management Act (MSA) is the principle law governing marine fisheries in the United States. Long term objectives that guide decision making are:

- Prevent overfishing
- Allow overfished stocks to recover
- Conserve and manage fishery resources

The MSA contains ten National Standards. Standard number one: "Prevent overfishing while achieving optimum yield". The law requires that each FMP specify objective and measurable criteria for determining when a stock is overfished or when overfishing is occurring, and to establish measures for rebuilding the stock.

The international legal framework for the precautionary approach is specified in:

- UN Convention of the Law of the Sea (1982)
- Rio Declaration (1982)
- FAO Code of Conduct for Responsible Fisheries (1995)
- UN Straddling Stock Assessment (1995)

The Article 6 of the UN Straddling Stock Agreement establishes the application of the precautionary approach. This is contained in Annex I & II. Article 6.2 establish that states shall be more cautious when information is uncertain unreliable or inadequate. Absence of adequate scientific information shall not be used as a reason for postponing or failing to take conservation and management measures.

PI 3.1.4 Incentives for Sustainability fishing

PI 3.1.4: Incentives for sustainable fishing		
The management system provides economic and social incentives for sustainable fishing and does not operate with subsidies that contribute to unsustainable fishing		
SG60	SG80	SG100
The management system provides for incentives that are consistent with achieving the outcomes expressed by MSC Principles 1 and 2.	The management system provides for incentives that are consistent with achieving the outcomes expressed by MSC Principles 1 and 2, and seeks to ensure that negative incentives do not arise.	The management system provides for incentives that are consistent with achieving the outcomes expressed by MSC Principles 1 and 2, and explicitly considers incentives in a regular review of management policy or procedures to ensure that they do not contribute to unsustainable fishing practices.

Score

Unit Of Certification ID	Fishery Name	Fishing Method	Score
1	CHMSF British Columbia North Pacific Albacore Tuna	Troll & Jig	80
2	American WFOA North Pacific Albacore Tuna	Troll & Jig	80
3	American WFOA North Pacific Albacore Tuna	Pole & Line	80

A score of **80** was achieved by **all Units of Certification** based on the following scoring issue:

- The management system provides for incentives that are consistent with achieving the outcomes expressed by MSC Principles 1 and 2 and seeks to ensure that negative incentives do not arise.

Rationale

Unit Of Certification ID	Fishery Name	Fishing Method	Score
1	CHMSF British Columbia North Pacific Albacore Tuna	Troll & Jig	80

The management system provides for incentives that are consistent with achieving the outcomes expressed by MSC Principles 1 and 2, and seeks to ensure that negative incentives do not arise.

- TAB membership of catching and processing sector engender a sense of stewardship of the resource
- The Canada/USA treaty provide stability and security
- The DFO licensing policies attempt to provide stability and/or security for fishers
- The research plans (domestic and international) are addressing information gaps and uncertainties in the assessment of the stock
- TAB provides for a participatory approach to management, research and data collection.
- No incentives for fishers to fish unsustainably (e.g. fuel subsidies) are present in the system

Unit Of Certification ID	Fishery Name	Fishing Method	Score
2	American WFOA North Pacific Albacore Tuna	Troll & Jig	80
3	American WFOA North Pacific Albacore Tuna	Pole & Line	80

The fisheries management council process ‘opens the door’ for the possibility for positive incentives for sustainable fishing. No incentives for fishers to fish unsustainable (e.g. fuel subsidies) are present in the system

The PFMC recommends fishery management measures to the National Marine Fisheries Services. States (WA, OR, CA) are also involved through their membership in the council. The fishery management process is based on FMPs, a set of management objectives and strategies for achieving them.

PMFC has three parts: Council, staff and advisory bodies. Advisory bodies include advisory subpanels, management teams, technical teams, the Scientific and Statistical Committee, and the Habitat Committee. Meetings of advisory bodies are open to the public (i.e., open and transparent). The Highly Migratory Species Advisory Subpanel includes one member each from the commercial troll, purse seine, gillnet, and private recreational fisheries, two from the charter fisheries, three from commercial at-large members, two processors, one conservation representative, and one member from the public.

Component Fishery-specific management system

PI 3.2.1 Fishery Specific Objectives

PI 3.2.1: Fishery Specific Objectives		
The fishery has clear, specific objectives designed to achieve the outcomes expressed by MSC's Principles 1 and 2		
SG60	SG80	SG100
Objectives which are broadly consistent with achieving the outcomes expressed by MSC's Principles 1 and 2, are implicit within the fishery's management system.	Short and long term objectives, which are consistent with achieving the outcomes expressed by MSC's Principles 1 and 2 are explicit within the fishery's management system.	Well defined and measurable short and long term objectives, which are demonstrably consistent with achieving the outcomes expressed by MSC's Principles 1 and 2 are explicit within the fishery's management system

Score

Unit Of Certification ID	Fishery Name	Fishing Method	Score
1	CHMSF British Columbia North Pacific Albacore Tuna	Troll & Jig	100
2	American WFOA North Pacific Albacore Tuna	Troll & Jig	100
3	American WFOA North Pacific Albacore Tuna	Pole & Line	100

A score of **100** was achieved by all Units of Certification based on the following scoring issue:

- Well defined and measurable short and long term objectives, which are demonstrably consistent with achieving the outcomes expressed by MSC's Principles 1 and 2 are explicit within the fishery's management system.

Rationale

Unit Of Certification ID	Fishery Name	Fishing Method	Score
1	CHMSF British Columbia North Pacific Albacore Tuna	Troll & Jig	100

A score of 100 is justified as the IFMP lists explicit management short- and long-term objectives and performance measures for the albacore fishery. The objectives are demonstrably consistent with achieving the outcomes expressed by MSC's Principles 1 and 2.

The specific management objectives and performance measures for the albacore fishery are listed in the IFMP. Management objectives and performance measures, as described in the IFMP, are:

1. Ensure Conservation and Protection (short and long term objective)

To ensure conservation and protection of Pacific albacore tuna stocks through the application of scientific management principles applied in a risk averse and precautionary manner based on the best scientific advice available.

Performance Measure

- Require all vessels to report catch (and by-catch), effort, landings and transhipments by November 1, 2008.
- Collect all catch, effort, landings and transhipment information for albacore tuna by geographic location through logbooks and fish slips accurately and in time to fulfil international and regional reporting requirements.
- Collect biological samples by geographic location through logbooks in time to fulfil international and regional reporting requirements
- Enact and enforce regulations that control Canadian fishing vessels through licences and Conditions of Licence.
- Conduct the second year of an electronic logbook pilot to improve data management by providing more timely and accurate catch data to the Department.

2. Consultation Process (Short and Long term objective)

Conduct open and transparent consultation processes for discussion of harvest management issues in this fishery, and to assist in the annual development of an IFMP.

Performance Measure

- Hold a minimum of two meetings per fishing season with the Tuna Advisory Board (TAB) to allow stakeholder involvement and to seek advice from TAB in the annual development of the IFMP and consensus building on issues related to the fishery.
- Review and co-operatively plan monitoring and reporting programs for the tuna fishery including the electronic logbook pilot, the logbook program, haul system, to ensure collection of information on catch and effort and improve compliance levels from the previous season.

- Post the minutes and information presented at TAB meetings on the DFO consultation website within 8 weeks of the meeting date.
- Evaluate the effectiveness of the TAB based on objectives identified in its Terms of Reference during the post season review process.

3. Provide Opportunity to Harvest Tuna (Short and Long term objective)

Provide opportunity for commercial fish harvesters to harvest tuna in Canadian fisheries waters, USA fisheries waters pursuant to the Tuna Treaty, and on the high seas. Also, provide an opportunity for recreational fish harvesters to retain albacore tuna.

Performance Measure

- A portion of Canadian commercial and recreational fish harvesters are provided with an opportunity to harvest albacore tuna in Canadian waters, USA fisheries waters and on the high seas for the 2009/2010 fishing season.

4. Work Cooperatively with the United States of America

Maintain a positive working relationship with the USA government to ensure both parties meet their obligations under the revised Treaty.

Performance Measure

- Hold an annual bi-lateral meeting with US officials to discuss Treaty implementation issues on both sides and co-operatively exchange information on their respective conservation and management measures for albacore tuna to meet international obligations.
- Monthly exchange of information on harvesting activity and possible fishing violations.
- Provide a list of Canadian vessels licensed to access the US EEZ under the terms of the Treaty by June 1, 2009.
- Complete advocacy activities to demonstrate the benefits of the Treaty to each country.

Unit Of Certification ID	Fishery Name	Fishing Method	Score
2	American WFOA North Pacific Albacore Tuna	Troll & Jig	100
3	American WFOA North Pacific Albacore Tuna	Pole & Line	100

Evidence is contained in the FMP. There are 18 general goals and objectives:

- Promote and actively contribute to international efforts for the long-term conservation and sustainable use of highly migratory species fisheries that are utilized by West Coast-based fishers, while recognizing these fishery resources contribute to the food supply, economy, and health of the nation.
- Provide a long-term, stable supply of high-quality, locally caught fish to the public.
- Minimize economic waste and adverse impacts on fishing communities to the extent practicable when adopting conservation and management measures.
- Provide viable and diverse commercial fisheries and recreational fishing opportunity for highly migratory species based in ports in the area of the Pacific Council's jurisdiction, and give due consideration for traditional participants in the fisheries.
- Implement harvest strategies which achieve optimum yield for long-term sustainable harvest levels.
- Provide foundation to support the State Department in cooperative international management of highly migratory species fisheries.
- Promote inter-regional collaboration in management of fisheries for species which occur in the Pacific Council's managed area and other Councils' areas.
- Minimize inconsistencies among federal and state regulations for highly migratory species fisheries.
- Minimize bycatch and avoid discard and implement measures to adequately account for total bycatch and discard mortalities.
- Prevent overfishing and rebuild overfished stocks, working with international organizations as necessary.
- Acquire biological information and develop a long-term research program.
- Promote effective monitoring and enforcement.
- Minimize gear conflicts.

