MARINE STEWARDSHIP COUNCIL FISHERY ASSESSMENT

Public Comment Draft Report

For The

Affiliation of Seafood Producers Association of Nova Scotia (ASPANS)

Southern Gulf of St Lawrence Snow Crab (Chionoecetes opilio) Trap Fishery

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Glossary

B_{msy}	Stock size that can produce Maximum Sustainable Yield when it is fished at a level equal to F_{msy}
B_{lim}	Limit biomass reference point, below which recruitment is expected to be impaired.
B_{usr}	Biomass Upper Stock Reference
CAB	Certification Assessment Body
CL	Carapace Length
CoC	Chain of Custody
CFA	Crab Fishing Areas
CSAS	Canadian Science Advisory Secretariat
CPUE	Catch per Unit Effort
CW	Carapace Width
DFA	Department of Fisheries and Aquaculture
DFO	Department of Fisheries and Oceans
DMP	Dockside Monitoring
EAM	Ecosystem Approach Management
EEZ	Exclusive Economic Zone
ESBA	Ecologically and Biologically Significant Areas
ETP	Endangered, Threatened and Protected species
F	Fishing Mortality
F_{lim}	Limit reference point for fishing mortality that is expected to drive the stock to the biomass limit
F_{msy}	Fishing Mortality rate at the level that would produce maximum sustainable yield from a stock that has a size of B_{msy}
FAM	Fisheries Assessment Methodology
FAO	United Nations Food and Agriculture Organisation
ICES	International Council for the Exploration of the Seas
IFMP	Integrated Fisheries Management Plan
IRCA	International Register of Certification Auditors
HCR	Harvest Control Rule
IUU	Illegal, Unregulated & Unreported fishing
LRP	Limit Reference Point
MCS	Monitoring, Control and Surveillance
MPA	Marine Protected Area
MSC	Marine Stewardship Council
MSY	Maximum Sustainable Yield
NAFO	Northern Atlantic Fishery Organisation
PA	Precautionary Approach
P1	MSC Principle 1
P2	MSC Principle 2
P3	MSC Principle 3
PI	MSC Performance Indicator
RAP	Regional Advisory Committee
SAR	Science Advisory Report
SARA	Species at Risk Act
SG	Scoring Guidepost
TAC	Total Allowable Catch
UoC	Unit of Certification
VMS	Vessel Monitoring System

1.0 MSC FISHERY ASSESSMENT REPORT

MSC Full Assessment Reporting Template V1.2 Document.
Date of Issue: 10th January 2012.

• Client Name	Affiliation of Seafood Producers Association of Nova Scotia (ASPANS)	
• Fishery Unit	This assessment report under the 'Unit of Certification' (UoC) covers one target species and one method of capture and the resulting scores are for rectangular and conical traps landings by registered licence holders. Fishing for this UoC is entirely within the Canadian Exclusive Economic Zone (EEZ) and exclusively in Crab Fishing Areas (CFAs) 12, 12E, 12F and 19.	
• Report Issue	•	• Client Report
	•	• Peer Review
	• X	• Public Comment Draft Report
	•	• Final Report and Determination
	•	• Public Certification Report
Global Trust Correspondence to:	GLOBAL TRUST CERTIFICATION LTD 3rd Floor, Block 3, Quayside Business Park, Mill Street, Dundalk, Co. Louth, Ireland. Website: www.gtcert.com **Programme Manager:** Clare Murray claremurray@gtcert.com	

The aim of this assessment is to determine the degree of compliance of the fishery with the Marine Stewardship Council (MSC) Principles and Criteria for Sustainable Fishing.
This Public common draft report is written for the stakeholders after peer review and contains:

- The standard used (MSC Fishery Standard - Principles and Criteria for Sustainable Fishing)
- The scores, weighting and certification outcome (Section 5)
- All intended conditions as set out in Section 8 of the Certification Requirements (CR v 1.1): 'Conditions provide for agreed further improvement in the fishery and provide one of the bases for subsequent audit. They are intended to improve performance against the MSC Principles'.
- The assessment followed the current versions of MSC scheme requirements and these were implemented by Global Trust accredited MSC Procedures.
- Information sources used are provided throughout the report and full references for published, unpublished data and main websites accessed are documented at the end of this report in the reference section.
- Peer review report templates and assessment team responses.

1.1 Executive Summary

This assessment report under the 'Unit of Certification' (UoC) covers snow crab *(Chionoecetes opilio)* and one method of capture and the resulting scores are for trap landings by registered vessels. Other fishing gears are not covered by this certification. This report provides the details and results of the MSC assessed *Southern Gulf of St Lawrence Snow Crab Trap Fishery* against the Marine Stewardship Councils (MSC) Principles and Criteria for Sustainable Fishing (v1.1). The assessment process began in June 2011. As a requirement of the certification process, the initial fishery announcement was advertised in the following media outlets e.g. The Chronicle Herald and the Navigator Magazine; as it was felt these were the most appropriate publications for this fishery. The Navigator Magazine is circulated throughout Atlantic Canada and is viewed by industry as the leading magazine for the fishing industry: http://www.thenavigatormagazine.com/index.asp.

The assessed *Southern Gulf of St Lawrence Snow Crab Trap Fishery* in Crab Fishing Areas (CFAs) 12, 12E, 12F and 19 have not previously been assessed against the MSC Principles and Criteria for Sustainable Fishing under a previous certificate. The current assessment has taken account, where relevant, of other most current assessments led by a CAB in accordance with CR v 1.1 to ensure consistency of assessment outcomes for any fishery assessments that overlap.

The assessment covers Crab Fishing Areas (CFAs) 12, 12E, 12F and 19 and its licensees as defined in section 4 of this report. It is to be interpreted in strict accordance with operational practices, including adherence the certificate sharing mechanism defined in Section 27.23 (Client Sharing Letter) see Appendix 6. A full and up to date active list of fleet licensees will be made available by the client group ASPANS and provided to the certification body on an annual basis as a requirement of surveillance conditions.

A rigorous assessment of the MSC Principles and Criteria was undertaken by the assessment team and a detailed, fully referenced scoring rationale is provided in Appendix 1 of this report. On completion of the assessment and scoring process, the assessment team has provisionally recommended that the *Southern Gulf of St Lawrence Snow Crab Trap Fishery* is eligible to be certified according to the Marine Stewardship Council Principles and Criteria for Sustainable Fisheries.

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

Table 1*:* Final Principle Scores

Final Principle Scores		
Principle	Score	PASS/FAIL
Principle 1 – Target Species	96.9	PASS
Principle 2 - Ecosystem	96.7	PASS
Principle 3 – Management System	83.0	PASS*

*Although the assessment team found the overall Principle and Unit of Certification in overall compliance with MSC Standard, it also found the performance of two performance indicators (PI 3.1.1 & PI 3.2.5) to be below the established compliance mark (Score of 70). Full explanation of these conditions is provided in Appendix 1.

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. A full explanation of how the Client/DFO intends to meet these conditions is provided in the client action plan in Appendix 1 of the report. As a standard requirement of the MSC certification requirements, the fishery shall be subject to (as a minimum) annual surveillance audits. These audits shall be publicised and reports made publicly available.

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

- **Responsibilities on Principle 1** Jerry Ennis
- **Responsibilities on Principle 2** Jerry Ennis/Eric Dunne
- **Responsibilities on Principle 3** Eric Dunne
- **Team Leader:** Dave Garforth
- **Lead Auditor:** Clare Murray
- **Peer Reviewer A:**Don Parsons
- **Peer Reviewer B:** Joe De Alteris

The assessment followed set procedures as described in the MSC Fishery Certification Requirements Version 1.1. Key stages of the assessment were:

- **Stage 1: Fishery Announcement and Assessment Team Formation**
    - Stakeholder Notification: Fisheries enters full assessment- 16th June 2011
    - Stakeholder Notification: Assessment team nominations - 16th June 2011
    - Stakeholder Notification: Assessment team confirmation - 26th June 2011
    - Stakeholder Notification: Assessment team revision - October 2011

- **Stage 2: Building the Assessment Tree**
- Stakeholder Notification: Draft assessment tree released for comment – 29th July 2011
- **Stage 3: Information gathering, stakeholder meetings and scoring**
    - Stakeholder Notification: Site Visit scheduled - 17th October 2011
- **Stage 4: Client and peer review**
    - Stakeholder Notification: Peer reviewers proposed – December 2011
- **Confirmation of peer reviewers** - December 2011
- **Stage 5: Public review of the draft assessment report**
    - Public comment draft report – March 2012
- **Stage 6: Final report and Determination submission-** April 2012

1.2 Authorship and Peer Reviewers

Jerry Ennis (Responsibilities on Principle 1 & 2)

Following undergraduate and graduate degrees at Memorial University of Newfoundland in the 1960s, Dr. Ennis completed a Ph.D. in marine biology at University of Liverpool in the early 1970s. He retired in 2005 following a 37-year research career with the Science Branch of the Department of Fisheries and Oceans. His extensively published work has focused primarily on lobster fishery and population biology and on various aspects of larval, juvenile and adult lobster behaviour and ecology in Newfoundland waters. Throughout his career, Dr. Ennis was heavily involved in the review and formulation of scientific advice for management of shellfish in Atlantic Canada as well as the advisory/consultative part of managing the Newfoundland lobster fishery.

Eric Dunne (Responsibilities on Principle 2 & 3)

Mr Dunne has been a fishery consultant based in St. John's, Newfoundland since 1995, specializing in fisheries management policy analysis. He previously served 15 years as Regional Director-General, Newfoundland Region, Canada Department of Fisheries and Oceans. In that role he acquired extensive senior executive level experience in all aspects of fishery resource management. With a background in the economics of fishing, he previously held senior positions in the department's economics and policy development functions. He also has experience in the area of fisheries innovation and technology development. He has also lectured on fisheries management and fisheries economics in the Masters of Marine Studies Program at Memorial University.

Dave Garforth (Team Leader)

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 agriculture and aquaculture (Nutreco) and operational management. Currently, based at Global Trust as a lead technical expert in fisheries and aquaculture, a lead IRCA approved and a 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.

Clare Murray (Assessment Coordinator/ISO lead Auditor)

Clare manages the technical and administrative functions of Global Trust's MSC Fishery Programme and is a lead IRCA approved auditor. Clare has worked directly in fisheries stock assessment as an observer on national projects in Ireland with the Marine Institute of Ireland. This work involved fisheries research on Marine Institute national surveys and on the discard observer Programme. For 2 years she has worked with an NGO, Irish Whale and Dolphin Group in Ireland. The work involved coordination of the ISCOPE program in the Irish Sea, with particular emphasis on the spatial and temporal abundance of cetaceans in the Irish Sea. Professional qualifications include a Master's Degree in Fisheries Technology

(related to the development of new environmentally friendly pot based fishery techniques) and a degree in Marine Science from the National University of Ireland, Galway.

Peer Reviewer A

Don Parsons: Retired shrimp population biologist from Fisheries and Oceans Canada, Newfoundland Region. Mr. Parsons was the Principle Scientific Investigator for the biology, ecology and population dynamics of northern shrimp (*Pandalus borealis*) and fisheries research in the Newfoundland and Labrador Region from 1978 through to 2006. He has represented Canada at several international fora on *pandalus* species. He has published extensively on the biology and population dynamics of northern shrimp. Recent work included peer review of the MSC assessment of MSC Certified Fogo Island Cold Water Shrimp Fishery.

Peer Reviewer B

Dr. Joseph DeAlteris: professor of fisheries science at the University of Rhode Island has an international reputation as an expert in the field of stock assessments; he brings intimate knowledge of invertebrate fisheries and has considerable experience in MSC fishery evaluations. Dr. DeAlteris has worked with SCS on the full assessment of the Atlantic deep sea red crab evaluation. Dr. DeAlteris brings extensive knowledge of the management of invertebrate fisheries, the MSC evaluation process and of crab fisheries in particular. Recent work included MSC Certified Deep-Sea Red Crab Fishery.

Risk based Framework

The risk based framework (RBF) is designed for use with the default assessment tree specifically with Principal 1 & 2, and was adopted by the MSC to enable scoring of fisheries in data-deficient situations. This has not been triggered during previous assessments of this fishery and has not been considered as a likely option in this assessment.

2.0 Description of the Fishery

2.1 Unit(s) of Certification and scope of certification sought

This report sets out the details of the Marine Stewardship Council (MSC) assessment for the *Southern Gulf of St Lawrence Snow Crab Trap Fishery* against the Marine Stewardship Councils (MSC) Principles and Criteria for Sustainable Fisheries. The report details the background, results and justification of the fishery, carried out by Global Trust Certification Ltd. to the Marine Stewardship Council (MSC) Principles and Criteria for Sustainable Fisheries Programme.

The MSC Guidelines or rationale to Certification Bodies specify that the Unit of Certification is "The fisheries 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 practices are illegal throughout Canada.

The'Units of Certification' (UoC) of the fishery evaluated in this report is defined as:

Species	(*Chionoecetes opilio*)
Common Name	Snow Crab
Geographical Range of the Fishing Operation	The Southern Gulf of St. Lawrence in DFO management Crab Fishing Areas 12, 12E, 12F, 19 (Southern Gulf)
Method of capture	Conical or rectangular crab pots (traps)
Management System	Fisheries & Oceans Canada [Canadian Fisheries Act]
Client Group	ASPANS

Description of the Harvesters

In the entire southern Gulf of St. Lawrence (SGSL) fishery, 449 licenses were issued in 2010. These were utilized by 424 boats and a total of 2,120 harvesters. All snow crab vessels in CFAs 12, 12E and 12F are in the under 100 ft category; in CFA 19 all vessels are less than 45 feet. Licenses are issued to qualified commercial harvesters or on a communal basis to First Nations groups. The individual commercial license holders are usually long-time members of the harvesting sector. In CFA 12, 12E and 12F each commercial license holder receives an individual share of the relevant fleet's total allocation and a maximum number of traps. In CFA 19, each license is issued for a specified number of traps to a maximum number of 1,669. Individual quota allocations in CFA 19 are determined by the number of traps authorized by each license. There are an estimated 2,000 people employed in shore-based activities.

2.1.1 Scope of Assessment in Relation to Enhanced Fisheries

This fishery does not meet the scope criteria for enhanced fisheries and so is not considered as such. This section is not applicable.

2.1.2 Scope of Assessment in Relation to Introduced Species Based Fisheries (ISBF)

This fishery does not meet the scope criteria for Introduced Species fisheries and so is not considered as such. This section is not applicable.

2.2 Overview of the fishery

2.2.1 Biology of the Target Species

The snow crab (*Chionoecetes opilio*) is a subarctic species distributed along the east coast of North America from northern Labrador to near the Gulf of Maine. It supports major commercial fisheries through much of this range. Snow crabs are the most important species of crab harvested in Atlantic Canada and are exploited by commercial and First Nations fishers coast-wide. Commercial concentrations are found at depths from 60 to 280 m and temperatures of -1 to 6^{o} C. The effects of temperature depend on the stage of the snow crab's lifecycle and prefer a narrow temperature range of cold water less than 3 to 4°C. Temperatures greater than 7°C are known to be detrimental to snow crab. Large snow crab is generally found on soft mud bottoms although smaller and moulting crabs are found on more complex substrates that provide shelter.

Snow crab (*Chionoecetes opilio*); have flat, almost circular bodies and five pairs of spider-like legs. They are sexually dimorphic, meaning males and females have two different forms, with obvious size differences between them. Eggs are brooded by females for around two years. A primiparous female of

approximately 57 mm CW would produce between 35,000 to 46,000 eggs which are extruded during winter-spring. The actual range of fecundity is quite large: multiparous females produce more than 100,000 eggs. Eggs are hatched from April to June. Larvae are pelagic 3 to 5 months and settle to the bottom in autumn to winter. Very little is known of survival rates at these early life stages. As they grow these crabs periodically shed their shell (a process called moulting) including the carapace-the large portion on the crab's back. Moulting is an important sign of a snow crab's growth as it matures and gets ready to reproduce. The fishery for snow crab on the Scotian Shelf targets large males (95 mm carapace length minimum). Females attain terminal moult and sexual maturity at smaller sizes (mostly in the 45-75 mm CW range). Males reach a much larger size at maturity, with a carapace up to 165 mm wide, a leg span of 900 mm, and a weight of about 1.35 kilograms. By comparison, the female's carapace does not often grow beyond 95 mm; its leg span is about 380 mm and it weighs under half a kilogram. Males mature and stop growing a carapace width as small as 40 mm, characterised as a terminal moult and characterized by the development of large claws on the first pair of legs. The average difference of two to three years at terminal moult between males and females causes a sexual size/age dimorphism with males older and larger than females. Life expectancy after terminal moult for both males and females is typically four to six years. Snow crab reproduction dynamics are complex and involve paired mates with intense competition for mating partners between males and potentially as well between females.

Apart from size, snow crabs also differ in shape: males have a triangular abdomen and relatively large claws, while the female's abdomen is circular and their claws are rather small. Outside the spring mating period there is a degree of spatial separation between large males. Minimum mesh size requirements ensure that any undersize crabs entering traps are provided ample opportunity to escape on the bottom. Large adult males are considered to have a particularly beneficial role to reproduction compared to smaller mature males. Large males can deposit larger sperm loads and female clutch size is positively correlated to sperm load and female size. Large males may clutch females for longer period thus affording protection from predation, harassment and loss of eggs. The abundance of adult crab is characterized by large oscillations with strong autocorrelation patterns in year class abundance have been attributed to competition among year classes large and medium size crab competing with and consuming smaller and newly settled crab[1]. Female crabs are rarely encountered in commercial catches. Incidental fishing mortality on females is negligible.

The snow crab diet includes fish (capelin and lumpfish), clams, polychaete worms, brittle stars, shrimp, sea urchins, worms, detritus, large zooplankton, other crabs, ocean quahaug, molluscs, sea snails and sea anemones. Predators of snow crab are groundfish, halibut, skates (especially thorny skate), cod, seals, American plaice, squids, and interspecific predation. Crab in the size range of 3 to 30 mm carapace width (CW) and are particularly vulnerable to predation, as are soft-shelled crab in the spring moulting season.

It takes up to 10 months after moulting for the shell to harden and up to 1 year for meat yields to be commercially viable. After hardening of the carapace the male is able to mate. Females reproducing for the first time (primiparous) generally begin their moult to maturity at an average size of 60 mm CW and

1 Sainte-Marie, B., Sévigny, J.M., Smith, B.D. and Lovrich, G.A. 1996. Recruitment variability in snow crab (Chionoecetes opilio): Pattern, possible causes, and implications for fishery management. High Latitude Crabs: Biology, Management, and Economics, Alaska Sea Grant College Program AK-SG-96-02: 451-478.

mate while their carapace is still soft. Mating involves complex behaviours. Pair formation (a mating embrace where the male holds the female) may occur up to 3 weeks prior to mating. Females are selective in their mate choice, as is often the case in sexually dimorphic species, and sometimes die in the process of resisting mating attempts from unsolicited males. Males compete heavily for females and often injure themselves in the contest over a female. Larger males with larger chela are generally more successful in mating and protecting females from harm.

Primiparous females mate after their terminal moult, sometime from February to mid- March. The male fertilizes the female's eggs before they are released. The eggs are deposited on the female's pleopods, under her abdomen, and are carried there until the larvae hatch-one to two years later. A female can produce up to 160,000 eggs depending on her size. The larvae are released from April to late May and are found throughout the water column (between the surface and the bottom). Depending on temperature, this planktonic larval development lasts three to five months. Water temperature determines how long the eggs are carried. The larvae will go through various stages before settling on the sea bottom. Females have spermathecae and can store sperm for fertilizing multiple batches of eggs without re-mating. In the southern Gulf of St. Lawrence, eggs are carried under the abdomen by females for about two years before hatching. The eggs hatch in late spring or early summer and the newly-hatched crab larvae spend 12-15 weeks floating freely in the water column. At the end of this period, they settle on the bottom. It takes at least 8-9 years (post-settlement, 10-11 years post mating) for males to reach carapace sizes >=95 mm, the legal size for harvest in the commercial fishery. For the first few weeks, the new shell is soft and easily damaged, and the crab is highly vulnerable to natural predation, or to injury or death as a result of trapping or poor handling. It requires two months or more for the new shell to completely harden and fill with meat. In the Newfoundland area, younger snow crabs or recently moulted crabs are particularly susceptible to bitter crab disease, a blood parasite that is fatal to many within a year of acquiring the disease.

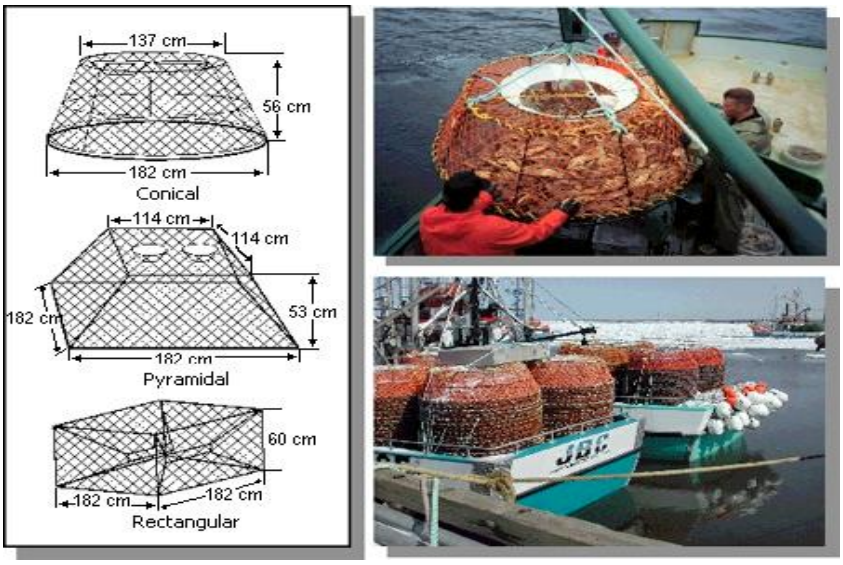
Male and female snow crabs develop differently, though each undergoes three stages of development.

Male		Female	
juvenile	when its reproductive organs do not function	*immature*	when they have a narrow abdomen and no detectable ovaries
adolescent	when its reproductive organs do function but its claws are not yet enlarged	*prepubescent*	when their ovaries begin to develop
adult	when its claws are enlarged	*adult*	when their abdomen gets broader and they have the ability to reproduce

Figure 1. Snow Crab

Bitter Crab Disease: Bitter crab disease (BCD), caused by a parasitic algae, commonly infects crabs in the Bering Sea, and off Newfoundland and Labrador. There have been recent anecdotal reports of BCD occurrences on the Scotian Shelf stocks. Research into the frequency of infestation, potential stock impact and presence of the disease in other shellfish is being undertaken by the Lobster Science Centre at the Atlantic Veterinary College in Charlottetown, PEI[2.] Infected crabs have a bitter taste, their leg meat becomes milky white in colour and their mortality is thought to be high. The rate of mortality is higher in August-September and decreases towards the mid-winter. Other diseases such as carapace diseases caused by fungus and bacteria are also known but are less detrimental compared to BCD.

Figure 2. Snow Crab Traps

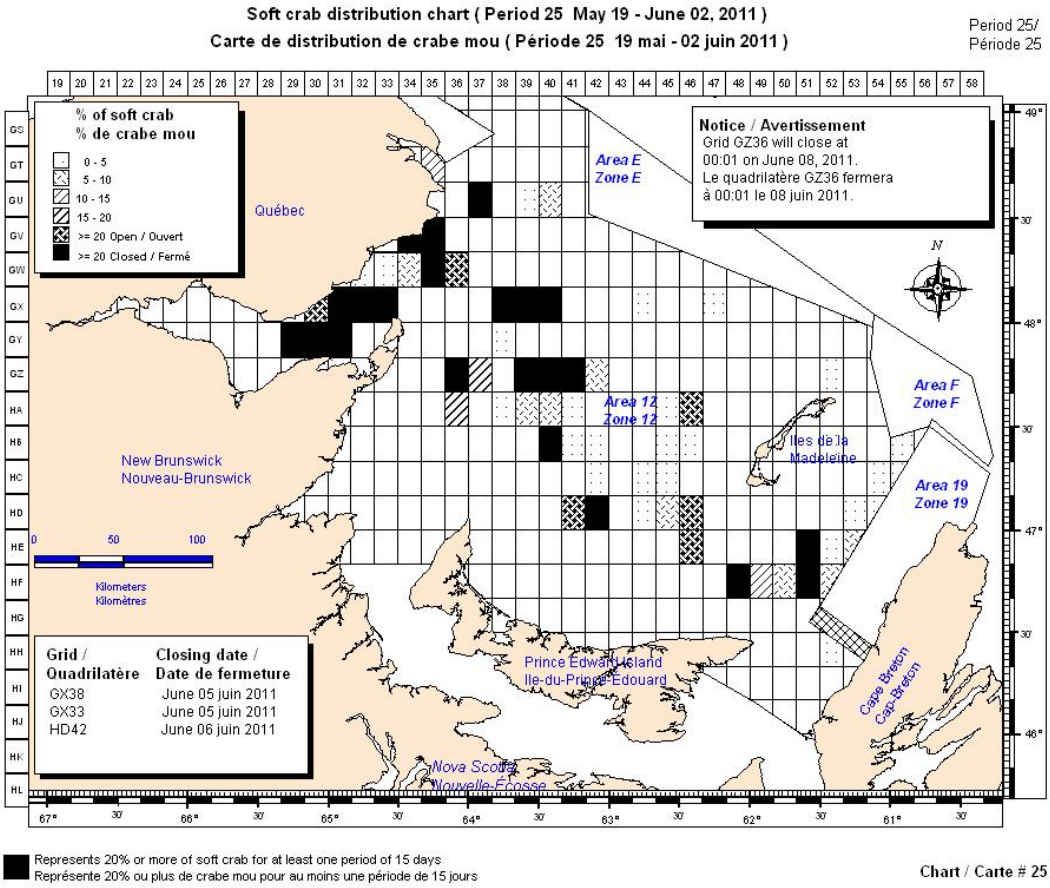


2 http://www.lobsterscience.ca/bitter_crab_disease

2.2.2 Fishery and catching method Southern Gulf of St Lawrence

The commercial fishing season for snow crab in the southern Gulf of St. Lawrence typically occurs from spring to early summer in CFAs 12, 12 E and 12 F and after July 1st in CFA 19. Baited rectangular but mainly conical traps, constructed of wire or tubular steel, are used to catch crab, mainly on mud or sand-mud bottoms at temperatures ranging from -0.5 to 4.5°C and depths ranging from 50 to 280 m. Management of the fisheries is based on quotas and effort controls (number of licenses, trap allocations, trap dimensions, and seasons). The minimum legal carapace size for retention in the fishery is 95 mm and females are not harvested. Soft-shell and white-crab, which have recently moulted and for which the carapace has not fully hardened, are of lower economic value and are not of interest to the fishery. There are soft shelled and white crab protocols which allow for closure portions of each fish area when the proportion to maximise the yield and the reproductive potential of the resource.

Figure 3. Soft Crab Distribution Chart Gulf St Lawrence 2011



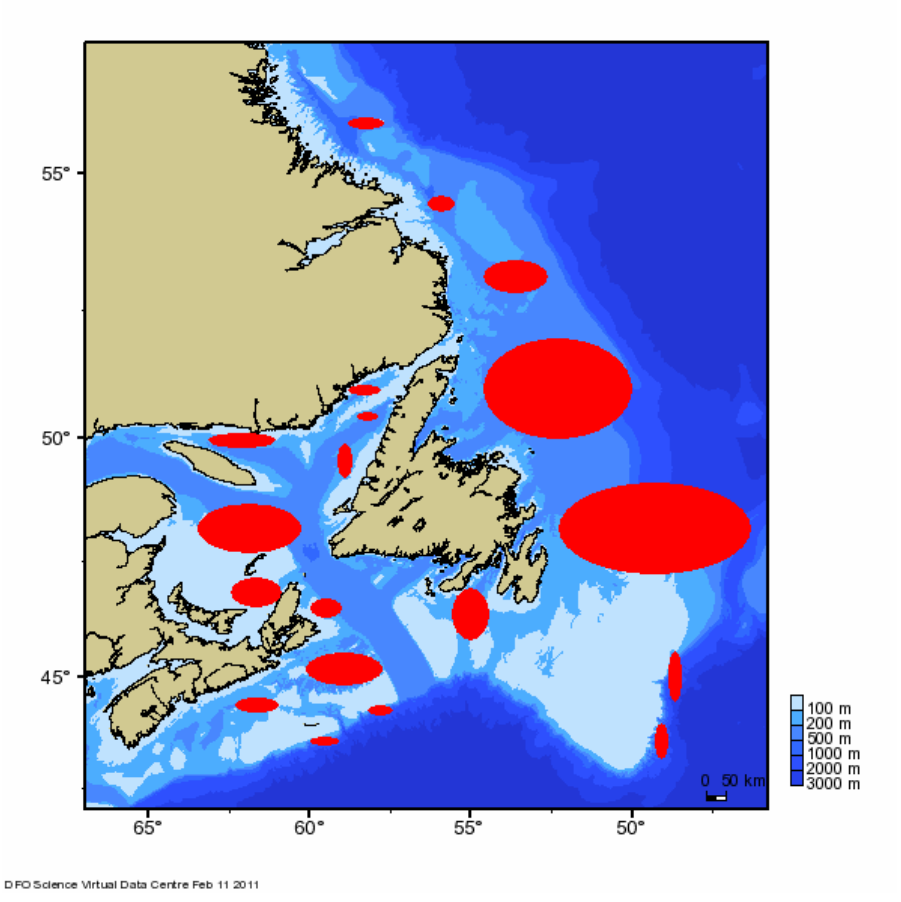
Crab fishing vessels vary in size depending on whether the fishery is inshore, mid-shore or offshore. Snow crabs are trapped using various baits: most often herring, mackerel or squid. Once captured, the crabs are kept alive on ice in the hold of the fishing boat. Some vessels have saltwater circulation

systems that maintain the quality of the crabs until processing, which usually happens within hours of their delivery to the processing plant.

Figure 4. 2010 Gulf of St Lawrence Total number of licenses, allowable catch, landings.

	CFA 12	CFA 12E	CFA 12F	CFA 19	Total
No License	261	8	18	162	449
No Boats	288	3	17	99	424
Total traps	32390	800	1350	1699	36639
Opening	April 21	May 5	April 12	July 14	
Closing	July 18	July 18	July 17	July 30	
Quota (MT)	7700	67	420	1360	9547
Landings (MT)	7719	50	420	1360	9549

Figure 5. Distribution of Snow Crab Stocks Harvested in Atlantic Canada[3]



3 http://www.dfo-mpo.gc.ca/fm-gp/sustainable-durable/fisheries-peches/snow-crab-eng.htm

Table 2: Snow Crab Quota Report http://www.dfo-mpo.gc.ca/stats/commercial/qr-rc/2010/cra-eng.htm

2010-01-01 TO 2010-12-31										
Area by type of vessel-Season	Initial quota	Quota after transfer	Maritimes	Gulf	QC	NFLD	C&A		%	Remaining
AREA 12/18/25/26 TRADITIONAL FLEETS	5,327	5,394	0	4,058	1,320	0	0	**5,378**	100 %	16
AREA 12/18/25/26 ABORIGINAL FISHERY	1,218	1,167	0	710	513	0	0	**1,223**	105 %	-56
AREA 12/18/25/26 NEW ACCESS	1,155	1,139	0	744	374	0	0	**1,118**	98%	21
AREA 12A CRAB FISHERS	97	97	0	0	97	0	0	**97**	100 %	0
AREA 12B CRAB FISHERS	246	246	0	0	247	0	0	**247**	100 %	-1
AREA 12C CRAB FISHERS	220	220	0	0	220	0	0	**220**	100 %	-1
AREA 12C TEMPORARY ALLOC.	100	100	0	0	101	0	0	**101**	101 %	-1
AREA 12E CRAB FISHERS	67	67	0	48	2	0	0	**50**	75%	17
AREA 12F CRAB FISHERS	420	420	0	131	289	0	0	**420**	100 %	0
AREA 12F TEMPORARY ALLOC.	0	0	0	0	0	0	0	**0**	-	-
AREA 13 CRAB FISHERS	188	188	0	0	146	0	0	**146**	78%	42
AREA 14 CRAB FISHERS	509	509	0	0	496	0	0	**496**	97%	13
AREA 15 CRAB FISHERS	538	538	0	0	538	0	0	**538**	100 %	0
AREA 15 TEMPORARY ALLOC.	55	55	0	0	57	0	0	**57**	103 %	-2
AREA 16 CRAB FISHERS GR. A	4,270	4,270	0	0	4,085	0	0	**4,085**	96%	185
AREA 16 CRAB FISHERS GR. B	336	336	0	0	334	0	0	**334**	99%	2
AREA 16A TEMPORARY ALLOC.	426	426	0	0	426	0	0	**426**	100 %	-1
AREA 17 CRAB FISHERS	1,258	1,258	0	0	1,259	0	0	**1,259**	100 %	-1
AREA 17 TEMPORARY ALLOC.	172	172	0	0	174	0	0	**174**	101 %	-2
AREA 19 INSHORE CAPE BRETON - TEMP,	1,361	1,361	0	1,360	0	0	0	**1,360**	100 %	1
AREA 19 INSHORE CAPE BRETON	0	0	0	0	0	0	0	**0**	-	-
2010-01-01 TO 2010-12-31										
AREA 20-22 SCOTIA-FUNDY SNOW CRAB (15/04/09 - 08/08/09)	576	576	585	0	0	0	0	**585**	101 %	-9
AREA 23 SCOTIA-FUNDY SNOW CRAB (01/05/09 - 30/09/09)	7,141	7,141	6,697	386	18	0	0	**7,101**	99%	41
AREA 24E SCOTIA-FUNDY SNOW CRAB (01/05/09 - 30/09/09)	6,059	6,059	6,049	0	0	0	0	**6,049**	100 %	10
AREA 24W/4X SCOTIA-FUNDY	346	346	345	0	0	0	0	**345**	100 %	1
TOTAL SNOWCRAB	**32,084**	**32,084**	**13,676**	**7,437**	**10,697**	**0**	**0**	**31,809**	**99%**	**275**

The Southern Gulf of St. Lawrence Snow Crab Fishery

The snow crab fishery of eastern Canada began in the early 1960s with incidental by-catches by groundfish draggers in the southern Gulf of St. Lawrence. During the 1980s it expanded rapidly to become one of the largest in Canada in terms of landings and landed value. The landings from the southern Gulf of St. Lawrence increased from 1969 to the present with three periods of high landings: 1981-1986, 1994-1995, and more recently 2002 to 2009. Peak landings were reported in 2005, 36,118 mt, while the lowest landing was reported in 1975, 4,632 mt.

The snow crab fishery in the Southern Gulf of St. Lawrence occurs in what is essentially NAFO Subdivision 4T. For the purposes of establishing the Total Allowable Catches, the stock is now managed as one biological unit. Until 1994, 130 mid-shore fish harvesters from New Brunswick, Québec and Nova Scotia exploited the snow crab fishery in CFA 12. In 1978, CFA 19 was established for the exclusive use of Cape Breton inshore fish harvesters with vessels less than 13.7 m (45 feet) in length. There were 162 licenses in CFA 19 in 2010.

In 1995, CFAs 12E and 12F were created for exploratory fisheries that were changed to commercial fisheries in 2002. Eight licensed enterprises from New Brunswick, Nova Scotia, PEI and Québec now fish in 12E while 18 operations from Québec and Nova Scotia fish 12F[4]. The main fishing grounds range from around the Gaspe Peninsula to the Magdalen Islands, around Cape Breton Island toward south-western Nova Scotia. Since 1997, the PEI coastal fishery, formerly Areas 25/26, has been integrated into Area 12. In 2003, harvesters from the coastal fishery off south-western Cape Breton (formerly CFA 18) were also integrated into CFA 12. For the purpose of this assessment, CFA 12 refers to the new management unit. The number of licenses in CFA 12 was 261 in 2010.

Beginning in 2011, a global Southern Gulf TAC is established and then distributed among the four southern Gulf CFAs (12, 12E, 12F, 19) based on their annual prorated biomasses for the post-fishery RV survey. The allocation in each CFA is then disturbed among the various fleets.

The annual allocation in CFA 12 (which is some 86% of the SGSL total) is allocated among three user groups: First Nations, Traditional Fleet and New Entrants. In addition, the quota is further allocated to stakeholders in each of the four provinces (Nova Scotia, New Brunswick, Prince Edward Island and Quebec) that border the Southern Gulf of St. Lawrence. The details of the 2011 sharing arrangements are given in the 2011 Snow Crab Management Decisions for CFA 12 as posted on the DFO website[5]. The 2011 TAC of 8,584 mt was allocated as follows:

- The quota for First Nations is 1,358 t (15.816%) and distributed as follows:
    - New Brunswick (NB): 747 t (8.7%)
    - Quebec (QC): 536 t (6.239%)
    - Prince Edward Island (PE): 75 t (0.877%)
- The quota for the Traditional Fleets is 5,939 t (69.184%) and distributed as follows:
    - New Brunswick: 3,383 t (39.408%)
    - Quebec: 1,817 t (21.169%)

4 Hébert, M. et al., 2010. The 2010 assessment of the snow crab (Chionoecetes opilio) stock in the southern Gulf of St. Lawrence (Areas 12, 19, 12E and 12F). DFO Can. Sci. Advis. Sec. Res. Doc. 2011/082.

5 Snow Crab CFA 12, 18, 25 and 26 http://www.dfo-mpo.gc.ca/decisions/fm-2011-gp/atl-021-eng.htm

- Nova Scotia: 100 t (1.169%)
- Prince Edward Island: 295 t (3.436%)
- Harvesters from Crab Fishing Area 18: 344 t (4.002%)

- The quota for New Access is 1,288 t (15%) and distributed as follows:

Separate shares of the overall TAC are allocated to CFAs 12E, 12F and 19. Licensed operators in CFA 12 E and F are members of the existing or traditional fleets. All fleet percentage quota shares in CFA 12 have been stabilised for the period 2010-2014. There is no recreational component in any of these fisheries.

The last Fisheries Management Plan (FMP) for Area 12, 12E and 12F snow crab is contained in a three-page Press Release issued in March 2006. A new IFMP is currently under development but the finalization date is unclear. Since 2006, annual management measures for these snow crab fisheries have been announced through annual fisheries management decisions posted on the DFO Website.

The snow crab fishery along the west coast of Cape Breton was initially fished in the mid-1960's by a group of Danish seiners based in Chéticamp with fishers from Quebec and New Brunswick fishing sporadically in the area. With the increase in the commercial value of snow crab in the late 1970's, the fishery gradually expanded to cover all fishing grounds along the West Coast of Cape Breton Island. In 1978 an area known as "the gully" (now Crab Fishing Area 19) was declared an exclusive inshore zone.