- Maintain, restore, or enhance the current quantity and productive capacity of habitats to increase fishery productivity for the benefit of the resource and commercial and recreational fisheries for highly migratory species.
- Establish procedures to facilitate rapid implementation of future management actions, as necessary.
- Promote outreach and education efforts to inform the general public about how West Coast HMS fisheries are managed and the importance of these fisheries to fishers, local fishing communities, and consumers.
- Manage the fisheries to prevent adverse effects on any protected species covered by MMPA and MBTA and promote the recovery of any species listed under the ESA to the extent practicable.
- Allocate harvest fairly and equitably among commercial, recreational and charter fisheries for HMS, if allocation becomes necessary.

PI 3.2.2 Decision making process

PI 3.2.2 Decision making process		
The fishery-specific management system includes effective decision-making processes that result in measures and strategies to achieve the objectives.		
SG60	SG80	SG100
There are informal decision-making processes that result in measures and strategies to achieve the fishery-specific objectives. Decision-making processes respond to serious issues identified in relevant research, monitoring, evaluation and consultation, in a transparent, timely and adaptive manner and take some account of the wider implications of decisions.	There are established decision-making processes that result in measures and strategies to achieve the fishery-specific objectives. Decision-making responds to serious and other important issues identified in relevant research, monitoring, evaluation and consultation, in a transparent, timely and adaptive manner and take account of the wider implications of decisions. Decision-making processes use the precautionary approach and are based on best available information. Explanations are provided for any actions or lack of action associated with findings and relevant recommendations emerging from research, monitoring, evaluation and review activity.	There are established decision-making processes that result in measures and strategies to achieve the fishery-specific objectives. Decision-making processes respond to all issues identified in relevant research, monitoring, evaluation and consultation, in a transparent, timely and adaptive manner and take account of the wider implications of decisions. Decision-making processes use the precautionary approach and are based on best available information. Formal reporting to all interested stakeholders describes how the management system responded to findings and relevant recommendations emerging from research, monitoring, evaluation and review activity.

Score

Unit Of Certification ID	Fishery Name	Fishing Method	Score
1	CHMSF British Columbia North Pacific Albacore Tuna	Troll & Jig	95
2	American WFOA North Pacific Albacore Tuna	Troll & Jig	95
3	American WFOA North Pacific Albacore Tuna	Pole & Line	95

A score of **95** was achieved by all Units of Certification based on the following scoring issues:

- There are established decision-making processes that result in measures and strategies to achieve the fishery-specific objectives. SG100
- Decision-making responds to serious and other important issues identified in relevant research, monitoring, evaluation and consultation, in a transparent, timely and adaptive manner and take account of the wider implications of decisions. SG80
- Decision-making processes use the precautionary approach and are based on best available information. SG100
- Formal reporting to all interested stakeholders describes how the management system responded to findings and relevant recommendations emerging from research, monitoring, evaluation and review activity. SG 100

**Rationale
(All Units of Certification)**

Issue 1 SG 100

Decision-making processes are established through the IATTC and the WCPFC. Measures and strategies to achieve the fishery-specific objectives are listed in the 2005 resolution of the IATTC and WCPFC (see Boxes 4 and 5).

Issue 2 SG 80

The assessment team considered that decision-making responds to serious and other important issues identified in relevant research, monitoring, evaluation and consultation, in a transparent, timely and adaptive manner and take account of the wider implications of decisions. Evidence is provided by the management measure currently in place (i.e. The total level of fishing effort for North Pacific albacore tuna in the Eastern Pacific Ocean not be increased beyond current levels) and the interim management measures introduced in 2008 by the Northern Committee (See Box 6). Issue 2 SG 100 was not met as some of the research needs have not yet been addressed (i.e. improving uncertainty in age parameters obtained in the 60's).

Issue 3 SG 100

The assessment team considered that the decision making process use the precautionary approach and are based on best available information. On this, evidence provided include the WCPFC convention text and the Antigua convention of the IATTC (at international level) and the Oceans Act and the Magnuson-Stevens Fishery Conservation and Management Act in Canada and the USA, respectively (at national level).

Issue 4 SG 80

Explanations are provided for any actions or lack of action associated with findings and relevant recommendations emerging from research, monitoring, evaluation and review activity. Evidence of this is the explanation provided by the ISC on the delay of the new stock assessment that supposed to happen in 2008. Reasons for delay in carrying out stock assessment are due to the development of a new stock assessment model and the need of further work to fully develop it.

Issue 4 SG 100

In relation to the forth issue, the Assessment Team considered that, formal reporting to all stakeholders describing how the management system respond to findings and relevant recommendations emerging from research, monitoring, evaluation and review activity is well documented in the following reports: ISC ALBWG, IATTC, WCPFC, DFO, Canada, and the PFMC, in the USA.

PI 3.2.3 Compliance and enforcement

PI 3.2.3: Compliance and enforcement		
Monitoring, control and surveillance mechanisms ensure the fishery's management measures are enforced and complied with		
SG60	SG80	SG100
Monitoring, control and surveillance mechanisms exist, are implemented in the fishery under assessment and there is a reasonable expectation that they are effective. Sanctions to deal with non-compliance exist and there is some evidence that they are applied. Fisheries are generally thought to comply with the management system for the fishery under assessment, including, when required, providing information of importance to the effective management of the fishery.	A monitoring, control and surveillance system has been implemented in the fishery under assessment and has demonstrated an ability to enforce relevant management measures, strategies and/or rules. Sanctions to deal with non-compliance exist, are consistently applied and thought to provide effective deterrence. Some evidence exists to demonstrate fishers comply with the management system under assessment, including, when required, providing information of importance to the effective management of the fishery. There is no evidence of systematic non-compliance.	A comprehensive monitoring, control and surveillance system has been implemented in the fishery under assessment and has demonstrated an ability to enforce relevant management measures, strategies and/or rules. Sanctions to deal with non-compliance exist, are consistently applied and demonstrably provide effective deterrence. There is a high degree of confidence that fishers comply with the management system under assessment, including, providing information of importance to the effective management of the fishery. There is no evidence of systematic non-compliance

Score

Unit Of Certification ID	Fishery Name	Fishing Method	Score
1	CHMSF British Columbia North Pacific Albacore Tuna	Troll & Jig	90
2	American WFOA North Pacific Albacore Tuna	Troll & Jig	95
3	American WFOA North Pacific Albacore Tuna	Pole & Line	95

A score of **90** was achieved by the **Unit of Certification No.1** based on the following scoring issues:

- A monitoring, control and surveillance system has been implemented in the fishery under assessment and has demonstrated an ability to enforce relevant management measures, strategies and/or rules.
- Sanctions to deal with non-compliance exist, are consistently applied and thought to provide effective deterrence.
- There is a high degree of confidence that fishers comply with the management system under assessment, including, providing information of importance to the effective management of the fishery
- There is no evidence of systematic non-compliance

A score of **95** was achieved by the **Unit of Certification No.1&2** based on the following scoring issues:

- A comprehensive monitoring, control and surveillance system has been implemented in the fishery under assessment and has demonstrated an ability to enforce relevant management measures, strategies and/or rules
- Sanctions to deal with non-compliance exist, are consistently applied and demonstrably provide effective deterrence.
- Some evidence exists to demonstrate fishers comply with the management system under assessment, including, when required, providing information of importance to the effective management of the fishery.
- There is no evidence of systematic non-compliance

Rationale

Unit Of Certification ID	Fishery Name	Fishing Method	Score
1	CHMSF British Columbia North Pacific Albacore Tuna	Troll & Jig	90

The implementation system of control, monitoring and surveillance is outlined in the IFMP. Performance measures to ensure conservation and protection (Section 8.1 of the IFMP):

To ensure conservation and protection of Pacific albacore tuna stocks through the application of scientific management principles applied in a risk averse and precautionary manner based on the best scientific advice available.

Performance Measure

- Require all vessels to report catch (and by-catch), effort, landings and transhipments;
- Collect all catch, effort, landings and transhipment information for albacore tuna by geographic location through logbooks and fish slips accurately and in time to fulfil international and regional reporting requirements.
- Collect biological samples by geographic location through logbooks in time to fulfil international and regional reporting requirements.
- Enact and enforce regulations that control Canadian fishing vessels through licences and Conditions of Licence.
- Conduct the second year of an electronic logbook pilot to improve data management by providing more timely and accurate catch data to the Department.

The fishing activity and catch reporting of the IFMP requires:

- Hail Requirements;
- Hail-out Report (Start Fishing or Transiting Report);
- Specific to the United States of America Zone;
- Hail-in Report (Stop Fishing Report);

- Change of Intent Report (Changing Zone or Cancelling Report);
- Vessel Monitoring System Reporting Requirements;
- Fishing in the United States of America Exclusive Economic Zone;
- Vessel Marking Requirements;
- Landing Locations;
- United States of America Vessels Fishing in Canadian Waters;
- Catch and Fishery Data.

Logbook compliance is 98% (IFMP 2010). Non compliance is followed by letter from DFO enforcement. DFO has a system of recording violations. Up to date there have been no charges with hail in/hail out requirement. DFO has an offshore over flight enforcement program. No one has been discovered illegally fishing under this program.