By 1992, the number of licensed fishers involved in the CFA 19 fishery had reached 74 (59 permanent and 15 temporary licenses). In 1995, individual trap allocations and ITQ's were reduced to provide for 37 new participants. By 2011, there were a total of 162 permanent licenses and a total of 1,699 traps. In July 1996 the first Area 19 Co-management Arrangement was instituted as the basis for the management of this fishery. This involved a separate CFA 19 Integrated Fishery Management Plan (IFMP) and a Joint Project Agreement (JPA) whereby the CFA licence holders contributed funding towards a separate biomass survey in CFA 19. The current IFMP for CFA 19[6] runs to the end of 2013, but the separate pre-fishery biomass survey has been discontinued because of the implementation of the Precautionary Approach in the southern Gulf. The total allowable catch for all of SGSL is now calculated by applying a single target exploitation rate based on the post-fishery survey total exploitable biomass estimate. CFA 19's percentage share of that overall SGSL allowable catch is then calculated on the basis of the percentage of the biomass that was estimated as being in that area at the time of the post-fishery survey. In 2011 this percentage share was 15.95. (Until 2011, the quota for CFA 19 was set by applying an exploitation rate between 32 and 42 percent to the exploitable biomass estimate from a pre-fishery survey in that CFA.)

The quota thus provided to CFA 19 is allocated by the number of traps held by each license holder; each trap represents an equal share of the CFA's allowable catch. Under the current IFMP, the total number of licenses can range between 145 and 184 depending on transfer of traps as harvesters level of participation in the fishery each year is determined. The maximum numbers of traps that can be held by a single licensee is 26 and the minimum is 3. First Nations hold 15 licenses with a total of 9 percent of the CFA 19 quota. The current IFMP commits to maintaining at least this percentage share for the 2007-13 period.

6 2007-13 IFMP CFA 19 http://www.glf.dfo-mpo.gc.ca/e0008346

It is presently being modified to take into account. Based on that IFMP and the annual management decisions Area 19 harvesters prepared their annual Conservation Harvest Plan (CHP) for 2011. This CHP detailed the various limits, rules and management measures that will be in effect for the current year fishery.

Table 8 below shows the main parameters of the snow crab fishery in the four Southern Gulf CFAs in 2010.

Table 3: Summary of The Southern Gulf Snow Crab Fishery, 2010

	Crab Fishing Area				
	12	**12E**	**12F**	**19**	**Total**
Number of Licenses	261	8	18	162	449
Number of Boats	288	3	17	99	424
Total Traps	32,390	800	1,350	1,699	36,639
Opening Date	April 21	May 5	April 12	July 14	
Closing Date	July 18	July 18	July 17	July 30	
Quota (Mt)	7,700	67	420	1,360	9,547
Landings (Mt)	7,719	50	420	1,360	9,549
Source: Canadian Science Advisory Secretariat Science Advisory Report 2011/082					

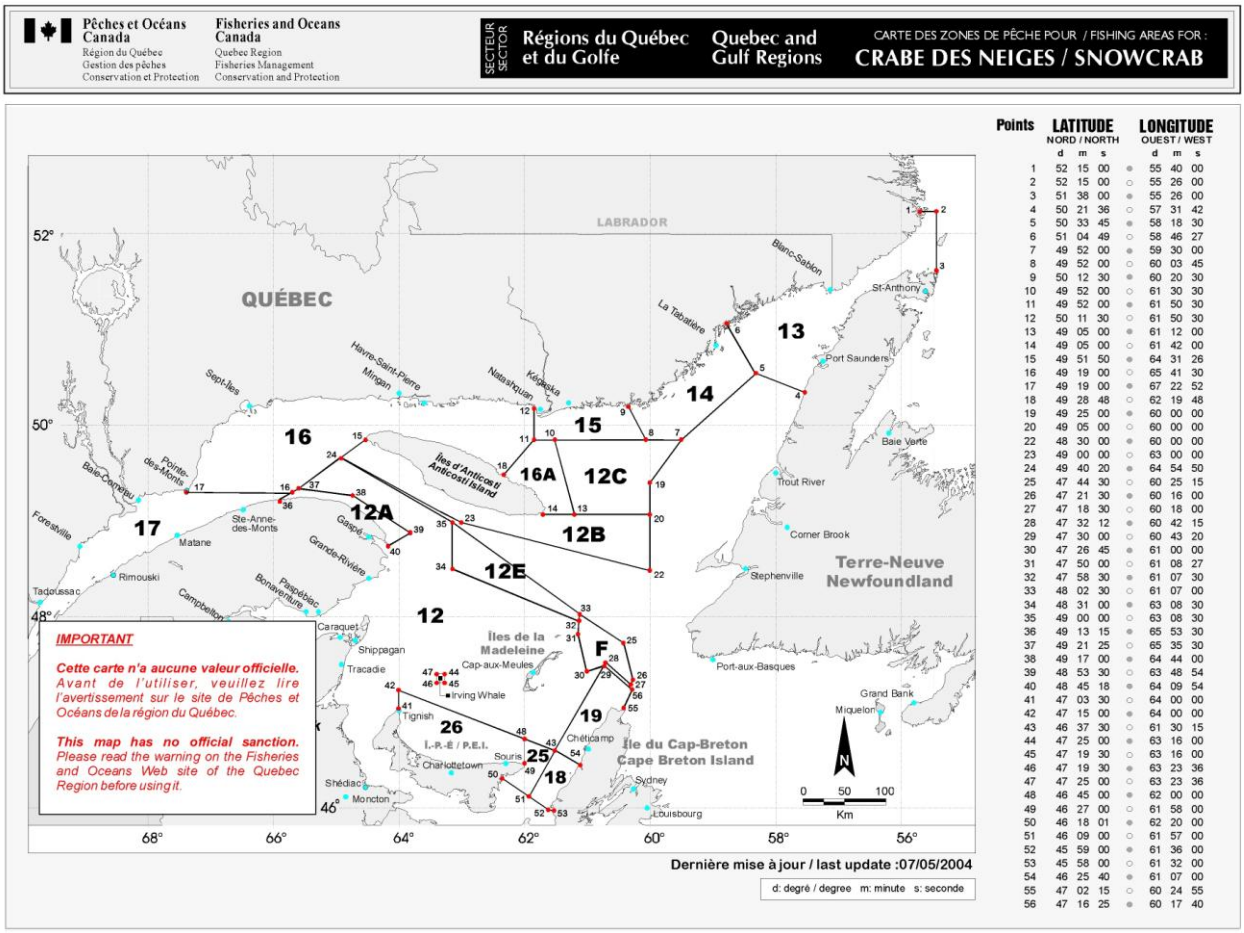
Snow crab landings from the Southern Gulf of St. Lawrence have increased from 1969 to the present with three periods of high landings: 1981-1986, 1994-1995, and more recently 2002 to 2009. Peak landings of 36,118 mt were reported in 2005 and the lowest catch of 4,632 mt was reported in 1975. The catch history against Total Allowable Catch (TAC) from 2002 is shown in Table 4 below.

Table 4: Snow Crab TACs and Landings, Southern Gulf of St. Lawrence, 2002 to 2010

Year	**TAC**	**Catch**
2002	25,826	25,691
2003	21,412	21,163
2004	32,850	31,675
2005	36,144	36,118
2006	29,234	29,076
2007	26,910	26,867
2008	24,887	24,458
2009	23,998	23,642
2010	9,547	9,549
Source: : Canadian Science Advisory Secretariat Science Advisory Report 2011/002		

Figure 6. Southern Gulf of St Lawrence Snow Crab Management Units

Source: CSAS SAR 2011/002



3.0 DESCRIPTION OF FISHERIES BY MSC PRINCIPLE

3.1 Principle One: Target Species Background

Stock Status

Large adult males are considered to play a particularly important role in maintaining reproductive capacity and stock resilience. They out compete small adult males for females, tend to mate with larger females, deposit larger sperm loads which with size is correlated with clutch size, and maintain the mating embrace for longer periods affording females better protection from predation, harassment and loss of eggs. Management ensures a high proportion of large males available for mating by maintaining moderate exploitation rates on the fishable biomass.

Nevertheless, SSB varies appreciably over time due to natural causes. Abundance of mature females in the population declined sharply from 1990 to 1995. Following a partial recovery in 1999 to a level approximately half that in the early 1990s, which persisted for several years, it declined to a very low level over the 2005-2009 period. Abundance of mature females increased in 2010, however, continued low abundance of immature and pubescent females in the population in recent years suggests that mature female abundance will remain low in the coming years.

The extent to which recruitment will be impacted by current low abundance of mature females is unknown. Neither the shape of the stock recruitment relationship nor larval recruitment processes are well known for snow crab anywhere in Atlantic Canada. Nevertheless, it is reasonable to assume that strong recruitment is most likely at some intermediate SSB level. Recruitment increased over the 1999 to 2004 period, despite reduced abundance of mature females during 1993-1998, but has been declining since along with mature females. Over the 1990 to 2010 period, abundance of Instar VIII crab (34-44 mm CW, 5 years post hatching) in the southern Gulf population has undergone two pronounced oscillations, males and females in tandem. These oscillations are believed to be independent of the fishery. In many populations of various crab species, abundance of adult crab is characterized by large oscillations with strong autocorrelation patterns in year class abundance. Oscillations in Gulf snow crab populations have been attributed to strong density-dependent processes involving competition among year classes with large and medium size crab competing with and consuming smaller and newly settled crab. These oscillations are characterized by 4-5 years of high recruitment followed by 4-5 years of low recruitment.

Snow crab throughout the southern Gulf are considered a single biological unit. Nevertheless, a long larval period, from hatching in spring/early summer to settlement in autumn/early winter, provides considerable opportunity for dispersal/transport of larvae between various sub-units of the snow crab stock complex in the waters of Atlantic Canada. While the southern Gulf population for the most part is likely to be self-sustaining, there is potential for recruitment originating with populations elsewhere in the Gulf in particular.

Bottom water temperature conditions in the southern Gulf in 2010 are considered sub-optimal for snow crab. The mean temperature index was higher than normal and the snow crab habitat index (bottom area with temperature from -1 to 3^{o} C) was below normal.

Biomass of commercial-size adult males declined appreciably after 2004 to the lowest level observed in the survey time series (1990 to 2010) in 2009. Although it increased slightly in 2010, it is still below the upper stock reference point B_{usr} that has been defined. However, biomass of pre-recruits that will become available to the fishery in 2 years increased in 2010 and biomass of pre-recruits that will recruit over the next 3-4 years has been increasing since 2006. Biomass of commercial-size adult males is forecast to increase appreciably over the next several years.

The abundance of commercial-size adult males was proposed as the indicator of stock status for the southern Gulf of St. Lawrence snow crab population to guide fishing activities in the PA framework. It is the life stage which is exploited and valued by the fishery, and whose abundance can be directly affected by the fishing activity; and it is hypothesized to have a particular value to reproductive capacity of the stock and to its resilience. Managing under the assumption that large commercial-size adult male recruitment is at least in part dependent upon the abundance of large commercial-size adult male mating stock results in the least risk to the resource.

Upper stock and limit reference points were defined based on survey estimates of fishable biomass. In the absence of an explicit model, a provisional estimate of B_{msy} was taken as 50% of the maximum biomass observed over a productive period, i.e. 1997 to 2008. The maximum was observed in 2004 and yields a B_{msy} of 42,400 t. Following DFO guidelines, B_{usr} = 80% of B_{msy}, yields an upper stock reference point of 34,000 t. This B_{usr} is commercial-size adult male crab of all carapace conditions as estimated by the post-fishery survey, all of which will be hard-shelled, as of 1 January of the year following the survey. Over the survey time series, fishable biomass below this B_{usr} has been observed only in 2009 and 2010.

The limit reference point was chosen as the lowest biomass of hard-shelled commercial-size adult male crab in the post-fishery survey (residual biomass) which produced good recruitment rates of juvenile crab at Instar VIII. This B_{lim} ($B_{recovery}$) value is 9,400 t observed in 2000, which is the only year that residual biomass has been less than 10,000 t over the past 22 years.

Consistent with the United Nations Fish Stock Agreement (UNFSA) F_{msy} (the fishing mortality which gives the maximum sustainable yield) is the minimum standard for the removal reference in the application of the PA to fisheries. In the context of the Canadian framework for the PA, the exploitation rate in the Healthy Zone should not exceed F_{msy}. In the absence of an explicit model, a provisional estimate of F_{msy} for snow crab in the southern Gulf was taken as the average exploitation rate over the same period used to estimate B_{msy}. The F_{lim} value was calculated at 0.401, the average exploitation rate (harvest in year t divided by biomass in year t-1 estimated from the trawl survey) over the 1998 to 2009 fishing seasons.

Given a fishery that targets large adult males, with negligible incidental mortality on females, an important role played by the large adult males in maintaining reproductive capacity and stock resilience, as well as density-dependent processes involved in regulating abundance of both sexes, the provisional target and limit reference points chosen are appropriate. Through substantial TAC reductions, the exploitation rate in 2010 was reduced to 36.6% (below F_{lim}) from 50% in 2009. An increasing trend in recruitment of commercial-size adult males is forecast over the next 5 years. Since management based

on reference points was only implemented in 2010, ongoing monitoring over the next several years will reveal its effectiveness.

The 2010 post-fishery survey biomass of commercial-sized adult crabs was estimated at 30,500 t (27,400 to 33,700 t), an increase of 17% from 2009, but below B_{usr} (34,000 t). The residual biomass (13,500 t) from the 2010 survey increased by 26% compared to 2009. Recruitment to the fishery (soft-shell, commercial-size adult males) increased by 10% relative to the 2009 estimate. Indices of recruitment for the next several years increased as well. In addition, the abundance of mature females increased in 2010 relative to values during 2005 to 2009. It is anticipated that fishable biomass will be above B_{usr} within the next year or so. The most recent assessment included a risk analysis associated with a range of catch options for the 2011 fishing season giving probabilities of F_{lim} being exceeded, of residual biomass falling below B_{lim} and of fishable biomass being below B_{usr} after the season. The TAC for 2011 was set at 11,384 t, a 19% increase from 9,547 in 2010, which is targeted to achieve an exploitation rate of 35%. With removals in 2011 of 11,500 t, the risk analysis estimated a p=.08 for F_{lim} being exceeded, a p=.36 for residual biomass falling below B_{lim} and a p=.29 for fishable biomass below B_{usr} after the fishing season.

Management of the fishery in the southern Gulf has adapted and evolved over the course of its history. Currently, there are four management areas (12, 12E, 12F and 19). The practice of controlling removals by way of TAC is well established. Based on an annual, post-fishery resource survey, TAC adjustments for the following fishing season are made for each of the four management areas. New recruitment to the fishery (soft-shell crab which has no commercial value) is protected from handling mortality by the soft-shell protocols requiring closure of specific grids for the remainder of the season when the incidence of soft-shell crab in observer sampling exceeds 20%.

Industry has adopted a precautionary approach to the conservation of large mature males (i.e. a moderate exploitation rate) to ensure they have opportunity to participate in maintaining the reproductive potential of the population. A harvest rate of 40% of the fishable biomass when it is above the upper stock reference point (healthy zone) and lower when it is in the cautious zone is the key part of the strategy for long-term sustainability in this fishery. A moderate exploitation rate also provides a measure of stability to the fishery by making it less susceptible to the vagaries of recruitment variability.

Specific management measures include a variety of input and output controls. Effort is controlled by limited entry licensing, a trap limit per license and fishing season. Catch is controlled by minimum legal size of males, no take of females, minimum mesh size in traps to allow undersize escapement as well as a maximum mesh size, maximum trap size, traps must be fitted with biodegradable panels, no take of white or soft-shell crab and TAC, which is allocated on the basis of individual license percentage shares and managed through individual transferable quotas (ITQs).

There is a history of TAC adjustments based on trawl survey biomass estimates. Most notable was a major reduction from 23,998 t in 2009 to 9,547 t in 2010.

A fishery independent, scientific survey of the resource is conducted annually. Logbooks are mandatory and include information on fishing position, catch and effort each fishing day. 100% of landings are monitored at dockside. At-sea monitoring of catches is conducted by certified observers. In 2009, target

coverage was 25% of all fishing trips and approximately 17% of the landings came from observed trips. An electronic Vessel Monitoring System (VMS) is in place for the entire fleet. 100% hail out and hail in (using an automated system) is required to keep Dockside Monitoring and At-sea Observer companies informed of vessel activity. Each time series of data is updated annually and subjected to rigorous statistical analysis including detailed consideration of sources of error and uncertainty.

In addition to the foregoing information monitoring directed at the crab resource and its fishery, there is broad-scale ecosystem/environmental monitoring that is utilized extensively in crab assessment and management.

Stock Assessment

An annual post-fishery survey of the southern Gulf crab resource, which is the main stock assessment tool, has been conducted since 1988. A Bigouden Nephrops trawl, which is designed to dig into soft sediments, is used. The survey is extensive, covering all areas between the 36 m and 365 m isobaths, and intensive, with a minimum of one station located in every 10x10 minute (lat/long) area. One or two sampling stations within each grid were chosen randomly and have remained fixed. The survey includes about 355 stations annually. From 2004 to 2009, a pre-fishery survey was also conducted in Area 19 and provided the basis for management in that particular area. This survey was discontinued and the whole of the southern Gulf is now managed on the basis of the post-fishery survey.

This survey design was developed to facilitate geo-statistical estimation techniques. The method used, termed kriging with drift, uses depth as a secondary variable. Catchability in the trawl is assumed to be 100%. There have been changes in spatial coverage, methodology and introduction of new equipment over the years, but the sampling protocol has remained the same. An in-depth review of this survey, involving internationally recognized experts in the field of survey design/estimation from inside and outside DFO, was done at a 4-day workshop in 2005. Based on recommendations from that workshop, some methodological adjustments were made and the 2006 survey served as a reference for standardization of survey data since 1988. A comprehensive review of the survey, its analytical protocols and the standardized time series was done in 2008.

An independent analysis by an industry consultant proposed that it is impossible to reconstitute the biomass estimates of the previous years to compensate for the lack of samples in some sectors in the southern Gulf survey coverage area whatever the kriging method used. This individual conclusion needs further review. A new review of the approaches currently used to reconstruct the time series, to assess the level of bias, and to consider alternate approaches to reconstitute useable estimates in order to conserve the historical series is scheduled for November 2011.

Detailed biological sampling, including morphometric measurements, sex, maturity, shell condition, etc, is done on the catch at each station. This provides a basis for abundance/biomass estimation for various population components. In addition to current fishable biomass and recruitment, estimates of pre-recruits in various size groups provide a basis for forecasting recruitment to the fishery for several years into the future.

The extensiveness of the survey allows the objective determination of the spatial bounds of various components of the population. Population estimation is done with full consideration of sources of error and uncertainty and includes statistical confidence intervals.

Information from the fishery includes annual landings from dockside monitoring, catch rates and spatial/temporal distribution of fishing effort from logbooks, size structure and shell condition of commercial catches and by-catch of other species from at-sea observer data. These data are utilised and interpreted with full recognition of potential bias and sources of error.

Canada complies with the Precautionary Approach (PA) in its Oceans Act, and identifies the need for the development of reference points and a harvest control mechanism. The Precautionary Approach framework prescribes three stock status zones: healthy, cautious and critical. Snow crab stocks in the Southern Gulf are currently identified as being in the cautious zone, just below the upper stock reference point. In accordance with the precautionary approach, fishery removals of snow crab have declined in response and remain at very low levels as part of the rebuilding strategy. Post fishery survey results in 2010 are positive with increasing stock abundance and recruitment. The limited fishery in 2011 should provide additional stock growth. Return to stock levels above the upper stock reference point is anticipated in the near future.

Research Data [7]

Figure 7. Survey biomass of commercial-sized adult males (t; mean and 95% confidence intervals) and abundance (in millions of crabs) of future recruitment in the southern Gulf of St. Lawrence.

Taken from: DFO. 2011. Assessment of snow crab in the southern Gulf of St. Lawrence (Areas 12, 19, 12E and 12F). DFO Can. Sci. Advis. Sec. Sci. Advis. Rep. 2011/002.
Snow crab in management Areas 12, 19, 12E, and 12F comprise a single biological population and the southern Gulf of St. Lawrence stock is considered as one unit for assessment purposes. Statements of stock status are based on inferences from abundance data from annual trawl surveys conducted during July to September, over the entire area of snow crab distribution in the southern Gulf. This provides estimates of commercial biomass which is comprised of residual biomass (hard-shelled adult males of legal size remaining after the fishery) and recruitment biomass (soft-shelled adult males larger than 95 mm CW (R-1) that will be available to the fishery the following fishing season). It also provides estimates of future male recruitment to the fishery (pre-recruits defined as R-4, R-3 and R-2). The pre-recruits R-4, R-3 and R-2 represent adolescent male crabs with a carapace width range of 56-68, 69-83, and larger than 83 mm, respectively. A portion of these crabs could be available to the fishery in 4, 3 and 2 years, respectively. The abundances of small adolescent male and female instar VIII (34-44 mm CW) were also estimated as an indicator of long-term recruitment. It takes at least six years for an adolescent male of instar VIII to reach the commercial size of 95 mm CW.

7 DFO. 2011. Assessment of snow crab in the southern Gulf of St. Lawrence (Areas 12, 19, 12E and 12F). DFO Can. Sci. Advis. Sec. Sci. Advis. Rep. 2011/002.

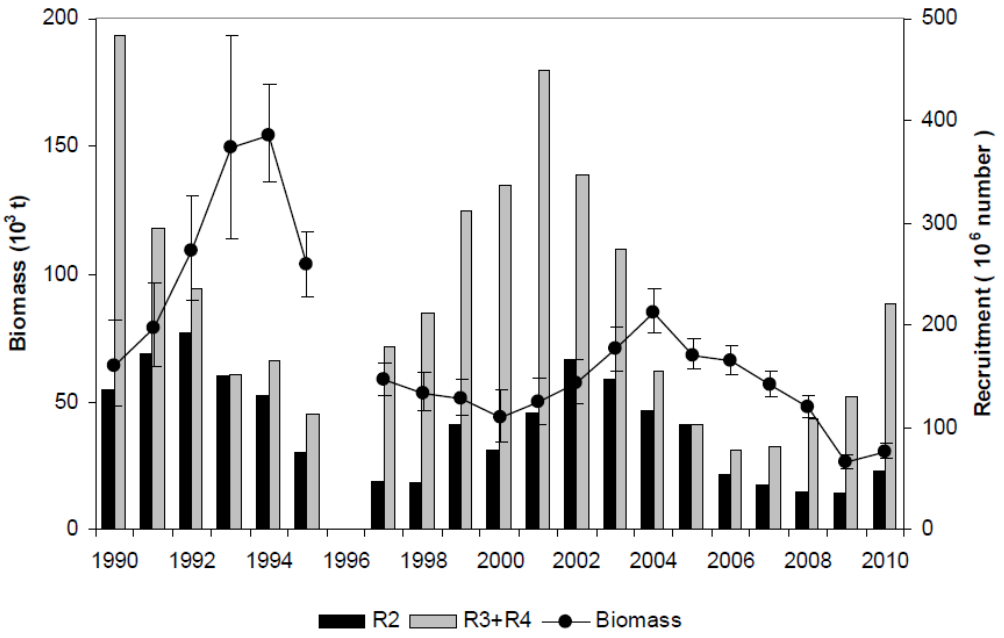


Figure 8. Recruitment and residual biomass (t; mean and 95% confidence intervals) in the southern Gulf of St. Lawrence, 1990 to 2010

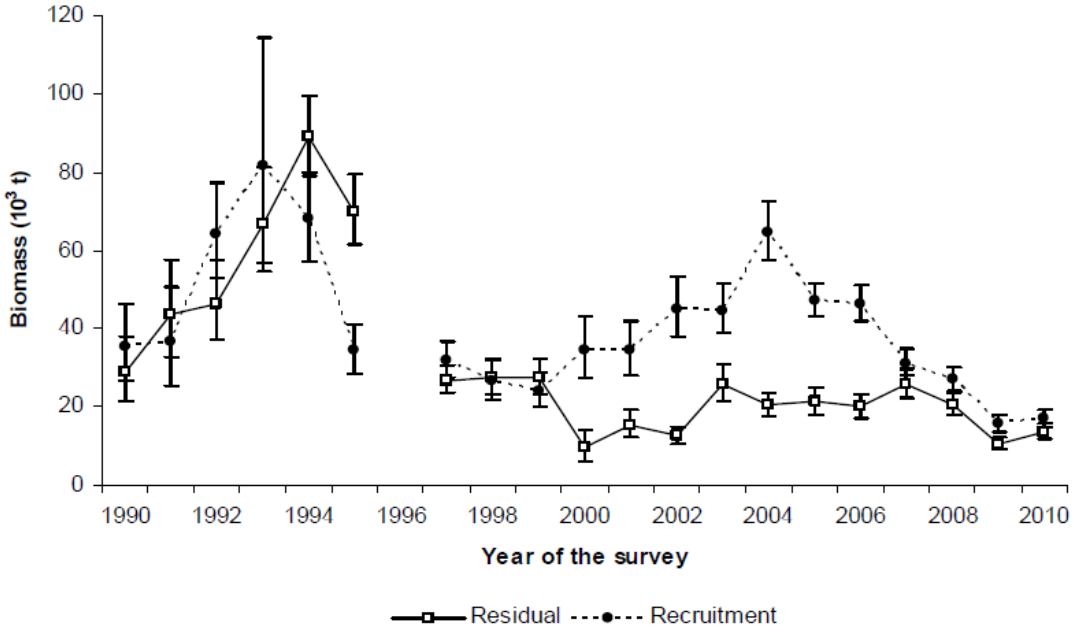
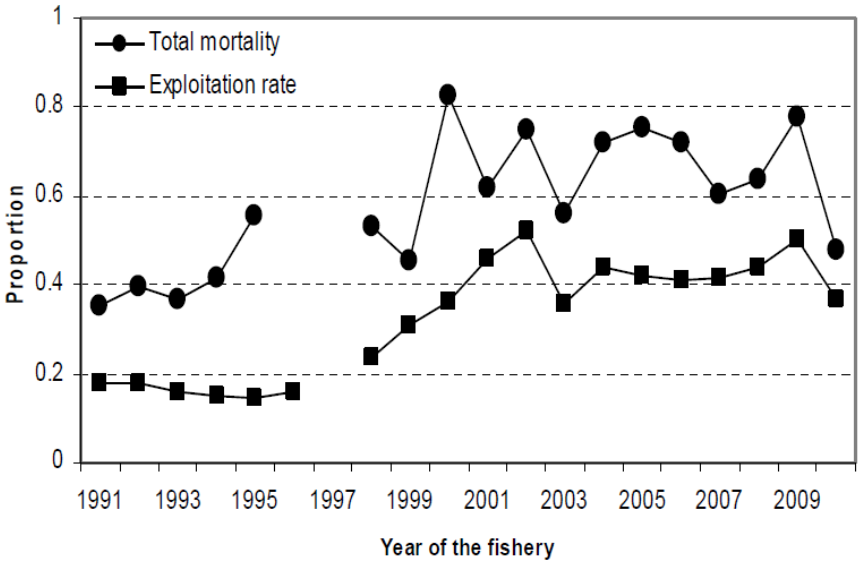


Figure 9. Total commercial, recruitment, and residual biomass (t; mean with 95 % confidence intervals) of commercial-sized adult males in the southern Gulf of St. Lawrence.

Year	Commercial Biomass (t)	Recruitment Biomass (t)	Residual Biomass (t)
1990	**63,900** 48,700-82,300	**35,400** 26,500-46,300	**28,900** 21,600-37,900
1991	**78,900** 63,900-96,400	**36,500** 25,500-50,700	**43,800** 32,700-57,400
1992	**108,800** 89,800-130,600	**64,000** 52,700-77,100	**46,500** 37,100-57,400
1993	**149,700** 114,000-193,000	**81,700** 56,600-114,200	**66,800** 54,500-81,100
1994	**154,300** 136,000-174,300	**67,900** 57,400-79,700	**88,800** 79,200-99,400
1995	**103,420** 91,200-116,800	**34,300** 28,300-41,200	**69,900** 61,400-79,200
1996	**N/A**	**N/A**	**N/A**
1997	**58,600** 52,500-65,200	**32,000** 27,700-36,700	**26,800** 23,300-30,500
1998	**53,500** 46,200-61,600	**26,600** 21,900-31,900	**27,300** 23,000-32,200
1999	**51,100** 44,300-58,600	**24,000** 20,000-28,700	**27,400** 22,900-32,500
2000	**43,800** 34,600-54,700	**34,700** 27,400-43,200	**9,400** 6,100-13,900
2001	**49,600** 41,300-59,100	**34,400** 27,900-41,800	**15,500** 12,300-19,200
2002	**57,600** 49,300-66,800	**45,100** 37,900-53,200	**12,500** 10,300-15,000
2003	**70,400** 61,900-79,600	**44,600** 38,600-51,300	**25,900** 21,400-31,100
2004	**84,900** 76,500-94,000	**64,600** 57,400-72,500	**20,400** 17,500-23,600
2005	**68,200** 62,300-74,400	**47,200** 43,200-51,400	**21,300** 18,100-24,800
2006	**66,000** 60,400-72,100	**46,300** 41,900-51,000	**19,900** 17,100-23,100
2007	**56,800** 52,100-61,800	**31,100** 27,800-34,700	**25,900** 22,200-29,900
2008	**48,000** 43,800-52,400	**27,100** 24,100-30,300	**20,700** 17,900-23,800
2009	**26,100** 23,400-29,000	**15,500** 13,300-17,900	**10,700** 9,200-12,300
2010	**30,500** 27,400-33,700	**17,000** 14,900-19,200	**13,500** 11,600-15,700

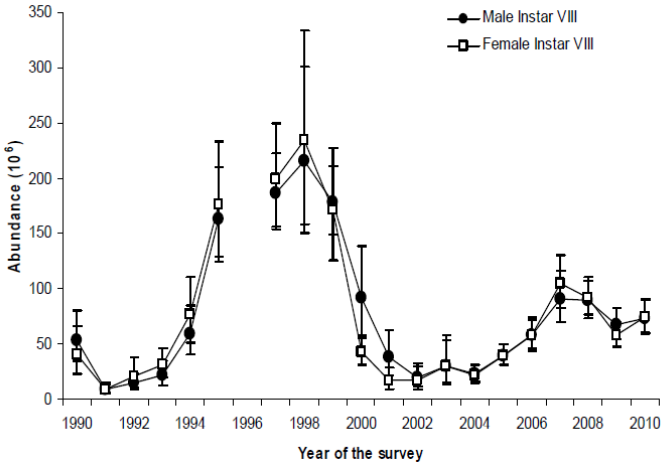
Figure 10. Exploitation rates by the fishery and total mortality of commercial-sized adult male snow crab in the southern Gulf of St. Lawrence, 1991 to 2010.



The commercial biomass estimate from the fall survey of 2009 was 11% higher than the sum of the residual biomass from the fall survey in 2010 and the landings in 2010. In previous years, the average difference over the time series has been 29%. This difference (termed non-fishing directed mortality) could be attributed to a number of factors including variability in survey estimates, natural mortality; fishery induced mortalities, as well as emigration out of the sampled area. The total mortality, expressed as a proportion, was estimated at 48% in 2010 and varied between 35% and 88% since 1991. The exploitation rate in the southern Gulf of St. Lawrence in 2010, which is the ratio between the catch of the 2010 fishery and the commercial biomass estimated from the 2009 trawl survey, was 36.6%. Exploitation rates have been relatively stable since 2000 at a level of about 40%.

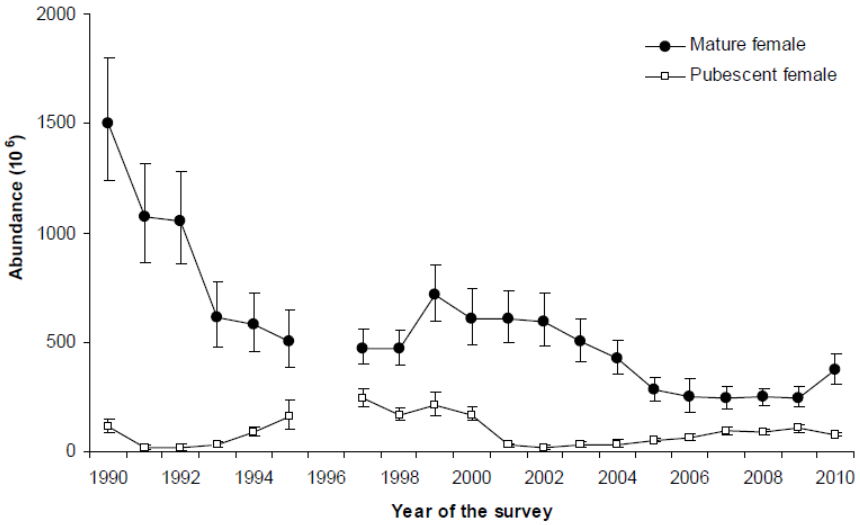
An increasing trend in recruitment of commercial-sized adult male crab to the fishery is anticipated until the 2015 fishery based on the 2010 survey abundances of adolescent males of R-2, R-3 and R-4. The abundances of male and female Instar VIII (34-44 mm CW) observed in the trawl survey in 2010 are comparable to 2009. The abundance of Instar VIII observed from 2006 to 2009 is 42% lower than the peak observed in the previous recruitment wave from 1996 to 1999.

Figure 11. Abundance of males and females Instar VIII, 34 – 44 mm CW, (number of individuals, mean with 95% confidence intervals) based on the trawl surveys conducted in the southern Gulf of St.



The abundance of mature females increased in 2010 relative to the low values observed during 2005 to 2009. The continued low abundance of immature and pubescent females in the population in recent years suggests that the abundance of mature females will remain low in the coming years.

Figure 12. Annual female abundances (number of individuals; mean with 95% confidence intervals) based on the trawl surveys in the southern Gulf of St. Lawrence, 1990 to 2010.



Sources of Uncertainty

The trawl survey data were processed using the procedure defined in the Assessment Framework Workshop. A review of the standardization for the tow length, trawl opening width and area of polygon for the time series 1988 to 2006 was reviewed at the 2008 meeting. Nevertheless, other factors such as the change in vessel cannot be addressed without a comparative survey. It was assumed that the trawl survey biomass estimates for commercial size males are absolute measures of abundance. An independent analysis by an industry consultant proposed that it is impossible to reconstitute the biomass estimates of the previous years to compensate for the lack of samples in some sectors in the southern Gulf survey coverage area whatever the kriging method used. This individual conclusion needs further review. A new review of the approaches currently used to reconstruct the time series, to assess the level of bias, and to consider alternate approaches to reconstitute useable estimates in order to conserve the historical series should be considered. Other uncertainties such as estimation uncertainty, growth, natural mortality (including predation) and movement make it difficult to reliably predict the commercial biomass more than one year in advance.

3.2 Principle Two: Ecosystem Background

	List principle 2 Species identified during Scoring Sessions
Retained Species	There are no retained species in the snow crab fishery.
Minor Bycatch Species	Atlantic cod, Northern Stone Crab.
Major Bycatch Species	There are no retained species in the snow crab fishery.
ETP Species	*Atlantic Wolffish* Leatherback Turtle Northern Wolffish Spotted Wolffish *Anarhichas minor* (Spotted Wolffish) is listed as "threatened" and *Anarhichas lupus* (Atlantic, or Striped Wolffish) is of "special concern". The *Anarhichas denticulatus* (Northern or Broadhead Wolffish) is also listed as "threatened" but does occur in the area of the 4VWX crab fishery. Bycatches of Spotted wolffish have ranged from 30 to 54 kgs from 2006-2009 and of Striped Wolffish from 32 to 80 kgs in the same period.

3.2.1 Retained Species

Snow crab is the target species and the only species permitted by regulation and license conditions to be retained in this fishery. The very small amounts of all other species taken are so inconsequential as to have no commercial attraction or value. The amounts of these are recorded in fishing logs and the species then released, alive in most instances. The snow crab stocks in the SGSL are managed by DFO at conservative exploitation rates with regularly recurring scientific advice on stock status provided in support of setting allowable catches.

The comprehensive MCS system used in this snow crab fishery includes VMS, hail-out and hail-in requirements, 10-30% observer coverage, mandatory logbook completion and 100% coverage of

landings by independent dockside monitors. The latter ensures that landings consist only of the target species. Trap design and minimum mesh sizes appear effective in avoiding catches of other species. These efforts coupled with targeted surveillance and random auditing procedures by DFO provide an effective strategy for ensuring snow crab is the only retained species.

Quantitative information on the snow crab catch and landings are available from the at-sea observer and dockside monitoring programs, respectively. Observer data includes information on numbers; weights and lengths of incidentally caught species and can be used to confirm their non-commercial nature, both in quantity and size. Dockside monitoring records on 100% of landings provide the amounts of all landed species in this fishery. Information on directed and other incidental species is also available from commercial logbooks. Bycatch of non-target species are considered so low that the log book data are not recorded electronically in the Gulf Region's official statistics system. As well, no extrapolations of by-catch amounts from Observer data are conducted. The most common by-catch species are understood to be other shellfish that are returned at the earliest possible time and are believed to have a high survivability rate8.

3.2.2 By-Catch Species

The incidence of by-catch in the SGSL commercial snow crab fishery is considered to be so low that the data from logbooks is not recorded electronically in the statistics system. Nor are by-catch data from observer reports tabulated.

This low by-catch incidence can be attributed to:

- Trap design and size: mainly large, top-entry conical traps exclude many fish species.
- Passive nature of fishing gear (also increases survival of bycatch discards).
- Large mesh-size of the twine in the traps (minimum 5.25" knot to knot).
- Mandatory escape mechanism (panel)

The Assessment Team could find no expressed concerns regarding the effects of such small catches on the status of the various bycatch species taken in the SGSL snow crab fisheries. None are even close to a level where they could be considered a main bycatch species (all are described as being well under 5% of the total snow crab catch).

The comprehensive MCS system used in the snow crab fishery includes VMS, hail-out and hail-in requirements, 10-30% target observer coverage, mandatory logbook completion and 100% coverage of landings by independent dockside monitors. Trap design and minimum mesh sizes appear effective in avoiding all but small incidental catches of other species. These efforts coupled with targeted surveillance and random auditing procedures by DFO enforcement staff provide an effective strategy for ensuring the snow crab fishery minimizes the catch of all other species.

8 http://www.dfo-mpo.gc.ca/Csas-sccs/publications/resdocs-docrech/2011/2011_005-eng.pdf, p. 15

The majority of rarely observed by-catch from all snow crab areas of SGSL is reported to be composed mostly of other invertebrate species for which higher survival rates can be expected after release as compared to finfish discards[9]. The continuing indications of very low and non-increasing by-catches signify that the management measures for the gear used in this fishery are effective in essentially eliminating this as a problem. Data on by-catch by species from Observer Reports cannot be provided by the Gulf Region until April 2012.

3.2.3 ETP Species

Two ETP species are involved with the SGSL snow crab fishery. These are one of the three protected wolffish species listed in Schedule 1 of the Canadian Species at Risk Act (SARA):[10] *Anarhichas minor* (Spotted Wolffish) is listed as "threatened". The Anarhichas *lupus* (Atlantic or Striped Wolffish) is of "special concern" and the *Anarhichas denticulatus* (Northern or Broadhead Wolffish) is also listed as "threatened" but neither occurs in the area of the SGSL crab fishery. Catches of Spotted Wolffish in this snow crab fishery are considered so negligible that it is not worth tabulating or recording them.

There are no reported cases of leatherback turtles being entangled in buoy lines in this fishery.
No records exist of any involvement with any endangered whale species. No corals or sponges are captured in this passive gear fishery.

In Canada the primary management strategies for the protection of ETP species are provided by SARA[11.] The Committee on the Status of Endangered Wildlife in Canada (COSEWIC) reviews species considered to be at risk and provides government with assessments and advice. Species are placed on Schedule 1 of SARA by the Canadian government based on COSEWIC assessments, its own consultations with stakeholders and consideration of the consequences of listing including socio-economic consequences. Once protected under SARA, ETP species are subject to recovery strategies and management plans, such as have been developed for the wolfish species[12] involved in the SGSL snow crab fishery.

The mandatory fishing gear restrictions and other measures outlined above reduce bycatch of ETP species in this fishery to very low levels. A mandatory SARA logbook must be completed as a condition of license. Training courses in release techniques have been provided to crab license holders. A recovery strategy detailing procedures for expeditious release of all wolffish has been established, industry has been trained, reporting procedures of encounters are in place and assessments of live release methods are conducted to ensure a high level of survival is being achieved.

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9 http://www.dfo-mpo.gc.ca/Csas-sccs/publications/resdocs-docrech/2011/2011_005-eng.pdf, p. 15

10*Species at Risk Act Public Registry*. Additional information on SARA can be found at: http://www.sararegistry.gc.ca/default_e.cfm

11*Species at Risk Act Public Registry*. Additional information on SARA can be found at: http://www.sararegistry.gc.ca/default_e.cfm

12Kulka, D., C. Hood and J. Huntington. 2007. Recovery Strategy for Northern Wolffish (*Anarhichas denticulatus*) and Spotted Wolffish (*Anarhichas minor*), and Management Plan for Atlantic Wolffish (*Anarhichas lupus*) in Canada. Fisheries and Oceans Canada: Newfoundland and Labrador Region. St. John's, NL. x + 103 pp.

A recovery strategy for leatherback turtles has been finalized and an action plan is being developed[13] Procedures are in place for quick release of SARA species and snow crab license conditions require return of all non-target species immediately upon capture. Many harvesters have participated in quality handling workshops which illustrate the importance of quick return of species and introduced harvesters to onboard handling technologies which reduce the amount of time to sort and return unwanted species.

Information and monitoring activities are the same as apply to targeted and bycatch species. The at-sea observer program provides bycatch information, research vessel surveys help determine stock abundance and status, while surveillance, auditing activities and peer-reviewed assessments determine the quality of data used. However, the Gulf Region does not monitor, tabulate or record such logbook data.

The Canadian government has a strategy for managing the commercial fishing impact on ETP species, including measures to minimize mortality, ensure proper reporting of by-catch and ongoing changes to vessels have been made to further ensure survivability of returned ETP species. License holders are required to complete a SARA logbook on interactions with species at risk. The Atlantic Fisheries Regulations require immediate return of spotted wolfish and leatherback turtles to the water and where alive in a manner that causes the least harm. At-sea observers, boarding/inspections by DFO officers and/or individual vessel logbooks are the primary means to determine the incidence of encounters with ETP species. There is no record of endangered whales encountering during commercial fishing activities in this the snow crab fishery.

All information available to the Assessment Team indicate the SGSL snow crab fisheries, because of their nature and the various management measures imposed on it, has a very low incidence of harm to the ETP species encountered in that area. This is a general view of passive gear snow crab fisheries. But it is likely that unreported encounters with ETP species do occur and that the potential exists for these fisheries to have some negative impact on the larger ETP species found in the fishery areas. The industry and DFO should continue to closely monitor this situation and introduce mitigating measures, such as weighted buoy lines, as soon as it is feasible to do so.

3.2.4 Habitat

The snow crab fishery uses baited traps that drop to soft mud and gravel bottom areas that are less vulnerable to perturbation. While traps may cause some mortality to benthic species when they settle to the bottom and when they are hauled back, the spatial scale of any impact is small. Incremental impacts of trap fishing on biotic and abiotic features of this type of bottom are believed to be minimal. Lost traps are uncommon in the fishery. Nevertheless, traps are required to be fitted with escape mechanisms with biodegradable twine to ensure that all species caught in lost traps will escape. Fishing effort tends to be concentrated in specific depth strata and in areas where catch rates are highest.

13http://www.sararegistry.gc.ca/virtual_sara/files/plans/rs%5FLeatherback%5Fturtle%5FAtlantic%5Fpopulation%5F0207%5Fe%2Epdf

While effort shifts to some extent over the course of a fishing season, a great deal of crab habitat is fished only lightly or not at all.

Although three of five biologically and ecologically significant areas (EBSAs) that have been identified for the southern Gulf of St. Lawrence overlap or are adjacent to crab fishing areas, no concerns have been raised regarding impacts by the fishery. Further, given that crab fishing regularly perturbs only a relatively small area of soft mud and gravel bottom, the fishery is expected to have negligible impact on habitat structure and function. On-going research will better define the ecosystem within which the fishery takes place.

Management of the fishery limits habitat impact by restricting the number and size of traps in use. A minimum mesh size requirement allows undersize crab to escape and keeps by-catch extremely low. DFO tracks lost traps by way of trap-tag replacement – all traps used in the fishery must be tagged. Incidence of lost traps is around 1-2%. All traps must be fitted with an escape mechanism using biodegradable twine. This escape mechanism eliminates ghost fishing which had been shown to occur in lost traps[9].
The ecosystem background which follows describes an ecosystem approach to management that includes habitat considerations.

By-catch of non-target ETP species must be recorded in SARA logbooks and is also included in at-sea observer reports. Previous studies and ongoing habitat research provides extensive information regarding habitat, bottom type and impact of commercial fishing activities on the habitat. The government and industry have also implemented closure areas to protect sensitive habitats. Current initiatives will add to information on the nature, distribution and vulnerability of habitat types in fishing areas and collect sufficient data to detect any increased risk to habitats.

In order to better define environmental impacts, significant efforts have been made to identify and catalogue habitats in all major fishing areas. Initiatives to provide ecosystem information and understanding of the key ecosystem elements, including habitat, are described in the following ecosystem background section.

3.2.5 Ecosystem

The Gulf of St. Lawrence is a semi-enclosed sea with dynamic physical oceanography. The southern Gulf comprises a vibrant marine ecosystem with high abundance of many species of fish, invertebrates, marine mammals and plants. Key features of the ecosystem are well known. Snow crab prey on a wide variety of benthic species, primarily shrimp, starfish, sea urchins, worms, molluscs, etc. Smaller and especially soft-shell crabs are preyed upon by a variety of groundfish species as well as seals. Large, hard-shell male crabs targeted by the fishery are not known to be an important prey item for any species. The fishery uses a large quantity of bait (estimated to be in the order of 250 t in the 2010 season) mostly herring, mackerel and squid obtained from the international bait trade, that represents a substantial transfer of energy to the benthos.

Based on a comprehensive framework, 10 biologically and ecologically significant areas (EBSAs) have been identified for the Gulf of St. Lawrence as a whole, five of these are in the southern Gulf, three of which overlap or are adjacent to crab fishing areas. EBSA status calls attention to an area that has particularly high ecological or biological significance, and provides a focus for conservation measures and guidance on the standard of management that is considered to be appropriate.

Two large areas on the western side of the southern Gulf, American Bank and Shediac Valley, have been designated Areas of Interest for possible inclusion in a network of Marine Protected Areas under Canada's Oceans Act.

Despite a concerted focus on the southern Gulf ecosystem, no concerns have been raised to indicate that the snow crab fishery causes any disruption of the key elements underlying ecosystem structure and function.

Under the Oceans Act and the *Policy and Operational Framework for Integrated Management of Estuarine, Coastal and Marine Environments in Canada,* there is a commitment to development of large-scale and local integrated management plans for all of Canada's oceans. This includes implementation by DFO of an Ecosystem Approach to management in all activities for which it has management responsibility. The governance, regulation and management of activities within and surrounding the Gulf are shared between a wide variety of government departments and agencies involved in or with an interest in the use and management of resources within its coastal, estuarine and marine environments. The process is intended to involve all stakeholders. There is a strategy in place that is being implemented and will continue to develop under new national policies.

Canada has developed a Sustainable Fisheries Framework which builds on existing fisheries management practices to form a foundation for implementing an ecosystem approach in the management of its fisheries to ensure continued health and productivity while protecting biodiversity and fisheries habitat. The Framework comprises four main elements: conservation and sustainable use policies; economic policies; governance policies and principles; and planning and monitoring tools. It incorporates existing policies with new and evolving policies using a phased-in approach. It also includes tools to monitor and assess results of conservation and sustainable use in order to identify areas that may need improvement.

The primary goal of the Sustainable Fisheries Framework is to ensure that Canada's fisheries are environmentally sustainable, while supporting economic prosperity. It is designed to foster a more rigorous, consistent, and transparent approach to decision making across all key fisheries in Canada. This initiative continues to be a central part of DFO policy framework for the "Future of Canada's Commercial Fisheries".[14]

The conservation and sustainable use policies incorporate precautionary and ecosystem approaches into fisheries management decisions. The newest of these policies include:

• A Fishery Decision-Making Framework Incorporating the Precautionary Approach

14 New Initiatives Under the Sustainable Fisheries Framework (SFF) http://www.dfo-mpo.gc.ca/fm-gp/future-avenir/presentation2-eng.htm

- Managing Impacts of Fishing on Benthic Habitat, Communities and Species
- Policy on New Fisheries for Forage Species[15]
- Policy Framework on Managing Bycatch and Discards (Draft) under DFOs Sustainable Fisheries Framework.

The implementation process will use adaptive management principles, whereby experience applying the policies to fisheries management will guide future applications. Integrated Fisheries Management Plans (IFMPs) will continue to play a critical role as the primary resource management tool through which the Framework's policies are applied.

The Gulf of St Lawrence is one of several large areas of Atlantic Canada for which there has been a focus on describing and identifying activities and issues within the ecosystem. The Gulf of St. Lawrence Integrated Management (GOSLIM) project was created to develop and implement a management plan for ocean resources in the Gulf[11].

A multidisciplinary and inter-regional program[13] known as CDEENA (Comparative Dynamics of Exploited Ecosystems in the Northwest Atlantic) originally proposed a comparative analysis of changes in the structure and function of northwest Atlantic shelf ecosystems to determine how these may have affected the productivity of living resources. To this end, CDEENA brought together the expertise of field scientists and modellers to: (1) describe the changes in time and space, (2) identify and fill critical data gaps in the knowledge base, and (3) develop models to investigate ecosystem-level hypotheses (i.e., environmental variation, predation, fishing effects) concerning changes in reproduction, mortality, growth, and feeding of cod and other species. One of these ecosystems was the southern Gulf of St. Lawrence. Mass-balance models have being used to reconstruct trophic flows through the southern Gulf ecosystem before (mid-1980s) and after (mid-1990s) the collapse of the cod stock. The whole-system model of the southern Gulf is divided into 30 functional groups or compartments from phytoplankton and detritus to marine mammals and seabirds, including harvested species of pelagic, demersal, and benthic domains. Details of the input data (biomass, production, consumption, export, and diet composition) for each compartment used in the modelling have been published. The model provides a tool to evaluate the impact of human and environmental factors on the southern Gulf ecosystem.

In addition to some mentioned above, there are several other initiatives and policies currently in place and/or under development which guide the ecosystem management structure and will continue to provide ecosystem information and understanding of the key ecosystem elements. These include:

- a Policy for Managing the impact of fishing on Sensitive Benthic Areas[16] which includes protocols for gathering of information, development of risk analysis, implementation of management measures and monitoring procedures. This initiative is being undertaken jointly by DFO and industry.

- A Forage Species Policy[17] which recognizes that forage species play a critical role in ecosystem sustainability. Sustainable and economically viable fisheries for some forage species, such as

15 http://www.dfo-mpo.gc.ca/fm-gp/peches-fisheries/fish-ren-peche/sff-cpd/overview-cadre-eng.htm
16 Policy for Managing the impact of fishing on Sensitive Benthic Areas
http://www.dfo-mpo.gc.ca/fm-gp/peches-fisheries/fish-ren-peche/sff-cpd/benthieng.htm

herring, have been ongoing in Canada for many decades without causing undue alteration to the related ecosystem. Forage species policy is continuing to be developed on the premise that exploitation rates should be more conservative than with upper-chain species in the ecosystem.

- A National Framework for establishing and managing Marine Protection Areas (MPA's) [18] is being developed. Areas of interest for MPA's have been identified and socio-economic profiles completed.

- an Ecologically and Biologically Significant Areas (EBSA)[19] framework has been developed which provides criteria for identification of areas that have particularly high ecological or biological significance and provides guidance on the standard of management that is considered to be appropriate.

- Gulf of St. Lawrence marine Ecosystem Overview and Assessment Report[20] (Dufour and Ouellet, 2007)

- Gulf of St. Lawrence Ecosystem Management (GOSLIM)[21.]

- GOSLIM website[22].

3.3 Principle Three: Management System Background

The Legal Basis and Scope of the Management System

The mature Canadian fisheries management system is based primarily on the extensive powers contained in the Fisheries Act of Canada. This legislation gives the Minister of Fisheries and Oceans absolute authority to add or change fisheries management measures at any time[23.] Various regulations pertaining to fish harvesting operations are made pursuant to that Act; the principal ones being the *Fishery (General) Regulations* and the *Atlantic Fishery Regulations, 1985*. The Coastal Fisheries Protection Act (and the regulations made under it), which apply to the activities of foreign vessels, is the other main source of the Minister's fisheries management powers. The Department's primary legislation also includes the Oceans Act, which, among other things, gives the Minister the authority to lead integrated oceans management and to implement use of the precautionary approach. The Department is also one of the three responsible authorities under the *Species at Risk Act* (SARA).

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17 http://www.dfo-mpo.gc.ca/fm-gp/peches-fisheries/fish-ren-peche/sff-cpd/forage-eng.htm
18 http://www.dfo-mpo.gc.ca/oceans/publications/mpa-framework-cadrezpm/page04-eng.asp
19 http://www.dfo-mpo.gc.ca/csas/Csas/status/2004/ESR2004_006_E.pdf
20 http://www.dfo-mpo.gc.ca/Library/329836.pdf
21 http://www.glf.dfo-mpo.gc.ca/e0006090
22 http://www.dfo-mpo.gc.ca/oceans/marineareas-zonesmarines/loma-zego/atlantic-atlantique/gsl/1/index-eng.htm
23 L S Parsons, "Canadian Marine Fisheries Management: A Case Study", Available at: http://www.sustainablefisheries.ca/download_files/LSP_Grafto_CH30.pdf

Canada is a signatory to the United Nations Convention on Law of the Sea (UNCLOS) as well as the subsequent United Nations Fish Stocks Agreement (UNFA). It has adopted the FAO Code for Responsible Fisheries and assisted the domestic development of the Canadian Code of Conduct for Responsible Fishing operations. The Canadian Code has been ratified by some 60 Canadian fisheries organizations representing 80% of domestic landings.[24] Canada has also supported the four International Plans of Action (IPOA) (on seabirds, sharks, fishing capacity and illegal, unreported and unregulated fishing) that have emerged under the FAO Code.

Canada is a member of several Regional Fisheries Management Organizations (RFMO) around the world, including (but not limited to) the Northwest Atlantic Fisheries Organization (NAFO), the North Pacific Anadromous Fish Commission (NPAFC), the Inter-American Tropical Tuna Commission (IATTC), the International Commission for the Conservation of Atlantic Tunas (ICCAT), the North Atlantic Salmon Conservation Organization (NASCO) and the Western and Central Pacific Fisheries Commission (WCPFC).

Unresolved disputes within the Canadian fisheries management system can be, and have been, taken to the Canadian judicial system for a final decision. The most notable of these over the last two decades have been the ”Sparrow”, “Marshall” and “Larocque” decisions. The first two established aboriginal rights to fish under specific circumstances and the latter outlawed the use of resource allocations to pay for services provided to, or on behalf of, government without the approval of Parliament. The Minister’s power to allocate for reasons other than conservation was also confirmed in another earlier court challenge. There is provision for an appeal of licensing decisions to independent Regional and Atlantic License Appeal Boards but the Minister is not legally bound to accept recommendations made by them.

The Canadian Government’s Aboriginal Fisheries Strategy (AFS) was established in 1992 to implement the Supreme Court of Canada’s “Sparrow Decision” of 1990 that aboriginal groups have a right to fish for food, societal and ceremonial purposes and that this use-right is surpassed only by conservation of the resource. Under AFS, DFO negotiated time-limited fisheries agreements with eligible Aboriginal groups to govern their fishing activities for food, social and ceremonial purposes. The agreements may also provide for fisheries-related economic opportunities. The AFS applies to DFO-managed fisheries where land claims settlements have not already established a fisheries management regime. Approximately two-thirds of the current agreements are with Aboriginal groups in DFO's Pacific Region, the balance are in the four Atlantic Provinces and Quebec. The AFS also has a license transfer component under the Allocation Transfer Program (ATP) for providing First Nations access to commercial fisheries and/or other economic development opportunities. The initial First Nations access to the SGSL snow crab fisheries was achieved under this initiative.

The Supreme Court of Canada’s 1999 *Marshall* Decision affirmed a treaty right to hunt fish and gather in pursuit of a “moderate livelihood” arising out of the Peace and Friendship Treaties of 1760 and 1761. This decision affected 34 Mi’kmaq and Maliseet First Nations located in New Brunswick, Nova Scotia, Prince Edward Island and the Gaspé area of Québec. The Court reaffirmed that the federal government has the authority and responsibility for regulating the fishery, with conservation as the key consideration.

In response to that decision, DFO implemented the Initial Marshall Response Initiative (IMRI) in 2000. This was a one-year program funded in the amount of $159.6M to negotiate Interim Fisheries Agreements (IFAs) to provide increased First Nations (FNs) access to the commercial fishery on an

24 http://www.dfo-mpo.gc.ca/international/media/bk_fao-eng.htm

immediate basis. In 2001, DFO introduced the Longer-term Marshall Response Initiative (MRI) to build upon the IMRI. Funding of $430.2M was initially approved to negotiate fisheries agreements until March 31, 2004. This was extended for two years to March 2006 and subsequently extended to March 31, 2007. This 2001-2007 longer term initiative produced fisheries and contribution agreements with 32 of the 34 eligible First Nations. These agreements provided for fisheries access (including mentoring training, vessels, gear, and commercial fisheries infrastructure) and First Nations internal governance.
These latter objectives were continued under the subsequent Atlantic Commercial Fisheries Diversification Initiative (ACFDI) aimed at increasing Micmac and Maliseet participation in commercial fisheries and the Aboriginal Aquatic Resource and Oceans Management (AAROM) program that provides funding to qualifying Aboriginal groups to establish aquatic resource and oceans management bodies.[25] While this source of funding for increasing First Nations participation in commercial fisheries has ended, this can be still pursued through the Allocation Transfer Program and the normal license transfer procedures. The licenses transfer initiatives to date have resulted in some 1,140 licenses being held by First Nations communities, including 115 in crab fisheries.[26] "In addition, DFO continues to work towards longer-term fishing arrangements with Mi'kmaq and Maliseet First Nations through the processes being led by Indian and Northern Affairs Canada"[27].

In addition to these efforts at improving First Nations participation in these snow crab fisheries, increased access was provided to commercial harvesters that were negatively impacted by the decline in groundfish stocks in the Southern Gulf. This was accomplished at slightly different timeframes and through different licensing arrangements in CFA 12 as compared to CFA 19. In all cases, these temporary access arrangements were converted into permanent status by the mid-2000s. The process followed in CFA 19 is described in the current IFMP for that fishery. The details of the CFA 12 initiative are less well documented.

Consultation Processes

The roles and responsibilities of all stakeholders in CFAs 12, 12E and 12F appear to be adequately understood in terms of the RAP and advisory committee process. There is no current IFMP for these fisheries, which is where roles and responsibilities are normally described. The annual overall management framework for these snow crab fisheries is updated periodically with annual fishery management decisions on such elements as TACs, opening/closing dates or changes to other management measures. These annual decisions are published on the Department's website. A new IFMP is now under development in line with the current Departmental template for such plans. But it will not be available publically until into 2012. The assessment team has been not able to access any of the draft sections of this upcoming plan.

25 Evaluation of the Atlantic Integrated Commercial Fisheries Initiative (AICFI)
http://www.dfo-mpo.gc.ca/ae-ve/evaluations/07-08/6b053-eng.htm
26 Ibid
27 First Nation Participation in Commercial Fisheries Following the *Marshall* Decision
http://www.dfo-mpo.gc.ca/fm-gp/aboriginal-autochtones/marshall/index-eng.htm

The current IFMP[28] for CFA 19 runs to the end of 2013. This IFMP documents the overall management framework for that snow crab fishery and is updated periodically with annual fishery management decisions on such elements as annual TACs, opening/closing dates or changes to other management measures. These annual decisions are published on the Department's website.

The primary vehicle for consultations on management measures in each of the four southern Gulf crab fishing areas have been area-specific advisory committees which meet annually. In addition, with the recent implementation of the Precautionary Approach, a new Southern Gulf Snow Crab Advisory Committee (SGSCAC) (to replace the same named one currently in place for CFA 12) is being established as of 2012 to discuss the annual management measures for the southern Gulf. The new SGSCAC will be chaired by a representative of Fisheries and Oceans Canada. Membership on the SGSCAC will include representatives of numerous crab harvesting associations and various First Nations communities representing crab license holders in each CFA and associated provincial governments and the processing sector.[29] Meetings of SGSCAC will be open to the public but it is unclear to what extent non-industry members are encouraged to attend. The SGSCAC meeting will continue to be preceded by Science RAP sessions to peer review the analysis of stock status and develop the stock assessment advice for the upcoming fishery.

A separate consultative arrangement has existed in CFA 19 since the early 1990s. The 2007-2013 IFMP established a Management Committee made up of Area 19 fishermen and representatives of DFO to act as an advisory body for implementation of the IFMP and to establish its annual Conservation Harvesting Plan. The Assessment Team understands that this autonomous advisory committee arrangement is to end in 2012 when there will be a single TAC-setting process for SGSL snow crab.

Long Term Objectives

The Department of Fisheries and Oceans, on its Website, describes its mission as follows:[30]
"To deliver to Canadians the following outcomes:

- Safe and Accessible Waterways;
- Healthy and Productive Aquatic Ecosystems; and
- Sustainable Fisheries and Aquaculture."

To achieve Sustainable Fisheries and Aquaculture the Department has developed its Sustainable Fisheries Framework "to provide the basis for ensuring, Canadian fisheries are conducted in a manner which supports conservation and sustainable use. It incorporates existing fisheries management policies with new and evolving policies. The framework also includes tools to monitor and assess those initiatives geared towards ensuring an environmentally sustainable fishery, and identifies areas that may need improvement. Overall, the Sustainable Fisheries Framework provides the foundation of an ecosystem-based and precautionary approach to fisheries management in Canada"[31.]

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28 2007-13 IFMP CFA 19 http://www.glf.dfo-mpo.gc.ca/e0008346

29 Summary of Meeting Southern Gulf Snow Crab Advisory Committee March 8, 2011@ http://www.glf.dfo-mpo.gc.ca/e0020461

30 Vision, Mission, Mandate http://www.dfo-mpo.gc.ca/us-nous/vision-eng.htm

31 Sustainable Fisheries Framework http://www.dfo-mpo.gc.ca/fm-gp/peches-fisheries/fish-ren-peche/sff-cpd/overview-cadre-eng.htm

The website outlines the Department's intention to incorporate this approach into all Integrated Fishery Management Plans: "Integrated Fisheries Management Plans identify goals related to conservation, management, enforcement, and science for individual fisheries; and they describe access and allocations among various fish harvesters and fleet areas. The plans also incorporate biological and socio-economic considerations that are factored into harvest decisions. Integrated Fisheries Management Plans are an important reporting tool, and a valuable source of information on a given fishery for fisheries managers, industry, and other resource users. They also include a requirement to conduct a regular review of the fishery against the plan's objectives. In addition, self-diagnostic tools like the Fishery Checklist (a tool for internal use) can help the Department monitor improvements that support sustainable fisheries, and identify areas of weakness that require further work"[32].

This indicates a clear national intention to orient fisheries management practices and activities so that decisions are made in accordance with the precautionary approach and ecosystem-based management principles.

Incentives for Sustainable Fishing

The Southern Gulf snow crab fisheries are managed by area-specific TACs, limited licenses and IQ regimes. The total number of licenses has been fixed since about 2005, all temporary assess provisions have been converted to permanent status and a level of First Nations participation in the commercial fishery has been achieved.

Fleet shares of the total quota in CFA 12 have been stabilised for 2010 to 2014. The number of traps per license type in all CFAs except 19 is also fixed. In CFA 19 where a maximum global quantity of traps has been established, the number of traps held by an individual licensee is used to determine individual quota shares and can range from 3 to 26.

In CFA 12 a variety of Temporary Flexibility Options[33] were available to license holders in 2011. These allow various levels of temporary (annual) combining of individual quota shares and trap numbers provided they are arranged before the fishery starts. These include annual transfer of 100% of one's quota to one or more recipients, seasonal partnerships between two operators or "trios" between three operators. There are limits on total traps that can be fished by the combined operation that is never more than 1½ times that of a single license operation in the given fleet category. Quota overruns that are not covered by an in-season transfer of quota are deducted from next year's allocation.

In CFA 19 temporary combinations are also permitted[34]. For 2011 only, a one-time transfer of a complete individual allocation could be done before the season began. The receiving harvesters were

32 Ibid
33 Temporary Flexibility Options. Snow Crab Area 12, 18, 25, 26. 2011. @ http://www.glf.dfo-mpo.gc.ca/folios/00622/docs/temporary-flexibility-options-eng.pdf
34 CONSERVATION HARVESTING PLAN AREA 19 SNOW CRAB – 2011@ http://www.glf.dfo-mpo.gc.ca/e0020904

permitted to combine 26 trap share allocations per vessel under this provision. The transferring harvesters were not required to be on board during fishing. Pooling of allocations was also permitted provided an operator for each license is on board during fishing and the maximum of 26 trap allocations per vessel is not exceeded.

The current DFO approach to ITQ/IQ regimes is that the decision to establish these arrangements is left to the individual fleets. DFO does not initiate such arrangements but the generalized DFO policy for all commercial fisheries is that 100 percent dockside monitoring is a condition of a fleet's adopting an ITQ/IQ regime.

The requirement of Dock Side Monitoring (DMP) for all landings tends to reduce the possibilities of unreported catches. Continued individual violations create the risk of license suspension. The soft shell protocols that encourage maximization of yields and productivity are further supported by earlier season opening and closing times.

The overall Southern Gulf snow crab management system is now considered to be on a stable footing with the only significant year-to-year changes being adjustments in TACs or closed times. The combining under the IQ systems have permitted some permanent removal of licenses in CFA 19 and temporary/annual removal of harvesting vessels in all CFAs thereby reducing total vessel operating costs and creating the basis for a more economically sustainable fishery.
No capital or operating subsidies or incentives are known to be offered by governments to snow crab fishermen in the Southern Gulf.

Fishery Specific Objectives

No elaboration of DFO Gulf Region's long-term objectives for the CFA 12 snow crab fishery appears in any formal document. The Summary of the March 2011 Southern Gulf Snow Crab Advisory Committee Advisory Committee meeting refers to "the vision for the Area 12 snow crab fishery is long term sustainability and we need to ensure the stock remains at a sustainable level. The framework for accomplishing this is the implementation of the precautionary approach…" Various implicit objectives can be inferred from the annual management decisions; they would appear to include such ends as achieving stock preservation/conservation, managing expected fluctuations in stock abundance, providing for efficient/profitable fishing operations, achieving equitable/acceptable sharing arrangements etc. The recent adoption of reference points in a precautionary approach framework indicates a further level of implicit stock management objectives that will eventually curtail undisciplined management decisions and provide valuable guidance to Ministerial discretion.

The 2007-13 IFMP for CFA 19[35], a current version of an integrated fishery management plan, contains a set of Fisheries Management Objectives that "define clear and measurable goals of the fishery including biological targets and socio-economic factors and are developed by the Management Committee and approved by DFO." The "Socio-economic Objectives are:

- To facilitate an orderly and productive fishery through maximizing harmony within the industry and adjacent communities.

35 2007-13 IFMP CFA 19 http://www.glf.dfo-mpo.gc.ca/e0008346

- To provide the fishermen with increased opportunity to develop long-term business plans.
- To promote the development and use of good fishing practices.

"The measurable activities supporting the Socio-economic Objectives:

- Stabilization of the access and allocation process.
- No additional access or effort will be provided in this fishery under the current agreement as set out in this IFMP.
- Improved management of fishery through co-management.
- Inclusive and open consultations in development of the IFMP.
- Management decisions are made through the annual harvest planning process.
- First Nations access and allocation formulas are maintained in the IFMP and opportunities for additional access are addressed through the Fisheries Access Program.
- Development of multi-year fisheries management plan (5-9 years).
- Use of top entry traps.
- Research on designing improved traps."

The Biological Objective is

- "To preserve the reproductive potential of the stock."

"The measurable activities to support the Biological Objectives are:

- Minimize catch of, and zero retention of female crab.
- Incidence of immature (non-terminal moult) and terminal moult with soft and white-shell males in the commercial catches does not exceed 20% as per Soft Shell Protocol.
- Define fishing area.
- Typically, no fishing during peak mating season.
- Fishing effort capped at 1,699 traps.
- No additional traps added throughout the season."

These Fisheries Management Objectives are supported by a listing of Fisheries Management Strategies that are used to achieve each of those objectives.

Decision-Making Process

There is an annual recurring fishery management cycle for snow crab (and all species that are managed by quota allocations and/or annual fishery management plans). When the fishery is under way data are collected through fishing log books, purchase slips, by port samplers, offshore observers and dockside monitors. Habitat and ecosystem information is also collected and compiled. Annual research vessel surveys are carried out to provide fishery-independent data. When the fishery is finished and all data compiled, the science assessment report (SAR) document is prepared, peer-reviewed and shared and discussed with industry before final advice is developed.

In some areas or fleets within CFA 12, internal consultations may take place, culminating in the final Southern Gulf Snow Crab Advisory Committee Consensus is sought on management measures for the upcoming season. In CFA 12, while differences of opinions usually exist with respect to the annual TAC

level, consensus generally exists on most other management measures. Based on the outcome of these final meetings a briefing memo on CFA 12 for Headquarters (and the Minister) is prepared by the Regional Director-General (RDG), Gulf Region (and vetted with the RDG Quebec Region) outlining the issues and the recommended management measures for the upcoming fishing season. When decisions are made by the Minister, the industry is notified and the final management decisions for the fishing year are posted on the DFO website. It is likely that the Minister is lobbied by various industry and provincial governments before these final management decisions are made.
This annual recurring fishery management decision-making cycle for CFA 19 snow crab culminates in a IFMP Management Committee meeting where details of the past season's fishery are reviewed, problems identified, scientific advice received and discussed, management proposals made and consensus sought on management measures for the following fishing season. Because only one fleet, one provincial government and one DFO Region are involved the final decisions on management measures for the next fishing season are made by the RDG Gulf Region.
The fisheries start on the set opening dates and the management cycle commences all over again.

This is now a longstanding Canadian Atlantic fisheries management decision-making process of which Southern Gulf snow crab industry members and others are well aware and appear to function comfortably within.

The current IFMP for CFA 19 contains the following statement: *"As with any Policy the Minister retains the discretion to make exceptions to or to change this Policy at any time; however, it is the expectation and intention of DFO to follow the management process set out in this IFMP with a view to contributing to increased certainty and direction for this fishery"*. A similar statement is expected to appear in the upcoming IFMP for the entire SGSL.

Monitoring, Control and Surveillance

There is a comprehensive system for monitoring, control and surveillance of the SGSL snow crab fishery. Access and effort is regulated through fishing area licenses, seasons, area and individual quotas as well as gear specifications (including minimum and maximum mesh sizes and bio-degradable escape panels). The fishery is monitored by 10-30 percent target at-sea-observer coverage paid for by license holders. At-sea observers monitor for compliance with management measures on by-catches, discarding, gear restrictions, area and closed time provisions and ETP species occurrences. Observers also collect all data related to soft-shell/white-shell protocols in addition to scientific information including size and by-catch composition as well as temperature data. Gulf Region observers are equipped to collect and record GPS data every 30 seconds. Dockside monitoring is required for 100% of snow crab landings as is submission of accurate fishing logbooks and fish purchase slips.

All vessels in CFA 12 must be equipped with a DFO approved electronic vessel monitoring system (VMS) which transmits positions each 15 minutes to a 24/7 VMS Centre. Fishery Officers conduct surveillance of fishing activities through periodic aerial and dockside surveillance and by conducting targeted or opportunistic at-sea boarding of fishing vessels. From time to time vessels may be subject to spot audit of reported landings and catch information. The DFO Catch and Effort database tracks catch against IQ's based on hail estimates, logbook data, DMP reports and landing slips.

Some of the various Enforcement indicators for Southern Gulf Crab are shown in the following table.

Table 5: Surveillance Indicators, SGSL Snow Crab 2006-09

	2006	2007	2008	2009
Air Hours	103	75	81	57
F/O Hours	6,850	2,752	3,681	4,753
% Observers				
CFA 12	26.6	23.1	23.0	23.3
CFA 12E	31.9	30.0	24.1	22.0
CFA 12 F	27.7	27.4	22.0	25.0
CFA 19	7.3	7.0	8.6	10.5
Occurrences	140	135	175	315
Charges	10	10	35	20
Source: DFO Gulf Region				

No official concerns over the level of compliance or the degree of deterrents achieved in the fishery were detected by the Assessment Team. However, the data shown above indicate general declining levels of enforcement resources being applied to this fishery, except for observer coverage which is completely paid for by harvesters. The number of occurrences (violations detected) and the number of charges laid appears to be increasing. However, there is no known analysis of the SGSL snow crab enforcement efforts that would substantiate a conclusion that serious and flagrant non-compliance exists in these fisheries.

Research Plan

There are several ongoing annual research initiatives in the Southern Gulf area that contribute to the information needs of snow crab management and which require annual work planning[36]. These include:

- The conducting of the annual directed research vessel surveys for either snow crab or multi-species data collection.
- The annual collection of data from fishing log books, offshore observers, dockside monitors during the fishing season.
- The annually compilation of habitat and ecosystem information the available season.
- The drafting and peer-reviewing of the annual scientific assessment document.
- Conducting the Regional science advisory process involving all industry stakeholders.
- Completing the management advisory process soliciting input from stakeholders.
- Providing extra time and effort to provide answers to issues raised in these sessions.
- The current development of provisional reference points and harvest control rules for the snow crab fishery requires work planning on the part of over-stretched science staff.
- A workshop with outside experts to review the crab stock assessment methods is held every four years. One is scheduled for the Autumn of 2011.

36 A copy of the 2011-12 Work Plan for the Snow Crab Section of Gulf Region's Science Branch was supplied to the Assessment Team.

Monitoring and Evaluation of the Snow Crab Management System

There is no IFMP to guide or direct evaluation of the management system used in CFA 12 snow crab. The Gulf Region does conduct post-season operational reviews of its annual snow crab Conservation and Protection (C&P) initiatives in conjunction with industry members.
The general view of fishery management personnel is that the annual fishery advisory and RAP sessions constitute an external review of fishery management measures as both industry and non-industry members participate and that this meets the need for real-time, in-season, annual and overall management system reviews.
The Canadian Auditor General has the mandate to, and does, review the management of fisheries on an ad-hoc basis and publishes the results. The Parliament of Canada has two Committees pertaining to Fisheries and Oceans: the Standing Committee on Fisheries and Oceans of the House of Commons and the Standing Senate Committee on Fisheries and Oceans of the Senate. These standing committees regularly examine various aspects of fishery management in Canada and prepare public reports on findings and conclusions.

Annual Science research plans provide the management system with a strategic approach to research and provide reliable and timely information to interested parties. The Canadian Science Advisory Secretariat (CSAS) process is peer-reviewed and results are published on the DFO website.
The DFO Internal Checklist is divided into three sections including target stock information, habitats/ecosystems and management systems. This checklist has been adopted and used internally by DFO as a tool to measure effectiveness of all fishery management systems. However, results of these reviews are not available.

Although limit reference points (LRP) for SGSL snow crab are now in place, efforts to develop defined pre-set harvest control rules (HCR) are ongoing. It is anticipated that the use of both LRP's and HCR's will, of themselves, require some ongoing review of stock management measures.

The new IFMP for CFA 12 is expected to have an updated section on management system evaluation that may meet the requirements for regular internal and occasional external performance review of the snow crab management system.

The 2007-13 IFMP for CFA 19 contains a Section 7 on Performance Review. "The Performance Review is a comprehensive evaluation of the execution and results of the IFMP. It focuses on the effectiveness of the Fisheries Management Controls and Strategies in meeting the Fisheries Management Objectives and respecting the Conservation Limits. The purpose of the Performance Review is to determine "what works and what does not" and provides the basis for continuous improvement. Some of the performance indicators will be measured throughout the fishing season while others that rely on the compilation of data gathered during the fishing season will be evaluated at season's end and from season to season."
However, there is no indication of the extent to which these actions have been carried out.

4.0 MSC Evaluation Procedure

4.1 Harmonised Fishery Assessment

Certification Bodies assessing fisheries that have areas of overlap are required to ensure consistency of outcomes so as not to undermine the integrity of MSC fishery assessments. The CR requirements section Annex CI provides guidance for harmonisation where a fishery in assessment overlaps with an already certified fishery. There are no areas of overlap that require harmonisation to the best knowledge of the assessment team.

With respect to the MSC certification of the Affiliation of Seafood Producers Association of Nova Scotia (ASPANS), it is confirmed that all registered license holders operating in the certified areas are eligible to be covered by the MSC certification. This commitment is subject to their compliance with policies, terms and conditions of our organization. Among the conditions, of course, is the requirement to land their catch at DFO specified facilities in the unit of certification. ASPANS will accept new members (see client sharing letter) on the basis of the equitable sharing of cost of the certification and maintaining the MSC fisheries certificate.

http://www.msc.org/track-a-fishery/in-assessment/north-west-atlantic/aspans-snow-crab/assessment-downloads-1/Client_Sharing_letter_NS_Snow_Crab_May_2011_Signed_Copy.pdf

4.2 Previous assessments

There are no previous assessments of the client operations. There are no existing MSC certificates for snow crab in this *western* North Atlantic region. There are no existing MSC certificates for snow crab in this western North Atlantic region.

4.3 Assessment Methodologies and Evaluation Techniques

The MSC Principle and Criteria of Sustainable Fishing Standard sets 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 performances of the fishery can be measured according to pre-specified guideposts. The default assessment tree developed by the MSC includes 31 Performance Indicators (Annex 1).

MSC Current Scheme Documents	Version
MSC Fishery Standard - Principles and Criteria for Sustainable Fishing	1.1
Certification Requirements	1.1
Guidance to MSC Certification Requirements	1.0
Guidance to Certification Bodies	1.0
MSC Full Reporting Template	1.0
Default Assessment Tree without adjustments	1.0

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. 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 weighted 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.