In relation to sanctions to deal with non compliance The Fisheries Act : “*Except as otherwise provided in this Act every person who contravenes this Act or the regulations is guilty of (a) an offense punishable on summary conviction and liable, for a first offense, to a fine not exceeding one hundred thousand dollars, and for any subsequent offence, to a fine not exceeding one hundred thousand dollars or to imprisonment for a term not exceeding one year, or both; or (b) an indictable offense and liable, for a first offense, to a fine not exceeding five hundred thousand dollars and for any subsequent offence, to a fine not exceeding five hundred thousand dollars or to imprisonment for a term not exceeding two years, or both*”

In addition fishers provide accurate and timely catch and effort data, the information is collected and monitored through hail out system and information from cross checking logbooks and sales slips indicates a 98% of compliance. Finally there is no evidence of systematic non-compliance. Compliance is also recorded with regard to albacore catch reporting on the IATTC and WCPFC websites. Albacore catch must be reported every 6 months.

Unit Of Certification ID	Fishery Name	Fishing Method	Score
2	American WFOA North Pacific Albacore Tuna	Troll & Jig	95
3	American WFOA North Pacific Albacore Tuna	Pole & Line	95

Compliance oversight of the north Pacific albacore troll fishery is conducted by the National Marine Fisheries Service's (NMFS) Sustainable Fisheries Division located in the Southwest Regional Office in Long Beach, CA. Above 80% compliance has been observed.

The compliance process is administered annually and consists of three phases:

1. Pacific Fisheries Information Network (PacFIN) landings tickets are analyzed against the NMFS Pacific Highly Migratory Species (HMS) Permits database. This phase reveals a list of vessels which may have fished without a valid Pacific HMS permit.
2. Albacore troll logbook data, obtained from the NMFS Southwest Fisheries Science Center, is reconciled against PacFIN landings data. This phase reveals a list of vessels which may have not supplied one or more logbooks during the calendar year
3. HMS logbook data from Commercial Passenger Fishing Vessels (CPFV), also known as charter vessels and party boats, are obtained from the three west coast state fishery management agencies. This phase reveals a list of CPFV's which may have fished without a valid Pacific HMS permit. Vessels suspected of being in non-compliance with NMFS regulations, are referred to the NOAA Office for Law Enforcement (OLE) for investigation

The Office of Law Enforcement has established sanctions; the PFMC has an Enforcement Consulting Committee comprised of State (WA, OR, CA) and NMFS. They meet 5 times per year to review joint enforcement operations.

From October 2008 through June 2009, Southwest Division Office of Law Enforcement has opened 49 investigations regarding HMS Pacific Albacore Tuna violations. Eleven of these referrals were for fishing without a valid HMS permit and the remaining 38 were for failure to submit logbooks. 25 of those cases were closed with only one case resulting in judicial action. The other 24 closed cases were closed due to the lack of evidence or verbal warnings. The remaining 24 open cases are pending further investigation and/or judicial action (Helvey, Personal communication).

Docksite visits and verification of logbooks etc. demonstrate that fishers are in compliance with the management system; Compliance is also recorded with regard to albacore catch reporting on the IATTC and WCPFC websites. Albacore catch must be reported every 6 months.

PI 3.2.4 Research Plan

PI 3.2.4 Research Plan		
The fishery has a research plan that addresses the information needs of management		
SG60	SG80	SG100
Research is undertaken, as required, to achieve the objectives consistent with MSC's Principles 1 and 2. Research results are available to all interested parties.	A research plan provides the management system with a strategic approach to research and reliable and timely information sufficient to achieve the objectives consistent with MSC's Principles 1 and 2. Research results are disseminated to all interested parties in a timely fashion.	A comprehensive research plan provides the management system with a coherent and strategic approach to research across P1, P2 and P3, and reliable and timely information sufficient to achieve the objectives consistent with MSC's Principles 1 and 2. Research plan and results are disseminated to all interested parties in a timely fashion and are widely and publicly available.

Score

Unit Of Certification ID	Fishery Name	Fishing Method	Score
1	CHMSF British Columbia North Pacific Albacore Tuna	Troll & Jig	90
2	American WFOA North Pacific Albacore Tuna	Troll & Jig	90
3	American WFOA North Pacific Albacore Tuna	Pole & Line	90

A score of **90** was achieved by all Units of certification based on the following scoring issues:

- A research plan provides the management system with a strategic approach to research and reliable and timely information sufficient to achieve the objectives consistent with MSC's Principles 1 and 2;
- Research plan and results are disseminated to all interested parties in a timely fashion and are widely and publicly available.

**Rationale
(All Units of Certifications)**

In 2004 the Nineteenth NP Albacore Workshop (Stocker, 2005) developed a suite of research recommendations. The plan was updated in 2006 (Stocker, 2006). The research plan focuses on three broad areas of research:

1. Fishery Statistics
2. Biological studies (Conduct age and growth studies, studies on migration)
3. Stock assessment studies (Research on alternatives Assessment Models, Conduct studies on reference point, and studies on the development of abundance index).

More recently the ALBWG research needs were identified. ALBWG recognizes ageing and maturity as significant uncertainties in the current stock assessment. The research plan calls for a cooperative effort between agencies from Canada, Chinese Taipei, Japan, and the USA for the analysis of age, growth, and reproduction (ISC, 2009)

The results of research are published and disseminated to all interested parties in a timely fashion widely available ISC ALBWG reports.

PI 3.2.5 Monitoring and Management Performance Evaluation

PI 3.2.5 Monitoring and Management Performance Evaluation		
There is a system for monitoring and evaluating the performance of the fishery-specific management system against its objectives. There is effective and timely review of the fishery-specific management		
SG60	SG80	SG100
The fishery has in place mechanisms to evaluate some parts of the management system and is subject to occasional internal review.	The fishery has in place mechanisms to evaluate key parts of the management system and is subject to regular internal and occasional external review.	The fishery has in place mechanisms to evaluate all parts of the management system and is subject to regular internal and external review.

Score

Unit Of Certification ID	Fishery Name	Fishing Method	Score
1	CHMSF British Columbia North Pacific Albacore Tuna	Troll & Jig	80
2	American WFOA North Pacific Albacore Tuna	Troll & Jig	80
3	American WFOA North Pacific Albacore Tuna	Pole & Line	80

A score of 80 was achieved by all Units of Certification based on the following scoring issue:

- The fishery has in place mechanisms to evaluate key parts of the management system and is subject to regular internal and occasional external review.

Rationale

Unit Of Certification ID	Fishery Name	Fishing Method	Score
1	CHMSF British Columbia North Pacific Albacore Tuna	Troll & Jig	80

Evaluation of the management objectives is documented in the IFMP Section 7.

- Conservation and Protection
- Consultation Process
- Providing Opportunity to Harvest Tuna
- Working Cooperatively with the US.
-

The evaluation is conducted internally by DFO:

- Fisheries provide accurate and timely catch and effort data; the information is collected and monitored through haul out system, logbooks (98% compliance) and sales slips

- In 2008, DFO piloted an electronic logbook program with the aim of providing more timely and accurate catch data

The ISC/IATTC/WCPFC are international scientific peer organizations that regularly assess and analyze the north pacific albacore fishery. The international nature of these organizations constitutes a rigorous and external review process.

Unit Of Certification ID	Fishery Name	Fishing Method	Score
2	American WFOA North Pacific Albacore Tuna	Troll & Jig	80
3	American WFOA North Pacific Albacore Tuna	Pole & Line	80

Evaluation of the management objectives is documented in the FMP.

A three-year cycle of specification setting, preparation of peer-reviewed Stock Assessment and Fishery Evaluation Reports (SAFE report), annual reviews of plan status and needs by the Council staff and its Executive Committee, leading to Council review and consideration of priorities and work plans, regular reviews by the Research Coordination Committee, and continuing review by staff members at the Council, and the NMFS.

The ISC/IATTC/WCPFC are international scientific peer organization that regularly assess and analyze the north pacific albacore fishery. The international nature of these organizations constitutes a rigorous and external review process.

7.3 Certification Recommendation and Performance Scores.

The three Units of Certification achieved a score of 80 or above on each of the three MSC Principles independently and did not score less than 60 against any Indicator. Score achieved in each of the MSC Principles by each of the Units of Certification are shown in Table 14.

Although the assessment team found the three Units of Certification in overall compliance, it also found the performance of the three Units of Certification on one performance indicator (PI 1.1.2) to be below the established compliance mark (Score of 80). In these specific cases, the MSC requires that the Certification Body set 'Conditions for Continued Certification' that when met bring the level of compliance for the selected indicator up to the 80-level score. Table 15-17 below show the overall results of the evaluation in terms of Principle 1, 2 and 3.

Table 14. MSC Principles score for each of the Units of Certification.

Principle (P)	Unit of Certification No.1	Unit of Certification No.2	Unit of Certification No.3
P 1-Target Species	85.6	85.6	85.6
P2-Ecosystem	96.7	97.0	96.3
P3-Management	91.75	92.3	92.3

Table 15. Scoring assigned to Unit of Certification No.1 using Analytic Hierarchy Process (AHP).