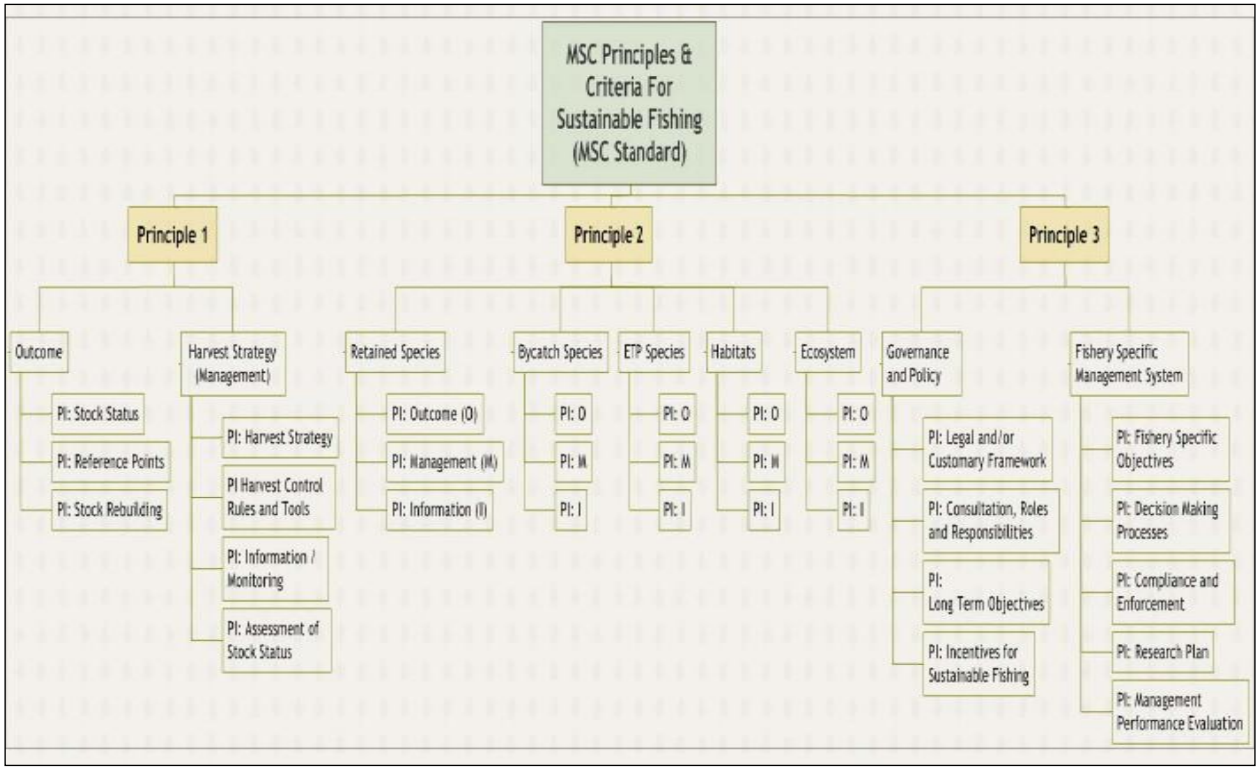
The scoring methodology is fully explained in the MSC Fisheries Assessment Methodology. It can be summarized as follow:

- 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[37] 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.
    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.

[37] Scoring issues: The different parts of a single scoring guidepost, where more than one part exist covering related but different topics.

Annex 1 MSC Default Assessment Tree



Alternately the default assessment tree of the MSC Principles and Criteria can be viewed from the MSC website
http://www.msc.org/documents/get-certified/fisheries/MSC-FAM-default-assessment%20tree.pdf/view

Table 6: Weights Assigned to Each Component and PI within the Assessment Tree Structure

Principle	Wt (L1)	Component	Wt (L2)	PI No.	Performance Indicator (PI)	Wt (L3)	Weight in Principle		
						Either		Or	
One	1	Outcome	0.5	1.1.1	Stock status	0.5	0.25	0.333	0.1667
				1.1.2	Reference points	0.5	0.25	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		
		Ecosystem	0.2	2.5.1	Outcome	0.333	0.0667		
				2.5.2	Management	0.333	0.0667		
				2.5.3	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		

4.4 Evaluation Processes and Techniques

4.4.1 Site Visits

Stakeholders Consultation Meetings

Initial consultation meetings were held in October 2011. The objectives of the consultation meetings were to provide information and understanding of the activities of the Certification Body and to discuss the fishery management organizational roles in the management of the crab resources. The consultation meetings were designed to be inclusive of all organizations and representatives of the crab fisheries. However, the consultation plan was designed to strategically capture sufficient information to ensure understanding and confidence with respect to full assessment scoring.

The on-site consultation also served other important functions. These included:

- Responding to questions and comments raised by participants in the fishery at this initial stage in the assessment.
- The client group provided information, documents, and a list of stakeholders as required by Global Trust. This served to allow the assessment team to collect general information on the fisheries, identify information gaps and 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 (Moncton & Halifax) and are recorded in Table 7.

4.4.2 Consultations

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

Date	Purpose	Media
16/06/2011	Fishery Enters Full Assessment	Notification on MSC website. Direct email/letter. Advertisement in Press
16/06/2011	Assessment Team Nominations	Notification on MSC website
30/06/2011	Assessment Team Confirmation	Notification on MSC website
29/07/2011	Default Assessment Tree Released for Comments	Notification on MSC website
06/09/2011	Site Visit Scheduled	Notification on MSC website Direct email/letter
17/10/2011	Assessment Site Visit	Stakeholder Consultation Meetings

05/11/2011	Scoring Meetings	Stakeholder Consultation Meetings
07/10/2012	Assessment Team Revision	Notification on MSC website
23/12/2011	Preliminary Draft Report	Notification to Client
20/12/2011	Nomination of Peer Reviewers	Notification on MSC website Direct email/letter
17/01/2012	Confirmation of Peer Reviewers	Notification on MSC website
22/03/2012	Notification of Public Comment Draft Report	Notification on MSC website
To be completed for the PCDR report	GTC Certification Determination	Notification on MSC website Direct email/letter
To be completed for the Final Report	Notification of Final Report	Notification on MSC website Direct email/letter
To be completed for the PCR report	Certification or Objections Process Consultation	Notification on MSC website

Table 8: Summary of Consultation Meetings

Date	Organization	Location	Staff Represented	Overview/Key Items
Sunday, October 16th 2011				
4:00 - 6:00	GT Internal Meeting with Assessment Team	Holiday Inn Dartmouth	GTC Assessment Team	Schedule of events. Priority information requests. Key discussion points.
Monday, October 17th 2011				
9:00 - 11:30am	DFO Maritimes - Science	Bedford Institute of Oceanography (BIO) Dartmouth	GTC Assessment Team Wendy Williams, Manon Mallet Jai Choi Tara McIntyre Claire McDonald Bryan Wood Scott Coffen-Smout Claudio Di Bacco	TAC Quota allocations, Data Intensive Investment, LRP/TRP. IFMP status. Mortality rates to fishing. Gear impacts and Ghost-fishing. VMS, monitoring, Violations. Overview of each of the PIS under P1 P2 and P3. Stock assessment and uncertainties. Data streams and funding.
12:30 - 4:00pm	DFO Maritimes - Management			
4:30 - 6:30pm	Client Opening Meeting	Holiday Inn Dartmouth	GTC Assessment Team Peter Norsworthy	Brief overview of main issues in the fishery. Key stakeholders. Client group members and CoC. Traceability. Trade between areas. Area 19 IFMP and new IFMP.
Tuesday, October 18th 2011				
9:00 - 11:00am	DFA NS - Science / Management	Homburg Building Halifax	GTC Assessment Team Geordie MacLachlan Nadene MacAulay Clary Reardon	Advisory committees involvement with DFA Principle 2 issues. Compliance in the fishery license compliant and issues. Fisheries Data management.
3.00-5.00pm	NSMDC AAROM	Best Western Plus, Moncton	GTC Assessment Team Dave Dunn, Commercial Fisheries Ed Frennette, PEI Brian Isaac, Commercial Fisheries Liaison	Marshall Decision Area 12 and IFMP First nation concerns/community goals. PEI licenses Bands and fleets beyond first nations
7:00 -	Bob Allain Independent	Best Western Plus,	GTC Assessment Team Bob	Stakeholder interest in the fishery.

10:30pm	Stakeholder	Moncton	Allain, Ocean IQ	Discussion on Area 12 and inclusion of Area 18, 25 and 26. History of the fishery. Survey schedule and methods.
Wednesday, October 19th 2011				
9:00 - 12:00	DFO Gulf Region - Science	Gulf Fisheries Centre Moncton	GTC Assessment Team Manon Mallet, Mikio Moriyasu Monique Baker Rejean Herbert Leroy McEachern Ross Alexander Ron Belliveau Wendy Williams	Gulf of St Lawrence Boundaries History of the Fishery TRP/LRP/IFMP Reference points and Internal review Mortality Rates and Gear Impacts ETP, By-catch and Habitats Overall ecosystem interactions Soft Shell closure mechanisms/area. VMS, Recording quota transfers and conflict on the water. Incentives to sustainable fishing
1:00 - 4:00	DFO Gulf Region - Management			
4:30 - 6:30	Area 19 Snow Crab Fishermen Association	Best Western Plus, Moncton	Basil MacLean, President Tommy Campbell, VP Gordon Beaton, Director	SAR 2005/2006 Area 19 fishing area and differences Co Management of the IFMP Stakeholders involvement Area certification
Thursday, October 20th 2011				
11:30 - 4:00	Client Closing Meeting	Best Western Plus, Moncton	GTC Assessment Team Peter Norsworthy	Review of findings and data deficiencies. Next steps. Stakeholder inclusion. Next steps. Assessment process.

4.5 Traceability

4.5.1 Eligibility Date

In accordance with CR Requirements *CR 27.6* MSC product eligibility date may be up to a maximum 6 months prior to the publication of the Public Comment Draft Report (PCDR). The client representative has indicated the client member groups desire to have the opportunity, if they so wish, to take full advantage of this 6 month period. The proposed target eligibility date from which the product from Affiliation of Seafood Producers Association of Nova Scotia is eligible and authorized to bear the MSC label is estimated to be the 1st of December 2011.

This PCDR report is due to be published in February 2012 and so the target eligibility date for this fishery is going to be 6 months prior to this date. This means that any *Snow Crab* products landed by the certified fleet following this date will be eligible to enter chain of custody as certified product provided that:

1. the company handling the fish is issued a valid CoC certificate before the date of certification of the fishery; and
2. the fishery in question is listed in the scope of the CoC certificate or in the dedicated under-MSC-assessment schedule attached to the certificate of the company handling the fish.

The scheduled certification date for this Fishery is May 2012. The Actual Eligibility date of product to use the MSC logo after publication of the Public Comment draft Report is December 2011.

4.5.2 Traceability within the Fishery

The extent of certification of The Fishery is defined by the Unit of Certification. Crab *(Chionoecetes opilio)* landed from these areas must be accounted for within the licensed fishery. All segments of the licensed trap fishery are within the Unit of Certification and therefore, this product is eligible for identification as coming from an MSC certified fishery on eventual certification.
Existing fisheries management requirements include the clear identification of this species, quantity, fishing method and area of capture by all vessels landing crab from the fishery. All catches are reported in logbooks and on landing to ensure accountability of volumes against each quota share allocation. Dockside monitoring takes place by certified observers. Crab is then distributed from dockside by registered buyers (registration is with the local DFA).

The point of landing for the Chain of Custody is the *ASPANS* member companies processing plants located in Nova Scotia, New Brunswick, Quebec and PEI. Members purchase crab directly or via the registered buyers and receive at their premises. To be eligible to carry the MSC logo, crab must enter into a Chain of Custody assessment. It has recommended that in on-going MSC Chain of Custody assessments that membership of or authorisation by ASPANS is determined, for vessels landing crab. The client will enter into a chain of custody audit in February 2012 in anticipation of certification of the fishery in May 2012.

4.5.3 Eligibility Criteria of Recognition of Certified Product

The Fishery Logbook

Within the Fishery the Logbook is used to record information that can be used to confirm traceability to the Unit of Certification. . As a condition for license, all vessels fishing for crab must record catch details in this logbook (Figure X). Relevant information recorded for traceability purposes includes; vessel name and registration number, method of capture, location fished on a daily basis and weight of fish caught in metric tons (MT) or pounds. All vessels for this client land to DFO designated landing ports.

At-Sea Processing

There is no at sea processing activity associated with this unit of certification. Harvesters selling to the ASPANS members do not hold a license to process crab at sea.

Point of Landing

a. **Tracking, tracing and segregation systems within the fishery**.
Snow crab is identified by an associated logbook entry providing details that allow it to be identified from the Unit of Certification. The Unit of Certification includes all current fishing

areas within the Gulf of Saint Lawrence, making all crab in effect, eligible for identification as an MSC certified crab, once it enters an MSC certified Chain of Custody.

b. An evaluation of the possibility of vessels fishing outside the unit of certification and risk of substitution prior to landing.
Licensee holders may hold entitlements in other regions. However, it is unlikely that licensee holders will fish crab outside the Unit of Certification and declare it within the Unit of Certification due to the sea distances involved. Logbook requirements, landing inspections and sales inspection at the registered buyer and processor also act as deterrents to mis-reporting and non-reporting landings by area of harvest. Information on TAC and declared landings do not indicate a history of mis-reporting by the fishery. There is no at sea transshipment or processing.

c. Risk of substitution of certified fish with non-certified fish prior to and at the point of landing.
At the point of landing, crab is identified by landing documentation (logbook). Registered buyers must make accurate records of purchases and sales to allow traceability to licensee and to purchaser. Documentation and premises are subject to inspection by the local DFA offices. ASPANS member companies fall under within the same inspection requirements.

4.5.4 Eligibility to Enter Further Chains of Custody

Eligibility to enter Chain of Custody

Crab quota allocations are made to individual enterprise owners (license holders). The ASPANS members purchase crab from the licensed fishery for preparation, processing and distribution to market.

On successful MSC certification of the Fishery**,** snow crab license holders will be eligible for the status of MSC-certified as a sustainable and well managed fishery, on entering the eligible Chain of Custody and products from this fishery will be eligible for the MSC eco-label. Product that is demonstrably harvested and landed from the Unit of Certification by logbook declaration, is traceable back to the Fishery at the first point in the Chain of Custody (ASPANS registered users of the MSC Fishery Certificate), the first point of change of ownership, is eligible to enter further chains of custody and be recognized as coming from an MSC certified fishery on eventual certification.

Product that does not enter the ASPANS member Chain of Custody is not eligible under the eventual Certificate. There are a total of 27 registered snow crab production plants in New Brunswick. Producers on Prince Edward Island (PEI) are represented by the Prince Edward Island Seafood Processors Association. Quebec producers (17) are represented by Association of Quebec Seafood Producers (AQIP). These plants are currently not represented by ASPANS and are therefore not part of the Fishery Certificate. ASPANS has undertaken to facilitate access to Certificate sharing in accordance with MSC Procedural requirements.

The Fishery must recognize any requirements and conditions of certification that are placed upon It . A list of eligible licensee holders covered by the Unit of Certification must be maintained by ASPANS and made available to the Certification Body. . This list of license holders must be updated on an annual basis for each surveillance audit.

Table 9: List of Producers that are eligible to use the ASPANS MSC Fishery Certificate in 2012[38]
North Atlantic Seafood's
Premium Group of Companies
Louisbourg Seafood's
A&L Seafood's
Highland Fisheries
Victoria Co-op
Cheticamp Packers
North Nova Seafood's

4.5.5 Eligibility of Inseparable or Practically Inseparable (IPI) stock(s) to Enter Further Chains of Custody

This fishery does not fall within the scope criteria for Inseparable or Practically Inseparable (IPI) stock(s) to Enter Further Chains of Custody and so is not considered as such. This section is not applicable

5.0 Fishery Performance Results

Certification Recommendations and Performance Level Scores.
The Southern Gulf of St. Lawrence achieved a score of 80 or more on each of the three MSC Principles independently and did not score less than 60 against any Indicator. Scores achieved in each of the MSC Principles by the Unit of Certification are shown in Table 14.

Although the assessment team found the unit of certification in overall compliance, it also found the performance of the fishery on the Gulf of St Lawrence Fishery on two performance indicators (PI 3.2.1) and (PI 3.2.5) to be below the established compliance mark (Both score of 70). In these specific cases, the MSC requires that the Certification Body set 'Conditions for Continued Certification' that when met bring compliance for the selected indicator up to the 80-level score.

Table 10: Final Principle Scores

Final Principle Scores	
Principle	Score
Principle 1 – Target Species	96.9
Principle 2 - Ecosystem	96.7
Principle 3 – Management System	83.0

38 Vessel list obtained from DFO

a. Summary of Scores

Table 11: Scoring assigned to the Scotian Shelf fishery using Analytic Hierarchy Process (AHP)

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	90	22.50
				1.1.2	Reference points	0.5	0.25	100	23.75
				1.1.3	Stock rebuilding	0.333	0.1667	NA	NA
		Management	0.5	1.2.1	Harvest strategy	0.25	0.125	100	11.25
				1.2.2	Harvest control rules & tools	0.25	0.125	95	10.00
				1.2.3	Information & monitoring	0.25	0.125	100	11.25
				1.2.4	Assessment of stock status	0.25	0.125	100	11.25
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
		By-catch species	0.2	2.2.1	Outcome	0.333	0.0667	100	5.33
				2.2.2	Management	0.333	0.0667	100	6.33
				2.2.3	Information	0.333	0.0667	90	6.00
		ETP species	0.2	2.3.1	Outcome	0.333	0.0667	100	6.00
				2.3.2	Management	0.333	0.0667	95	6.00
				2.3.3	Information	0.333	0.0667	85	6.00
		Habitats	0.2	2.4.1	Outcome	0.333	0.0667	90	4.67
				2.4.2	Management	0.333	0.0667	95	5.33
				2.4.3	Information	0.333	0.0667	95	4.67
		Ecosystem	0.2	2.5.1	Outcome	0.333	0.0667	100	5.33
				2.5.2	Management	0.333	0.0667	100	5.33
				2.5.3	Information	0.333	0.0667	100	6.33
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	80	10.63
				3.1.3	Long term objectives	0.25	0.125	80	11.25
				3.1.4	Incentives for sustainable fishing	0.25	0.125	90	10.00
		Fishery specific management system	0.5	3.2.1	Fishery specific objectives	0.2	0.1	70	8.00
				3.2.2	Decision making processes	0.2	0.1	90	9.00
				3.2.3	Compliance & enforcement	0.2	0.1	85	9.00
				3.2.4	Research plan	0.2	0.1	90	8.50
				3.2.5	Management performance evaluation	0.2	0.1	70	8.00

b. Summary of Conditions

The outcome of the assessment of the fishery assessment resulted in a decision to certify. All principle components resulted in a score of over 80. Two PIs however were scored below the required 80 score and therefore a condition was attached.

Condition number	Condition	Performance Indicator
1	Documentary evidence shall be provided that the fishery has adopted clear, specific objectives designed to achieve the outcomes expressed by MSC's Principles 1 and 2.	3.2.1
2	Documentary evidence shall be provided there is a system of monitoring and evaluating the performance of the fishery-specific management system against its objectives and that there is an effective and timely review of the fishery-specific management system in place.	3.2.5

c. Determination, Formal Conclusion and Agreement

The Certification Committee of Global Trust has yet to determine that:

- The *Southern Gulf of St Lawrence Snow Crab Trap Fishery* is to be awarded certification to the Marine Stewardship Council Sustainable Fishing Standard.

Global Trust Certification Ltd. If the certification is successful will thereby publicly announce its intention to Certify the Fishery Unit and upon issue of a certificate, the client 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.

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http://www.dfo-mpo.gc.ca/fm-gp/peches-fisheries/fish-ren-peche/sff-cpd/benthieng.htm

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APPENDIX 1: Scoring and Rationales for Southern Gulf of St Lawrence

PRINCIPLE 1

Evaluation Table PI 1.1.1

PI 1.1.1		The stock is at a level which maintains high productivity and has a low probability of recruitment overfishing	
SG	Issue	Met? (Y/N)	Justification/Rationale
60	a	Y	It is likely that the stock is above the point where recruitment would be impaired.
			The fishery for snow crab in the southern Gulf of St. Lawrence targets large males (95 mm carapace length minimum). Females attain terminal moult and sexual maturity at smaller sizes (mostly in the 45-75 mm CL range). Outside the spring mating period there is a degree of spatial separation between large males, which prefer deeper, soft mud bottoms, and smaller crabs, which are found in more complex habitats. Minimum mesh size requirements ensure that any undersize crabs entering traps are provided ample opportunity to escape on the bottom. Female crabs are rarely encountered in commercial catches. Incidental fishing mortality on females is negligible.
80	a	Y	It is highly likely that the stock is above the point where recruitment would be impaired.
			The stock is currently well above the B_{lim} that has been established.
	b	Y	The stock is at or fluctuating around its target reference point.
			B_{usr} for the stock has been established at 34,000 t (commercial-size adult males in the post-fishery survey). The 2010 estimate was 30,500 t (27,400 to 33,700 t), an increase of 17% from 2009, but below B_{usr} (34,000 t). Recruitment to the fishery (soft-shell, commercial-size adult males) increased by 10% relative to the 2009 estimate. Indices of recruitment for the next several years increased as well.
100	a	Y	There is a high degree of certainty that the stock is above the point where recruitment would be impaired.
			B_{lim} was chosen as the lowest biomass of hard-shelled commercial-size adult male crab in the post-fishery survey which produced good recruitment rates of juvenile crab at Instar VIII. This B_{lim} ($B_{recovery}$) value is 9,400 t observed in 2000, which is the only year that residual biomass has been less than 10,000 t over the past 22 years. The 2010 survey estimated residual biomass at 13,500 t. Biomass of commercial-size adult males is forecast to increase appreciably over the next several years. In addition, the abundance of mature females increased in 2010 relative to values during 2005 to 2009.
	b	N	There is a high degree of certainty that the stock has been fluctuating around its target reference point, or has been above its target reference point, over recent years.
			The extent to which recruitment will be impacted by current low abundance of mature females is unknown. Neither the shape of the stock recruitment relationship nor larval recruitment processes are well known

PI 1.1.1			The stock is at a level which maintains high productivity and has a low probability of recruitment overfishing
			for snow crab anywhere in Atlantic Canada. Nevertheless, it is reasonable to assume that strong recruitment is most likely at some intermediate SSB level. Recruitment increased over the 1999 to 2004 period, despite reduced abundance of mature females during 1993-1998, but has been declining since along with mature females. Over the 1990 to 2010 period, abundance of Instar VIII crab (34-44 mm CW, 5 years post hatching) in the southern Gulf population has undergone two pronounced oscillations, males and females in tandem. These oscillations are believed to be independent of the fishery. In many populations of various crab species, abundance of adult crab is characterized by large oscillations with strong autocorrelation patterns in year class abundance. Oscillations in Gulf snow crab populations have been attributed to strong density-dependent processes involving competition among year classes with large crab competing with and consuming smaller crab of younger age groups. These oscillations are characterized by 4-5 years of high recruitment followed by 4-5 years of low recruitment. The 2010 post-fishery survey biomass of commercial-sized adult crabs was estimated at 30,500 t (27,400 to 33,700 t), an increase of 17% from 2009, but below B_{usr} (34,000 t). The residual biomass (13,500 t) from the 2010 survey increased by 26% compared to 2009. Recruitment to the fishery (soft-shell, commercial-size adult males) increased by 10% relative to the 2009 estimate. Indices of recruitment for the next several years increased as well. In addition, the abundance of mature females increased in 2010 relative to values during 2005 to 2009. Biomass of pre-recruits that will become available to the fishery in 2 years increased in 2010 and biomass of pre-recruits that will recruit over the next 3-4 years has been increasing since 2006. Biomass of commercial-size adult males is forecast to increase appreciably over the next several years and it is anticipated that it will be above B_{usr} within the next year or so. The most recent assessment included a risk analysis associated with a range of catch options for the 2011 fishing season giving probabilities of F_{lim} being exceeded, of fishable biomass falling below B_{lim} and of being below B_{usr} after the season. The TAC for 2011 was set at 11,384 t, a 19% increase from 9,547 in 2010, which is targeted to achieve an exploitation rate of 35%. With removals in 2011 of 11,500 t, the risk analysis estimated a p=.08 for F_{lim} being exceeded, a p=.36 for fishable biomass falling below B_{lim} and a p=.29 for fishable biomass below B_{usr} after the fishing season.
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PI 1.1.1	The stock is at a level which maintains high productivity and has a low probability of recruitment overfishing
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PI 1.1.1	The stock is at a level which maintains high productivity and has a low probability of recruitment overfishing		
	Surette, T. J., and Wade, E. 2006. Bayesian serial linear regression models for forecasting the short-term abundance of commercial snow crab (*Chionoecetes opilio*). Can. Tech. Rep. Fish. Aquat. Sci. 2672 vi+33pp.		
Stock Status relative to Reference Points			
	Type of reference point	Value of reference point	Current stock status relative to reference point
Target reference point	A provisional B_{msy} has been taken as 50% of the maximum fishable biomass of adult male crab observed in the post-fishery survey during a productive period (1997 to 2008).	The upper stock reference point (B_{usr}) has been set at 80% of B_{msy} = 34,000 t.	The 2010 survey estimated fishable biomass at 30,500 t.
Limit reference point	A provisional B_{lim} has been chosen as the lowest biomass of hard-shelled commercial-size adult male crab observed in the post-fishery survey from which produced good recruitment of juvenile crab at Instar VIII.	B_{lim} = 9,400 t the residual biomass observed in the 2000 survey.	The 2010 survey estimated residual biomass at 13,500 t.
OVERALL PERFORMANCE INDICATOR SCORE:			90
CONDITION NUMBER (if relevant):			**NA**

Evaluation Table: PI 1.1.2

PI 1.1.2		Limit and target reference points are appropriate for the stock	
SG	Issue	Met? (Y/N)	Justification/Rationale
60	a	Y	Generic limit and target reference points are based on justifiable and reasonable practice appropriate for the species category.
			Females are not harvested and are not subjected to incidental fishing mortality. The abundance of commercial-size adult males was proposed as the indicator of stock status for the southern Gulf of St. Lawrence snow crab population to guide fishing activities in the PA framework. It is the life stage which is exploited and valued by the fishery, and whose abundance can be directly affected by the fishing activity.
80	a	Y	Reference points are appropriate for the stock and can be estimated.
			Commercial-size adult males are hypothesized to have a particular value to reproductive capacity of the stock and to its resilience. Managing under the assumption that large commercial-size adult male recruitment is at least in part dependent upon the abundance of large commercial-size adult male mating stock results in the least risk to the resource. An annual post-fishery survey provides biomass/abundance estimates of various population components.
	b	Y	The limit reference point is set above the level at which there is an appreciable risk of impairing reproductive capacity.
			The limit reference point was chosen as the lowest biomass of hard-shelled commercial-size adult male crab in the post-fishery survey which produced good recruitment rates of juvenile crab at Instar VIII. This B_{lim} ($B_{recovery}$) value is 9,400 t observed in 2000, which is the only year that residual biomass has been less than 10,000 t over the past 22 years.
	c	Y	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.
			Upper stock and limit reference points were defined based on survey estimates of fishable biomass. In the absence of an explicit model, a provisional estimate of B_{msy} was taken as 50% of the maximum biomass observed over a productive period, i.e. 1997 to 2008. The maximum was observed in 2004 and yields a B_{msy} of 42,400 t. Following DFO guidelines, B_{usr} = 80% of B_{msy} yields an upper stock reference point of 34,000 t. This B_{usr} is commercial-size adult male crab of all carapace conditions as estimated by the post-fishery survey, all of which will be hard-shelled, as of 1 January of the year following the survey. Over the survey time series, fishable biomass below this B_{usr} has been observed only in 2009 and 2010.
	d	N/A	Key low trophic level species, the target reference point takes into account the ecological role of the stock.
			Snow crab prey on a wide variety of benthic species, primarily shrimp, starfish, sea urchins, worms, molluscs, etc. Smaller and especially soft-shell crabs are preyed upon by a variety of groundfish species as well as

PI 1.1.2		Limit and target reference points are appropriate for the stock	
SG	Issue	Met? (Y/N)	Justification/Rationale
			seals. Large, hard-shell male crabs targeted by the fishery are not known to be an important prey item for any species. Snow crab is not a low trophic level species. *(Reference: CR Annex CB2.3.13, CB2.3.18)*
100	b	Y	The limit reference point is set above the level at which there is an appreciable risk of impairing reproductive capacity following consideration of precautionary issues.
			The fishery targets large adult males, with negligible incidental mortality on females and abundance of both sexes fluctuates in tandem due to natural causes. The limit reference point ensures sufficient adult male biomass to maintain reproductive capacity. It was chosen as the lowest biomass of hard-shelled commercial-size adult male crab in the post-fishery survey (residual biomass) which produced good recruitment rates of juvenile crab at Instar VIII. This B_{lim} ($B_{recovery}$) value is 9,400 t observed in 2000, which is the only year that residual biomass has been less than 10,000 t over the past 22 years.
	c	Y	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, or a higher level, and takes into account relevant precautionary issues such as the ecological role of the stock with a high degree of certainty.
			The abundance of commercial-size adult males was proposed as the indicator of stock status for the southern Gulf of St. Lawrence snow crab population to guide fishing activities in the PA framework. It is the life stage which is exploited and valued by the fishery, and whose abundance can be directly affected by the fishing activity; and it is hypothesized to have a particular value to reproductive capacity of the stock and to its resilience. Managing under the assumption that large commercial-size adult male recruitment is at least in part dependent upon the abundance of large commercial-size adult male mating stock results in the least risk to the resource. Upper stock and limit reference points were defined based on survey estimates of biomass. In the absence of an explicit model, a provisional estimate of B_{msy} was taken as 50% of the maximum fishable biomass observed over a productive period, i.e. 1997 to 2008. The maximum was observed in 2004 and yields a B_{msy} of 42,400 t. Following DFO guidelines, B_{usr} = 80% of B_{msy} yields an upper stock reference point of 34,000 t. This B_{usr} is commercial-size adult male crab of all carapace conditions as estimated by the post-fishery survey, all of which will be hard-shelled, as of 1 January of the year following the survey. Over the survey time series, fishable biomass below this B_{usr} has been observed only in 2009 and 2010.

PI 1.1.2		Limit and target reference points are appropriate for the stock	
SG	Issue	Met? (Y/N)	Justification/Rationale
			Snow crab prey on a wide variety of benthic species, primarily shrimp, starfish, sea urchins, worms, molluscs, etc. Smaller and especially soft-shell crabs are preyed upon by a variety of groundfish species as well as seals. Large, hard-shell male crabs targeted by the fishery are not known to be an important prey item for any species. Snow crab is not a low trophic level species. Consistent with the United Nations Fish Stock Agreement (UNFSA) F_{msy} (the fishing mortality which gives the maximum sustainable yield) is the minimum standard for the removal reference in the application of the PA to fisheries. In the context of the Canadian framework for the PA, the exploitation rate in the Healthy Zone should not exceed F_{msy}. In the absence of an explicit model, a provisional estimate of F_{msy} for snow crab in the southern Gulf was taken as the average exploitation rate over the same period used to estimate B_{msy}. The F_{lim} value was calculated at 0.401, the average exploitation rate (harvest in year t divided by biomass in year t-1 estimated from the trawl survey) over the 1998 to 2009 fishing seasons. Given a fishery that targets large adult males, with negligible incidental mortality on females, an important role played by the large adult males in maintaining reproductive capacity and stock resilience, as well as density-dependent processes involved in regulating abundance of both sexes, the provisional target and limit reference points chosen are appropriate. Through substantial TAC reductions, the exploitation rate in 2010 was reduced to 36.6% (below F_{lim}) from 50% in 2009. An increasing trend in recruitment of commercial-size adult males is forecast over the next 5 years. Since management based on reference points was only implemented in 2010, ongoing monitoring over the next several years will reveal its effectiveness.
References			DFO. 2011. Assessment of snow crab in the southern Gulf of St. Lawrence (Areas 12, 19, 12E and 12F). DFO Can. Sci. Advis. Sec. Sci. Advis. Rep. 2011/002. DFO. 2010. Assessment of snow crab in the southern Gulf of St. Lawrence (Areas 12, 19, 12E and 12F. DFO. Can. Sci. Advis. Sec. Sci. Advis. Rep. 2010/015. DFO. 2009. A fishery decision-making framework incorporating the Precautionary Approach. http://www.dfo-mpo.gc.ca/fm-gp/peches-fisheries/fish-ren-peche/sff-cpd/precautioneng.htm (2009-03-23).

PI 1.1.2			Limit and target reference points are appropriate for the stock
SG	Issue	Met? (Y/N)	Justification/Rationale
			DFO. 2010. Reference points consistent with the precautionary approach for snow crab in the southern Gulf of St. Lawrence. DFO Can. Sci. Advis. Sec. Sci. Advis. Rep. 2010/014.
OVERALL PERFORMANCE INDICATOR SCORE:			100
CONDITION NUMBER (if relevant):			**NA**

Evaluation Table: PI 1.1.3

PI 1.1.3		**Where the stock is depleted, there is evidence of stock rebuilding**	
SG	**Issue**	**Met? (Y/N)**	**Justification/Rationale**
60	**a**		Where stocks are depleted rebuilding strategies which have a reasonable expectation of success are in place.
			The stock is not depleted.
	b		A rebuilding timeframe is specified for the depleted stock that is the shorter of 30 years or 3 times its generation time. For cases where 3 generations is less than 5 years, the rebuilding timeframe is up to 5 years.
			The stock is not depleted
	c		Monitoring is in place to determine whether they are effective in rebuilding the stock within a **specified** timeframe.
			The stock is not depleted
80	**a**		Where stocks are depleted rebuilding strategies are in place.
			The stock is not depleted
	b		A rebuilding timeframe is specified for the depleted stock that is the shorter of 20 years or **2 times its generation time**. For cases where 2 generations is less than 5 years, the rebuilding timeframe is up to 5 years.
			The stock is not depleted
	c		There is **evidence** that they are rebuilding stocks, or it is **highly likely** based on simulation modelling or previous performance that they will be able to rebuild the stock within a **specified** timeframe.
			The stock is not depleted
100	**a**		Where stocks are depleted, strategies are demonstrated to be rebuilding stocks continuously and there is strong evidence that rebuilding will be complete **within the specified timeframe**.
			The stock is not depleted
	b		The shortest practicable rebuilding timeframe is specified which does not exceed **one generation** time for the depleted stock.
			The trajectory of stock abundance (biomass of commercial-sized adult male crab from the fall trawl survey in year t – 1) versus exploitation rate on this biomass in the fishery of year t is shown in Figure 13. The commercial

PI 1.1.3		Where the stock is depleted, there is evidence of stock rebuilding	
SG	**Issue**	**Met? (Y/N)**	**Justification/Rationale**
			biomass has varied between 26,100 t and 84,900 t during 1998 to 2010. Over this same period, exploitation rates have varied between 24% and 52%, and produced harvests of 9,549 t to 36,100 t. The estimated biomass from the 2010 fall survey, which would be available to the fishery in 2011, was 30,500 t (95% CL range 27,400 t – 33,700 t). The 2010 biomass estimate is in the cautious zone of the PA framework. When the stock is in the cautious zone, the exploitation regime should be defined at a level to favour stock increase toward and above BUSR.
References			DFO. 2011. Assessment of snow crab in the southern Gulf of St. Lawrence (Areas 12, 19, 12E and 12F). DFO Can. Sci. Advis. Sec. Sci. Advis. Rep. 2011/002.
OVERALL PERFORMANCE INDICATOR SCORE:			**NS**
CONDITION NUMBER (if relevant):			**NA**

Evaluation Table: PI 1.2.1

PI 1.2.1		There is a robust and precautionary harvest strategy in place	
SG	Issue	Met? (Y/N)	Justification/Rationale
60	a	Y	The harvest strategy is expected to achieve stock management objectives reflected in the target and limit reference points.
			F_{lim} has been established. This represents an exploitation rate around 40% which will ensure sufficient large adult males in the population to maintain reproductive capacity and stock resilience.
	b	Y	The harvest strategy is likely to work based on prior experience or plausible argument.
			There is a long history of managing the fishery by adjusting TAC as fishable biomass fluctuates.
	c	Y	Monitoring is in place that is expected to determine whether the harvest strategy is working.
			Exploitation rate in the fishery is estimated annually based on dockside-monitored landings and survey estimates of fishable biomass.
80	a	Y	The harvest strategy is responsive to the state of the stock and the elements of the harvest strategy work together towards achieving management objectives reflected in the target and limit reference points.
			Specific management measures include a variety of input and output controls. Effort is controlled by limited entry licensing, a trap limit per license and fishing season. Catch is controlled by minimum legal size of males, no take of females, minimum mesh size in traps to allow undersize escapement as well as a maximum mesh size, maximum trap size, traps must be fitted with biodegradable panels, no take of white or soft-shell crab and TAC. Soft-shell protocols are in place that require closure of specific grids for the remainder of the season when the incidence of soft-shell crab in observer sampling exceeds 20%. This measure serves to reduce handling mortality on crab that have no commercial value and provides extra protection to a portion of the population that represents recruitment for the next fishing season. F_{lim} has been established as an exploitation rate of 40% of the fishable biomass. In the annual stock assessment, this is estimated from landings in a given season as a proportion of fishable biomass estimated from the post-fishery survey of the preceding year. As long as fishable biomass available for the following fishing season is at or above the established $B_{usr,}$ the TAC will be based on a 40% exploitation rate. There is a history of TAC adjustments based on trawl survey biomass estimates. Most notable was a major reduction from 23,998 t in 2009 to 9,547 t in 2010.
	b	Y	The harvest strategy may not have been fully tested but monitoring is in place and evidence exists that it is achieving its objectives.

PI 1.2.1		There is a robust and precautionary harvest strategy in place	
SG	Issue	Met? (Y/N)	Justification/Rationale
			The 40% exploitation rate harvest strategy was first applied to the 2010 fishing season. The annual stock assessment done prior to the 2011 season estimated the exploitation rate in 2010 at 36.6%. The TAC set for 2011 is targeted to achieve an exploitation rate of 35%.
100	a	Y	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.
			The TAC set for the 2010 fishing season was intended to achieve an exploitation rate below F_{lim} (40%) – it was estimated at 36.6%. The 2010 post-fishery survey biomass of commercial-sized adult crabs was estimated at 30,500 t (27,400 to 33,700 t), an increase of 17% from 2009, but still below B_{usr} (34,000 t). The TAC set for 2011 is targeted to achieve an exploitation rate of 35%.
	B	Y	The performance of the harvest strategy has been fully evaluated and evidence exists to show that it is achieving its objectives including being clearly able to maintain stocks at target levels.
			Biomass of commercial-size adult males declined appreciably after 2004 to the lowest level observed in the survey time series (1990 to 2010) in 2009. Although it increased slightly in 2010, it is still below the upper stock reference point B_{usr} that has been defined. However, biomass of pre-recruits that will become available to the fishery in 2 years increased in 2010 and biomass of pre-recruits that will recruit over the next 3-4 years has been increasing since 2006. The residual biomass (13,500 t) from the 2010 survey increased by 26% compared to 2009. Recruitment to the fishery (soft-shell, commercial-size adult males) increased by 10% relative to the 2009 estimate. In addition, the abundance of mature females increased in 2010 relative to values during 2005 to 2009. Biomass of commercial-size adult males is forecast to increase appreciably over the next several years and it is anticipated that fishable biomass will be above B_{usr} within the next year or so.
	D	Y	The harvest strategy is periodically reviewed and improved as necessary.
			Stock assessments and stakeholder consultations are held annually to review stock status in relation to established reference points to evaluate the harvest strategy and consider/recommend appropriate adjustments.
References			Conservation Harvesting plan Area 19 Snow Crab -2011

PI 1.2.1		There is a robust and precautionary harvest strategy in place	
SG	Issue	Met? (Y/N)	Justification/Rationale
			http://www.glf.dfo-mpo.gc.ca/e0020904 Area 19 Conservation Harvesting Plan 2005-2013 http://www.glf.dfo-mpo.gc.ca/e0008346 Area 19 Integrated Fisheries Management Plan 2001-2010 http://www.dfo-mpo.gc.ca/Library/341322.pdf Gulf management plan summary 2011. http://www.peifa.org/notices_item.php?activities_id=306
OVERALL PERFORMANCE INDICATOR SCORE:			100
CONDITION NUMBER (if relevant):			**NA**

Evaluation Table: PI 1.2.2

PI 1.2.2		There are well defined and effective harvest control rules in place	
SG	Issue	Met? (Y/N)	Justification/Rationale
60	a	Y	Generally understood harvest 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.
			Development and implementation of reference points was done with involvement of stakeholders who understand that under Canada's PA framework exploitation rates lower than F_{lim} are required when the stock is in the cautious zone (below B_{usr}), especially when B_{lim} is approached. The practice of adjusting TACs in response to changes in fishable biomass is well established.
	c	Y	There is some evidence that tools used to implement harvest control rules are appropriate and effective in controlling exploitation.
			In 2010, the first year of managing under PA reference points, the exploitation rate was reduced from 50% the year before to 36.6%. The TAC set for the 2011 season is targeted to achieve an exploitation rate of 35%.
80	a	Y	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.
			Specific management measures include a variety of input and output controls. Effort is controlled by limited entry licensing, a trap limit per license and fishing season. Catch is controlled by minimum legal size of males, no take of females, minimum mesh size in traps to allow undersize escapement as well as a maximum mesh size, maximum trap size, traps must be fitted with biodegradable panels, no take of white or soft-shell crab and TAC. Soft-shell protocols are in place that require closure of specific grids for the remainder of the season when the incidence of soft-shell crab in observer sampling exceeds 20%. This measure serves to reduce handling mortality on crab that have no commercial value and provides extra protection to a portion of the population that represents recruitment for the next fishing season. Managing under PA reference points was implemented in 2010. F_{lim} has been established as an exploitation rate of 40% of the fishable biomass as long as it is at or above the established B_{usr}. Stakeholders are aware that lower exploitation rates will be required when the stock is below B_{usr}, especially if B_{lim} is approached. In 2010, the first year of managing under PA reference points, fishable biomass was below B_{usr} and the exploitation rate was reduced from 50% the year before to 36.6%. The TAC set for the 2011 season is targeted to achieve an exploitation rate of 35%. Residual biomass is currently well above B_{lim} and increasing. There is a history of TAC

PI 1.2.2		There are well defined and effective harvest control rules in place	
SG	Issue	Met? (Y/N)	Justification/Rationale
			adjustments based on trawl survey biomass estimates. Most notable was a major reduction from 23,998 t in 2009 to 9,547 t in 2010.
	b	Y	The selection of the harvest control rules takes into account the main uncertainties. The annual Science Advisory Report (SAR), which contains the critically important information considered in the advisory/decision-making process for the upcoming fishing season, includes a consideration of sources of uncertainty in the stock assessment. It provides 95% confidence intervals for biomass/abundance estimates from the survey, the main assessment tool. In addition to uncertainty associated with survey methodology, standardization and estimation, other uncertainty considered in the annual stock assessment includes the role of environmental variability in modifying growth, natural mortality and movements, factors which reduce reliability of forecasting more than one year in advance. Changing environmental conditions are also considered. In recent years, bottom temperatures have been above normal and sub-optimal for snow crab which has resulted in a decline in the index of suitable habitat for crab.
	c	Y	Available evidence indicates that the tools in use are appropriate and effective in achieving the exploitation levels required under the harvest control rules. The exploitation rate was reduced from 50% in 2009 to 36.6% in 2010, below F_{lim} which is 40%, as required when fishable biomass is lower than B_{usr}. The TAC set for the 2011 season is targeted to achieve a 35% exploitation rate.
100	a	N	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. Managing under PA reference points was implemented in 2010. F_{lim} has been established. Stakeholders are aware that lower exploitation rates will be required when the stock is below B_{usr}, especially if B_{lim} is approached. In 2010, the first year of managing under PA reference points, the exploitation rate was reduced from 50% the year before to 36.6%. The TAC set for the 2011 season is targeted to achieve an exploitation rate of 35%. Residual biomass is currently well above B_{lim} and increasing. Since implementation of reference points, managing with biomass near B_{lim} has not been necessary, however, the practice of adjusting TACs in response to changes in fishable biomass is well established and the management regime has demonstrated a capacity to implement substantial reductions in TAC to lower exploitation rates.

PI 1.2.2		There are well defined and effective harvest control rules in place	
SG	Issue	Met? (Y/N)	Justification/Rationale
			The reason for a No on this scoring issue is the absence of an explicit decision rule for management actions to be taken when the stock is in different zones of the PA framework.
	b	Y	The design of the harvest control rules takes into account a wide range of uncertainties.
			The annual stock assessment provides 95% confidence intervals for biomass/abundance estimates from the survey, the main assessment tool. In addition to uncertainty associated with survey methodology, standardization and estimation, other uncertainty considered in the annual stock assessment includes the role of environmental variability in modifying growth, natural mortality and movements, factors which reduce reliability of forecasting more than one year in advance. Changing environmental conditions are also considered. In recent years, bottom temperatures have been above normal and sub-optimal for snow crab which has resulted in a decline in the index of suitable habitat for crab. Also, the two recent SARs included a risk analysis that provided probabilities for a range of catch options of F_{lim} being exceeded, of residual biomass falling below B_{lim} and of fishable biomass being below B_{usr} after the season.
	c	Y	Evidence clearly shows that the tools in use are effective in achieving the exploitation levels required under the harvest control rules.
			The exploitation rate was reduced from 50% in 2009 to 36.6% in 2010, below F_{lim} which is 40%, as required when fishable biomass is lower than B_{usr}. The TAC set for the 2011 season is targeted to achieve a 35% exploitation rate. The practice of adjusting TACs in response to changes in fishable biomass is well established and the management regime has demonstrated a capacity to implement substantial reductions in TAC to lower exploitation rates.
References			DFO. 2011. Assessment of snow crab in the southern Gulf of St. Lawrence (Areas 12, 19, 12E and 12F). DFO Can. Sci. Advis. Sec. Sci. Advis. Rep. 2011/002. DFO. 2010. Assessment of snow crab in the southern Gulf of St. Lawrence (Areas 12, 19, 12E and 12F. DFO. Can. Sci. Advis. Sec. Sci. Advis. Rep. 2010/015. DFO. 2009. A fishery decision-making framework incorporating the Precautionary Approach. http://www.dfo-mpo.gc.ca/fm-gp/peches-fisheries/fish-ren-peche/sff-cpd/precautioneng.htm (2009-03-23). DFO. 2010. Reference points consistent with the precautionary approach for snow crab in the southern Gulf of St. Lawrence. DFO Can. Sci. Advis. Sec. Sci. Advis. Rep. 2010/014.
OVERALL PERFORMANCE INDICATOR SCORE:			95

PI 1.2.2		There are well defined and effective harvest control rules in place	
SG	Issue	Met? (Y/N)	Justification/Rationale
CONDITION NUMBER (if relevant):			**NA**

Evaluation Table: PI 1.2.3

PI 1.2.3		Relevant information is collected to support the harvest strategy	
SG	Issue	Met? (Y/N)	Justification/Rationale
60	a	Y	Some relevant information related to stock structure, stock productivity and fleet composition is available to support the harvest strategy. Information on fishery performance, including catch, effort, distribution of fishing effort, catch composition, number and size of vessels, etc has been collected annually since the fishery started.
	b	Y	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. Landings are dockside monitored and a resource survey is conducted annually.
80	a	Y	Sufficient relevant information related to stock structure, stock productivity, fleet composition and other data is available to support the harvest strategy. The overall fishery is managed by 4 sub-areas for which time series of fishery performance indicators, number of licenses and vessels, etc, and catch composition data are available. All 4 areas have been covered in the annual resource survey which provides a time series of biological indicators including abundance of various population components.
	b	Y	Stock abundance and fishery removals are regularly monitored at a level of accuracy and coverage consistent with the harvest control rule, and one or more indicators are available and monitored with sufficient frequency to support the harvest control rule. The annual resource survey is fishery independent and conducted scientifically. Removals have been 100% dockside monitored. Estimates of exploitation rates achieved in the fishery are quite reliable.
	c	Y	There is good information on all other fishery removals from the stock. Snow crab are not retained in any other fishery operating in the southern Gulf. Other fisheries are required to record by-catch and release any snow crab caught.
100	a	Y	A comprehensive range of information (on stock structure, stock

PI 1.2.3		Relevant information is collected to support the harvest strategy	
SG	Issue	Met? (Y/N)	Justification/Rationale
			productivity, fleet composition, stock abundance, fishery removals and other information such as environmental information), including some that may not be directly related to the current harvest strategy, is available. Snow crab in the Gulf of St. Lawrence in general and the southern Gulf in particular, has been the subject of rigorous biological research for a long time. The annual resource survey has provided a time series of abundance/biomass estimates for various population components. A complete record of the number/size of vessels and licenses is available. Logbooks are mandatory and include information on fishing position, catch and effort each fishing day. 100% of landings are monitored at dockside. At-sea monitoring of catches is conducted by certified observers deployed to achieve a target coverage of 25% of fishing trips in a given season – observers perform detailed sampling of the catch for size composition and shell condition and check logbooks for accuracy. An electronic Vessel Monitoring System (VMS) is in place for the entire fleet. 100% hail out and hail in using an automated system is required to keep Dockside Monitoring and At-sea Observer companies informed of vessel activity. In addition to the foregoing information monitoring directed at the crab resource and its fishery, there is broad-scale ecosystem/environmental monitoring that is utilized extensively in crab assessment and management.
	b	Y	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 inherent uncertainties in the information [data] and the robustness of assessment and management to this uncertainty. Each time series of data utilized in the annual stock assessment is updated annually and subjected to rigorous statistical analysis including detailed consideration of sources of error and uncertainty. The resource survey in particular has been subjected to rigorous scrutiny by internationally recognised experts in the field of survey design and estimation. The assessment provides a reliable estimate of the exploitation rate achieved in the fishery and a risk analysis for a range of catch options giving probabilities of F_{lim} being exceeded, of residual biomass dropping below B_{lim} and of fishable biomass being below B_{usr} after the fishery. This provides guidance in the decision-making process and setting the TAC for the upcoming fishing season.
References			Hébert, M., E. Wade, M. Biron, P. DeGrâce, J.-F. Landry and/et M. Moriyasu. 2010. The 2009 assessment of snow crab, *Chionoecetes opilio*, stock in the southern Gulf of St. Lawrence (Areas 12, 19, 12E and 12F). DFO Can. Sci. Advis. Sec. Res. Doc. 2010/091. vi + 85 p.

PI 1.2.3		Relevant information is collected to support the harvest strategy	
SG	Issue	Met? (Y/N)	Justification/Rationale
			Moriyasu, M., E. Wade, M. Hébert, and M. Biron. 2008. Review of the survey and analytical protocols used for estimating abundance indices of southern Gulf of St. Lawrence snow crab from 1988 to 2006. DFO Can. Sci. Advis. Sec. Res. Doc. 2008/069. Surette, T.J., Marcotte, D., and Wade, E. 2007. Predicting snow crab (*Chionoecetes opilio*) abundance using kriging with external drift with depth as a covariate. Can. Tech. Rep. Fish. Aquat. Sci. 2763: vi + 33 p. Hébert, M., E. Wade, M. Biron, P. DeGrâce, R. Sonier and M. Moriyasu. 2009. The 2008 assessment of snow crab, *Chionoecetes opilio*, stocks in the southern Gulf of St. Lawrence (Areas 12, 19, E and F). DFO Can. Sci. Adv. Secr. Res. Doc. 2009/053.
OVERALL PERFORMANCE INDICATOR SCORE:			100
CONDITION NUMBER (if relevant):			**NA**

Evaluation Table: PI 1.2.4

PI 1.2.4		There is an adequate assessment of the stock status	
SG	Issue	Met? (Y/N)	Justification/Rationale
60	b	Y	The assessment estimates stock status relative to reference points.
			Reference points are based on the time series of biomass estimates from the annual resource survey which is considered in detail in the annual stock assessment.
	c	Y	The assessment identifies major sources of uncertainty.
			All sources of uncertainty are considered in the stock assessment and summarized in the Science Advisory Report.
80	a	Y	The assessment is appropriate for the stock and for the harvest control rule.
			The assessment provides reliable estimates of exploitation rate in the past season and the fishable biomass available for the upcoming season.
	c	Y	The assessment takes uncertainty into account.
			The annual stock assessment provides 95% confidence intervals for biomass/abundance estimates from the survey, the main assessment tool. In addition to uncertainty associated with survey methodology, standardization and estimation, other uncertainty considered in the annual stock assessment includes the role of environmental variability in modifying growth, natural mortality and movements, factors which reduce reliability of forecasting more than one year in advance. Changing environmental conditions are also considered. In recent years, bottom temperatures have

PI 1.2.4		There is an adequate assessment of the stock status	
SG	Issue	Met? (Y/N)	Justification/Rationale
			been above normal and sub-optimal for snow crab which has resulted in a decline in the index of suitable habitat for crab. Also, the two recent SARs included a risk analysis that provided probabilities for a range of catch options of F_{lim} being exceeded, of residual biomass falling below B_{lim} and of fishable biomass being below B_{usr} after the season.
	e	Y	The assessment of stock status is subject to peer review.
			The annual stock assessment is done in a formal regional (DFO Gulf Region) process. Participation in the meeting includes stock assessment scientists of the Gulf Region Science Branch working on other species as well as scientists conducting broad-scale oceanographic and ecological research. A level of participation that ensures good peer review of the science of the assessment is required as part of the process.
100	a	Y	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 provides reliable estimates of exploitation rate in the past season and the fishable biomass available for the upcoming season. The snow crab population of the southern Gulf has been intensively researched for a very long time and details of population biology and population dynamics are well known. This provides a solid basis for estimating biomass of various population components and forecasting recruitment over several years. The fishery is very well known and regulated and the assessment fits well with its nature.
	c	Y	The assessment takes into account uncertainty and is evaluating stock status relative to reference points in a probabilistic way.
			95% confidence intervals are included with biomass estimates from the survey. A risk analysis for a range of catch options giving probabilities of F_{lim} being exceeded, of residual biomass dropping below B_{lim} and of fishable biomass being below B_{usr} after the fishery. This provides guidance in the decision-making process and setting the TAC for the upcoming fishing season.
	d	Y	The assessment has been tested and shown to be robust. Alternative hypotheses and assessment approaches have been rigorously explored.
			The resource survey is the main assessment tool. Its design was developed to facilitate geo-statistical estimation techniques. The method used, termed kriging with drift, uses depth as a secondary variable. Catchability in the trawl is assumed to be 100%. There have been changes in spatial coverage, methodology and introduction of new equipment over the years, but the sampling protocol has remained the same.

PI 1.2.4		There is an adequate assessment of the stock status	
SG	Issue	Met? (Y/N)	Justification/Rationale
			An in-depth review of this survey, involving internationally recognized experts in the field of survey design/estimation from inside and outside DFO, was done at a 4-day workshop in 2005. The workshop provided a rigorous evaluation of various approaches to survey design, analytical procedures and biomass estimation. Based on recommendations from that workshop, some methodological adjustments were made and the 2006 survey served as a reference for standardization of survey data since 1988. A comprehensive review of the survey, its analytical protocols and the standardized time series was done in 2008. An independent analysis by an industry consultant proposed that it is impossible to reconstitute the biomass estimates of the previous years to compensate for the lack of samples in some sectors in the southern Gulf survey coverage area whatever the kriging method used. This individual conclusion needs further review. A new review of the approaches currently used to reconstruct the time series, to assess the level of bias, and to consider alternate approaches to reconstitute useable estimates in order to conserve the historical series is scheduled for November 2011.
	e	Y	The assessment has been internally and externally peer reviewed. The annual stock assessment routinely includes participation by stock assessment scientists as well as scientists conducting broad-scale oceanographic and marine ecology research from within the DFO Gulf Region Science Branch. In addition, there is regular participation by scientists from other DFO regions, from universities, local consulting firms and, from time to time, from other countries. Overall, the assessment methodology has been extensively peer reviewed and the annual assessment receives a high degree of both internal and external peer review.
References			Hébert, M., E. Wade, M. Biron, P. DeGrâce, J.-F. Landry and/et M. Moriyasu. 2010. The 2009 assessment of snow crab, *Chionoecetes opilio*, stock in the southern Gulf of St. Lawrence (Areas 12, 19, 12E and 12F). DFO Can. Sci. Advis. Sec. Res. Doc. 2010/091. vi + 85 p. Moriyasu, M., E. Wade, M. Hébert, and M. Biron. 2008. Review of the survey and analytical protocols used for estimating abundance indices of southern Gulf of St. Lawrence snow crab from 1988 to 2006. DFO Can. Sci. Advis. Sec. Res. Doc. 2008/069. Surette, T.J., Marcotte, D., and Wade, E. 2007. Predicting snow crab (*Chionoecetes opilio*) abundance using kriging with external drift with depth as a covariate. Can. Tech. Rep. Fish. Aquat. Sci. 2763: vi + 33 p. Hébert, M., E. Wade, M. Biron, P. DeGrâce, R. Sonier and M. Moriyasu. 2009. The 2008 assessment of snow crab, *Chionoecetes opilio*, stocks in the southern Gulf of St. Lawrence (Areas 12, 19, E and F). DFO Can. Sci. Adv.

PI 1.2.4		There is an adequate assessment of the stock status	
SG	Issue	Met? (Y/N)	Justification/Rationale
			Secr. Res. Doc. 2009/053. DFO, 2010. Proceedings of the Gulf Region Science Advisory Process on Reference Points and Assessment of Snow Crab from the Southern Gulf of St. Lawrence, February 22 to 26, 2010. DFO Can. Sci. Advis. Sec. Proceed. Ser. 2010/042. iv + 46 p. DFO, 2005. Proceedings of the Peer Review of Snow Crab Stock in the Southern Gulf of St. Lawrence, Gulf Region; 22-25 February 2005. DFO Can. Sci. Advis. Sec. Proceed. Ser. 2005/026. DFO, 2006. Proceedings of the Assessment Framework Workshop on Southern Gulf of St. Lawrence Snow Crab (Areas 12, E, F and 19), Gulf Regional Advisory Process; 11-14 October 2005. DFO Can. Sci. Advis. Sec. Proceed. Ser. 2006/042.
OVERALL PERFORMANCE INDICATOR SCORE:			100
CONDITION NUMBER (if relevant):			**NA**

PRINCIPLE 2:

Evaluation Table: PI 2.1.1

PI 2.1.1		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	
SG	Issue	Met? (Y/N)	Justification/Rationale
60	a	Y	Main retained species are likely to be within biologically based limits (if not, go to scoring issue d below).
			By regulation, license condition and in actual practice there are no retained species in this fishery.
	c	Y	If main retained species are outside the limits there are measures in place that are expected to ensure that the fishery does not hinder recovery and rebuilding of the depleted species.
			By regulation, license condition and in actual practice there are no retained species in this fishery.
	d	Y	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.
			By regulation, license condition and in actual practice there are no retained species in this fishery.
80	a	Y	Main retained species are highly likely to be within biologically based limits (if not, go to scoring issue c below).
			By regulation, license condition and in actual practice there are no retained species in this fishery.

PI 2.1.1		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	
SG	Issue	Met? (Y/N)	Justification/Rationale
	c	Y	If main retained species are 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.
			By regulation, license condition and in actual practice there are no retained species in this fishery.
100	a	Y	There is a high degree of certainty that retained species are within biologically based limits and fluctuating around their target reference points.
			By regulation, license condition and in actual practice there are no retained species in this fishery.
	b	Y	Target reference points are defined and retained species.
			By regulation, license condition and in actual practice there are no retained species in this fishery.
References			Information received by Assessment Team from Fisheries Management Staff in DFO's Gulf Region during the Site Visit.
OVERALL PERFORMANCE INDICATOR SCORE:			100
CONDITION NUMBER (if relevant):			**NA**

Evaluation Table: PI 2.1.2

PI 2.1.2		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	
SG	Issue	Met? (Y/N)	Justification/Rationale
60	a	Y	There are measures 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.
			The various basic MCS efforts, outlined in the Management Control and Surveillance Background section, coupled with targeted surveillance and random auditing procedures by DFO provide an effective strategy for ensuring snow crab is the only targeted species. Regulations and license conditions require there be no other retained species in this fishery. This is viewed as being the actual and normal practice in this and all other Atlantic Coast snow crab fisheries.
	b	Y	The measures are considered likely to work, based on plausible argument (e.g., general experience, theory or comparison with similar fisheries/species).
			The various basic MCS efforts, outlined in the Management Control and Surveillance Background section, coupled with targeted surveillance and random auditing procedures by DFO provide an effective strategy for ensuring snow crab is the only targeted species. Regulations and license conditions require there be no other retained species in this fishery. This is viewed as being the actual and normal practice in this and all other Atlantic Coast snow crab fisheries.
80	a	Y	There is a partial strategy 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.
			Not applicable because the various basic MCS efforts, outlined in the Management Control and Surveillance Background section, coupled with targeted surveillance and random auditing procedures by DFO provide an effective strategy for ensuring snow crab is the only targeted species. Regulations and license conditions require there be no other retained species in this fishery. This is viewed as being the actual and normal practice in this and all other Atlantic Coast snow crab fisheries.
	b	Y	There is some objective basis for confidence that the partial strategy will work, based on some information directly about the fishery and/or species involved.
			The various basic MCS efforts, outlined in the Management Control and Surveillance Background section, coupled with targeted surveillance and random auditing procedures by DFO provide an effective strategy for ensuring snow crab is the only targeted species. Regulations and license conditions require there be no retained species in this fishery. This is

PI 2.1.2		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	
SG	Issue	Met? (Y/N)	Justification/Rationale
			viewed as being the actual and normal practice in this and all other Atlantic Coast snow crab fisheries.
	c	Y	There is some evidence that the partial strategy is being implemented successfully.
			The various basic MCS efforts, outlined in the Management Control and Surveillance Background section, coupled with targeted surveillance and random auditing procedures by DFO provide an effective strategy for ensuring snow crab is the only targeted species. Regulations and license conditions require there be no retained species in this fishery. This is viewed as being the actual and normal practice in this and all other Atlantic Coast snow crab fisheries.
100	a	Y	There is a strategy in place for managing retained species.
			The various basic MCS efforts, outlined in the Management Control and Surveillance Background section, coupled with targeted surveillance and random auditing procedures by DFO provide an effective strategy for ensuring snow crab is the only targeted species. Regulations and license conditions require there be no retained species in this fishery. This is viewed as being the actual and normal practice in this and all other Atlantic Coast snow crab fisheries.
	b	Y	Testing supports high confidence that the strategy will work, based on information directly about the fishery and/or species involved.
			The various basic MCS efforts, outlined in the Management Control and Surveillance Background section, coupled with targeted surveillance and random auditing procedures by DFO provide an effective strategy for ensuring snow crab is the only targeted species. Regulations and license conditions require there be no retained species in this fishery. This is viewed as being the actual and normal practice in this and all other Atlantic Coast snow crab fisheries.
	c	Y	There is clear evidence that the strategy is being implemented successfully.
			The various basic MCS efforts, outlined in the Management Control and Surveillance Background section, coupled with targeted surveillance and random auditing procedures by DFO provide an effective strategy for ensuring snow crab is the only targeted species. Regulations and license conditions require there be no retained species in this fishery. This is viewed as being the actual and normal practice in this and all other Atlantic Coast snow crab fisheries.
	d	Y	There is some evidence that the strategy is achieving its overall objective.
			The various basic MCS efforts, outlined in the Management Control and Surveillance Background section, coupled with targeted surveillance and random auditing procedures by DFO provide an effective strategy for ensuring snow crab is the only targeted species. Regulations and license

PI 2.1.2		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	
SG	Issue	Met? (Y/N)	Justification/Rationale
			conditions require there be no retained species in this fishery. This is viewed as being the actual and normal practice in this and all other Atlantic Coast snow crab fisheries.
References			Information on Regional MSC efforts in the SGSL snow crab fishery received by Assessment Team from DFO's Gulf Region.
OVERALL PERFORMANCE INDICATOR SCORE:			100
CONDITION NUMBER (if relevant):			**NA**

Evaluation Table: PI 2.1.3

PI 2.1.3		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	
SG	Issue	Met? (Y/N)	Justification/Rationale
60	a	Y	Qualitative information is available on the amount of main retained species taken by the fishery.
			The various basic MCS efforts, outlined in the Management Control and Surveillance Background section, coupled with targeted surveillance and random auditing procedures by DFO provide an effective strategy for ensuring snow crab is the only targeted species. Regulations and license conditions require there be no retained species in this fishery. This is viewed as being the actual and normal practice in this and all other Atlantic Coast snow crab fisheries.
	b	Y	Information is adequate to qualitatively assess outcome status with respect to biologically based limits.
			The various basic MCS efforts, outlined in the Management Control and Surveillance Background section, coupled with targeted surveillance and random auditing procedures by DFO provide an effective strategy for ensuring snow crab is the only targeted species. Regulations and license conditions require there be no retained species in this fishery. This is viewed as being the actual and normal practice in this and all other Atlantic Coast snow crab fisheries.
	c	Y	Information is adequate to support measures to manage main retained species.
			The various basic MCS efforts, outlined in the Management Control and Surveillance Background section, coupled with targeted surveillance and random auditing procedures by DFO provide an effective strategy for ensuring snow crab is the only targeted species. Regulations and license

PI 2.1.3		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	
SG	Issue	Met? (Y/N)	Justification/Rationale
			conditions require there be no retained species in this fishery. This is viewed as being the actual and normal practice in this and all other Atlantic Coast snow crab fisheries.
80	a	Y	Qualitative information and some quantitative information are available on the amount of main retained species taken by the fishery.
			The various basic MCS efforts, outlined in the Management Control and Surveillance Background section, coupled with targeted surveillance and random auditing procedures by DFO provide an effective strategy for ensuring snow crab is the only targeted species. Regulations and license conditions require there be no retained species in this fishery. This is viewed as being the actual and normal practice in this and all other Atlantic Coast snow crab fisheries.
	b	Y	Information is sufficient to estimate outcome status with respect to biologically based limits.
			The various basic MCS efforts, outlined in the Management Control and Surveillance Background section, coupled with targeted surveillance and random auditing procedures by DFO provide an effective strategy for ensuring snow crab is the only targeted species. Regulations and license conditions require there be no retained species in this fishery. This is viewed as being the actual and normal practice in this and all other Atlantic Coast snow crab fisheries.
	c	Y	Information is adequate to support a partial strategy to manage main retained species.
			The various basic MCS efforts, outlined in the Management Control and Surveillance Background section, coupled with targeted surveillance and random auditing procedures by DFO provide an effective strategy for ensuring snow crab is the only targeted species. Regulations and license conditions require there be no retained species in this fishery. This is viewed as being the actual and normal practice in this and all other Atlantic Coast snow crab fisheries.
	d	Y	Sufficient data continue to be collected to detect any increase in risk level (e.g. due to changes in the outcome indicator score or the operation of the fishery or the effectiveness of the strategy)
			The various basic MCS efforts, outlined in the Management Control and Surveillance Background section, coupled with targeted surveillance and random auditing procedures by DFO provide an effective strategy for ensuring snow crab is the only targeted species. Regulations and license conditions require there be no retained species in this fishery. This is viewed as being the actual and normal practice in this and all other Atlantic Coast snow crab fisheries.
100	a	Y	Accurate and verifiable information is available on the catch of all retained species and the consequences for the status of affected populations.

PI 2.1.3		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	
SG	Issue	Met? (Y/N)	Justification/Rationale
			The various basic MCS efforts, outlined in the Management Control and Surveillance Background section, coupled with targeted surveillance and random auditing procedures by DFO provide an effective strategy for ensuring snow crab is the only targeted species. Regulations and license conditions require there be no retained species in this fishery. This is viewed as being the actual and normal practice in this and all other Atlantic Coast snow crab fisheries.
	b	Y	Information is sufficient to quantitatively estimate outcome status with a high degree of certainty.
			The various basic MCS efforts, outlined in the Management Control and Surveillance Background section, coupled with targeted surveillance and random auditing procedures by DFO provide an effective strategy for ensuring snow crab is the only targeted species. Regulations and license conditions require there be no retained species in this fishery. This is viewed as being the actual and normal practice in this and all other Atlantic Coast snow crab fisheries.
	c	Y	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.
			The various basic MCS efforts, outlined in the Management Control and Surveillance Background section, coupled with targeted surveillance and random auditing procedures by DFO provide an effective strategy for ensuring snow crab is the only targeted species. Regulations and license conditions require there be no retained species in this fishery. This is viewed as being the actual and normal practice in this and all other Atlantic Coast snow crab fisheries.
	d	Y	Monitoring of retained species is conducted in sufficient detail to assess ongoing mortalities to all retained species.
			The various basic MCS efforts, outlined in the Management Control and Surveillance Background section, coupled with targeted surveillance and random auditing procedures by DFO provide an effective strategy for ensuring snow crab is the only targeted species. Regulations and license conditions require there be no retained species in this fishery. This is viewed as being the actual and normal practice in this and all other Atlantic Coast snow crab fisheries.
References			Information on Regional MSC efforts in the SGSL snow crab fishery received by Assessment Team from Fisheries Management Staff in DFO's Gulf Region during the Site Visit.
OVERALL PERFORMANCE INDICATOR SCORE:			100
CONDITION NUMBER (if relevant):			**NA**

Evaluation Table: PI 2.2.1

PI 2.2.1		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	
SG	Issue	Met? (Y/N)	Justification/Rationale
60	a	Y	Main bycatch species are likely to be within biologically based limits (if not, go to scoring issue b below).
			The incidence of by-catch in the SGSL commercial snow crab fishery is considered to be so low that the data from logbooks is not recorded electronically in the statistics system.The Assessment Team could find no expressed concerns regarding the effects of such small catches on the status of the various bycatch species taken in the SGSL snow crab fisheries. None are even close to a level where they could be considered a main bycatch species (all are considered to be well under 5% of the total snow crab catch).
	b	Y	If main bycatch species are outside biologically based limits there are mitigation measures in place that are expected to ensure that the fishery does not hinder recovery and rebuilding.
			The incidence of by-catch in the SGSL commercial snow crab fishery is considered to be so low that the data from logbooks is not recorded electronically in the statistics system.The Assessment Team could find no expressed concerns regarding the effects of such small catches on the status of the various bycatch species taken in the SGSL snow crab fisheries. None are even close to a level where they could be considered a main bycatch species (all are considered to be well under 5% of the total snow crab catch).
	c	Y	If the status is poorly known there are measures or practices in place that are expected to result in the fishery not causing the bycatch species to be outside biologically based limits or hindering recovery.
			The incidence of by-catch in the SGSL commercial snow crab fishery is considered to be so low that the data from logbooks is not recorded electronically in the statistics system.The Assessment Team could find no expressed concerns regarding the effects of such small catches on the status of the various bycatch species taken in the SGSL snow crab fisheries. None are even close to a level where they could be considered a main bycatch species (all are considered to be well under 5% of the total snow crab catch).
80	a	Y	Main bycatch species are highly likely to be within biologically based limits (if not, go to scoring issue b below).
			The incidence of by-catch in the SGSL commercial snow crab fishery is considered to be so low that the data from logbooks are not recorded electronically in the statistics system.The Assessment Team could find no expressed concerns regarding the effects of such small catches on the status of the various bycatch species taken in the SGSL snow crab fisheries.

PI 2.2.1		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	
SG	Issue	Met? (Y/N)	Justification/Rationale
			None are even close to a level where they could be considered a main bycatch species (all are considered to be well under 5% of the total snow crab catch).
	b	Y	If main bycatch species are outside biologically based limits there is a partial strategy of demonstrably effective mitigation measures in place such that the fishery does not hinder recovery and rebuilding.
			The Assessment Team could find no expressed concerns regarding the effects of such small catches on the status of the various bycatch species taken in the SGSL snow crab fisheries. None are even close to a level where they could be considered a main bycatch species (all are considered to be well under 5% of the total snow crab catch).
100	a	Y	There is a high degree of certainty that bycatch species are within biologically based limits.
			The Assessment Team could find no expressed concerns regarding the effects of such small catches on the status of the various bycatch species taken in the SGSL snow crab fisheries. None are even close to a level where they could be considered a main bycatch species (all are considered to be well under 5% of the total snow crab catch).
References			Information received directly by Assessment Team from Fisheries Management Staff in DFO's Gulf Region during Site Visit. (Presentation on C & P)
OVERALL PERFORMANCE INDICATOR SCORE:			100
CONDITION NUMBER (if relevant):			**NA**

Evaluation Table: PI 2.2.2

PI 2.2.2		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	
SG	Issue	Met? (Y/N)	Justification/Rationale
60	a	Y	There are measures 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.
			The comprehensive MCS system used in the snow crab fishery includes VMS (with a 15 minute reporting sequence to a 24/7 VMS Centre), hail-out and hail-in requirements, 10%-30% target observer coverage, mandatory logbook completion and 100% coverage of landings by independent dockside monitors. Trap design and minimum mesh sizes appear effective in avoiding all but small incidental catches of other species. These efforts coupled with targeted surveillance and random auditing procedures by DFO enforcement staff provide an effective strategy for ensuring the SGSL snow crab fishery minimizes the catch of all other species.
	b	Y	The measures are considered likely to work, based on plausible argument (e.g. general experience, theory or comparison with similar fisheries/species).
			The continuing very low bycatches are viewed as too low to record in the Region's electronic data system. Fishery Management Staff feel this signifies that the management measures for the gear used in this fishery are effective in essentially eliminating measurable effects of bycatch as a problem.
80	a	Y	There is a partial strategy in place, if necessary, for managing 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.
			The comprehensive MCS system used in the snow crab fishery includes VMS (with a 15 minute reporting sequence to a 24/7 VMS Centre), hail-out and hail-in requirements, 10%-30% target observer coverage, mandatory logbook completion and 100% coverage of landings by independent dockside monitors. Trap design and minimum mesh sizes appear effective in avoiding all but small incidental catches of other species. These efforts coupled with targeted surveillance and random auditing procedures by DFO enforcement staff provide an effective strategy for ensuring the SGSL snow crab fishery minimizes the catch of all other species.
	b	Y	There is some objective basis for confidence that the partial strategy will work, based on some information directly about the fishery and/or the species involved.
			The continuing very low bycatches are viewed as too low to record in the Region's electronic data system. Fishery Management Staff feel this signifies that the management measures for the gear used in this fishery are effective in essentially eliminating measurable effects of bycatch as a problem.

PI 2.2.2		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	
SG	Issue	Met? (Y/N)	Justification/Rationale
	c	Y	There is some evidence that the partial strategy is being implemented successfully.
			The continuing very low bycatches are viewed as too low to record in the Region's electronic data system. Fishery Management Staff feel this signifies that the management measures for the gear used in this fishery are effective in essentially eliminating measurable effects of bycatch as a problem.
100	a	Y	There is a strategy in place for managing and minimising bycatch.
			The comprehensive MCS system used in the snow crab fishery includes VMS (with a 15 minute reporting sequence to a 24/7 VMS Centre), hail-out and hail-in requirements, 10%-30% target observer coverage, mandatory logbook completion and 100% coverage of landings by independent dockside monitors. Trap design and minimum mesh sizes appear effective in avoiding all but small incidental catches of other species. These efforts coupled with targeted surveillance and random auditing procedures by DFO enforcement staff provide an effective strategy for ensuring the SGSL snow crab fishery minimizes the catch of all other species.
	b	Y	Testing supports high confidence that the strategy will work, based on information directly about the fishery and/or species involved.
			The continuing very low bycatches are viewed as too low to record in the Region's electronic data system. Fishery Management Staff feel this signifies that the management measures for the gear used in this fishery are effective in essentially eliminating measurable effects of bycatch as a problem.
	c	Y	There is clear evidence that the strategy is being implemented successfully.
			The continuing very low bycatches are viewed as too low to record in the Region's electronic data system. Fishery Management Staff feel this signifies that the management measures for the gear used in this fishery are effective in essentially eliminating measurable effects of bycatch as a problem.
	d	Y	There is some evidence that the strategy is achieving its objective.
			The continuing very low bycatches are viewed as too low to record in the Region's electronic data system. Fishery Management Staff feel this signifies that the management measures for the gear used in this fishery are effective in essentially eliminating measurable effects of bycatch as a problem.
References			Information received by Assessment Team from Fisheries Management Staff in DFO's Gulf Region.
OVERALL PERFORMANCE INDICATOR SCORE:			100
CONDITION NUMBER (if relevant):			**NA**

Evaluation Table: PI 2.2.3

PI 2.2.3		Information on the nature and the amount of bycatch is adequate to determine the risk posed by the fishery and the effectiveness of the strategy to manage bycatch	
SG	Issue	Met? (Y/N)	Justification/Rationale
60	a	Y	Qualitative information is available on the main bycatch species affected by the fishery.
			The continuing very low bycatches are viewed as too low to record in the Region's electronic data system.
	b	Y	Information is adequate to broadly understand outcome status with respect to biologically based limits
			The Gulf Region's Fishery Management Staff is of the opinion that the amounts of bycatch are so low as to be inconsequential or un-measurable in terms of effects on the species discarded. Bycatch amounts are not even close to a level where they could be considered a main bycatch species (all are considered to be well under 5% of the total snow crab catch, indeed under one percent).
	c	Y	Information is adequate to support measures to manage bycatch.
			The Gulf Region's Fishery Management Staff is of the opinion that the amounts of bycatch are so low as to be inconsequential or un-measurable in terms of effects on the species discarded. Bycatch amounts are not even close to a level where they could be considered a main bycatch species (all are considered to be well under 5% of the total snow crab catch, indeed under one percent).
80	a	Y	Qualitative information and some quantitative information are available on the amount of main bycatch species affected by the fishery.
			The Gulf Region's Fishery Management Staff is of the opinion that the amounts of bycatch are so low as to be inconsequential or un-measurable in terms of effects on the species discarded. Bycatch amounts are not even close to a level where they could be considered a main bycatch species (all are considered to be well under 5% of the total snow crab catch, indeed under one percent). However, by-catch data are not tabulated from logbooks nor are tabulations or estimates based on Observer Reports data conducted in the Gulf Region.
	b	Y	Information is sufficient to estimate outcome status with respect to biologically based limits.
			The Gulf Region's Fishery Management Staff is of the opinion that the amounts of bycatch are so low as to be inconsequential or un-measurable in terms of effects on the species discarded. Bycatch amounts are not even close to a level where they could be considered a main bycatch species (all are considered to be well under 5% of the total snow crab catch, indeed under one percent). However, by-catch data are not tabulated from

PI 2.2.3		Information on the nature and the amount of bycatch is adequate to determine the risk posed by the fishery and the effectiveness of the strategy to manage bycatch	
SG	Issue	Met? (Y/N)	Justification/Rationale
			logbooks nor are tabulations or estimates based on Observer Reports data conducted in the Gulf Region.
	c	Y	Information is adequate to support a partial strategy to manage main bycatch species.
			The Gulf Region's Fishery Management Staff is of the opinion that the amounts of bycatch are so low as to be inconsequential or un-measurable in terms of effects on the species discarded. Bycatch amounts are not even close to a level where they could be considered a main bycatch species (all are considered to be well under 5% of the total snow crab catch, indeed under one percent). However, by-catch data are not tabulated from logbooks nor are tabulations or estimates based on Observer Reports data conducted in the Gulf Region.
	d	Y	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 effectively of the strategy).
			The comprehensive MCS system used in the SGSL snow crab fishery includes VMS (with a 15 minute reporting sequence to a 24/7 VMS Centre), hail-out and hail-in requirements, 10%-30% observer coverage, mandatory logbook completion and 100% coverage of landings by independent dockside monitors. Trap design and minimum mesh sizes appear effective in avoiding all but small incidental catches of other species. These efforts coupled with targeted surveillance and random auditing procedures by DFO enforcement staff provide an effective strategy for ensuring the SGSL snow crab fishery minimizes the catch of all other species.
100	a	N	Accurate and verifiable information is available on the amount of all bycatch and the consequences for the status of affected populations.
			Observer coverage ranges from 23 percent in the main fishing area (CFA 12) to about 10 in CFA 19, affecting the level of reported activity that can be fully verified. However, by-catch data are not tabulated from logbooks nor are tabulations or estimates based on Observer Reports data conducted in the Gulf Region.
	b	Y	Information is sufficient to quantitatively estimate outcome status with respect to biologically based limits with a high degree of certainty.
			Achieved observer coverage is in the range of 10 to 23 percent, reducing the level of reported activity that can be fully verified. The Gulf Region's Fishery Management Staff is of the opinion that the amounts of bycatch are so low as to be inconsequential or un-measurable in terms of effects on the species discarded. Bycatch amounts are not even close to a level where they could be considered a main bycatch species (all are considered to be well under 5% of the total snow crab catch, indeed under one percent).The levels of bycatch considered to exist in this fishery would seem to be supported by conventional wisdom regarding the effects of snow crab fishing on other species.