NA: Not Applicable

Principle	Wt (L1)	Component	Wt (L2)	PI No.	Performance Indicator (PI)	Wt (L3)	Weight in Principle	Score	Contribution to Principle Score
One	1	Outcome	0.5	1.1.1	Stock status	0.5	0.25	80	20
				1.1.2	Reference points	0.5	0.25	75	18.75
				1.1.3	Stock rebuilding	NA	NA	NA	NA
		Management	0.5	1.2.1	Harvest strategy	0.25	0.125	95	11.88
				1.2.2	Harvest control rules & tools	0.25	0.125	80	10.00
				1.2.3	Information & monitoring	0.25	0.125	100	12.50
				1.2.4	Assessment of stock status	0.25	0.125	100	12.50
Two	1	Retained species	0.2	2.1.1	Outcome	0.333	0.0667	100	6.67
				2.1.2	Management	0.333	0.0667	100	6.67
				2.1.3	Information	0.333	0.0667	100	6.67
		Bycatch species	0.2	2.2.1	Outcome	0.333	0.0667	100	6.67
				2.2.2	Management	0.333	0.0667	100	6.67
				2.2.3	Information	0.333	0.0667	90	6.00
		ETP species	0.2	2.3.1	Outcome	0.333	0.0667	100	6.67
				2.3.2	Management	0.333	0.0667	80	5.33
				2.3.3	Information	0.333	0.0667	80	5.33
		Habitats	0.2	2.4.1	Outcome	0.333	0.0667	100	6.67
				2.4.2	Management	0.333	0.0667	100	6.67
				2.4.3	Information	0.333	0.0667	100	6.67
		Ecosystem	0.2	2.5.1	Outcome	0.333	0.0667	100	6.67
				2.5.2	Management	0.333	0.0667	100	6.67
				2.5.3	Information	0.333	0.0667	100	6.67
Three	1	Governance and policy	0.5	3.1.1	Legal & customary framework	0.25	0.125	90	11.25
				3.1.2	Consultation, roles & responsibilities	0.25	0.125	100	12.50
				3.1.3	Long term objectives	0.25	0.125	100	12.50
				3.1.4	Incentives for sustainable fishing	0.25	0.125	80	10.00
		Fishery specific management system	0.5	3.2.1	Fishery specific objectives	0.2	0.1	100	10.00
				3.2.2	Decision making processes	0.2	0.1	95	9.50
				3.2.3	Compliance & enforcement	0.2	0.1	90	9.00
				3.2.4	Research plan	0.2	0.1	90	9.00
				3.2.5	Management performance evaluation	0.2	0.1	80	8.00

Table 16. Scoring assigned to Unit of Certification No.2 using Analytic Hierarchy Process (AHP).

NA: Not Applicable

Principle	Wt (L1)	Component	Wt (L2)	PI No.	Performance Indicator (PI)	Wt (L3)	Weight in Principle	Score	Contribution to Principle Score
One	1	Outcome	0.5	1.1.1	Stock status	0.5	0.25	80	20
				1.1.2	Reference points	0.5	0.25	75	18.75
				1.1.3	Stock rebuilding	NA	NA	NA	NA
		Management	0.5	1.2.1	Harvest strategy	0.25	0.125	95	11.88
				1.2.2	Harvest control rules & tools	0.25	0.125	80	10.00
				1.2.3	Information & monitoring	0.25	0.125	100	12.50
				1.2.4	Assessment of stock status	0.25	0.125	100	12.50
Two	1	Retained species	0.2	2.1.1	Outcome	0.333	0.0667	100	6.67
				2.1.2	Management	0.333	0.0667	100	6.67
				2.1.3	Information	0.333	0.0667	100	6.67
		Bycatch species	0.2	2.2.1	Outcome	0.333	0.0667	100	6.67
				2.2.2	Management	0.333	0.0667	100	6.67
				2.2.3	Information	0.333	0.0667	90	6.00
		ETP species	0.2	2.3.1	Outcome	0.333	0.0667	100	6.67
				2.3.2	Management	0.333	0.0667	85	5.67
				2.3.3	Information	0.333	0.0667	80	5.33
		Habitats	0.2	2.4.1	Outcome	0.333	0.0667	100	6.67
				2.4.2	Management	0.333	0.0667	100	6.67
				2.4.3	Information	0.333	0.0667	100	6.67
Three	1	Governance and policy	0.5	2.5.1	Outcome	0.333	0.0667	100	6.67
				2.5.2	Management	0.333	0.0667	100	6.67
				2.5.3	Information	0.333	0.0667	100	6.67
				3.1.1	Legal & customary framework	0.25	0.125	90	11.25
				3.1.2	Consultation, roles & responsibilities	0.25	0.125	100	12.50
				3.1.3	Long term objectives	0.25	0.125	100	12.50
				3.1.4	Incentives for sustainable fishing	0.25	0.125	80	10.00
		Fishery specific management system	0.5	3.2.1	Fishery specific objectives	0.2	0.1	100	10.00
				3.2.2	Decision making processes	0.2	0.1	95	9.50
				3.2.3	Compliance & enforcement	0.2	0.1	95	9.00
				3.2.4	Research plan	0.2	0.1	90	9.00
				3.2.5	Management performance evaluation	0.2	0.1	80	8.00

Table 17.

Table 17. Scoring assigned to Unit of Certification No.3 using Analytic Hierarchy Process (AHP)

NA: Not Applicable

Principle	Wt (L1)	Component	Wt (L2)	PI No.	Performance Indicator (PI)	Wt (L3)	Weight in Principle	Score	Contribution to Principle Score
One	1	Outcome	0.5	1.1.1	Stock status	0.5	0.25	80	20
				1.1.2	Reference points	0.5	0.25	75	18.75
				1.1.3	Stock rebuilding	NA	NA	NA	NA
		Management	0.5	1.2.1	Harvest strategy	0.25	0.125	95	11.88
				1.2.2	Harvest control rules & tools	0.25	0.125	80	10.00
				1.2.3	Information & monitoring	0.25	0.125	100	12.50
				1.2.4	Assessment of stock status	0.25	0.125	100	12.50
Two	1	Retained species	0.2	2.1.1	Outcome	0.333	0.0667	90	6.00
				2.1.2	Management	0.333	0.0667	100	6.67
				2.1.3	Information	0.333	0.0667	100	6.67
		Bycatch species	0.2	2.2.1	Outcome	0.333	0.0667	100	6.67
				2.2.2	Management	0.333	0.0667	100	6.67
				2.2.3	Information	0.333	0.0667	90	6.00
		ETP species	0.2	2.3.1	Outcome	0.333	0.0667	100	6.67
				2.3.2	Management	0.333	0.0667	85	5.67
				2.3.3	Information	0.333	0.0667	80	5.33
		Habitats	0.2	2.4.1	Outcome	0.333	0.0667	100	6.67
				2.4.2	Management	0.333	0.0667	100	6.67
				2.4.3	Information	0.333	0.0667	100	6.67
Three	1	Governance and policy	0.5	2.5.1	Outcome	0.333	0.0667	100	6.67
				2.5.2	Management	0.333	0.0667	100	6.67
				2.5.3	Information	0.333	0.0667	100	6.67
				3.1.1	Legal & customary framework	0.25	0.125	90	11.25
				3.1.2	Consultation, roles & responsibilities	0.25	0.125	100	12.50
				3.1.3	Long term objectives	0.25	0.125	100	12.50
				3.1.4	Incentives for sustainable fishing	0.25	0.125	80	10.00
		Fishery specific management system	0.5	3.2.1	Fishery specific objectives	0.2	0.1	100	10.00
				3.2.2	Decision making processes	0.2	0.1	95	9.50
				3.2.3	Compliance & enforcement	0.2	0.1	95	9.50
				3.2.4	Research plan	0.2	0.1	90	9.00
				3.2.5	Management performance evaluation	0.2	0.1	80	8.00

8 MEETING CONDITIONS FOR CONTINUED CERTIFICATION.

To be awarded an MSC certificate for the fishery, the applicants must agree in written contract to develop an action plan for meeting the required 'Conditions'; a plan that must provide specific information on what actions will be taken, who will take the actions, and when the actions will be completed. The Action Plan must be approved by GTC as the certification body of record. The applicant must also agree in a written contract to be financially and technically responsible for surveillance visits by an MSC accredited certification body, which would occur at a minimum of once a year, or more often at the discretion of the certification body (based on the applicant's action plan or by previous findings by the certification body from annual surveillance audits or other sources of information). The contract must be in place prior to certification being awarded. Surveillance audits will be comprised in general of:

1. Checking on compliance with the agreed action plan for meeting pre-specified 'Conditions'.
2. Sets of selected questions that allow the certifier to determine whether the fishery is being maintained at a level of performance similar to or better than the performance recognized during the initial assessment.

8.1 General Conditions for Continued Certification

The general 'Conditions' set for the Canadian Highly Migratory Species Foundation (CHMSF) and the Western Fishboat Owner Association (WFOA) are:

- The CHMSF and WFOA must recognize that MSC standards require regular monitoring inspections at least once a year, focusing on compliance with the 'Conditions' set forth in this report (as outlined below) and continued conformity with the standards of certification;
- The CHMSF and WFOA must agree by contract to be responsible financially and technically for compliance with required surveillance audits by an accredited MSC certification body, and a contract must be signed and verified by GTC prior to certification being awarded;
- The CHMSF and WFOA must recognize that MSC standards require a full re-evaluation for certification (as opposed to yearly monitoring for update purposes) every five years;
- Prior to receiving final certification, the CHMSF and WFOA shall develop, an 'Action Plan' (each of the client groups) for Meeting the Condition for Continued Certification' and have it approved by GTC.

8.2 Specific Conditions for Continued Certification

In addition to the general requirements outline above, CHMSF and WFOA agree in a contract to meet the condition described below (within the agreed timelines in the ‘Action Plan for Meeting the Conditions for Continued Certification’).

Condition: PI 1.1.2: Reference Points

The assessment team determined that the appropriateness of the target reference points used at present for the North Pacific albacore stock (Fishing Mortality = 0.75) is not known.

ISC conservation advice suggests that the stock maybe “either fully exploited or sustaining fishing mortality above levels that are sustainable in the long term”. Accordingly, management resolutions have been provided by IATTC/WCPFC for a cap in fishing effort.

The ISC is warning that fishing rates are in excess of common benchmarks and recommend the need for developing an effort reduction strategy. In 2005, the ISC requested to the management authorities for guidance on the definition of biological reference points to determine the degree to which, when and how reduction should occur.

In 2008, The Northern Committee adopted an interim management objective at NC4 to maintain the spawning stock biomass (SSB) above the average level of its 10 historically lowest points (ATHL) with a probability of 50% until reference points are established. However, the request on guidance for the definition of biological reference points (limit and target referee points) was still in place at the ISC Plenary in 2009.