PI 2.2.3		Information on the nature and the amount of bycatch is adequate to determine the risk posed by the fishery and the effectiveness of the strategy to manage bycatch	
SG	Issue	Met? (Y/N)	Justification/Rationale
	c	Y	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.
			The Gulf Region's Fishery Management Staff is of the opinion that the amounts of bycatch are so low as to be inconsequential or un-measurable in terms of effects on the species discarded. Bycatch amounts are not even close to a level where they could be considered a main bycatch species (all are considered to be well under 5% of the total snow crab catch, indeed under one percent). The levels of bycatch considered to exist in this fishery would seem to be supported by conventional wisdom regarding the effects of snow crab fishing on other species. However, by-catch data are not tabulated from logbooks nor are tabulations or estimates based on Observer Reports data conducted in the Gulf Region.
	d	N	Monitoring of bycatch data is conducted in sufficient detail to assess ongoing mortalities to all bycatch species.
			Achieved observer coverage is in the range of 10 to 23 percent, reducing the level of reported activity that can be fully verified. The Gulf Region's Fishery Management Staff is of the opinion that the amounts of bycatch are so low as to be inconsequential or un-measurable in terms of effects on the species discarded. Bycatch amounts are not even close to a level where they could be considered a main bycatch species (all are considered to be well under 5% of the total snow crab catch, indeed under one percent).The levels of bycatch considered to exist in this fishery would seem to be supported by conventional wisdom regarding the effects of snow crab fishing on other species. However, by-catch data are not tabulated from logbooks nor are tabulations or estimates based on Observer Reports data conducted in the Gulf Region. The Gulf Region should be encouraged to estimate levels of by-catch using information available from Observer Reports as is done in the 4VWX snow crab fishery.
References			Information received by Assessment Team from Fisheries Management Staff in DFO's Gulf Region.
OVERALL PERFORMANCE INDICATOR SCORE:			90
CONDITION NUMBER (if relevant):			**NA**

Evaluation Table: PI 2.3.1

PI 2.3.1		The fishery meets national and international requirements for the 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	
SG	Issue	Met? (Y/N)	Justification/Rationale
60	a	**Y**	Known effects of the fishery are likely to be within limits of national and international requirements for protection of ETP species.
			Catches of Spotted Wolffish in the snow crab fishery are considered negligible. There are no reported cases of leatherback turtles being entangled in buoy lines in this fishery. No records exist of any involvement with any endangered whale species. No corals or sponges are captured in this passive gear fishery.
	b	Y	Known direct effects are unlikely to create unacceptable impacts to ETP species.
			Catches of Spotted Wolffish in the snow crab fishery are considered negligible. There are no reported cases of leatherback turtles being entangled in buoy lines in this fishery. No records exist of any involvement with any endangered whale species. No corals or sponges are captured in this passive gear fishery.
80	a	Y	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.
			Catches of Spotted Wolffish in the snow crab fishery are considered negligible. There are no reported cases of leatherback turtles being entangled in buoy lines in this fishery. No records exist of any involvement with any endangered whale species. No corals or sponges are captured in this passive gear fishery.
	b	Y	Direct effects are highly unlikely to create unacceptable impacts to ETP species.
			Catches of Spotted Wolffish in the snow crab fishery are considered negligible. There are no reported cases of leatherback turtles being entangled in buoy lines in this fishery. No records exist of any involvement with any endangered whale species. No corals or sponges are captured in this passive gear fishery.
	c	Y	Indirect effects have been considered and are thought to be unlikely to create unacceptable impacts.
			No indirect effects on ETP species are known to exist in this fishery.
100	a	Y	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.
			Catches of Spotted Wolffish in the snow crab fishery are considered

			negligible. There are no reported cases of leatherback turtles being entangled in buoy lines in this fishery. No records exist of any involvement with any endangered whale species. No corals or sponges are captured in this passive gear fishery.
	b	Y	There is a high degree of confidence that there are no significant detrimental direct effects of the fishery on ETP species.
			Catches of Spotted Wolffish in the snow crab fishery are considered negligible. There are no reported cases of leatherback turtles being entangled in buoy lines in this fishery. No records exist of any involvement with any endangered whale species. No corals or sponges are captured in this passive gear fishery. No indirect effects on ETP species are known to exist in this fishery. Overall, this is a small-scale seasonal fishery where a total of 449 license holders, half of whom operate vessels less than 65 ft., use a total of 36,600 traps for a catch of 9,500 mt over about three months of overall activity. The longest fishing season in 2010 was almost three months in CFA 12; in the CFA 19 the season lasted 16 days. Most of the activity (261 licenses and 32,000 traps) takes place in CFA 12.
	c	Y	There is a high degree of confidence that there are no significant detrimental indirect effects of the fishery on ETP species.
			Catches of Spotted Wolffish in the snow crab fishery are considered negligible. There are no reported cases of leatherback turtles being entangled in buoy lines in this fishery. No records exist of any involvement with any endangered whale species. No corals or sponges are captured in this passive gear fishery. No indirect effects on ETP species are known to exist in this fishery. Overall, this is a small-scale seasonal fishery where a total of 449 license holders, half of whom operate vessels less than 65 ft., use a total of 36,600 traps for a catch of 9,500 mt over about three months of overall activity. The longest fishing season in 2010 was almost three months in CFA 12; in the CFA 19 the season lasted 16 days. Most of the activity (261 licenses and 32,000 traps) takes place in CFA 12.
References			Information received by Assessment Team from Fisheries Management Staff in DFO's Gulf Region and Canadian Science Advisory Secretariat Science Advisory Report 2011/002
OVERALL PERFORMANCE INDICATOR SCORE:			100
CONDITION NUMBER (if relevant):			**NA**

Evaluation Table: PI 2.3.2

PI 2.3.2		The fishery has in place precautionary management strategies designed to: • Meet national and international requirements; • Ensure the fishery does not pose a risk of serious harm to ETP species; • Ensure the fishery does not hinder recovery of ETP species; and • Minimise mortality of ETP species.	
SG	Issue	Met? (Y/N)	Justification/Rationale
60	a	Y	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.
			In Canada the primary management strategies for the protection of ETP species are provided by SARA. Once protected under SARA, ETP species are subject to recovery strategies and management plans, such as have been developed for the single wolfish species involved in the SGSL snow crab fishery. A mandatory SARA logbook must be completed and submitted to DFO as a condition of license. Training courses in release techniques have been provided to crab license holders. A recovery strategy detailing procedures for expeditious release of wolffish has been established, industry has been trained, reporting procedures of encounters are in place and research on release methods used are monitored to ensure a high level of survival. A recovery strategy for leatherback turtles has been finalized and an action plan is being developed.
	b	Y	The measures are considered likely to work, based on plausible argument (e.g., general experience, theory or comparison with similar fisheries/species).
			Once protected under SARA, ETP species are subject to recovery strategies and management plans, such as have been developed for the one wolfish species involved in the SGSL snow crab fishery and under development for leatherback turtles. These are developed by multi-disciplinary teams, usually led by qualified fisheries scientists.
80	a	Y	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.
			Once protected under SARA, ETP species are subject to recovery strategies and management plans, such as have been developed for the one wolfish species involved in the SGSL snow crab fishery and under development for leatherback turtles. These are developed by multi-disciplinary teams, usually led by qualified fisheries scientists. In addition to these procedures for release of SARA species snow crab license conditions require return of all non-target species immediately upon capture. As well, many harvesters have participated in quality handling workshops which stress the importance of quick and careful return of species and introduce harvesters to onboard handling technologies which reduce the amount of time to sort and return all

PI 2.3.2		The fishery has in place precautionary management strategies designed to: • Meet national and international requirements; • Ensure the fishery does not pose a risk of serious harm to ETP species; • Ensure the fishery does not hinder recovery of ETP species; and • Minimise mortality of ETP species.	
SG	Issue	Met? (Y/N)	Justification/Rationale
			unwanted species.
	b	Y	There is an objective basis for confidence that the strategy will work, based on information directly about the fishery and/or the species involved.
			Once protected under SARA, ETP species are subject to recovery strategies and management plans, such as have been developed for the one wolfish species involved in the SGSL snow crab fishery and under development for leatherback turtles. These are developed by multi-disciplinary teams, usually led by qualified fisheries scientists. In addition to these procedures for release of SARA species snow crab license conditions require return of all non-target species immediately upon capture. As well, many harvesters have participated in quality handling workshops which stress the importance of quick and careful return of species and introduce harvesters to onboard handling technologies which reduce the amount of time to sort and return all unwanted species.
	c	Y	There is evidence that the strategy is being implemented successfully.
			Once protected under SARA, ETP species are subject to recovery strategies and management plans, such as have been developed for the one wolfish species involved in the SGSL snow crab fishery and under development for leatherback turtles. These are developed by multi-disciplinary teams, usually led by qualified fisheries scientists. In addition to these procedures for release of SARA species snow crab license conditions require return of all non-target species immediately upon capture. As well, many harvesters have participated in quality handling workshops which stress the importance of quick and careful return of species and introduce harvesters to onboard handling technologies which reduce the amount of time to sort and return all unwanted species.
100	a	Y	There is a comprehensive strategy in place for managing the fishery's impact on ETP species, including measures to minimise mortality that is designed to achieve above national and international requirements for the protection of ETP species.
			Once protected under SARA, ETP species are subject to recovery strategies and management plans, such as have been developed for the one wolfish species involved in the SGSL snow crab fishery and under development for leatherback turtles. These are developed by multi-disciplinary teams, usually led by qualified fisheries scientists. In addition to these procedures for release of SARA species snow crab license conditions require return of all non-target species immediately upon capture. As well, many harvesters have participated in quality handling workshops which stress the importance of

PI 2.3.2			The fishery has in place precautionary management strategies designed to: • Meet national and international requirements; • Ensure the fishery does not pose a risk of serious harm to ETP species; • Ensure the fishery does not hinder recovery of ETP species; and • Minimise mortality of ETP species.
SG	Issue	Met? (Y/N)	Justification/Rationale
			quick and careful return of species and introduce harvesters to onboard handling technologies which reduce the amount of time to sort and return all unwanted species. Catches of Spotted Wolffish in this snow crab fishery are considered negligible. There are no reported cases of leatherback turtles being entangled in buoy lines in this fishery. No records exist of any involvement with any endangered whale species. However, it is unclear whether SARA logbook information or Observer Reports are closely monitored. It is likely that unreported encounters with ETP species do occur and that the potential exists for these fisheries to have some negative impact on the larger ETP species found in the fishery areas. The industry and DFO should continue to closely monitor this situation and introduce mitigating measures, such as weighted buoy lines, as soon as it is necessary or feasible to do so. Overall, this is a small-scale seasonal fishery where a total of 449 license holders, half of whom operate vessels less than 65 ft., use a total of 36,600 traps for a catch of 9,500 mt over about three months of overall activity. The longest fishing season in 2010 was almost three months in CFA 12; in the CFA 19 the season lasted 16 days. Most of the activity (261 licenses and 32,000 traps) takes place in CFA 12.
	b	N	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.
			The Assessment Team is not aware of any quantitative analysis that has been conducted to determine the likely success of the approach used to minimize impact of the SGSL snow crab fishery on the ETP species encountered. Also, it is unclear whether SARA logbook information or Observer Reports are closely monitored.
	c	Y	There is clear evidence that the strategy is being implemented successfully.
			In addition to the specified procedures in place for quick release of SARA species, snow crab license conditions require return of all non-target species immediately upon capture. As well, many harvesters have participated in quality handling workshops which stress the importance of quick and careful return of species and introduce harvesters to onboard handling technologies which reduce the amount of time to sort and return all unwanted species.
	d	Y	There is evidence that the strategy is achieving its objective.
			Catches of Spotted Wolffish in the snow crab fishery are considered

PI 2.3.2			The fishery has in place precautionary management strategies designed to: • Meet national and international requirements; • Ensure the fishery does not pose a risk of serious harm to ETP species; • Ensure the fishery does not hinder recovery of ETP species; and • Minimise mortality of ETP species.
SG	Issue	Met? (Y/N)	Justification/Rationale
			negligible. There are no reported cases of leatherback turtles being entangled in buoy lines in this fishery. No records exist of any involvement with any endangered whale species. However, it is unclear whether SARA logbook information or Observer Reports are closely monitored. It is likely that unreported encounters with ETP species do occur and that the potential exists for these fisheries to have some negative impact on the larger ETP species found in the fishery areas. The industry and DFO should continue to closely monitor this situation and introduce mitigating measures, such as weighted buoy lines, as soon as it is necessary or feasible to do so. Overall, this is a small-scale seasonal fishery where a total of 449 license holders, half of whom operate vessels less than 65 ft., use a total of 36,600 traps for a catch of 9,500 mt over about three months of overall activity. The longest fishing season in 2010 was almost three months in CFA 12; in the CFA 19 the season lasted 16 days. Most of the activity (261 licenses and 32,000 traps) takes place in CFA 12.
References			Information received by Assessment Team from Fisheries Management Staff in DFO's Gulf Region plus: (1). Kulka, D., C. Hood and J. Huntington. 2007. Recovery Strategy for Northern Wolffish (*Anarhichas denticulatus*) and Spotted Wolffish (*Anarhichas minor*), and Management Plan for Atlantic Wolffish (*Anarhichas lupus*) in Canada. Fisheries and Oceans Canada: Newfoundland and Labrador Region. St. John's, NL. x + 103 pp. (2).http://www.sararegistry.gc.ca/virtual_sara/files/plans/rs%5FLeatherback%5Fturtle%5FAtlantic%5Fpopulation%5F0207%5Fe%2Epdf
OVERALL PERFORMANCE INDICATOR SCORE:			95
CONDITION NUMBER (if relevant):			**NA**

Evaluation Table: PI 2.3.3

PI 2.3.3			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.
SG	Issue	Met? (Y/N)	Justification/Rationale
60	a	Y	Information is sufficient to qualitatively estimate the fishery related mortality of ETP species.
			Quantitative information on the snow crab catch and landings are available from the at-sea observer and dockside monitoring programs, respectively. Observer data includes information on numbers, weights and lengths of incidentally caught species and can be used to confirm their non-commercial nature, both in quantity and size. Dockside monitoring records on 100% of landings provide the amounts of all landed species in this fishery. Information on directed and other incidental species is also available from commercial logbooks. All sources of information and expert advice available to the Assessment Team indicate the SGSL snow crab fishery, because of its nature and the various management measures imposed on it, has an extremely low incidence of harm to the few ETP species encountered in that area.
	b	Y	Information is adequate to broadly understand the impact of the fishery on ETP species.
			Quantitative information on the snow crab catch and landings are available from the at-sea observer and dockside monitoring programs, respectively. Observer data includes information on numbers; weights and lengths of incidentally caught species and can be used to confirm their non-commercial nature, both in quantity and size. Dockside monitoring records on 100% of landings provide the amounts of all landed species in this fishery. Information on directed and other incidental species is also available from commercial logbooks. All sources of information and expert advice available to the Assessment Team indicate the SGSL snow crab fishery, because of its nature and the various management measures imposed on it, has an extremely low incidence of harm to the few ETP species encountered in that area.
	c	Y	Information is adequate to support measures to manage the impacts on ETP species.
			Quantitative information on the snow crab catch and landings are available from the at-sea observer and dockside monitoring programs, respectively. Observer data includes information on numbers; weights and lengths of incidentally caught species and can be used to confirm their non-commercial nature, both in quantity and size. Dockside monitoring records on 100% of landings provide the amounts of all landed species in this fishery. Information on directed and other incidental species is also available from commercial logbooks. All sources of information and expert

PI 2.3.3			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.
SG	Issue	Met? (Y/N)	Justification/Rationale
			advice available to the Assessment Team indicate the SGSL snow crab fishery, because of its nature and the various management measures imposed on it, has an extremely low incidence of harm to the few ETP species encountered in that area.
80	a	Y	Sufficient data are available to allow fishery related mortality and the impact of fishing to be quantitatively estimated for ETP species.
			Quantitative information on the snow crab catch and landings are available from the at-sea observer and dockside monitoring programs, respectively. Observer data includes information on numbers; weights and lengths of incidentally caught species and can be used to confirm their non-commercial nature, both in quantity and size. Dockside monitoring records on 100% of landings provide the amounts of all landed species in this fishery. Information on directed and other incidental species is also available from commercial logbooks. All sources of information and expert advice available to the Assessment Team indicate the SGSL snow crab fishery, because of its nature and the various management measures imposed on it, has an extremely low incidence of harm to the few ETP species encountered in that area. Catches of Spotted Wolffish in the snow crab fishery are considered negligible. There are no reported cases of leatherback turtles being entangled in buoy lines in this fishery. No records exist of any involvement with any endangered whale species. However, it is unclear whether SARA logbook information or Observer Reports are closely monitored. It is likely that unreported encounters with ETP species do occur and that the potential exists for these fisheries to have some negative impact on the larger ETP species found in the fishery areas. The industry and DFO should continue to closely monitor this situation and introduce mitigating measures, such as weighted buoy lines, as soon as it is necessary or feasible to do so.
	b	Y	Information is sufficient to determine whether the fishery may be a threat to protection and recovery of the ETP species.
			Quantitative information on the snow crab catch and landings are available from the at-sea observer and dockside monitoring programs, respectively. Observer data includes information on numbers; weights and lengths of incidentally caught species and can be used to confirm their non-commercial nature, both in quantity and size. Dockside monitoring records

PI 2.3.3			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.
SG	Issue	Met? (Y/N)	Justification/Rationale
			on 100% of landings provide the amounts of all landed species in this fishery. Information on directed and other incidental species is also available from commercial logbooks. All sources of information and expert advice available to the Assessment Team indicate the SGSL snow crab fishery, because of its nature and the various management measures imposed on it, has an extremely low incidence of harm to the few ETP species encountered in that area. Catches of Spotted Wolffish in the snow crab fishery are considered negligible. There are no reported cases of leatherback turtles being entangled in buoy lines in this fishery. No records exist of any involvement with any endangered whale species. However, it is unclear whether SARA logbook information or Observer Reports are closely monitored. It is likely that unreported encounters with ETP species do occur and that the potential exists for these fisheries to have some negative impact on the larger ETP species found in the fishery areas. The industry and DFO should continue to closely monitor this situation and introduce mitigating measures, such as weighted buoy lines, as soon as it is necessary or feasible to do so.
	c	Y	Information is sufficient to measure trends and support a full strategy to manage impacts on ETP species.
			The SARA recovery plans developed for wolfish and under development for leatherbacks indicate that adequate information is available for this purpose.
100	a	Y	Information is sufficient to quantitatively estimate outcome status of ETP species with a high degree of certainty.
			The information currently available indicates a very low level of impact on ETP species and the Assessment Team could not find any concerns on the part of Fisheries Management Staff that this Is not the actual situation. However, it is unclear whether SARA logbook information or Observer Reports are closely monitored. It is likely that unreported encounters with ETP species do occur and that the potential exists for these fisheries to have some negative impact on the larger ETP species found in the fishery areas. The industry and DFO should continue to closely monitor this situation and introduce mitigating measures, such as weighted buoy lines, as soon as it is necessary or feasible to do so.

PI 2.3.3			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.
SG	Issue	Met? (Y/N)	Justification/Rationale
	b	N	Accurate and verifiable information is available on the magnitude of all impacts, mortalities and injuries and the consequences for the status of ETP species.
			The current level of observer coverage may produce inadequate data coverage to fully satisfy this requirement. Also, it is unclear whether SARA logbook information or Observer Reports are closely monitored. It is likely that unreported encounters with ETP species do occur and that the potential exists for these fisheries to have some negative impact on the larger ETP species found in the fishery areas. The industry and DFO should continue to closely monitor this situation and introduce mitigating measures, such as weighted buoy lines, as soon as it is necessary or feasible to do so.
	c	N	Information is adequate to support a comprehensive strategy to manage impacts, minimise mortality and injury of ETP species, and evaluate with a high degree of certainty whether a strategy is achieving its objectives.
			The current level of observer coverage may produce inadequate data coverage to fully satisfy this requirement. Also, it is unclear whether SARA logbook information or Observer Reports are closely monitored. It is likely that unreported encounters with ETP species do occur and that the potential exists for these fisheries to have some negative impact on the larger ETP species found in the fishery areas. The industry and DFO should continue to closely monitor this situation and introduce mitigating measures, such as weighted buoy lines, as soon as it is necessary or feasible to do so.
References			Information received by Assessment Team from Fisheries Management Staff in DFO's Gulf Region.
OVERALL PERFORMANCE INDICATOR SCORE:			85
CONDITION NUMBER (if relevant):			**NA**

Evaluation Table: PI 2.4.1

PI 2.4.1		The fishery does not cause serious or irreversible harm to habitat structure, considered on a regional or bioregional basis and function	
SG	Issue	Met? (Y/P/ N)	Justification/Rationale
60	a	Y	The fishery is unlikely to reduce habitat structure and function to a point where there would be serious or irreversible harm.
			The snow crab fishery uses baited traps that drop to soft mud, mud-sand and gravel bottom areas that are less vulnerable to perturbation. While traps may cause some mortality to benthic species when they settle to the bottom and when they are hauled back, the spatial scale of any impact is small. Incremental impacts of trap fishing on biotic and abiotic features of this type of bottom are believed to be minimal.
80	a	Y	The fishery is highly unlikely to reduce habitat structure and function to a point where there would be serious or irreversible harm.
			There is a restriction on size of traps that can be used and a minimum mesh size requirement that allows escapement on the bottom and serves to minimize by-catch. Lost traps are uncommon in the fishery. Most trap loss is related to ice movements during the early part of the season, however, an ice committee was established over 10 years ago to set the opening date and this has resulted in much reduced losses. In the annual trawl survey, only 2-3 lost traps are encountered. Nevertheless, traps are required to be fitted with escape mechanisms with biodegradable twine to ensure that all species caught in lost traps will escape. Fishing effort tends to be concentrated in specific depth strata and in areas where catch rates are highest. While effort shifts to some extent over the course of a fishing season, a great deal of crab habitat is fished only lightly or not at all. Although some biologically and ecologically significant areas that have been identified for the southern Gulf overlap or are adjacent to crab fishing areas, no concerns have been raised regarding impacts by the fishery. Given that it regularly perturbs only a relatively small area of soft mud and gravel bottom, the fishery is expected to have negligible impact on habitat structure and function. On-going research will better define the ecosystem within which the fishery takes place.
100	a	N	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.
			There have been significant efforts to document habitat impacts associated with various fishing gears used in Canadian waters and to implement measures to mitigate negative impacts where possible. Trap fisheries in general are considered to have low impact on habitat structure and function. No habitat impact issues have been identified for the snow crab fishery and there is no evidence that it is likely to reduce habitat structure

PI 2.4.1		The fishery does not cause serious or irreversible harm to habitat structure, considered on a regional or bioregional basis and function	
SG	Issue	Met? (Y/P/ N)	Justification/Rationale
			and function.
References			Donaldson, A., Gabriel, C., Harvey, BJ, and Carolsfeld, J. 2010. Impacts of Fishing Gears other than Bottom Trawls, Dredges, Gillnets and Longlines on Aquatic Biodiversity and Vulnerable Marine Ecosystems. DFO Can. Sci. Advis. Sec. Res. Doc. 2010/011. vi + 84 p. DFO. 2010. Potential impacts of fishing gears (Excluding mobile bottom-contact gears) on marine habitats and communities. Can. Sci. Adv. Sec. Sci. Adv. Rep. 2010/003.
OVERALL PERFORMANCE INDICATOR SCORE:			90
CONDITION NUMBER (if relevant):			**NA**

Evaluation Table: PI 2.4.2

PI 2.4.2		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	
SG	Issue	Met? (Y/N)	Justification/Rationale
60	a	Y	There are measures in place, if necessary, that are expected to achieve the Habitat Outcome 80 level of performance.
			In addition to a limit on the number of traps that can be used by each license holder, there is a restriction on size of traps that can be used and a minimum mesh size requirement that allows escapement of undersize crab on the bottom and serves to minimize by-catch.
	b	Y	The measures are considered likely to work, based on plausible argument (e.g. general experience, theory or comparison with similar fisheries/habitats).
			The snow crab fishery uses baited traps that drop to soft mud, mud-sand and gravel bottom areas that are less vulnerable to perturbation. While traps may cause some mortality to benthic species when they settle to the bottom and when they are hauled back, the spatial scale of any impact is small. Incremental impacts of trap fishing on biotic and abiotic features of this type of bottom are believed to be minimal.
80	a	Y	There is a partial strategy in place, if necessary, that is expected to achieve the Habitat Outcome 80 level of performance or above.
			In addition to a limit on the number of traps that can be used by each license holder, there is a restriction on size of traps that can be used and a minimum mesh size requirement that allows escapement of undersize crab on the bottom and serves to minimize by-catch. Lost traps are uncommon in the fishery. Most trap loss is related to ice movements during the early part of the season, however, an ice committee was established over 10 years ago to set the opening date and this has resulted in much reduced losses. In the annual trawl survey, only 2-3 lost traps are encountered. Nevertheless, traps are required to be fitted with escape mechanisms with biodegradable twine to ensure that all species caught in lost traps will escape. Fishing effort tends to be concentrated in specific depth strata and in areas where catch rates are highest. While effort shifts to some extent over the course of a fishing season, a great deal of crab habitat is fished only lightly or not at all.
	b	Y	There is some objective basis for confidence that the partial strategy will work, based on information directly about the fishery and/or habitats involved.
			There have been significant efforts to document habitat impacts associated with various fishing gears used in Canadian waters. Trap fisheries in general are considered to have low impact on habitat structure and function. While there is little evidence specific to snow crab fishing, no issues have been identified and there is no indication that the fishery causes serious harm to the habitat.

PI 2.4.2		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	
SG	Issue	Met? (Y/N)	Justification/Rationale
	c	Y	There is some evidence that the partial strategy is being implemented successfully.
			Measures to limit numbers and sizes of traps in use and to mitigate or eliminate impacts were implemented during the early years of this fishery. Leave wording of 100d as is.
100	a	Y	There is a strategy in place for managing the impact of the fishery on habitat types.
			In addition to a limit on the number of traps that can be used by each license holder, there is a restriction on size of traps that can be used and a minimum mesh size requirement that allows escapement on the bottom and serves to minimize by-catch. Lost traps are uncommon in the fishery. Most trap loss is related to ice movements during the early part of the season, however, an ice committee was established over 10 years ago to set the opening date and this has resulted in much reduced losses. In the annual trawl survey, only 2-3 lost traps are encountered. Nevertheless, traps are required to be fitted with escape mechanisms with biodegradable twine to ensure that all species caught in lost traps will escape. Fishing effort tends to be concentrated in specific depth strata and in areas where catch rates are highest. While effort shifts to some extent over the course of a fishing season, a great deal of crab habitat is fished only lightly or not at all. Although some biologically and ecologically sensitive areas that have been identified for the southern Gulf overlap or are adjacent to crab fishing areas, no concerns have been raised regarding impacts by the fishery. Given that it regularly perturbs only a relatively small area of soft mud and gravel bottom, the fishery is expected to have negligible impact on habitat structure and function. On-going research will better define the ecosystem within which the fishery takes place.
	b	N	Testing supports high confidence that the strategy will work, based on information directly about the fishery and/or habitats involved.
			There has been no direct testing by way of before-and-after-fishing comparison of the fishing grounds.
	c	Y	There is clear evidence that that strategy is being implemented successfully.
			Despite a focus on impacts of fishing on habitats as part of Canada's efforts to implement an ecosystem approach to management, there have been no issues or concerns identified to indicate negative habitat impacts of snow crab fishing.
	d		There is some evidence that the strategy is achieving its objective.

PI 2.4.2		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	
SG	Issue	Met? (Y/N)	Justification/Rationale
		Y	Despite a focus on impacts of fishing on habitats as part of Canada's efforts to implement an ecosystem approach to management, there have been no issues or concerns identified to indicate negative habitat impacts of snow crab fishing.
References			Donaldson, A., Gabriel, C., Harvey, BJ, and Carolsfeld, J. 2010. Impacts of Fishing Gears other than Bottom Trawls, Dredges, Gillnets and Longlines on Aquatic Biodiversity and Vulnerable Marine Ecosystems. DFO Can. Sci. Advis. Sec. Res. Doc. 2010/011. vi + 84 p. DFO. 2010. Potential impacts of fishing gears (Excluding mobile bottom-contact gears) on marine habitats and communities. Can. Sci. Adv. Sec. Sci. Adv. Rep. 2010/003. DFO. 2007. Development of conservation objectives for Integrated Management in the Estuary and Gulf of St. Lawrence (GOSLIM); February 27-March 1, 2007. Can. Sci. Adv. Sec. Proc. Ser. 2007/007. Savenkoff, C., H. Bourdages, D.P. Swain, S.-P. Despatie, J.M. Hanson, R. Méthot, L. Morissette, and M.O. Hammill. 2004. Input data and parameter estimates for ecosystem models of the southern Gulf of St. Lawrence (mid-1980s and mid-1990s). Can. Tech. Rep. Fish. Aquat. Sci. 2529: vi+105 pp. Policy for Managing the impact of fishing on Sensitive Benthic Areas http://www.dfo-mpo.gc.ca/fm-gp/peches-fisheries/fish-ren-peche/sff-cpd/benthieng.htm http://www.dfo-mpo.gc.ca/oceans/publications/mpa-framework-cadrezpm/page04-eng.asp http://www.dfo-mpo.gc.ca/csas/Csas/status/2004/ESR2004_006_E.pdf http://www.dfo-mpo.gc.ca/Library/329836.pdf http://www.glf.dfo-mpo.gc.ca/e0006090 http://www.dfo-mpo.gc.ca/oceans/marineareas-zonesmarines/loma-zego/atlantic-atlantique/gsl/1/index-eng.htm	
OVERALL PERFORMANCE INDICATOR SCORE:			95
CONDITION NUMBER (if relevant):			**NA**

Evaluation Table: PI 2.4.3

PI 2.4.3		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	
SG	Issue	Met? (Y/N)	Justification/Rationale
60	a	Y	There is basic understanding of the types and distribution of main habitats in the area of the fishery.

			Large adult male snow crab targeted by the fishery are well known to prefer soft mud, mud-sand and gravel substrate whereas smaller crab prefers more complex substrate that provides shelter. Areas where high concentrations of commercial crab are most likely are well known to harvesters.
	b	Y	Information is adequate to broadly understand the nature of the main impacts of gear use on the main habitats, including spatial overlap of habitat with fishing gear.
			The snow crab fishery uses baited traps that drop to soft mud, mud-sand and gravel bottom areas that are less vulnerable to perturbation. While traps may cause some mortality to benthic species when they settle to the bottom and when they are hauled back, the spatial scale of any impact is small. Incremental impacts of trap fishing on biotic and abiotic features of this type of bottom are believed to be minimal.
80	a	Y	The nature, distribution and vulnerability of all main habitat types in the fishery are known at a level of detail relevant to the scale and intensity of the fishery.
			Large adult male snow crab targeted by the fishery are well known to prefer soft mud and gravel substrate whereas smaller crab prefers more complex substrate that provides shelter. Areas where high concentrations of commercial crab are most likely are well known to harvesters. During the relatively short spring to early summer fishing season, it is well established that commercial crab are distributed over soft mud, mud-sand and gravel bottom areas. Fishing effort tends to be concentrated in specific depth strata and in areas where catch rates are highest. While effort shifts to some extent over the course of a fishing season, a great deal of crab habitat is fished only lightly or not at all.
	b	Y	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 of interaction, and the timing and location of use of the fishing gear.
			The snow crab fishery uses baited traps that drop to soft mud, mud-sand and gravel bottom areas that are less vulnerable to perturbation. While traps may cause some mortality to benthic species when they settle to the bottom and when they are hauled back, the spatial scale of any impact is small. Incremental impacts of trap fishing on biotic and abiotic features of this type of bottom are believed to be minimal.

			The distribution of fishing effort throughout the short season is documented by way of VMS and logbooks. The distribution of various components of the crab population is documented in the annual survey.
	c	Y	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).
			The distribution of fishing effort and of the various crab population components will continue to be monitored annually as they have been for many years. As part of Canada's commitment to implementation of an ecosystem approach to management, habitat impact of fishing activity will continue to be researched and monitored.
100	a	Y	The distribution of habitat types is known over their range, with particular attention to the occurrence of vulnerable habitat types.
			As part of a broader focus on the Gulf of St. Lawrence ecosystem, of initiatives to identify ecologically and biologically significant as well as sensitive benthic areas and to identify and evaluate areas of interest for possible MPA designation, the distribution of habitat types of the southern Gulf is well known and particularly sensitive habitats have been identified.
	b	N	The physical impacts of the gear on the habitat types have been quantified fully.
			The snow crab fishery uses baited traps that drop to soft mud, mud-sand and gravel bottom areas that are less vulnerable to perturbation. Incremental impacts of trap fishing on this type of bottom are believed to be minimal. There has been no direct testing by way of before-and-after-fishing comparison of the fishing grounds because there have been no issues or concerns identified to indicate negative habitat impacts of snow crab fishing.
	c	Y	Changes in habitat distributions over time are measured.
			There has been and will continue to be an ongoing focus on habitat changes as part of Canada's commitment to ecosystem based management, especially in the Gulf of St. Lawrence. The annual crab assessment monitors changes in distribution of crab population components and crab fishing effort. It also monitors changes spatial extent of optimal crab habitat resulting from changing bottom temperature. Ongoing monitoring will detect major changes in habitat

			characteristics over time.
References			A Benthic Sensitive Habitat Conservation Policy (BSHC) includes protocols for gathering of information, development of risk analysis, implementation of management measures and monitoring procedures. This initiative is being undertaken jointly by DFO and industry. http://www.dfo-mpo.gc.ca/fm-gp/peches-fisheries/fish-ren-peche/sff-cpd/benthieng.htm Policy for Managing the Impacts of Fishing on Sensitive Benthic Areas http://www.dfo-mpo.gc.ca/fm-gp/peches-fisheries/fish-ren-peche/sff-cpd/benthi-eng.htm A network of Marine Protection Areas (MPA's) is being developed. Areas of interest for MPA's have been identified and and socio-economic profiles completed. http://www.dfo-mpo.gc.ca/oceans/marineareas-zonesmarines/mpa-zpm/indexeng.htm An Ecologically and Biologically Significant Areas (EBSA) framework has been developed which provides criteria for identification of areas that have particularly high ecological or biological significance and provides guidance on the standard of management that is considered to be appropriate. http://www.dfo-mpo.gc.ca/csas/Csas/status/2004/ESR2004_006_E.pdf Gulf of St. Lawrence Ecosystem Management (GOSLIM). http://www.glf.dfo-mpo.gc.ca/e0006090 GOSLIM website: http://www.dfo-mpo.gc.ca/oceans/marineareas-zonesmarines/loma-zego/atlantic-atlantique/gsl/1/index-eng.htm
OVERALL PERFORMANCE INDICATOR SCORE:			95
CONDITION NUMBER (if relevant):			**NA**

Evaluation Table: PI 2.5.1

PI 2.5.1		The fishery does not cause serious or irreversible harm to the key elements of ecosystem structure and function	
SG	Issue	Met? (Y/P/N)	Justification/Rationale
60	a	Y	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. Snow crab prey on a wide variety of benthic species, primarily shrimp, starfish, sea urchins, worms, molluscs, etc. Smaller and especially soft-shell crabs are preyed upon by a variety of groundfish species as well as seals. Large, hard-shell male crabs targeted by the fishery are not known to be an important prey item for any species.
80	a	Y	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. The southern Gulf comprises a vibrant marine ecosystem with high abundance of many species of fish, invertebrates, marine mammals and plants. Key features of the ecosystem are well known. Snow crab prey on a wide variety of benthic species, primarily shrimp, starfish, sea urchins, worms, molluscs, etc. Smaller and especially soft-shell crabs are preyed upon by a variety of groundfish species as well as seals. Large, hard-shell male crabs targeted by the fishery are not known to be an important prey item for any species.
100	a	Y	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. The fishery targets large adult males and has minimal impact by way of incidental mortality on other population components. Management effectively maintains a moderate level of exploitation (40%) on the fishable biomass. Overall, the fishery has a very low ecosystem impact. This eliminates any concerns regarding genetic diversity associated with potential consequences of the fishery targeting the largest males. The southern Gulf of St. Lawrence has been the focus of intense ecological research. There has been no indication that the crab fishery causes any disruption of key elements of the ecosystem.
References			DFO 2007. Ecologically and Biologically Significant Areas (EBSA) in the Estuary and Gulf of St. Lawrence: Identification and Characterization. Can. Sci. Advis. Sec. Sci. Advis. Rep. 2007/016. DFO. 2007. Development of conservation objectives for Integrated Management in the Estuary and Gulf of St. Lawrence (GOSLIM); February

PI 2.5.1		The fishery does not cause serious or irreversible harm to the key elements of ecosystem structure and function	
SG	Issue	Met? (Y/P/N)	Justification/Rationale
			27-March 1, 2007. Can. Sci. Adv. Sec. Proc. Ser. 2007/007. A Benthic Sensitive Habitat Conservation Policy (BSHC) includes protocols for gathering of information, development of risk analysis, implementation of management measures and monitoring procedures. This initiative is being undertaken jointly by DFO and industry. http://www.dfo-mpo.gc.ca/fm-gp/peches-fisheries/fish-ren-peche/sff-cpd/benthieng.htm Policy for Managing the Impacts of Fishing on Sensitive Benthic Areas http://www.dfo-mpo.gc.ca/fm-gp/peches-fisheries/fish-ren-peche/sff-cpd/benthi-eng.htm A network of Marine Protection Areas (MPA's) is being developed. Areas of interest for MPA's have been identified and and socio-economic profiles completed. http://www.dfo-mpo.gc.ca/oceans/marineareas-zonesmarines/mpa-zpm/indexeng.htm An Ecologically and Biologically Significant Areas (EBSA) framework has been developed which provides criteria for identification of areas that have particularly high ecological or biological significance and provides guidance on the standard of management that is considered to be appropriate. http://www.dfo-mpo.gc.ca/csas/Csas/status/2004/ESR2004_006_E.pdf Gulf of St. Lawrence Ecosystem Management (GOSLIM). http://www.glf.dfo-mpo.gc.ca/e0006090 GOSLIM website: http://www.dfo-mpo.gc.ca/oceans/marineareas-zonesmarines/loma-zego/atlantic-atlantique/gsl/1/index-eng.htm Savenkoff, C., H. Bourdages, D.P. Swain, S.-P. Despatie, J.M. Hanson, R. Méthot, L. Morissette, and M.O. Hammill. 2004. Input data and parameter estimates for ecosystem models of the southern Gulf of St. Lawrence (mid-1980s and mid-1990s). Can. Tech. Rep. Fish. Aquat. Sci. 2529: vi+105 pp. Policy for Managing the impact of fishing on Sensitive Benthic Areas http://www.dfo-mpo.gc.ca/fm-gp/peches-fisheries/fish-ren-peche/sff-cpd/benthieng.htm
OVERALL PERFORMANCE INDICATOR SCORE:			100
CONDITION NUMBER (if relevant):			**NA**

Evaluation Table: PI 2.5.2

PI 2.5.2		There are measures in place to ensure the fishery does not pose a risk of serious or irreversible harm to ecosystem structure and function	
SG	Issue	Met? (Y/N)	Justification/Rationale
60	a	Y	There are measures in place, if necessary. In addition to a limit on the number of traps that can be used by each license holder, there is a restriction on size of traps that can be used and a minimum mesh size requirement that allows escapement of undersize crab on the bottom and serves to minimize by-catch.
	b	Y	The measures take into account potential impacts of the fishery on key elements of the ecosystem. Lost traps are uncommon in the fishery. Most trap loss is related to ice movements during the early part of the season, however, an ice committee was established over 10 years ago to set the opening date and this has resulted in much reduced losses. In the annual trawl survey, only 2-3 lost traps are encountered. Nevertheless, traps are required to be fitted with escape mechanisms with biodegradable twine to ensure that all species caught in lost traps will escape.
	c	Y	The measures are considered likely to work, based on plausible argument (e.g., general experience, theory or comparison with similar fisheries/ecosystems). The snow crab fishery uses baited traps that drop to soft mud, mud-sand and gravel bottom areas that are less vulnerable to perturbation. While traps may cause some mortality to benthic species when they settle to the bottom and when they are hauled back, the spatial scale of any impact is small. Incremental impacts of trap fishing on biotic and abiotic features of this type of bottom are believed to be minimal.
80	a	Y	There is a partial strategy in place, if necessary. In addition to a limit on the number of traps that can be used by each license holder, there is a restriction on size of traps that can be used and a minimum mesh size requirement that allows escapement of undersize crab on the bottom and serves to minimize by-catch. Lost traps are uncommon in the fishery. Most trap loss is related to ice movements during the early part of the season, however, an ice committee was established over 10 years ago to set the opening date and this has resulted in much reduced losses. In the annual trawl survey, only 2-3 lost traps are encountered. Nevertheless, traps are required to be fitted with escape mechanisms with biodegradable twine to ensure that all species caught in lost traps will escape. Fishing effort tends to be concentrated in specific depth strata and in areas where catch rates are highest. While effort shifts to some extent over the course of a fishing season, a great deal of crab habitat is fished only lightly or not at all. Although some biologically and ecologically significant areas that have been

PI 2.5.2		There are measures in place to ensure the fishery does not pose a risk of serious or irreversible harm to ecosystem structure and function	
SG	Issue	Met? (Y/N)	Justification/Rationale
			identified for the southern Gulf overlap or are adjacent to crab fishing areas, no concerns have been raised regarding impacts by the fishery. Given that it regularly perturbs only a relatively small area of soft mud, mud-sand and gravel bottom, the fishery is expected to have negligible impact on ecosystem structure and function. On-going research will better define the ecosystem within which the fishery takes place.
	b	Y	The partial strategy 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.
			The southern Gulf of St. Lawrence in particular has been the focus of ongoing ecological research. No issues with snow crab fishing have been identified and there is no indication that the fishery causes any form of ecosystem disruption or harm to ecosystem structure and function.
	c	Y	The partial strategy is considered likely to work, based on plausible argument (e.g., general experience, theory or comparison with similar fisheries/ecosystems).
			Trap fisheries in general are considered to have low impact on habitat structure and function. No issues with snow crab fishing have been identified and there is no indication that the fishery causes any form of ecosystem disruption or harm to ecosystem structure and function.
	d	Y	There is some evidence that the measures comprising the partial strategy are being implemented successfully.
			Despite an ongoing focus on ecological research as part of Canada's efforts to implement an ecosystem approach to management, there have been no issues or concerns identified to indicate negative ecosystem impacts associated with snow crab fishing.
100	a	Y	There is a strategy that consists of a plan, in place.
			In addition to a limit on the number of traps that can be used by each license holder, there is a restriction on size of traps that can be used and a minimum mesh size requirement that allows escapement of undersize crab on the bottom and serves to minimize by-catch.

PI 2.5.2		There are measures in place to ensure the fishery does not pose a risk of serious or irreversible harm to ecosystem structure and function	
SG	Issue	Met? (Y/N)	Justification/Rationale
	b	Y	The strategy, which consists of a plan, contains 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. 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. Canada has developed a Sustainable Fisheries Framework which builds on existing fisheries management practices to form a foundation for implementing an ecosystem approach in the management of its fisheries to ensure continued health and productivity while protecting biodiversity and fisheries habitat. The Framework comprises four main elements: conservation and sustainable use policies; economic policies; governance policies and principles; and planning and monitoring tools. It incorporates existing policies with new and evolving policies using a phased-in approach. It also includes tools to monitor and assess results of conservation and sustainable use in order to identify areas that may need improvement. The primary goal of the Sustainable Fisheries Framework is to ensure that Canada's fisheries are environmentally sustainable, while supporting economic prosperity. It is designed to foster a more rigorous, consistent, and transparent approach to decision making across all key fisheries in Canada. The southern Gulf crab fishery targets large adult males and has minimal impact by way of incidental mortality on other population components. Management effectively maintains a moderate level of exploitation (40%) on the fishable biomass. Overall, the fishery has a very low ecosystem impact.
	c	Y	The measures are considered likely to work based on prior experience, plausible argument or information directly from the fishery/ecosystems involved. Trap fisheries in general are considered to have low impact on habitat structure and function. No issues with snow crab fishing have been identified and there is no indication that the fishery causes any form of ecosystem disruption or harm to ecosystem structure and function.
	d		There is evidence that the measures are being implemented successfully.

PI 2.5.2		There are measures in place to ensure the fishery does not pose a risk of serious or irreversible harm to ecosystem structure and function	
SG	Issue	Met? (Y/N)	Justification/Rationale
		Y	Despite an ongoing focus on ecological research as part of Canada's efforts to implement an ecosystem approach to management, there have been no issues or concerns identified to indicate negative ecosystem impacts associated with snow crab fishing.
References			DFO 2007. Ecologically and Biologically Significant Areas (EBSA) in the Estuary and Gulf of St. Lawrence: Identification and Characterization. Can. Sci. Advis. Sec. Sci. Advis. Rep. 2007/016. DFO 2007. Ecologically and Biologically Significant Areas (EBSA) in the Estuary and Gulf of St. Lawrence: Identification and Characterization. Can. Sci. Advis. Sec. Sci. Advis. Rep. 2007/016. DFO. 2007. Development of conservation objectives for Integrated Management in the Estuary and Gulf of St. Lawrence (GOSLIM); February 27-March 1, 2007. Can. Sci. Adv. Sec. Proc. Ser. 2007/007. A Benthic Sensitive Habitat Conservation Policy (BSHC) includes protocols for gathering of information, development of risk analysis, implementation of management measures and monitoring procedures. This initiative is being undertaken jointly by DFO and industry. http://www.dfo-mpo.gc.ca/fm-gp/peches-fisheries/fish-ren-peche/sff-cpd/benthieng.htm Policy for Managing the Impacts of Fishing on Sensitive Benthic Areas http://www.dfo-mpo.gc.ca/fm-gp/peches-fisheries/fish-ren-peche/sff-cpd/benthi-eng.htm A network of Marine Protection Areas (MPA's) is being developed. Areas of interest for MPA's have been identified and and socio-economic profiles completed. http://www.dfo-mpo.gc.ca/oceans/marineareas-zonesmarines/mpa-zpm/indexeng.htm An Ecologically and Biologically Significant Areas (EBSA) framework has been developed which provides criteria for identification of areas that have particularly high ecological or biological significance and provides guidance on the standard of management that is considered to be appropriate. http://www.dfo-mpo.gc.ca/csas/Csas/status/2004/ESR2004_006_E.pdf Gulf of St. Lawrence Ecosystem Management (GOSLIM). http://www.glf.dfo-mpo.gc.ca/e0006090 GOSLIM website: http://www.dfo-mpo.gc.ca/oceans/marineareas-zonesmarines/loma-zego/atlantic-atlantique/gsl/1/index-eng.htm Savenkoff, C., H. Bourdages, D.P. Swain, S.-P. Despatie, J.M. Hanson, R.

PI 2.5.2		There are measures in place to ensure the fishery does not pose a risk of serious or irreversible harm to ecosystem structure and function	
SG	Issue	Met? (Y/N)	Justification/Rationale
			Méthot, L. Morissette, and M.O. Hammill. 2004. Input data and parameter estimates for ecosystem models of the southern Gulf of St. Lawrence (mid-1980s and mid-1990s). Can. Tech. Rep. Fish. Aquat. Sci. 2529: vi+105 pp. Policy for Managing the impact of fishing on Sensitive Benthic Areas http://www.dfo-mpo.gc.ca/fm-gp/peches-fisheries/fish-ren-peche/sff-cpd/benthieng.htm
OVERALL PERFORMANCE INDICATOR SCORE:			100
CONDITION NUMBER (if relevant):			**NA**

Evaluation Table: PI 2.5.3

PI 2.5.3		There is adequate knowledge of the impacts of the fishery on the ecosystem	
SG	Issue	Met? (Y/N)	Justification/Rationale
60	a	Y	Information is adequate to identify the key elements of the ecosystem (e.g., trophic structure and function, community composition, productivity pattern and biodiversity).
			Key features of the ecosystem are well known. Snow crab prey on a wide variety of benthic species, primarily shrimp, starfish, sea urchins, worms, molluscs, etc. Smaller and especially soft-shell crabs are preyed upon by a variety of groundfish species as well as seals. Large, hard-shell male crabs targeted by the fishery are not known to be an important prey item for any species. They are well known to prefer soft mud, mud-sand and gravel substrate whereas smaller crab prefer more complex substrate that provides shelter.
	b	Y	Main impacts of the fishery on these key ecosystem elements can be inferred from existing information, and have not been investigated in detail.
			The snow crab fishery uses baited traps that drop to soft mud, mud-sand and gravel bottom areas that are less vulnerable to perturbation. While traps may cause some mortality to benthic species when they settle to the bottom and when they are hauled back, the spatial scale of any impact is small. Incremental impacts of trap fishing on biotic and abiotic features of this type of bottom are believed to be minimal. There is a restriction on size of traps that can be used and a minimum mesh size requirement that allows escapement on the bottom and serves to minimize by-catch.
80	a	Y	Information is adequate to broadly understand the key elements of the ecosystem.
			The southern Gulf comprises a vibrant marine ecosystem with high abundance of many species of fish, invertebrates, marine mammals and plants. Key features of the ecosystem are well known. Snow crab prey on a wide variety of benthic species, primarily shrimp, starfish, sea urchins, worms, molluscs, etc. Smaller and especially soft-shell crabs are preyed upon by a variety of groundfish species as well as seals. Large, hard-shell male crabs targeted by the fishery are not known to be an important prey item for any species. They are well known to prefer soft mud, mud-sand and gravel substrate whereas smaller crab prefer more complex substrate that provides shelter. Areas where high concentrations of commercial crab are most likely are well known to harvesters.
	b	Y	Main impacts of the fishery on these key ecosystem elements can be inferred from existing information and some have been investigated in detail.

PI 2.5.3		There is adequate knowledge of the impacts of the fishery on the ecosystem	
SG	Issue	Met? (Y/N)	Justification/Rationale
			During the relatively short spring to early summer fishing season, it is well established that commercial crab are distributed over soft mud, mud-sand and gravel bottom areas. Fishing effort tends to be concentrated in specific depth strata and in areas where catch rates are highest. While effort shifts to some extent over the course of a fishing season, a great deal of crab habitat is fished only lightly or not at all. There is a restriction on size of traps that can be used and a minimum mesh size requirement that allows escapement on the bottom and serves to minimize by-catch. Lost traps are uncommon in the fishery. Most trap loss is related to ice movements during the early part of the season, however, an ice committee was established over 10 years ago to set the opening date and this has resulted in much reduced losses. In the annual trawl survey, only 2-3 lost traps are encountered. Nevertheless, traps are required to be fitted with escape mechanisms with biodegradable twine to ensure that all species caught in lost traps will escape. Fishing effort tends to be concentrated in specific depth strata and in areas where catch rates are highest. While effort shifts to some extent over the course of a fishing season, a great deal of crab habitat is fished only lightly or not at all. Although some of the biologically and ecologically significant areas that have been identified for the southern Gulf overlap or are adjacent to crab fishing areas, no concerns have been raised regarding impacts by the fishery. Given that it regularly perturbs only a relatively small area of soft mud, mud-sand and gravel bottom, the fishery is expected to have negligible impact on ecosystem structure and function. On-going research will better define the ecosystem within which the fishery takes place.
	c	Y	The main functions of the Components (i.e., target, Bycatch, Retained and ETP species and Habitats) in the ecosystem are known.
			The southern Gulf of St. Lawrence has been the focus of intense ecological research. And, as part of a broader focus on the Gulf of St. Lawrence ecosystem, of initiatives to identify ecologically and biologically significant as well as sensitive benthic areas and to identify and evaluate areas of interest for possible MPA designation, the components of the ecosystem and their functions are well known.
	d	Y	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.
			There is a comprehensive annual assessment of the target species (see 1.2.4) and good information available to show negligible impact on by-catch, retained and ETP species (see 2.1.3, 2.2.3, 2.3.3). There is no

PI 2.5.3		There is adequate knowledge of the impacts of the fishery on the ecosystem	
SG	Issue	Met? (Y/N)	Justification/Rationale
			indication that the fishery causes serious habitat disruption (see 2.4.3).
	e	Y	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).
			All aspects of the fishery are monitored and assessed annually. As part of Canada's commitment to implementation of an ecosystem approach to management, ecosystem impact of fishing activity will continue to be researched and monitored to document risk and detect changes.
100	b	Y	Main interactions between the fishery and these ecosystem elements can be inferred from existing information, and have been investigated.
			The southern Gulf comprises a vibrant marine ecosystem with high abundance of many species of fish, invertebrates, marine mammals and plants. Key features of the ecosystem are well known. Snow crab prey on a wide variety of benthic species, primarily shrimp, starfish, sea urchins, worms, molluscs, etc. Smaller and especially soft-shell crabs are preyed upon by a variety of groundfish species as well as seals. Large, hard-shell male crabs targeted by the fishery are not known to be an important prey item for any species. Large adult male snow crab targeted by the fishery are well known to prefer soft mud, mud-sand and gravel substrate whereas smaller crab prefer more complex substrate that provides shelter. Areas where high concentrations of commercial crab are most likely are well known to harvesters. As part of a broader focus on the Gulf of St. Lawrence ecosystem, of initiatives to identify ecologically and biologically significant as well as sensitive benthic areas and to identify and evaluate areas of interest for possible MPA designation, the distribution of habitat types of the southern Gulf is well known and particularly sensitive habitats have been identified. The southern Gulf of St. Lawrence has been the focus of intense ecological research. There has been no indication that the crab fishery causes any disruption of key elements of the ecosystem.
	c	Y	The impacts of the fishery on target, Bycatch and ETP species are identified and the main functions of these Components in the ecosystem are understood.
			The target species is assessed annually. Incidental by-catches of all species is well documented and recorded annually as are any encounters between the gear and other ETP species. The southern Gulf of St. Lawrence has been the focus of intense ecological research. And, as part of a broader focus on the Gulf of St. Lawrence ecosystem, of initiatives to identify ecologically and biologically significant

PI 2.5.3		There is adequate knowledge of the impacts of the fishery on the ecosystem	
SG	Issue	Met? (Y/N)	Justification/Rationale
			as well as sensitive benthic areas and to identify and evaluate areas of interest for possible MPA designation, the components of the ecosystem and their functions are well known.
	d	Y	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.
			There have been significant efforts to document impacts associated with all fishing activity in Canadian waters and to implement measures to mitigate negative impacts where possible. The southern Gulf of St. Lawrence in particular has been the focus of intense ecological research. And, as part of a broader focus on the Gulf of St. Lawrence ecosystem, of initiatives to identify ecologically and biologically significant as well as sensitive benthic areas and to identify and evaluate areas of interest for possible MPA designation, the components of the ecosystem and their functions are known well enough to understand the consequences of fishing.
	e	Y	Information is sufficient to support the development of strategies to manage ecosystem impacts.
			The southern Gulf of St. Lawrence has been the focus of intense ecological research. As part of Canada's commitment to ecosystem based management, especially in the Gulf of St. Lawrence, there will be an ongoing focus on ecosystem impacts of fishing to ensure that all fishing is ecologically sustainable.
References			DFO 2007. Ecologically and Biologically Significant Areas (EBSA) in the Estuary and Gulf of St. Lawrence: Identification and Characterization. Can. Sci. Advis. Sec. Sci. Advis. Rep. 2007/016. DFO 2007. Ecologically and Biologically Significant Areas (EBSA) in the Estuary and Gulf of St. Lawrence: Identification and Characterization. Can. Sci. Advis. Sec. Sci. Advis. Rep. 2007/016. DFO. 2007. Development of conservation objectives for Integrated Management in the Estuary and Gulf of St. Lawrence (GOSLIM); February 27-March 1, 2007. Can. Sci. Adv. Sec. Proc. Ser. 2007/007. A Benthic Sensitive Habitat Conservation Policy (BSHC) includes protocols for gathering of information, development of risk analysis, implementation of management measures and monitoring procedures. This initiative is being undertaken jointly by DFO and industry. http://www.dfo-mpo.gc.ca/fm-gp/peches-fisheries/fish-ren-peche/sff-cpd/benthieng.htm Policy for Managing the Impacts of Fishing on Sensitive Benthic Areas http://www.dfo-mpo.gc.ca/fm-gp/peches-fisheries/fish-ren-peche/sff-cpd/benthi-eng.htm A network of Marine Protection Areas (MPA's) is being developed. Areas of

PI 2.5.3		There is adequate knowledge of the impacts of the fishery on the ecosystem	
SG	Issue	Met? (Y/N)	Justification/Rationale
			interest for MPA's have been identified and and socio-economic profiles completed. http://www.dfo-mpo.gc.ca/oceans/marineareas-zonesmarines/mpa-zpm/indexeng.htm An Ecologically and Biologically Significant Areas (EBSA) framework has been developed which provides criteria for identification of areas that have particularly high ecological or biological significance and provides guidance on the standard of management that is considered to be appropriate. http://www.dfo-mpo.gc.ca/csas/Csas/status/2004/ESR2004_006_E.pdf Gulf of St. Lawrence Ecosystem Management (GOSLIM). http://www.glf.dfo-mpo.gc.ca/e0006090 GOSLIM website: http://www.dfo-mpo.gc.ca/oceans/marineareas-zonesmarines/loma-zego/atlantic-atlantique/gsl/1/index-eng.htm Savenkoff, C., H. Bourdages, D.P. Swain, S.-P. Despatie, J.M. Hanson, R. Méthot, L. Morissette, and M.O. Hammill. 2004. Input data and parameter estimates for ecosystem models of the southern Gulf of St. Lawrence (mid-1980s and mid-1990s). Can. Tech. Rep. Fish. Aquat. Sci. 2529: vi+105 pp. Policy for Managing the impact of fishing on Sensitive Benthic Areas http://www.dfo-mpo.gc.ca/fm-gp/peches-fisheries/fish-ren-peche/sff-cpd/benthieng.htm
OVERALL PERFORMANCE INDICATOR SCORE:			100
CONDITION NUMBER (if relevant):			**NA**

PRINCIPLE 3:

Evaluation Table: PI 3.1.1

PI 3.1.1	The management system exists within an appropriate legal and/or customary framework which ensures that it: • Is capable of delivering sustainable fisheries in accordance with MSC Principles 1 and 2; • Observes 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.

SG	Issue	Met? (Y/N)	Justification/Rationale
60	a	Yes	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 Canadian fisheries management system generally meets this requirement through its administration of Canadian fisheries laws at the national and regional level and its participation in numerous multi-lateral and bi-lateral fisheries management arrangements with other countries. It is based on fairly powerful Acts that give the Minister authority to manage both fisheries and the oceans, to implement a precautionary approach to management and to regulate foreign vessels fishing in or around Canadian waters. Canada is also a signatory to LOS and UNFA and a member of several RFMOs worldwide.
	b	Yes	The management system incorporates or is subject by law to a mechanism for the resolution of legal disputes arising within the system.
			Unresolved disputes in fisheries can be, and have been, taken to the Canadian court system for a decision.
	c	Yes	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 of the fishery.
			The Canadian fisheries management authority is not continually facing court challenges but rather has been influenced by occasional landmark court decisions that significantly impact fisheries policies and programs (e.g. Sparrow, Marshall and Larocque). The current legal dispute between some of the traditional crab fleets and the department centres on the decision in 2002 to grant additional access to the CFA 12 crab fishery and to later make it permanent.
	d	Yes	The management system has a mechanism to generally respect 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.
			This has been met through ongoing development of quota allocation policies that provide access to various user groups in different fisheries. These arrangements are reflected in licensing policies and quota allocation arrangements that are now usually spelled out in Integrated Fishery Management Plans or in the annual fisheries management decisions posted on the Departmental website.
80	b	Yes	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.
			While licensing appeal mechanisms exist and the Minister can be lobbied directly on any issue, the final recourse for resolution of a legal dispute is to the judicial system where, at a minimum the rule of administrative fairness can be applied. Normally court challenges are of more substance than that

PI 3.1.1			The management system exists within an appropriate legal and/or customary framework which ensures that it: • Is capable of delivering sustainable fisheries in accordance with MSC Principles 1 and 2; • Observes 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.
SG	Issue	Met? (Y/N)	Justification/Rationale
			basic principle.
	c	Yes	The management system or fishery is attempting to comply in a timely fashion within binding judicial decisions arising from any legal challenges.
			The Canadian management system complies in a fairly timely manner with judicial decisions especially when fishing rights are involved. The most recent evidence has been the responses to the Sparrow, Marshall and Larocque decisions described in the P 3 background section above.
	d	Yes	The management system has a mechanism to observe 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.
			This has been met through ongoing development of allocation policies and/or special initiatives that provide access to various user groups in different fisheries. These arrangements are reflected in licensing policies and allocation arrangements usually spelled out in Integrated Fishery Management Plans or in annual announced fishery management decisions for various species. Most allocation and access issues on the Atlantic Coast have been dealt with in all significant fisheries, mostly over the last four decades; and more recently spurred on in some instances by court decisions.
100	b	No	The management system incorporates or subject by law to a transparent mechanism for the resolution of legal disputes that is appropriate to the context of the fishery and has been tested and proven to be effective.
			While recourse to the judicial system is available and has been used this is not the same as the fishery management system itself incorporating an internal legal dispute settlement mechanism that can be used, and be seen, to directly resolve fishery allocation, access and related fishery management disputes that are of a legal nature. As a general rule, the policy on which a disputed decision has been made cannot be appealed.
	c	Yes	The management system or fishery acts proactively to avoid legal disputes or rapidly implements binding judicial decisions arising from legal challenges.
			The Canadian fishery management system may not have always acted proactively but it usually implements binding judicial decisions arising from legal challenges within the timeframes spelled out by the courts. Again, the Sparrow, Marshall and Larocque decisions are significant recent examples.

PI 3.1.1		The management system exists within an appropriate legal and/or customary framework which ensures that it: • Is capable of delivering sustainable fisheries in accordance with MSC Principles 1 and 2; • Observes 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.	
SG	Issue	Met? (Y/N)	Justification/Rationale
	d	No	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 and livelihood in a manner consistent with the objectives of MSC Principles 1 and 2.
			The system does not commit formally to such rights until they have been legally proven or established and then they are implemented in a manner and timeframe consistent with the Minister's resource conservation mandate. In other instances, fishing rights have been worked out or formalised in the context of land claims agreements which is a negotiated process headed by the Department of Indian and Northern Affairs. A similar process is now being pursued in regard to the ongoing long-term treaty rights of Micmac and Maliseet First Nations groups to commercial fishing rights.
References			The Principle 3 background section "The Legal Basis and Scope of the Management System" above, information received by the Assessment Team from the Fisheries Management Staff of DFO's Gulf Region and: 1 L S Parsons, "Canadian Marine Fisheries Management: A Case Study", Available at: http://www.sustainablefisheries.ca/download_files/LSP_Grafto_CH30.pdf 1 http://www.dfo-mpo.gc.ca/international/media/bk_fao-eng.htm 3 Evaluation of the Atlantic Integrated Commercial Fisheries Initiative (AICFI) @ http://www.dfo-mpo.gc.ca/ae-ve/evaluations/07-08/6b053-eng.htm 4 First Nation Participation in Commercial Fisheries Following the *Marshall* Decision **@** http://www.dfo-mpo.gc.ca/fm-gp/aboriginal-utochtones/marshall/index-eng.htm
OVERALL PERFORMANCE INDICATOR SCORE:			90
CONDITION NUMBER (if relevant):			**NA**

Evaluation Table: PI 3.1.2

PI 3.1.2		The management system has effective consultation processes that are open to interested and affected parties. The roles and responsibilities of organisations and individuals who are involved in the management process are clear and understood by all relevant parties	
SG	Issue	Met? (Y/N)	Justification/Rationale
60	a	Yes	Organisations and individuals involved in the management process have been identified. Functions, roles and responsibilities are **generally understood.**
			The roles and responsibilities of all stakeholders in SGSL snow crab fisheries appear to be adequately understood in terms of the RAP and advisory committee process. While the only current IFMP is that for the CFA 19 fishery, the annual overall management framework for all these snow crab fisheries is updated periodically with annual fishery management decisions on such elements as TACs, opening/closing dates or changes to other management measures. These annual decisions are published on the Department's website. The primary vehicle for consultations on management measures in each of the four southern Gulf crab fishing areas have been area-specific advisory committees which meet annually[39]. In addition, with the recent implementation of the Precautionary Approach, a new Southern Gulf Snow Crab Advisory Committee (SGSCAC) (replacing the current one of the same name for CFA 12) is being established as of 2012 to discuss the annual management measures for the entire southern Gulf. The new SGSCAC will be chaired by a representative of Fisheries and Oceans Canada. Membership on the SGSCAC will include representatives of numerous crab harvesting associations and various First Nations communities representing crab license holders in each CFA and associated provincial governments and the processing sector. Meetings of SGSCAC will be open to the public but it is unclear to what extent non-industry members are encouraged to attend. There is also a Science Branch Regional Assessment Process (RAP) that involves meetings with interested snow crab industry members to disseminate and receive information of the status of crab stocks.
	b	Yes	The management system includes consultation processes that obtain relevant information from the main affected parties, including local knowledge, to inform the management system.
			That is done through the advisory committees and the RAP process described above.
80	a	Yes	Organisations 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.
			There is no current IFMP for CFA 12 that details roles, functions and responsibilities. Minutes of the 2011 advisory committee for CFA 12

39 For Example, see :"Summary of Meeting Southern Gulf Snow Crab Advisory Committee March 8, 2011"@ http://www.glf.dfo-mpo.gc.ca/e0020461

PI 3.1.2		The management system has effective consultation processes that are open to interested and affected parties. The roles and responsibilities of organisations and individuals who are involved in the management process are clear and understood by all relevant parties	
SG	Issue	Met? (Y/N)	Justification/Rationale
			indicate that the organizations and individuals involved in management of that fishery have been identified. Presumably these matters will also be detailed in the new IFMP currently under development. These roles and responsibilities have been exercised for the past five years and are unlikely to be dropped or downgraded. A separate consultative arrangement has existed in CFA 19 since the early 1990s. The 2007-2013 IFMP established a Management Committee made up of Area 19 fishermen and representatives of DFO to act as an advisory body for implementation of the IFMP and to establish its annual Conservation Harvesting Plan. The Assessment Team understands that this autonomous advisory committee arrangement is to end in 2012 when there will be a single TAC-setting process for SGSL snow crab. There are apparently advisory committee meeting held for CFAs 12E and 12F, but copies of minutes for only 12F have been made available.
	b	Yes	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.
			This flows from the Advisory and RAP meeting arrangements and indications of use of information so obtained can be seen in the annual stock assessment documents and in minutes of advisory committee meetings.
	c	Yes	The consultation process provides opportunity for all interested and affected parties to be involved.
			While the RAP and Advisory committee session are open to the public; it is not clear that these meetings are publically advertised".
100	a	No	Organisations 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.
			There is no current IFMP for CFA 12 (including E and F) that details roles, functions and responsibilities. The last FMP for CFA 12 snow crab was issued in a three page press release in 2006. Presumably these matters will also be detailed in the new IFMP now under development. These roles and responsibilities have been exercised for the past five years and are unlikely to be dropped or downgraded.
	b	No	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.
			It is not fully clear to the Assessment Team that the disposition of information received through the consultative processes is always

PI 3.1.2			The management system has effective consultation processes that are open to interested and affected parties. The roles and responsibilities of organisations and individuals who are involved in the management process are clear and understood by all relevant parties
SG	Issue	Met? (Y/N)	Justification/Rationale
			explained. There are some indications of this in the stock assessment documents for SGSL snow crab and to some extent in the one set of Minutes for CFA 12 and two for CFA 12F advisory committee meetings that were made available. No minutes have been obtained for 12E or 19.
	c	No	The consultation process provides opportunity and encouragement for all interested and affected parties to be involved, and facilitates their effective engagement.
			It appears to the Assessment Team that non-industry parties are not really encouraged to attend consultative meetings nor are the times and locations of such meetings advertised publically.
References			The "Consultation Processes" section of the Principle 3 background, information received by the Assessment Team from the Fisheries Management Staff of DFO's Gulf Region plus: 2007-13 IFMP CFA 19 @ http://www.glf.dfo-mpo.gc.ca/e0008346 Summary of Meeting Southern Gulf Snow Crab Advisory Committee March 8, 2011@ http://www.glf.dfo-mpo.gc.ca/e0020461 The CFA 12 Snow Crab FMP, 2006 @ http://www.dfo-mpo.gc.ca/media/npress-communique/2006/g02-eng.htm Canadian Science Advisory Secretariat Science Advisory Report 2011/002 @ http://www.dfo-mpo.gc.ca/csas-sccs/Publications/SAR-AS/2011/2011_002-eng.html
OVERALL PERFORMANCE INDICATOR SCORE:			80
CONDITION NUMBER (if relevant):			**NA**

Evaluation Table: PI 3.1.3

PI 3.1.3		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	
SG	Issue	Met? (Y/P/N)	Justification/Rationale
60	a	Yes	Long-term objectives to guide decision-making, consistent with the MSC Principles and Criteria and the precautionary approach, are implicit within management policy
			DFO has extensive statements of mission, objectives and priorities posted on its national website.
80	a	Yes	Clear long-term objectives that guide decision-making, consistent with MSC Principles and Criteria and the precautionary approach are explicit within management policy.
			The Department has developed its "Sustainable Fisheries Framework" to achieve its objective of sustainable fisheries and aquaculture. Overall, it advances the Sustainable Fisheries Framework as the foundation of an ecosystem-based and precautionary approach to fisheries management in Canada. The website outlines the Department's intention to incorporate this approach into all Integrated Fishery Management Plans. However, there is not a current IFMP in place for CFA 12. The future of the 2007-13 IFMP for CFA 19 is uncertain as the Assessment Team understands that the autonomous advisory committee arrangement for that CFA is to end in 2012 when there will be a single TAC-setting process for SGSL snow crab.
100	a	No	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.
			While the department's long-term objectives are consistent with MSC Principles and Criteria and the precautionary approach, until the Canadian precautionary approach is fully implemented in SGSL snow crab it cannot be said that they are completely explicit within and required by management policy. There is no current IFMP for all of SGSL snow crab and although the PA is under active development for this overall fishery, harvest control rules have yet to be developed or finalized. While the PA is touted as restricting the Minister's absolute powers under the Fisheries Act it remains to be seen if it will completely remove or fetter them. The long attempted reform of the Fisheries Act may be the next real step in this evolution. However, the legislation that authorises or mandates the use of PA is the Oceans Act not the Fisheries Act.
References			The "Long-term Objectives" section of the Principle 3 background and Vision, Mission, Mandate http://www.dfo-mpo.gc.ca/us-nous/vision-eng.htm Sustainable Fisheries Framework http://www.dfo-mpo.gc.ca/fm-gp/peches-fisheries/fish-ren-peche/sff-cpd/overview-cadre-eng.htm

PI 3.1.3		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	
SG	Issue	Met? (Y/P/ N)	Justification/Rationale
OVERALL PERFORMANCE INDICATOR SCORE:			80
CONDITION NUMBER (if relevant):			**NA**

Evaluation Table: PI 3.1.4

PI 3.1.4		The management system provides economic and social incentives for sustainable fishing and does not operate with subsidies that contribute to unsustainable fishing	
SG	Issue	Met? (Y/P/N)	Justification/Rationale
60	a	Yes	The management system provides for incentives that are consistent with achieving the outcomes expressed by MSC Principles 1 and 2. The SGSL snow crab fisheries are managed by area-specific TACs, limited licenses and IQ regimes. The total number of licenses has been fixed since about 2005, all temporary assess provisions have been converted to permanent status and a level of First Nations participation in the commercial fishery has been achieved.
80	a	Yes	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 perverse incentives do not arise. In CFA 12 a variety of Temporary Flexibility Options were available to license holders in 2011. These allow various levels of temporary (annual) combining of individual quota shares and trap numbers provided they are arranged before the fishery starts. These include annual transfer of 100% of one's quota to one or more recipients, seasonal partnerships between two operators or "trios" between three operators. There are limits on total traps that can be fished by the combined operation that is never more than 1½ times that of a single license operation in the given fleet category. In CFA 19 the number of traps held by an individual licensee can range from 3 to 26 and is used to determine individual quota shares. The available quota in CFA 19 is allocated by the numbers of traps held by each license holder; each trap represents an equal share of the CFA's allowable catch. The maximum number of traps available is set at 1,699 and the maximum number of licenses cannot exceed 184 and cannot be less than 145. There were a total of 160 permanent licenses and a total of 1,699 traps in place for the 2011 season. In CFA 19, for 2011 only, a one-time transfer of a complete individual allocation could be done before the season began. The receiving harvesters were permitted to combine 26 trap share allocations per vessel under this provision. The transferring harvesters were not required to be on board during fishing. Pooling of allocations was also permitted provided an operator for each license is on board during fishing and the maximum of 26 trap allocations per vessel is not exceeded. The combining permitted under these IQ systems have permitted temporary/annual removal of harvesting vessels thereby reducing total vessel operating costs and creating the basis for a more economically sustainable fishery. In CFA 19, these provisions of the trap share system have resulted in some reduction of the maximum numbers of licenses.

PI 3.1.4		The management system provides economic and social incentives for sustainable fishing and does not operate with subsidies that contribute to unsustainable fishing	
SG	Issue	Met? (Y/P/N)	Justification/Rationale
			No capital or operating subsidies or incentives are known to be offered by governments to snow crab fishermen in the Southern Gulf of St. Lawrence. Quota overruns that are not covered by an in-season transfer of quota are deducted from next year's allocation. The requirement of Dock Side Monitoring (DMP) for all landings tends to reduce the possibilities of unreported catches. Soft shell protocols that encourage maximization of yields and productivity are being supported by earlier season opening and closing times. These annual provisions for, or changes to, transfers of quotas or formation of annual partnerships are usually addressed in the announced annual fishery management decisions.
100	a	No	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 they not contribute to unsustainable fishing practices.
			The annual advisory committee process appears to address the annual provisions for quota transfer or partnerships. The aannual provisions for, or changes to, transfers of quotas or formation of annual partnerships or "trios" are usually covered in the announced annual fishery management decisions for CFA 12 and in the Conservation Harvesting Plan for CFA 19. In CFA 12 while the allowable transfers for the coming season do provide for temporary reductions of unnecessary effort, permanent accumulations of quotas shares are not available. All other transfers of quota are seasonal, except for the complete transfer of an enterprise to another eligible individual. Therefore, permanent combining is not permitted and, as a result, the number of annual licenses has not changed since about the mid-2000s. In CFA 19, the allowable transfer of a complete allocation is only for the coming season. Permanent accumulations of trap quotas shares are available up to the limit of 26 shares and not less than 145 total licenses. There are, therefore, further sustainable fishing incentives to be achieved by adopting some form of permanent combining of quota shares. The current DFO approach to ITQ/IQ regimes is that the decision to establish these arrangements is left to the individual fleets. DFO does not initiate such arrangements but 100 percent dockside monitoring is a condition of a fleet's adopting an ITQ/IQ regime.
References			The "Incentives for Sustainable Fishing" Section of the Principle 3 background section plus: 1. http://www.glf.dfo-mpo.gc.ca/folios/00622/docs/temporary-flexibility-options-eng.pdf 2. CONSERVATION HARVESTING PLAN AREA 19 SNOW CRAB – 2011@

PI 3.1.4		The management system provides economic and social incentives for sustainable fishing and does not operate with subsidies that contribute to unsustainable fishing	
SG	Issue	Met? (Y/P/ N)	Justification/Rationale
			http://www.glf.dfo-mpo.gc.ca/e0020904
OVERALL PERFORMANCE INDICATOR SCORE:			90
CONDITION NUMBER (if relevant):			**NA**

Evaluation Table: PI 3.2.1

PI 3.2.1		The fishery has clear, specific objectives designed to achieve the outcomes expressed by MSC's Principles 1 and 2	
SG	Issue	Met? (Y/PN)	Justification/Rationale
60	a	Yes	**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.
			No elaboration of DFO Gulf Region's long-term objectives for the CFA 12 snow crab fishery appears in any formal document. The Summary of the March 2011 SGSCAC meeting refers to "the vision for the Area 12 snow crab fishery is long term sustainability and we need to ensure the stock remains at a sustainable level. The framework for accomplishing this is the implementation of the precautionary approach…" Various implicit objectives can be inferred from the annual management decisions; they would appear to include such ends as achieving stock preservation/conservation, managing expected fluctuations in stock abundance, providing for efficient/profitable fishing operations, achieving equitable/acceptable sharing arrangements etc. The recent adoption of a precautionary approach framework indicates a further level of implicit stock management objectives that will curtail undisciplined management decisions and Ministerial discretion. The current IFMP for CFA 19 does contain a section on Fisheries Management Objectives that "define clear and measurable goals of the fishery including biological targets and socio-economic factors and are developed by the Management Committee and approved by DFO." However, this IFMP ends in 2013 and will apparently be replaced by one covering the entire SGSL.
80	a	NO	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.
			While under the DFO Template for IFMPs, a section on Fishery Specific Objectives is required, the forthcoming IFMP has not been seen by the Assessment Team. Therefore, the requirements of this SG cannot be confirmed as being met at this point.
100	a	No	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.
			While under the DFO Template for IFMPs, a section on Fishery Specific Objectives is required, the forthcoming IFMP has not been seen by the Assessment Team. Therefore, the requirements of this SG cannot be confirmed as being met at this point.
References			The "Fishery Specific Objectives" section of the Principle 3 backgrounder and the information supplied by Fisheries Management Staff of DFO's Gulf Region plus: 1. 2007-13 IFMP CFA 19 @ http://www.glf.dfo-mpo.gc.ca/e0008346

PI 3.2.1		The fishery has clear, specific objectives designed to achieve the outcomes expressed by MSC's Principles 1 and 2	
SG	Issue	Met? (Y/PN)	Justification/Rationale
OVERALL PERFORMANCE INDICATOR SCORE:			70
CONDITION NUMBER (if relevant):			**1**

Evaluation Table: PI 3.2.2

PI 3.2.2		The fishery-specific management system includes effective decision-making processes that result in measures and strategies to achieve the objectives	
SG	Issue	Met? (Y/N)	Justification/Rationale
60	a	Yes	There are some decision-making processes in place that result in measures and strategies to achieve the fishery-specific objectives.
			There is an annual recurring and comprehensive fishery management decision-making cycle for CFA 12 and CFA 19 snow crab that is well known in the industry in that CFA.
	b	Yes	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.
			The annual recurring fishery management decision-making cycle for CFAs 12 and 19 involves a data/information collection and an analysis phase which is followed by some government/industry consultations on science and fishery management issues and problems.
80	a	Yes	There are established decision-making processes that result in measures and strategies to achieve the fishery-specific objectives.
			This annual recurring and comprehensive fishery management decision-making cycle for CFAs 12 and 19 snow crab culminates in final advisory committee meetings where consensus is sought on management measures (but seldom achieved on TAC for CFA 12) for the following fishing season.
	b	Yes	Decision-making processes respond 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.
			This annual recurring fishery management decision-making cycle for CFA 12 snow crab culminates in a SGSCAC meeting where details of the past season's fishery are reviewed, problems identified, scientific advice received and discussed, management proposals made and consensus sought on management measures for the following fishing season.