8.2.1 The Canadian Highly Migratory Species Foundation (CHMSF)

It is recognised that the implementation of explicit reference points is not under control of CHMSF and therefore the following specific condition applies:

Condition PI 1.1.2 Limit and Target Reference Points are Appropriate for the Stock:

1. CHMSF to promote and support:

- a. The management actions put forward, notably limitation on effort. Communications supporting such management measures should be made to appropriate organisations.

Appropriate Organisations shall include: Fisheries and Oceans Canada (DFO); IATTC; and WCPFC (Northern Committee).

Records should be provided to Global Trust by CHMSF of communications and responses;

- b. ISC request to management authorities for guidance on the definition and application of biological reference points (BRPs) in order to facilitate response to requests for conservation advice. Communications supporting ISC request should be made by CHMSF to appropriate organisations.

Appropriate Organisations shall include: Fisheries and Oceans Canada (DFO); IATTC; and WCPFC (Northern Committee).

Records should be provided to Global Trust by CHMSF of communications and responses.

2. CHMSF to provide a summary to Global Trust on Canada's responses to IATTC/WCPFC management resolutions, as provided by Fisheries and Oceans Canada and Federal Government of Canada, when such materials become available.
3. Should the existing resolution be withdrawn following the ISC conservation advice, then point 1.a would be considered closed.
4. Should ISC existing request (1.b) be withdrawn then 1.b would be considered closed.
5. If additional resolutions are proposed, then these should be supported as in 1 above and records retained and provided to Global Trust.
6. If additional guidance, related to the definition of biological reference points, is requested from the ISC, then these should be supported as in 1.b above and records retained and provided to Global Trust.

Timeline for Condition PI 1.1.2:

- Point 1. If still appropriate, should be pursued immediately upon certification.
- Point 2. CHMSF should provide this information within 6 months of certification.
- Point 5. Should further resolutions be passed by IATTC/WCPFC in this regard, supportive actions should be initiated at the earliest possible opportunity thereafter.
- Point 6. Should further guidance be requested by the ISC in this regard, supportive actions should be initiated at the earliest possible opportunity thereafter.

8.2.2 The Western Fishboat Owners' Association (WFOA)

It is recognised that the implementation of explicit reference points is not under control of WFOA and therefore WFOA specific condition is as follow:

Condition PI 1.1.2 Limit and Target Reference Points are Appropriate for the Stock:

1. WFOA to promote and support:
 - a. The management actions put forward, notably limitation on effort. Communications supporting such management measures should be made to appropriate organisations.

Appropriate Organisations shall include: Fisheries and Oceans Canada; IATTC; and WCPFC (Northern Committee).

Records should be provided by WFOA of communications and responses ;
 - b. ISC request to management authorities for guidance on the definition and application of biological reference points (BRPs) in order to facilitate response to requests for conservation advice. Communications supporting ISC request should be made by WFOA to appropriate organisations.

Appropriate Organisations shall include: Fisheries and Oceans Canada; IATTC; and WCPFC (Northern Committee).

c. Records should be provided by WFOA of communications and responses;
2. WFOA to provide a summary to Global Trust on US's responses to IATTC/WCPFC management resolutions, as provided by NMFS and/or Pacific Fishery Management Council, when such materials become available.
3. Should the existing resolution be withdrawn following the ISC conservation advice, then point 1.a would be considered closed.
4. Should ISC existing request (1.b) be withdrawn then 1.b would be considered closed;
7. If additional resolutions are proposed, then these should be supported as in 1 above and records retained and provided to Global Trust;
8. If additional guidance, related to the definition of biological reference points, is requested from the ISC, then these should be supported as in 1.b above and records retained and provided to Global Trust.

Timeline for Condition 1.1.2:

- Point 1. If still appropriate, should be pursued immediately upon certification.
- Point 2. WFOA should provide this information within 6 months of certification.
- Point 5. Should further resolutions be passed by IATTC/WCPFC in this regard, supportive actions should be initiated at the earliest possible opportunity thereafter.
- Point 6. Should further guidance be requested by the ISC in this regard, supportive actions should be initiated at the earliest possible opportunity thereafter.

8.2.3 The Canadian Highly Migratory Species Foundation Action Plan

CHMSF Action Plan for Condition PI 1.1.2

CHMSF Board and Advisors continues its practice of keeping up to date, attending, and participating in the key discussions and meetings of the appropriate scientific, regulatory, and government bodies tasked with policy and management responsibilities for North Pacific albacore and the stock's troll/jig fisheries. These bodies include:

- *IATTC (Inter-American-Tropical-Tuna-Commission);*
- *WCPFC (Western and Central Pacific Fisheries Commission);*
- *Northern Committee of the WCPFC*
- *Chair of the ISC (International Scientific Committee for Tuna and Tuna-like Species in the North Pacific Ocean)*
- *Federal Ministry of Fisheries and Oceans (DFO);*
- *Federal Ministry of Fisheries- International Trade;*
- *Provincial Ministry of Environment (BCENV);*
- *Tuna Advisory Board (TAB);*
- *Department of Fisheries and Oceans Highly Migratory Species – Management Team;*
- *Bi-lateral Treaty Group*

CHMSF's actions in accordance with this plan include:

- a. *Submission of a letter to the Chair of the IATTC (Inter-American-TropicalTuna-Commission), copied to the Executive Director of the Secretariat expressing CHMSF's continued support for ongoing efforts, based on best available science, toward the long term sustainability of the stock, and compliance with international resolutions calling for fishing effort not to be increased.*
- b. *Submission of a letter to the Chair of the WCPFC, copied to the Executive Director of the Secretariat and the Chair of the Northern Committee, expressing CHMSF's continued support for ongoing efforts, based on best available science, toward the long term sustainability of the stock, and compliance with international resolutions calling for fishing effort not to be increased.*
- c. *Submission of a letter to the Chair of the ISC, copied to the Chair of the ISC Albacore Working Group, expressing CHMSF's continued support for ongoing efforts, based on best available science, toward the long term sustainability of the stock, and compliance with international resolutions calling for fishing effort not to be increased.*

- d. *Submission of a letter to the Chair of the WCPFC, copied to the Executive Director of the Secretariat and the Chair of the Northern Committee, expressing CHMSF's continued support for ongoing efforts, based on best available science, toward the long term sustainability of the stock, and compliance with international resolutions calling for fishing effort not to be increased.*
- e. *Submission of a letter to the Minister of Fisheries and Oceans Canada, copied to Regional Director General (Pacific) expressing CHMSF's continued support for ongoing efforts, based on best available science, toward the long term sustainability of the stock, and compliance with international resolutions calling for fishing effort not to be increased.*
- f. *Submission of a letter to BC Ministry of Environment expressing CHMSF's continued support for ongoing efforts, based on best available science, toward the long term sustainability of the stock, and compliance with international resolutions calling for fishing effort not to be increased.*
- g. *Submission of a letter to Tuna Advisory Board expressing CHMSF's continued support for ongoing efforts, based on best available science, toward the long term sustainability of the stock, and compliance with international resolutions calling for fishing effort not to be increased.*
- h. *Attendance and participation at Joint BCTFA, WFOA, NMFS, NOAA, meeting sessions to convey CHMSF's support for development and adoption of appropriate management measures and progress to ensure compliance with international resolutions regarding the North Pacific albacore stock.*
- i. *Supporting Canada's attendance and participation at IATTC/WCPFC and supporting ISC recommendations to those bodies international resolutions regarding the North Pacific albacore stock.*
- J. *Continued attendance, participation, and submission of communications to appropriate management bodies in accordance with current practice*
 - *Federal Ministry of Fisheries and Oceans (DFO);*
 - *Federal Ministry of Fisheries- International Trade;*
 - *Provincial Ministry of Environment (BCENV);*
 - *Tuna Advisory Board (TAB);*
 - *Department of Fisheries and Oceans Highly Migratory Species – Management Team;*
 - *Bi-lateral Treaty Group*

Condition PI 1.1.2 point 2 states (see 8.2.1):

ACTION PLAN related to Condition PI 1.1.2 point 2.

The North Pacific albacore stock assessment is presently being conducted by the ISC and its Albacore Working Group and the initially scheduled March, 2011 with the results release by approximately May 2012. CHMSF anticipates receiving the updated ISC stock assessment by approximately May 2010, and will provide Global Trust Certification with copies in a timely manner. Responsive documents and updates of North Pacific albacore stock assessments will be forwarded to Global Trust Certification in a timely manner following receipt.

CHMSF will provide Global Trust a summary of Fisheries and Oceans Canada and Federal government of Canada responses to IATTC/WCPFC management resolutions within 6 months of certification, or immediately after a DFO/GOC response, should it occur 6 months after certification.

Condition PI 1.1.2 point 5 states (see 8.2.1):

5. If additional resolutions are proposed, then these should be supported as in 1 above

ACTION PLAN related to Condition PI 1.1.2 point 5.

CHMSF plans to continue its practice of keeping up to date, attending, and participating in the key discussions and meetings of the appropriate scientific, regulatory, and government bodies tasked with policy and management responsibilities for North Pacific albacore and the stock's pole & line and troll/jig fisheries as set forth in ACTION PLAN related to Condition PI 1.1.2 point 1, above.. Significant developments and/or additional resolutions will be forwarded to Global Trust Certification in a timely manner following receipt, and CHMSF would continue with its efforts in support of responsible management.

ACTION PLAN related to Condition PI 1.1.2 point 6.

CHMSF, is collecting data used towards the definition of biological reference points and supports the North Pacific Albacore Working Group charged with establishing BPRs. As such we are actively engaged through our association with Federal Scientists and TAB in the ISC process and will continue to assist in the effort to develop control rules beneficial to long term sustainability and the economic health of the North American albacore fishery.

8.2.4 The Western Fishboat Owners Association Action Plan

Condition PI 1.1.2 point 1 state (see 8.2.2):

ACTION PLAN related to Condition PI 1.1.2 point 1

WFOA, immediately upon certification, if still appropriate, will correspond with all levels of management on the need to bring harvest in line with the estimated long-term productivity of the stock. WFOA is on record showing that the U.S. troll fishery has already reduced its effort considerably through fleet attrition and negotiating a lower cap on the number of Canadian vessels permitted to fish in the U.S. EEZ under the U.S –Canada Albacore Treaty. WFOA is very supportive of international efforts to control harvesting capacity, both legal and illegal, in order to achieve a reasonable degree of confidence of long term sustainable production.

WFOA proposes to achieve the desired condition through correspondence with State, National and International regulatory bodies. WFOA attends all of the forums involved with North Pacific albacore and supports establishment of a limits that can be both monitored and enforced. To that end WFOA also supports establishment of scientifically based biological reference points that are appropriate to albacore management.

WFOA will produce documents to be distributed to the US management authorities and to the International RFMOs. These will address items 1a and 1b. Also, WFOA representatives will be present to provide oral testimony and requests for action at the various fora involved with NP albacore management. Additionally, WFOA through its science arm AFRF, will continue to support the attendance of a stock assessment scientist to the Scientific stock assessment working group. Our scientist is instructed to work with the other scientists to develop scientifically supportable fishing levels and biological reference points.

Condition PI 1.1.2 point 2 states (see 8.2.2):

WFOA to provide a summary to Global Trust on US's responses to IATTC/WCPFC management resolutions, as provided by NMFS and/or Pacific Fishery Management Council

ACTION PLAN related to Condition PI 1.1.2 point 2

WFOA will provide Global Trust a summary of PFMC/NMFS responses to IATTC/WCPFC management resolutions within 6 months of certification, or immediately after a PFMC/NMFS response, should it occur 6 months after certification.

Condition PI 1.1.2 point 3, 4 and 5 states (see 8.2.2):

3. Should the existing resolution be withdrawn following the ISC conservation advice, then point 1.a would be considered closed.
4. Should ISC existing request (1.b) be withdrawn then 1.b would be considered closed
5. If additional resolutions are proposed, then these should be supported as in 1 above.

ACTION PLAN related to Condition PI 1.1.2 point 3, 4 & 5.

WFOA supports the principle of long-term sustainable yield and stable harvest. On this basis WFOA will support and effort by RFMO to achieve these goals by proposed BRPs and sustainable harvest levels. Should further resolutions be passed by IATTC/WCPFC in this regard, WFOA will support all management measures that are equably applied to all parties in the fishery and are shown to be a requirement to achieve an economically sustainable North American albacore fishery.

Condition PI 1.1.2 point 6 states (see 8.2.2):

If additional guidance, related to the definition of biological reference points, is requested from the ISC, then this should be supported as in 1.b above.

ACTION PLAN related to Condition PI 1.1.2 point 6.

WFOA, through its science arm, AFRF, is engaged in the definition of biological reference points and funds the attendance of an independent scientist to the North Pacific Albacore Working Group charged with establishing BPRs. As such we are actively engaged in the ISC process and will continue to assist in the effort to develop control rules beneficial to long term sustainability and the economic health of the North American albacore fishery.

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Appendix 1: Peer Review Reports

Canadian Highly Migratory Species Foundation (CHMSF)-British Columbia Albacore Tuna (*Thunnus alalunga*) North Pacific Fishery

&

American Western Fish Boat Owners Association (WFOA) Albacore Tuna (*Thunnus alalunga*) North Pacific Fisheries⁷,

MSC Certification: Main assessments Certification Body: Global Trust Certification

Peer Reviewers

A Peer Review panel was assembled for this fishery. Potential peer reviewers were approached on the basis of their experience of one or more of the following; the fishery under assessment, fishery management, stock assessment issues and relevant ecosystem interactions.

Brief details of each reviewer are provided below.

Dr. Haritz Arrizabalaga

Haritz Arrizabalaga has a PhD in Marine Science. Currently he works as Principal Investigator in AZTI Tecnalia leading research projects about Albacore Tuna and Bluefin Tuna fisheries and population dynamics. He has participated in over 15 national and international research projects, and has been an active member of the Standing Committee for Research and Statistics (SCRS) of the International Commission for the Conservation of Atlantic Tuna (ICCAT) for the last 10 years. He is the convener of the SCRS Subcommittee on Ecosystems since 2006, and also participated in the Scientific Committee of the Indian Ocean Tuna Commission (IOTC) between 2000-2002. His main research areas include tuna population structure, stock assessment, environmental influence on population dynamics, habitat use, migrations and ecology. He regularly supervises master and PhD students and has published 14 peer reviewed papers, co-edited one book and contributed over 30 working documents in both ICCAT and IOTC.

⁷ Fisheries: The North Pacific albacore (*Thunnus alalunga*) stock targeted by two fishing methods (i.e. Pole & Line and Troll & Jig)

Dr. Panayiota Apostolaki

Panayiota Apostolaki is PhD in Environmental Sciences. Her PhD topic was the evaluation of the effectiveness of alternative measures for the management of fisheries catching highly migratory species. She is currently Head of Marine System Dynamics Group and Fishery Advisor with the Centre for Environment, Fisheries and Aquaculture Science, UK. Her expertise includes tuna and tuna-like species biology and fisheries management issues through extended work on bluefin tuna, swordfish and sharks and contribution to relevant ICCAT stock assessment meetings. She is providing scientific advice on fishery management and sustainability issues related to a wide range of fisheries including multigear and multi-species, has good knowledge of U.S. and European environmental legislation, and experience in reviewing MSC fishery assessment reports. She has also contacted reviews of the evaluation processes followed by the Blue Ocean Institute in New York to produce its ranked list of seafood (elasmobranch section) and assess of the sustainability of shark fisheries in the Atlantic and Pacific Oceans and is member of the US Centre of Independent Experts (CIE). She has published peer review papers on international journals and contributed over 10 working documents in ICCAT.

Marine Stewardship Council

**The Canadian Highly Migratory Species Foundation British Columbia North Pacific
albacore (*thunnus alalunga*) tuna fishery**

&

**The American Western Fishboat Owners Association North Pacific albacore
(*thunnus alalunga*) tuna fisheries**

PEER REVIEW OF 2009 ASSESSMENT

Peer Reviewer A

This is a peer review of the assessment of the aforementioned fishery against the Marine Stewardship Council Principle and Criteria for Sustainable Fishing.

I have included below specific comments for each of the sections of the report (fishery overview, evaluation results) followed by an overall evaluation of the final conclusions of the report and conditions attached to certification.

Fishery overview and background information (Sections 1 – 5 of the report)

The information included in these sections is accurate and provide a comprehensive picture of the units of certification. There were only a couple of sections for which I felt that a bit more information or further clarifications would help me understand better certain aspects of the units of certification. I have included information about those sections below:

- a) Pole and line/livebait method: Fleets that use live bait often attract birds. However, I have not found any references to that in the description of the fishing methods and its effects. Injuries of birds (e.g. while fishermen try to scare birds away) have been reported in other fisheries. So, it is important to know if this fishery encounters similar problems and what techniques they use to deal with birds that might be attracted by the live bait. [Global Trust Comment: No issue in relation to injuries of birds occurring while fishermen attempt to scare them away was raised by any of the stakeholders nor was any information available in the literature on interactions of birds with the American pole and line fishery.](#)
- b) Page 19: “New regulations will ensure that the U.S. can meet its obligations under the treaty, including the 2002 amendments” What obligations did not US meet before 2002 and how does that affect the quality of data for this fishery? Some clarification would be useful here. [Global Trust Comment This sentence contained an error as it should say the “ ...will ensure that the U.S and Canada...” text has been corrected accordingly. Further clarification: The 2002 amendment did not have any effect on the procedure followed for data collection by the U.S and Canada. The explanation given in this section has been modified for the better understanding of the USA/Canada Treaty and to respond to peers comments \(see 3.1.4\)](#)

- c) Section 3.2. The majority of this section describes how WCPFC conducts its science. The only reference in the role of IATTC in terms of science is in the following sentence “The WCPFC format for conducting scientific studies is different than that of the IATTC, which has an independent staff.” Could you provide some more information on the scientific contribution of IATTC? [Global Trust Comments:](#) Text has been added to this section to provide information required. Specifically: “The work of the IATTC independent scientific staff focuses on: (1) studying the biology of the tunas and related species of the eastern Pacific Ocean with a view to determining the effects that fishing and natural factors have on their abundance. (2) To recommend appropriate conservation measures so that the stocks of fish can be maintained at levels which afford maximum sustainable catches. (3) to collect information on compliance with Commission resolutions”. Also at the end of this section “Furthermore, the IATTC and WCPFC review ALBWG ISC stock assessment for its approval and adoption of management measures directed to the conservation of the North Pacific albacore tuna stock”

Evaluation results (Section 7 of the report)

I generally agree with the scoring given to each PI. The way the evaluators used the relevant information is appropriate. Generally, sufficient arguments are provided to justify the decisions of the evaluators but there are sections about which I have some concerns. I explain that in detail below.

General comment: What is difficult to assess from the information used for deciding on the appropriate score is how important any problems with reporting (catch, CPUE, other data) is. The report includes references to efforts that are made (at the national and international level) to improve the catch reporting and data collection process. Data gaps could jeopardize attempts to provide robust advice on stock status and exploitation levels. So, it would be useful to add some information from the formal assessment report about any relevant issues the scientific committee has identified and about quality of data. [Global Trust Comment:](#) The Assessment Team considered that appropriate data is being collected to provide comprehensive advice on stock status and exploitation levels. Information on the quality of the data is contained in Section 7.2, PI 1.2.3/rationale. Data gaps were not considered as something that could jeopardize attempts to provide robust advice on stock status and exploitation levels. Sampling programs for data collection of population structure are comprehensive, occurring at the ports where landings are important in terms of quantities. Also, data of CPUE obtained from logbooks is considered to represent a true picture of stock removals. Logbook compliance is 98% in Canada and above 80% in the U.S (see Section 7.2, PI 3.2.3: Compliance and enforcement)

- a) PI 1.1.2: The rationale section for the score for PI 1.1.2 does not provide specific arguments for each of the issues that are relevant to the PI. So, it is not clear what issues got a score above 80 and what was the issue-specific evidence that led the evaluators to allocate the relevant score. [Global Trust Comment:](#) Structure of the rationale has been modified and headings for each of the issues have been included to present clearly issue-specific evidence. In addition, all the reference points for F (except one) you present in Tables 9 and 10 are below 0.75 y^{-1} while the management advice provided by ISC states that “**it is now recognized that F_{cur} (0.75) is high relative to most of the F reference points**”. So, it is difficult to understand how the choice of the $F=0.75$ could be considered as the appropriate reference point for this stock. Further clarification is needed here to explain how the

evaluators decided on the score for each issue. Global Trust Comment: The appropriateness of $F=0.75$ follows ISC's conservation advice on the stock status given in years 2007-2009 (see Box 1-3). Summarising, conservation advice is based on the following: (1) It is recognised that F_{cur} (0.75) is high relative to most F reference points (commonly used in fisheries management) and (2) Current estimate of SSB is the second highest in history and SSB will be reduced to the long term average by 2010s if maintaining F at current levels. F_{cur} (0.75) is relative high to F reference points used traditionally in the management of fisheries.

However, there lack of information on the relationship between spawners and recruits over the range of stock sizes observed (figure 3 introduced for clarification) determines the MSY correspond to F_{max} from a yield per recruit analysis (YPR). The YPR as a function of F is a nearly flat topped curve with F_{max} occurring at a large value of F ($F_{max} = 2.07$). The current value of F is considered precautionary in the sense that is far below F_{MSY} ($=F_{max}$) and corresponds to a level at which the stock have produced good recruitment (Figure 4 introduced for clarification).

Insert additional comment. Following the Draft Public Report Comment Period, an amendment has been made due to comments of the appropriateness of $F=0.75$ under Issue 2 of PI 1.1.2. The result of this that a Condition is now raised against this Issue. (Refer to Section 7 (PI 1.1.2)).

- b) PI 1.2.3: As mentioned earlier, there is not much information about the reliability and completeness of data. Quality of data is a requirement for a score of SG100 and it is not clear that the information available is of high quality. In a different section of the report, you mention that the growth function is 40 years old. Global Trust Comment: Text added to PI 1.2.3. Specifically: "The assessment team examined whether the data used for the assessment of the North Pacific albacore stock met the needs of the model used (VPA). As described in Section 4 of the report, catch, catch-at-age data, and indices of abundance are used in the application of the VPA model. The ISC ALBWG did not identify that the assumption "*catch-at age are available from all fishing sectors*" as a main source of uncertainty. The uncertainty of age data, and therefore catch-at-age data has been acknowledged by the ALBWG; however this is not due to a lack of research input and rather something inherent of the biology of the species. In addition, uncertainty associated with ageing is accounted for when producing stock assessment results (ISC, 2007/Annex 5)". It is also mentioned that the predictive ability of studies in recruitment variability is limited. Global Trust Comment: Coordinated research on recruitment variability and factors (environmental) affecting recruitment was considered by the assessment team as information that supports the SG 100. This information was considered as additional that is not directly relevant to the current harvest strategy.
- c) PI 1.2.3: Your rationale section describes the policies that are in place to ensure that monitoring of the fishery in US and Canada is effective. However, there is not anything about the quality of monitoring in other countries that exploit the stock (i.e. "vessels not covered by the Unit of certification"). Global Trust Comment: Japan is the country with highest captures of North Pacific albacore tuna, accounting for 90% of the landings approximately. Japan has two major fisheries that catch albacore in the North Pacific, namely pole-and-line and long-line. The ISC ALBWG uses data from all countries targeting the North Pacific albacore tuna stock (see Section 4). Catch, catch-at-age data, and indices of abundance are used in the application of the VPA mode. As described in Section 4 of the report "*The major*

assumptions of VPA are that catch-at-age are estimated without error and are complete, i.e. that catches-at-age are available from all fishing sectors, and that the standardized catch-per-effort indices are proportional to the abundance of the age-groups that are selected by the gear from which the CPUE is derived". However, the ISC ALBWG did not identify that the assumption "catch-at age are available from all fishing sectors" as a main source of uncertainty. As described above, the assumption "catch-at age are estimated without error" is not due to a lack of research input and rather something inherent of the biology of the species. In addition, uncertainty associated with ageing is accounted for when producing stock assessment results (ISC, 2007/Annex 5).

- d) PI 2.2.3: Please, see my comment in the previous section about bird mortality/injuries. Global Trust Comment: As Above: No issue in relation to injuries of birds occurring while fishermen attempt to scare them away was raised by any of the stakeholders nor was any information available in the literature on interactions of birds with the American pole and line fishery.
- e) PI 3.2.5. Page 116 shows that Units of certification 2&3 got a score of 80. However, the score that appears on page 117 for the same units is 95. I believe the former is correct. Global Trust Comment: The observation is correct and it is has been corrected.

Certification Recommendations and Conditions

The overall conclusion of the evaluator is appropriate and clearly reflects the performance of the Units of Certification against the MSC Principles. Further, I do not expect that the comments I provided above will change the overall outcome of the evaluation. I also agree with the specific conditions set for the Units of Certification. On a more general point, the statement by ISC that the stock is maybe "either fully exploited or sustaining fishing mortality above levels that are sustainable in the long term" indicates that although the current stock status and exploitation level are in line with the MSC objectives, this might not be the case in the future (e.g. if appropriate effort control measures are not implemented). Re-evaluation of the fishery in a few years would ensure that the conditions for accreditation are still met.

Marine Stewardship Council

**The Canadian Highly Migratory Species Foundation British Columbia North Pacific
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PEER REVIEW OF 2009 ASSESSMENT

Peer Reviewer B

The MSC evaluation report includes 9 sections (Introduction, Fisheries, Administrative Context, Stock Assessment, Fisheries Management, Standard used, Performance evaluation, conditions for continued certification and References). This review follows the same format, including only the sections where some modifications are required or explanations needed. Revision of editorial nature is not considered in this report.

In general, the evaluation team makes appropriate use of the existing information to score different principles of the assessment. However, some modifications and clarifications are still needed so as to allow better understanding of the rationale followed to reach the final scores and recommendation. These issues pertain mostly to stock status and reference points.

2.4.1.

No bluefin, bigeye or yellowfin tuna are caught? [Global Trust Comment:](#) Text amended to include these species. Specifically: "Incidental bycatch species in Pacific fisheries include big eye, bluefin, yellowfin and skipjack tunas, dolphinfish, yellowtail and blue shark with a total bycatch rate of around 1% or less" (see PI 2.1.1)

4.4.

The ISC Conservation advice is reflected in this section. However, in order to evaluate it against the MSC Principles and Criteria, some more information and/or clarification would be useful. For instance, it seems that last full stock assessment was in 2006, although some analyses have been conducted afterwards, and the next one is scheduled to be in 2011. Is this so? [Global Trust Comment:](#) Yes, last full stock assessment was in 2006, and a analysis has been carried out annually since to update the conservation advice for management. Text has been added to this section to provide information required. Specifically: "The latest stock assessment was carried out in 2006. Since then the ALB WG has carried out annual analysis to update the conservation advice for the management of the North Pacific albacore tuna. The next full stock assessment is due to be carried out in 2011" This sort of information is useful so as to assess the overall process, given the uncertainty around stock status ("there is increasing uncertainty concerning the status of North Pacific albacore in the absence of a new stock assessment"). [Global Trust Comment:](#) Uncertainty due to the absence of quantitative full stock assessment was highlighted by the ISC in 2008 (see Box 3). A score of 100 was not awarded to Issue 1 of PI 1.1.1 based on the uncertainty about the current stock status in relation to the level of recruitment after 2005 (see rationale for PI 1.1.1).

Also, regarding the interim management objective of maintaining “SSB above the average level of its 10 historically lowest points with a probability of 50%”, it might be useful either to show the SSB time series or at least give some indication of the number of years in the time series (apparently 1966 onwards), or the quartile that those 10 point represent... this is important so as to assess if this objective is precautionary or not. Global Trust Comment: Text added to PI 1.1.1 rationale. Specifically: “The ISC completed work in 2009 on determining FSSB-ATHL associated with the average level of the 10 historically lowest years for spawning stock biomass for the albacore stock over the last 40 years-back to 1969”. Figure 6 has been also introduced, which shows temporal trends in SSB, together with percentiles and projections estimates.

“The ALBWG has generally interpreted FSSB-ATHL as a limit reference point, however, further guidance is required from the NC to clarify whether FSSB-ATHL is considered a target or limit reference point”. So it seems there’s no clear limit and target reference points established? If FSSB-ATHL was a limit reference point, then achieving it with 50% probability might not be considered precautionary? (see PI 1.1.2 below). Global Trust Comment: The WCPFC Northern Committee requested the estimation of FSSB-ATHL for its adoption as an interim biological reference point. The ISC completed work in 2009 on determining FSSB-ATHL associated with the average level of the 10 historically lowest years for spawning stock biomass for the albacore stock over the last 40 years. The FSSB-ATHL is 0.75/yr, which is the same level as estimated by the 2006 assessment as the current F level. The ISC, however, requested clarification from the Northern Committee as to whether this interim reference point is a limit or a target reference point. If it is the former, then the NC needs further consideration with regard to the 50% probability limit it has chosen for this parameter. If it is the latter, further consideration of the decision, regarding appropriateness, is required.

At the same time, the current conservation measure ‘not increasing fishing effort above the current levels’ was interpreted as precautionary based on the following text (see 1.1.2). “*Current conservation and management measures for the North Pacific albacore tuna (IATTC Resolution C-05-02 and WCPFC Conservation and Management Measures CMM 05-03) states: ‘The total level of fishing effort for North Pacific albacore tuna in the Eastern Pacific Ocean not be increased beyond current levels’ and follows latest ISC conservation advice (ISC, 2009). The decision of not increasing fishing effort above current levels is based following the precautionary approach (IATTC, personal communication made during the stakeholder consultation phase of evaluation)*”.

Rationale of the precautionary approach “*There does not appear to be a relationship between spawners and recruits over the range of stock sizes observed. Therefore B_{MSY} corresponds to F_{max} from a yield per recruit (YPR) analysis. The YPR as a function of F is a nearly flat topped curve with F_{max} occurring at a very large value of F (i.e. 2.07, ISC, 2007/Annex 5). Thus, the current conservation recommendation of not increasing F above current levels (i.e. F=0.75) is considered to be precautionary in the sense that its value is well below F_{max} and corresponds to a level of fishing mortality, at which good recruitment to the albacore stock have been observed during years 1975-2005.*

The Assessment Team considered that the establishment of explicit limit and target reference points are needed to determine the stock status in relation to the target reference point. Therefore this is reflected in the specific conditions for continued certification.

Also Refer to Appendix 1.1 Modifications Made to Principle 1, Outcome Component

4.

Not to increase effort is recommended when “the stock is fully exploited or may be experiencing fishing mortality above levels that are sustainable in the long term”. Global Trust Comment: conservation advice is based on the following: (1) It is recognised that F_{cur} (0.75) is high relative to most F reference points (commonly used in fisheries management) and (2) Current estimate of SSB is the second highest in history and SSB will be reduced to the long term average by 2010s if maintaining F at current levels. F_{cur} (0.75) is relative high to F reference points used traditionally in the management of fisheries. However, there lack of information on the relationship between spawners and recruits over the range of stock sizes observed (figure 3 introduced for clarification) determines the MSY correspond to F_{max} from a yield per recruit analysis (YPR). The YPR as a function of F is a nearly flat topped curve with F_{max} occurring at a large value of F ($F_{max} = 2.07$). The current value of F is considered precautionary in the sense that is far below F_{MSY} ($=F_{max}$) and corresponds to a level at which the stock have produced good recruitment (Figure 4 introduced for clarification).

PI 1.1.2.

Some clarification might be needed about reference points. It seems that albacore specific reference points are still to be developed (pending guidance to the working group, see 4.4). In spite of this, this principle is scored high, based on, among other things, “reference points are appropriate for the stock and can be estimated”. Global Trust Comment: The Assessment Team evaluation considered that reference points were appropriate in an implicit manner. Text has been re-structured to clarify how each of the issues of this PI was scored.

According to article 6, annex II of UNFA, “the risk of exceeding limit reference points is very low”. In the albacore case, if FSSB-ATHL is interpreted as a limit reference point, then achieving it with 50% probability might not be considered precautionary. “the estimated value of FSSB-ATH is 0.75 y-1... this value is similar to the most recent estimate of F”. This is true, according to table 9, at 50% probability, but F should be less if a 95% probability level was desired, which could be considered more precautionary. Global Trust Comment: As above (see 4.4)

PI 1.2.1.

This text talks about U.S., Canada, WCPFC and IATTC in general, but is not specific of albacore... Global Trust Comment: Text talks about the harvest strategy defined internationally and nationally and it is specific of the North Pacific albacore. Tables 12 and 13 seem to suggest that F should be reduced, while management resolutions only cap fishing effort (but do not reduce it). Thus it should be further argued and explained why it is considered that the harvest strategy for albacore is responsive to the state of the stock. Global Trust Comment: Table 12 and 13 shows candidates limit and target reference points. However the definition of target and limit reference point has not been agreed yet by the various Committees. The Assessment Team considered that the establishment of explicit limit and target reference points are needed to determine the stock status in relation to the target reference point and hence this is a requirement in the specific conditions for continued certification. The appropriateness of the harvest strategy in relation to whether is responsive to the state of the stock is described in PI 1.1.3 (Stock Rebuilding)

PI 1.2.2.

This section is also general but might benefit from adding some explanation on how this general framework applies to albacore in this case. Global Trust Comment: Specific exploitation rules are described in text (points 1 to 4 and subsequent Boxes)

PI 1.2.3.

"Logbook data verified by observer data from US boats employing the same method in the same fishing area, combined with the practice of using barbless hooks which may permit release of non target species alive, represents a strategy in place for managing the fisher's impact on ETP species". I think the logbook-observer data should be viewed as a probe that the management is implemented successfully, but maybe not the management strategy itself. So the strategy would be the barbless hooks, monitored with logbooks, verified by observers data.

What's the coverage of observers and logbooks?

Global Trust Comment: The level of coverage of logbooks and observer data in relation to ETP species is dealt with in PI 2.3.3, Information and Monitoring on ETP species. Logbook data are provided on a mandatory basis with coverage of over 95% in 2008 (Holmes, 2009). In terms of Observer coverage, National Marine Fisheries Service (NMFS) contracted observers collected bycatch data from trolling vessels between 2004 – 2006. No ETP species were recorded as being caught during these observed trips or in logbook data.

PI 2.3.3.

"Information is sufficient to..." How many logbooks and observers are there?

"these data are sufficient to determine whether the fishery may be a threat to protection and recovery of the ETP species". Why is this so? Because the bycatch is zero? Or because there's some studies comparing bycatch levels to population levels? Global Trust Comment: In relation to the first point, as described above, logbook data are provided on a mandatory basis with coverage of over 95% in 2008 (Holmes, 2009). In terms of Observer coverage, National Marine Fisheries Service (NMFS) contracted observers collected bycatch data from trolling vessels between 2004 – 2006. No ETP species were recorded as being caught during these observed trips or in logbook data.

In the context of providing information, the meaning of the term 'sufficient' can be derived from the MSC Fisheries Assessment methodology (FAM). Section 7.1.28 describes an 'Objective basis for Confidence' in relation to conclusions made in an evaluation; On a gradient of 60 to 100, an intermediate level of information (score 80) "should have been collected in a sound manner, but might be opportunistically collected rather than collected as part of a systematic monitoring program or a research project targeted on the specific Component. How extensive that more specific information may vary, but should be appropriate to the scale and intensity of the fishery." The systematic logbook data combined with the opportunistic onboard observer data collected for this fishery can be described as 'sufficient' based on the MSC FAM and a score of 80 was provided for this PI.

PI 2.5.1.

It is my interpretation that there is no evidence to think that the fishery is likely to disrupt the key elements underlying ecosystem structure (in general the information about the pelagic ecosystem uses to be scarce and there're many unknowns in pelagic ecosystem function and structure). But it is not clear that there is evidence that the fishery is highly unlikely to disrupt those key elements. So the score of 100 might need more justification. Global Trust Comment: A score of 100 in this PI requires 'evidence' that the fishery is highly unlikely to disrupt key ecosystem elements. According

to the FAM, ‘Evidence’ for the Ecosystem component should be based on “direct observations from the fishery with limited reliance on analogy”. The key elements of the ecosystem which are affected by the fishery have been identified under the rationale provided for the Ecosystem Component in the evaluation report. Details of a range of studies carried out directly on albacore tuna in relation to these elements have also been provided. The results of the studies can be considered as ‘evidence’, and the evidence provided suggests that the fishery is highly unlikely to disrupt the key elements underlying ecosystem structure and function to a point where there would be a ‘serious or irreversible harm’.

1.1 Footnote: Modifications Made to Principle 1, Outcome Component

Following discussion with the MSC, after the Public Consultation phase, the condition was placed in PI 1.1.2 instead PI 1.1.1. It was agreed that $F_{CURRENT} = F_{ATH} = 0.75$ is being used at present as Target Reference point. As a result of this, PI 1.1.1 Issue 2 SG 80 was met and the stock was defined as not depleted. As a consequence of this PI 1.1.3 was not scored.

The assessment team determined that the appropriateness of the target reference points used at present for the North Pacific albacore stock (Fishing Mortality = 0.75) is not known (see PI 1.1.2 rationale) and therefore PI 1.1.2 issue 1 was not met.

Modifications made to the scoring and rationales of the Performance Indicators of the Outcome Component of Principle 1 must be taken into account when reviewing the responses to the comments of peer reviewers A and B. Specifically responses provided to comments of peer reviewers in relation to PI 1.1.2 scoring and rationale.

Appendix 2: Stakeholders Comments arising from Public Comment Period

During the assessment phase of Public Comments on the Draft Assessment Certification Report, comments were received from the David Suzuki Foundation. Letter received is shown below.



December 16, 2009

Re: Draft Assessment Report of *The Canadian Highly Migratory Species Foundation (CHMSF) British Columbia North Pacific Albacore (Thunnus Alalunga) Tuna Fishery*

Dear Dr. Antonio Hervás,

We have reviewed the DRAFT report and are satisfied with both the quality of the overall assessment and the conditions imposed on the fishery. The main question of concern raised at our stakeholder visit on May 20, 2009 was surrounding demonstrable evidence that bycatch was not an issue. The report has addressed this concern. Overall, we agree that this fishery meets the MSC standard as a sustainable fishery and the support the certification.

Thank you for considering our input into the stakeholder process.

Sincerely,

A handwritten signature in black ink that reads "Scott Wallace".

Scott Wallace, Ph.D

Sustainable Fisheries Analyst
David Suzuki Foundation