PI 3.2.2		The fishery-specific management system includes effective decision-making processes that result in measures and strategies to achieve the objectives	
SG	Issue	Met? (Y/N)	Justification/Rationale
			Because such consensus is seldom reached and fleets from four provinces, together with four provincial governments and industries in two DFO administrative regions are involved the final decisions on management measures for the next fishing season are made at the national (Ministerial) level on advice submitted by the RDG Gulf Region and concurred in by the RDG Quebec Region. The issues considered in this context would be those that members of all these interest groups considered most significant from their position in the snow crab fishery. This annual recurring fishery management decision-making cycle for CGA 19 snow crab culminates in a IFMP Management Committee meeting where details of the past season's fishery are reviewed, problems identified, scientific advice received and discussed, management proposals made and consensus sought on management measures for the following fishing season. Because only one fleet, one provincial government and one DFO Region are involved the final decisions on management measures for the next fishing season are made by the RDG Gulf Region. The issues considered in this context would be those that members of those interest groups considered most significant from their position in the snow crab fishery. In the future, the CFA 19 Committee will not have its past involvement in setting the CFA 19 quota as this will be determined based on the SGSL-wide post-fishery (Fall) survey, a single established SGSL exploitation rate and the percent of biomass estimated to be in CFA 19 at the time of the survey.
	c	Yes	Decision-making processes use the precautionary approach and are based on best available information.
			The Gulf Region has not yet fully implemented PA for snow crab although significant progress has being made. Reference points have been instituted and pre-set decision rules are under development. However, a large part of the management measures now used in snow crab fisheries management are considered precautionary in nature.
	d	Yes	Explanations are provided for any actions or lack of action associated with findings and relevant recommendations emerging from research, monitoring, evaluation and review activity.
			It is not clear that explanations are provided for all actions or the lack thereof, although that is certainly the case for some.
100	b	**No**	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.
			It is not clear that decision-making processes respond to all issues identified, but that is certainly the case for some.
	d	**No**	Formal reporting to all interested stakeholders describes how the management system responded to findings and relevant recommendations

PI 3.2.2		The fishery-specific management system includes effective decision-making processes that result in measures and strategies to achieve the objectives	
SG	Issue	Met? (Y/N)	Justification/Rationale
			emerging from research, monitoring, evaluation and review activity.
			There is no clear evidence of this type of formal reporting taking place. The current advisory committee process would be the most likely vehicle but this, understandably, appears to address only the most pressing annual issues.
References			The "Decision-making Process" section of the Principle 3 backgrounder and the minutes of SGSCAC meeting of March 2011 and the CFA 12F meetings of 2009 and 2010 supplied by Fishery Management Staff, DFO's Gulf Region.
OVERALL PERFORMANCE INDICATOR SCORE:			90
CONDITION NUMBER (if relevant):			**NA**

Evaluation Table: PI 3.2.3

PI 3.2.3		Monitoring, control and surveillance mechanisms ensure the fishery's management measures are enforced and complied with	
SG	Issue	Met? (Y/N)	Justification/Rationale
60	a	Yes	Monitoring, control and surveillance mechanisms exist are implemented in the fishery under assessment and there is a reasonable expectation that they are effective.
			The MCS system for this fishery is considered multi-faceted and comprehensive, consisting of 10-30 percent target coverage by at-sea-observer that records GPS data every 30 seconds, 100 % dockside monitoring, vessel monitoring system (VMS) which transmits positions each 15 minutes to a 24/7 VMS Centre as well as aerial and surface surveillance and spot checks.
	b	Yes	Sanctions to deal with non-compliance exist and there is some evidence that they are applied.
			When violations are detected either charges are laid and fines levied or warnings issued. The data available on these occurrences indicate an increase in charges laid in the last two years.
	c	Yes	Fishers 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.
			Harvesters are required to submit completed logbooks after each landing as well as a separate SARA logbook. Catches can only be offloaded in the presence of dockside monitors. No problems with harvesters not complying with these requirements were identified by Fisheries Management Staff.
80	a	Yes	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.
			The MCS system for this fishery is considered multi-faceted and comprehensive, consisting of 10-30 percent target coverage by at-sea-observer that records GPS data every 30 seconds, 100 % dockside monitoring, vessel monitoring system (VMS) which transmits positions each 15 minutes to a 24/7 VMS Centre as well as aerial and surface surveillance and spot checks.
	b	Yes	Sanctions to deal with non-compliance exist, **are consistently applied** and thought to provide effective deterrence.
			When violations are detected either charges are laid and fines levied or warnings issued. The data available on these occurrences indicate an increase in charges laid in the last two years. The level of fines imposed is decided by the courts.
	c	Yes	**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.
			Harvesters are required to submit completed logbooks after each landing

PI 3.2.3		Monitoring, control and surveillance mechanisms ensure the fishery's management measures are enforced and complied with	
SG	Issue	Met? (Y/N)	Justification/Rationale
			as well as a separate SARA logbook. Catches can only be offloaded in the presence of dockside monitors. No problems with harvesters not complying with these requirements were identified by Fisheries Management Staff.
	d	Yes	There is no evidence of systematic non-compliance.
			The general view detected by the Assessment Team is that systematic non-compliance does not exist in this fishery.
100	a	Yes	A **comprehensive** monitoring, control and surveillance system has been implemented in the fishery under assessment and has demonstrated a consistent ability to enforce relevant management measures, strategies and/or rules.
			The MCS system for this fishery is considered multi-faceted and comprehensive. The fishery is monitored by 10-25 percent or so at-sea-observer coverage paid for by license holders. Dockside monitoring is required for 100% of snow crab landings as is submission of accurate fishing and production logbooks and fish purchase slips. All vessels must be equipped with a DFO approved electronic vessel monitoring system (VMS) which transmits positions each 15 minutes to a 24/7 VMS Centre. Fishery Officers conduct surveillance of fishing activities through periodic aerial and dockside surveillance and by conducting at-sea boarding of fishing vessels. From time to time vessels may be subject to audit of reported landings and catch information. No particular trend appeared in the numbers of violations (occurrence) detected from year to year until 2009 when the number doubled. This may be the result of more targeted enforcement (FO hours were up from 2007/08) rather than a sudden decline in general adherence to rules and regulations.
	b	No	Sanctions to deal with non-compliance exist, are consistently applied and **demonstrably** provide effective deterrence.
			No official concerns over the level of compliance or the degree of deterrents achieved in the fishery were detected by the Assessment Team. However, the data shown in the MSC section of the background section indicate general declining levels of enforcement resources being applied to this fishery while the number of occurrences (violations detected) and the number of charges laid appear to be increasing. Observer coverage, which is completely paid for by harvesters, does not appear to be in decline.
	c	No	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.
			Harvesters are required to submit completed fishing logbooks after each landing as well as a separate SARA logbook. Catches can only be offloaded in the presence of dockside monitors. No abnormal problems with harvesters complying with these requirements were identified by Fisheries Management Staff. However, the data shown in the MSC section of the

PI 3.2.3		Monitoring, control and surveillance mechanisms ensure the fishery's management measures are enforced and complied with	
SG	Issue	Met? (Y/N)	Justification/Rationale
			background section indicate general declining levels of enforcement resources being applied to this fishery while the number of occurrences (violations detected) and the number of charges laid appear to be increasing.
References			The Monitoring Control and Surveillance section of the Principle 3 backgrounder which shows selected enforcement data supplied by Fishery Management Staff, DFO Gulf Region.
OVERALL PERFORMANCE INDICATOR SCORE:			85
CONDITION NUMBER (if relevant):			**NA**

Evaluation Table: PI 3.2.4

PI 3.2.4		The fishery has a research plan that addresses the information needs of management	
SG	Issue	Met? (Y/N)	Justification/Rationale
60	a	Yes	**Research** is undertaken, as required, to achieve the objectives consistent with MSC's Principles 1 and 2.
			There are several ongoing annual research initiatives in the Southern Gulf area that contribute to the information needs of snow crab management and which require annual work planning. These include: • The conducting of the annual directed research vessel surveys for either snow crab or multi-species data collection. • The annual collection of data from fishing log books, offshore observers, dockside monitors during the fishing season. • The annually compilation of habitat and ecosystem information the available season. • The drafting and peer-reviewing of the annual scientific assessment document. • Conducting the Regional science advisory process involving all industry stakeholders. • Completing the management advisory process soliciting input from stakeholders. • Providing extra time and effort to provide answers to issues raised in these sessions. • The current development of provisional reference points and harvest control rules for the snow crab fishery requires work planning on the part of over-stretched science staff. • A workshop with outside experts to review the crab stock assessment methods is held every four years. One is scheduled for the Autumn of 2011.
	b	Yes	Research results are **available** to interested parties.
			The documents produced annually are available on the CSAS website and are also explained to, and discussed with, industry and others at annual RAP and Advisory Committee sessions.
80	a	Yes	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.
			There are several ongoing annual research initiatives in the Southern Gulf area that contribute to the information needs of snow crab management and which require annual work planning. These include: • The conducting of the annual directed research vessel surveys for either snow crab or multi-species data collection. • The annual collection of data from fishing log books, offshore observers, dockside monitors during the fishing season. • The annually compilation of habitat and ecosystem information the available season.

			• The drafting and peer-reviewing of the annual scientific assessment document. • Conducting the Regional science advisory process involving all industry stakeholders. • Completing the management advisory process soliciting input from stakeholders. • Providing extra time and effort to provide answers to issues raised in these sessions. • The current development of provisional reference points and harvest control rules for the snow crab fishery requires work planning on the part of over-stretched science staff. A workshop with outside experts to review the crab stock assessment methods is held every four years. One is scheduled for the Autumn of 2011.
	b	Yes	Research results are **disseminated** to all interested parties in a **timely** fashion.
			The documents that are produced annually are available on the CSAS website and are also explained to, and discussed with, industry and others at annual RAP and Advisory Committee sessions.
100	a	No	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.
			Apart possibly from the four-year review of stock assessment methods, the research activities that are conducted in support of snow crab management in SGSL do not really extend beyond the normal stock assessment process and therefore do not extend to P3 considerations.
	b	Yes	Research **plan** and results are **disseminated** to all interested parties in a **timely** fashion and are **widely and publicly available**.
			The documents that are produced are available on the CSAS website and are also explained to, and discussed with, industry and others at annual RAP and Advisory Committee sessions.
References			**The "Research Plan" section of the Principle 3 backgrounder and the Crab Section Work Plan for 2011-12 supplied to the Assessment Team.**
OVERALL PERFORMANCE INDICATOR SCORE:			90
CONDITION NUMBER (if relevant):			**NA**

Evaluation Table: PI 3.2.5

PI 3.2.5		There is a system of 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 system	
SG	Issue	Met? (Y/N)	Justification/Rationale
60	a	Yes	The fishery has in place mechanisms to evaluate **some** parts of the management system.
			There is no current IFMP for CFA 12 snow crab that normally would be expected to detail this requirement but Fishery Management Staff consider the annual advisory committee process to be a form of internal and external review of the CFA 12 snow crab fishery. In the SCAC for CFA 12 outcomes of the past fishery and the scientific advice are reviewed and discussed and proposals for changes or improvements put forward for the following season. The current IFMP for CFA 19 snow crab contains a Section 7 on Performance Review. In the Management Committee meetings for CFA 19 outcomes of the past fishery and the scientific advice are reviewed and discussed and proposals for changes or improvements put forward for the following season. However, no minutes or other documents to this effect have been provided.
	b	Yes	The fishery-specific management system is subject to **occasional internal** review.
			The annual advisory committee's process is considered an internal and external review of the SGSL snow crab fishery. In the SCACs for CFA 12 and the Management Committee meetings for CFA 19 outcomes of the past fishery and the scientific advice are reviewed and discussed and proposals for changes or improvements put forward for the following season.
80	a	Yes	The fishery has in place mechanisms to evaluate **key** parts of the management system
			The annual advisory committee's process is considered by Gulf Region staff to be an internal and external review of the SGSL snow crab fishery. In the SCACs for CFA 12 and the Management Committee meetings for CFA 19 outcomes of the past fishery and the scientific advice are reviewed and discussed and proposals for changes or improvements put forward for the following season. However, these would be unlikely to evaluate all key parts of the management system or review performance against objectives as is required in current IFMPs. The 2006 FMP for CFA 12 contained the following statement regarding the long term approach in the fishery; "After the 2006 fishing season, DFO will propose consultations to design a management and control framework in the context of an anticipated decline in commercial biomass through to 2010. The requests for changes to the management measures from industry will also be included in these discussions. In addition, consultations will be undertaken on an approach to facilitate the conduct of snow crab

			scientific research in the context of a framework of shared responsibility and accountability." It is unclear to what extent these intentions were ever pursued. The current IFMP for CFA 19 snow crab contains a Section 7 on Performance Review that call for some form of performance evaluation. However, no indication of the extent to which this was conducted was provided to the Assessment team. Lack of a current IFMP for the entire SGSL snow crab and the imminent demise of the CFA IFMP prevents proper assessment of the present status of this requirement in the SGSL crab fishery.
	b	No	The fishery-specific management system is subject to **regular internal** and **occasional external** review.
			It is unclear when the new IFMP for SGSL will be available publically. Therefore it cannot be determined at this time if it will contain provisions for regular internal and occasional external review of the management system that will be sufficient to meet the intent of this element.
100	a	No	The fishery has in place mechanisms to evaluate **all** parts of the management system.
			It is unclear when the new IFMP for SGSL will be available publically. Therefore it cannot be determined at this time if it will contain provisions for regular internal and occasional external review of the management system that will be sufficient to meet the intent of this element.
	b	No	The fishery-specific management system is subject to **regular internal and external review.**
			It is unclear when the new IFMP for SGSL will be available publically. Therefore it cannot be determined at this time if it will contain provisions for regular internal and occasional external review of the management system that will be sufficient to meet the intent of this element.
References			The "Monitoring and Evaluation of the Snow Crab Management System" section of the Principle 3 backgrounder.
OVERALL PERFORMANCE INDICATOR SCORE:			70
CONDITION NUMBER (if relevant):			**2**

Appendix 2 Meeting Conditions for Continued Certification.

To be awarded an MSC certificate for the fishery, the applicants must agree in a 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.

General Conditions for Continued Certification

The general 'Conditions' set for the Fishery are as follows:

- The Client 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 Client 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 Client 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 Client shall develop, an 'Action Plan' (each of the client groups) for Meeting the Condition for Continued Certification' and have it approved by GTC.

- The Client must provide a list of all the licence holders to the certification body, that have signed up to provide catch to their processing plant and who will be expected to follow a

code of conduct. This list must be updated annually prior to each annual surveillance audit activity.

Specific Conditions for Continued Certification

When a condition is set additional to the general requirements outline above, the client must also agree in a written contract with an accredited MSC Certification Body to meet the conditions described (within the agreed timelines in the 'Action Plan for Meeting the Conditions for Continued Certification to be approved by GTC). Specific conditions attached to this fishery relating to two of the PIs that were scored are detailed below.

Condition: PI 3.2.1 (Fishery specific objectives)

Table 12: Condition 1

Performance Indicator	PI 3.2.1
Score	70
Rationale	While under the DFO Template for IFMPs, a section on Fishery Specific Objectives is required, the forthcoming IFMP has not been seen by the Assessment Team. Therefore, the requirements of this SG cannot be confirmed as being met at this point.
Condition	The client must demonstrate that it can meet the 80 scoring guidepost within the 5 year certification period. Documentary evidence shall be provided that the fishery has adopted clear, specific objectives designed to achieve the outcomes expressed by MSC's Principles 1 and 2.
Milestones	By surveillance audit in Year 1 the IFMP for SGSL snow crab should be shown to contain fishery specific objectives designed to achieve the requirements of Principles 1 and 2, and adopted in Year 2.
Client action plan	The client shall immediately request direction from DFO on what information and support can be provided to fulfil this condition. The client shall immediately support the acquiring of any additional information that may be required to support these activities. The client must provide documentary evidence of the requests and support provided on this condition.
Consultation on condition	Department of Fisheries and Oceans Canada

Condition: PI 3.2.5 (Management performance evaluation)

Table 13: Condition 2

Performance Indicator	PI 3.2.5
Score	70
Rationale	**Evaluation Table: PI 3.2.5** It is unclear when the new IFMP for SGSL will be available publically. Therefore it cannot be determined at this time if it will contain provisions for regular internal and occasional external review of the management system that will be sufficient to meet the intent of this element.
Condition	The client must demonstrate that it can meet the 80 scoring guidepost within the 5 year certification period. Documentary evidence shall be provided there is a system of monitoring and evaluating the performance of the fishery-specific management system against its objectives and that there is an effective and timely review of the fishery-specific management system in place. This should include the preparation of formal evaluation reports that are presented to, and discussed with, the Snow Crab Advisory Committees.
Milestones	By first surveillance audit or by the end of January 2013, the assessment team shall be provided with definitive evidence that effective review and evaluation of the fishery specific management system is in place, including provision for the discussion of evaluation reports with the Snow Crab Advisory Committees.
Client action plan	The client shall immediately request direction from DFO on what information and support can be provided to fulfil this condition. The client shall immediately support the acquiring of any additional information that may be required to support these activities. The client must provide documentary evidence of the requests and support provided on this condition.
Consultation on condition	Department of Fisheries and Oceans Canada

Appendix 3 Peer Review Reports

Template for Peer Review of MSC Fishery Assessment V1 document.
Date of Issue: 19th January 2011.

Peer Review Report A

Overall Opinion

Has the assessment team arrived at an appropriate conclusion based on the evidence presented in the assessment report?	**Yes**	**Conformity Assessment Body Response**
Justification: The evidence presented generally supports the assessment team's conclusion that the unit of certification meets the MSC requirements for certification. However, regarding some P2 issues in particular, the scoring is overly generous. The snow crab stock, which is well assessed, is not depleted and there are limit and target reference points that are appropriate for the stock. The harvest strategy appears to be effective. The use of well-designed traps clearly minimizes any negative impacts on other species, the habitat and elements of the ecosystem. However, there are no data and analyses to demonstrate that bycatch in the fishery (ETP or otherwise) is negligible. Although it is likely that bycatch is minor, there is nothing quantitative to evaluate the fishery effects. Scores awarded for bycatch and ETP PIs are excessive. Information providing rationale for P3 indicators is appropriate in most instances, although the somewhat uncertain future of IFMPs creates concern.		By-catch for the fishery is below the main by-catch species threshold of 5% and so therefore the assessment team, feel that the scoring is justified see relevant comments and response below and CB3.8.2. Comments on IFMP responded to below directly at PI comment.

Do you think the condition(s) raised are appropriately written to achieve the SG80 outcome within the specified timeframe?	**Yes**	**Conformity Assessment Body Response**
Justification: Condition 1: PI 3.2.1 Assuming a new IFMP for SGSL will be adopted in the near future, the Condition requiring the inclusion of clear and specific objectives is appropriate to achieve the requirements of SG 80. The timeframe specified (by surveillance audit in year 1) also seems appropriate but will ultimately be determined by DFO. Condition 2: PI 3.2.5 This performance indicator fails to meet the requirements of SG 80 because the management system is not subjected to regular internal and occasional external review. The condition, as worded, is lacking in that it does not specify the requirement for internal and external review. The timeframe specified (by first surveillance audit) is appropriate but will ultimately be determined by DFO.		*Condition 1* No response necessary on this point at this time in the report by assessment team. *Condition Point 2* The condition has been re-worded by the assessment team in the relevant section-refer to 3.2.5 Condition.

If included:

Do you think the client action plan is sufficient to close the conditions raised?	**No**	**Conformity Assessment Body Response**
Justification: Condition 1: PI 3.2.1 - Given the client's reliance on direction from DFO regarding information and support, the plan does not appear to be fully developed at this time. Condition 2: PI 3.2.5 - Given the client's reliance on direction from DFO regarding information and support, the plan does not appear to be fully developed at this time.		The action plan is not fully developed at this time and will be finalized at the release of the PC report and signed off by the client.

General Comments on the Assessment Report (optional)

1. The Glossary requires updating to reflect the content of the current document.

2. Although the references are listed in detail at the end of each PI scoring section (as required), it would be helpful, for verification, to have them cited within the text, immediately following the relevant justification/rationale.

3. Table 12 (page 60) is misplaced.

3. In instances where issue at SG 100 are met, rather than copy the rationale, verbatim, back through lower scoring levels, it should be included only at the highest level. Some Principle 2 PI's are particularly tedious in that regard.

Assessment team Response to General Comments

1. The Glossary has been updated

2. This has been noted by the assessment team but the rationale and their reference points have not been changed.
3. Table 12 Page 60 has been removed.
4. The assessment team have noted the peer reviews comment but have decided to leave the rationale as is.

Performance Indicator Review -A

Performance Indicator	Has all the relevant Information available been used to score this indicator? (Yes/No)	Does the information and/or rationale used to score this Indicator support the given score? (Yes /No)	Will the condition(s) raised improve the fishery's performance to the SG80 level? (Yes/NA)	Justification Please support your answers by referring to specific scoring issues and any relevant documentation where possible. Please attach additional pages if necessary.	Certification Body Response
1.1.1	Yes	No	NA	At SG100a, there appears to be some uncertainty (e.g. low abundance of mature females, S/R relationship and larval recruitment processes unknown) rather than a high degree of certainty with respect to recruitment. (The first paragraph of SG100b addresses recruitment - SG 100a - not current stock size.) On the other hand, the stock was below B_{usr} only in 2009 and 2010 so it could be considered as fluctuating around its TRP. The absence of an explicit decision rule for management actions when the stock is in different zones of the PA framework is not relevant to this PI. The score would still be 90 but for different reasons.	100a is about the stock being above the point where recruitment would be impaired. The uncertainty referred to by this reviewer has to do with natural causes. Although the first paragraph of 100b is indeed about recruitment, it provides context and a natural lead-in to the consideration of stock size that follows. The evidence indicates that the stock has in fact fluctuated around B_{usr} in recent years.
1.1.2	Yes	No	NA	SG 100c requires that the TRP also takes into account relevant precautionary issues such as the ecological role of the stock. Therefore, the score should be less than 100.	100c has been revised and taken into account additional reference to the ecological role of stock.
1.1.3	Yes	NA	NA	Comment: Although 1.1.3 is not applicable, it might	A brief statement on the PI has been included in the

				be appropriate to make a brief statement about the current stock status with an appropriate reference.	scoring section and a reference included.
1.2.1	Yes	No	NA	SG 100b does not provide comment on how the performance of the harvest strategy has been fully evaluated.	The harvest strategy is to maintain a moderate exploitation rate (no more than 40%) on the fishable biomass. The annual assessment estimates exploitation rate and provides, therefore, a full evaluation of harvest strategy performance.
1.2.2	Yes	No	NA	As SG 80a and 100a issues are identical, it should be scored at the lower level. If that is correct, the score should be 100.	The issues are worded exactly the same. However, our evaluation for 100a is No because of the absence of an explicit decision rule – this is clearly stated there.
1.2.3	Yes	Yes	NA	Rationale appropriate and score justified.	No response necessary by the assessment team after reviewing this review comment.
1.2.4	Yes	No	NA	SG 100d requires some evidence that other hypotheses and assessment approaches have been explored and, if available, the score of 100 is justified.	The following text has been added to 100d: The workshop provided a rigorous evaluation of various approaches to survey design, analytical procedures and biomass estimation.
2.1.1	Yes	Yes	NA	As there are no retained species, the score is justified. (See General Comment #4, above.)	No response necessary by the assessment team after reviewing this review comment.
2.1.2	Yes	Yes	NA	Rationale appropriate and score justified. (See General Comment #4, above.)	No response necessary by the assessment team after reviewing this review comment.
2.1.3	Yes	Yes	NA	Rationale appropriate and score justified. (See General Comment #4, above.)	No response necessary by the assessment team after reviewing this review comment.
2.2.1	No	No	NA	There is no evidence presented to confirm the low levels of bycatch. Data from logbooks are not recorded electronically and observer data have not been analysed. Although it is highly likely that bycatch is exceptionally rare and negligible in its	Based on verification of line by line of observer records and logbook in the last 4 years (2008-2011), by-catch is extremely low. No species at risk incidental catch were reported in snow crab logbooks in the past four years. In the last four years of snow crab fishery, there is 964, 1045, 456, and 429 sea-

				impact (GCB3.8.4), there is only anecdotal information to support that notion. There is a lack of qualitative and/or quantitative estimates of bycatch of PI's 2.2.1, 2.2.2 and 2.2.3.	days of catch observation record in 2008, 2009, 2010 and 2011 crab fishing season, respectively and 5510, 6115, 2473, and 2525 fishing-days recorded on crab harvesters' logbooks in 2008, 2009, 2010 and 2011 seasons, respectively. However, there is no report of by-catch species in commercial traps. By-catch species has been recorded in extremely rare occasion (namely toad crab, sea urchin, cod) before 1995, however recently no by-catch was reported, which may be partially due to the use of larger mesh size traps. In the late 1990's, some crab harvesters have started to use larger mesh size traps (there was no maximum size limit for trap.
2.2.2	No	No	NA	(See 2.2.1)	See above 2.2.1
2.2.3	No	No	NA	(See 2.2.1)	See above 2.2.1
2.3.1	No	No	NA	The lack of qualitative and/or quantitative data noted above for bycatch (2.2.1) applies to ETP species, as well.	See above 2.2.1
2.3.2	No	No	NA	Species at risk regulations support a high score for this PI. However, it appears that not even the SARA logbooks are monitored which undermines the intent of the regulations.	See above 2.2.1
2.3.3	No	No	NA	The lack of information, the perceived inadequacy of the observer coverage and the possible underutilization of SARA logbooks imply that data are not sufficient to allow fishery related mortality and the impact of fishing to be quantitatively estimated for ETP species (SG 80a).	See above 2.2.1
2.4.1	Yes	No	NA	There is only one scoring issue under each SG and, therefore, the intermediate score of 90 requires	The reason for a No evaluation for 100a, yet a 90 score, is the absence of a specific study focused on before-and-after-fishing comparisons to evaluate

				justification. If there is no evidence that the fishery is highly unlikely to reduce habitat structure and function, the score must be 80.	possible habitat impacts. Nevertheless, we felt that requirements of 100a are basically met. See 2.4.2 100b.
2.4.2	Yes	Yes	NA	Generally agree. However, distinction needs to be made between the rationale for SG 100c (successful implementation) and 100d (achieving objective).	The wording of 100c has been revised: Measures to limit numbers and sizes of traps in use and to mitigate or eliminate impacts were implemented during the early years of this fishery.
2.4.3	Yes	Yes	NA	Rationale appropriate and score justified.	No response necessary by the assessment team after reviewing this review comment.
2.5.1	Yes	Yes	NA	The rationale discusses fishery impacts in relation to trophic relationships, ecosystem structure and species diversity. Comment should also be made on genetic diversity, particularly the consequences of the fishery targeting the largest males.	The wording of 100a has been revised: This eliminates any concerns regarding genetic diversity associated with potential consequences of the fishery targeting the largest males. References have been added to the reference box.
2.5.2	Yes	Yes/No	NA	The progression of this PI goes from measures (SG 60) to a partial strategy (SG 80) to a strategy with a plan (SG 100). The rationale provided does not follow this progression. A solution could be to decide whether or not there are only measures, a partial strategy or a strategy and address the issues with the available information within the appropriate SG. Also, there appears to be a few references missing for this PI.	This PI deals with all 3 elements: measures, partial strategy, and strategy with a plan. 60abc all deal with measures, 80d and 100bcd include measures as well. What the reviewer suggests isn't consistent with requirements. References have been added to the reference box.
2.5.3	Yes	Yes	NA	Generally agree. Rationale appropriate and score justified. Some references appear to be missing for this PI, as well.	No response necessary by the assessment team after reviewing this review comment. References have been added to the reference box.
3.1.1	Yes	No	NA	Rationale appropriate but a score of 85 (one of three issues met) is not justified.	No response necessary by the assessment team after reviewing this review comment. Two of four

					requirements (100 a and c) are met, hence the score of 90.
3.1.2	Yes	Yes	NA	Rationale appropriate and score justified. It should be determined whether or not the Advisory Committee meetings are open to the public.	SG 80c has been reworded to “while the RAP and Advisory committee session are open to the public; it is not clear that these meetings are publically advertised”.
3.1.3	Yes	Yes	NA	Rationale appropriate and score justified. However, given the uncertainty about the future of IFMPs, this PI will need review in annual surveillance audits.	No action deemed necessary by the assessment team after reviewing this review comment. Surveillance audits inherently take into account changes in the fishery including changes in Fisheries Management plans CR 27.22
3.1.4	Yes	Yes	NA	As fishery management decisions are announced annually, this could be considered a regular review of management procedures, thereby supporting a higher score.	It still remains a fact that current combining allowances continue to be temporary, even if reviewed annually. The incentive for more sustainable fishing activities attributed to ITQs is not being fully achieved.
3.2.1	Yes	No	NA	If, as indicated, the single issue at SG 80 is not met, the score should be 60.	No action deemed necessary by the assessment team after reviewing this review comment. We know there will be a fishery specific objectives section in the new IFMP but don’t know exactly the details of what it will contain, hence 70 instead of 60.
3.2.2	Yes	No	NA	As neither issue at SG 100 is met, the score should be 80.	No action deemed necessary by the assessment team after reviewing this review comment. There is an a and c to SG 100 that are deemed to have been met; hence 90.
3.2.3	Yes	Yes	NA	Rationale appropriate and score justified.	No action deemed necessary by the assessment team after reviewing this review comment.

3.2.4	No	No	NA	The rationale for SG 80a needs to make the distinction that, not only are there research initiatives, the research is articulated in a plan. (The reference section indicates there was such a plan for 2011 - 2012.) Furthermore, other than SAR and research documents, peer reviewed publications on the biology, ecology and population dynamics of snow crab provide substantial support to management.	It is implicit that the activities outlined in SG 80a are contained in a plan. However the only plan we are aware of is the annual work plan of Science that is not "a **comprehensive research plan** that provides the management system with a coherent and strategic approach to research across P1, P2 and P3.
3.2.5	Yes	Yes	No	Rationale appropriate and score justified.	Condition 3.2.5 has been revised.

Any Other Comments

Comments	Conformity Assessment Body Response
The report should be scrutinized further for editorial corrections.	The assessment team took action to review further for editorial corrections.

Peer Review Report B

Overall Opinion

Has the assessment team arrived at an appropriate conclusion based on the evidence presented in the assessment report?	**Yes/No** **YES**	**Conformity Assessment Body Response**
Justification: The assessment team has properly reviewed all the appropriate information, so as to evaluate his fishery against the MSC performance indicators for each of the three principles.		No action deemed necessary by the assessment team after reviewing this review comment.

Do you think the condition(s) raised are appropriately written to achieve the SG80 outcome within the specified timeframe?	**Yes/No** **YES**	**Conformity Assessment Body Response**
Justification: Two conditions have been proposed by the assessment team. When the required actions are accomplished, the fishery should be able to achieve the SG80 score requirements.		No action deemed necessary by the assessment team after reviewing this review comment.

Do you think the client action plan is sufficient to close the conditions raised?	**Yes/No** **YES**	**Conformity Assessment Body Response**
Justification: The client action plan is sufficient to close the conditions raised.		No action deemed necessary by the assessment team after reviewing this review comment.

General Comments on the Assessment Report

Overall, the assessment report is comprehensive, well researched and documented, and clearly written is terms of responding to the Performance Indicators (PIs) and the issues or criteria within each PI. The assessment team appears to have in depth knowledge and understanding to the fishery, the supporting science, the management and the politics associated with the fishery being certified. The scoring of each PI is clearly justified based on the issues.

More information on the supporting science in terms of the details of the stock assessment in the introductory material should be included, so that the reviewer and eventually the reader would not have to attempt to refer to the reference documents to better understand the science behind the discussion of reference points and stock status relative to those reference points.

The Assessment Team Response

The assessment team included more information on stock assessment in section 3.1 of this report.

Performance Indicator Review -B

Performance Indicator	Has all the relevant Information available been used to score this indicator? (Yes/No)	Does the information and/or rationale used to score this Indicator support the given score? (Yes /No)	Will the condition(s) raised improve the fishery's performance to the SG80 level? (Yes/NA)	Justification Please support your answers by referring to specific scoring issues and any relevant documentation where possible. Please attach additional pages if necessary.	Certification Body Response
1.1.1	Yes	Yes	NA	PI 1.1.1 requires that the stock is at a level which maintains high productivity and has a low probability of recruitment overfishing. Sufficient evidence was provided to justify a score of 90. This fishery failed to meet the requirement for a score of 100 because on the second scoring issue, the stock was being below B_{usr} (in 2009 and 2010) and there is an absence of an explicit decision rule for management actions to be taken when the stock is in different zones of the PA framework	No action deemed necessary by the assessment team after reviewing this review comment.
1.1.2	Yes	Yes	NA	PI 1.1.2 requires Limit and target reference points are appropriate for the stock. The assessment team scored this PI at 100, as all the requirements for that score were met. Specifically, the limit reference point is set above the level at which there is an appreciable risk of impairing reproductive capacity following consideration of precautionary issues; and the target reference point is such that the stock is	No action deemed necessary by the assessment team after reviewing this review comment.

				maintained at a level consistent with B_{MSY} or some measure or surrogate with similar intent or outcome, or a higher level, and takes into account relevant precautionary issues such as the ecological role of the stock with a high degree of certainty.	
1.1.3	NA	NA	NA	No Comment	No Comment
1.2.1	Yes	Yes	NA	PI 1.2.1 requires that there is a robust and precautionary harvest strategy in place. Sufficient evidence was provided to justify a score of 100, in particular that there is a harvest strategy that is responsive to the state of the stock and is designed to achieve stock management objectives reflected in the target and limit reference points; the performance of the harvest strategy has been fully evaluated and evidence exists to show that it is achieving its objectives including being clearly able to maintain stocks at target levels, and that the harvest strategy is periodically reviewed and improved as necessary demonstrated responsiveness of management and the fishery participants to changes in stock availability in a consultative manner.	No action deemed necessary by the assessment team after reviewing this review comment.
1.2.2	Yes	Yes	NA	PI 1.2.2 requires that there are well defined and effective harvest control rules in place. The assessment team scored this PI at 95. This fishery failed to meet the requirement for a score of 100 because on the first scoring issue there is the absence of an explicit decision rule for management actions to be taken when the stock is in different	No action deemed necessary by the assessment team after reviewing this review comment.

				zones of the PA framework.	
1.2.3	Yes	Yes	NA	This PI requires that relevant information is collected to support the harvest strategy. Sufficient evidence was provided to justify a score of 100 for this fishery. The annual resource survey has provided a time series of abundance/biomass estimates for various population components. A complete record of the number/size of vessels and licenses is available. Logbooks are mandatory and include information on fishing position, catch and effort each fishing day. 100% of landings are monitored at dockside. At-sea monitoring of catches is conducted by certified observers An electronic Vessel Monitoring System (VMS) is in place for the entire fleet. 100% hail out and hail in using an automated system is required to keep Dockside Monitoring and At-sea Observer companies informed of vessel activity. Additionally, there is broad-scale ecosystem/environmental monitoring that is utilized in crab assessment.	No action deemed necessary by the assessment team after reviewing this review comment.
1.2.4	Yes	Yes	NA	PI 1.2.4 requires that there is an adequate assessment of the stock status. Sufficient evidence was provided to justify a score of 100, in particular in this fishery that has regular assessments based on a resource survey. Its design was developed to facilitate geo-statistical estimation techniques.	No action deemed necessary by the assessment team after reviewing this review comment.
2.1.1	Yes	Yes	NA	PI 2.1.1 requires that 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. Sufficient evidence was provided to	No action deemed necessary by the assessment team after reviewing this review comment.

				justify a score of 100 for this fishery. By regulation, license condition and in actual practice there are no retained species in this fishery**.**	
2.1.2	Yes	Yes	NA	PI 2.1.2 requires that the 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. Sufficient evidence was provided to justify a score of 100 for this fishery. By regulation, license condition and in actual practice there are no retained species in this fishery**.**	No action deemed necessary by the assessment team after reviewing this review comment.
2.1.3	Yes	Yes	NA	PI 2.1.3 requires that 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. Sufficient evidence was provided to justify a score of 100 for this fishery. By regulation, license condition and in actual practice there are no retained species in this fishery**.**	No action deemed necessary by the assessment team after reviewing this review comment.
2.2.1	Yes	Yes	NA	PI 2.2.1 requires that 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. Sufficient evidence was provided to justify a score of 100 for this fishery. The Assessment Team could find no expressed concerns regarding the effects of such small catches on the status of the various bycatch species taken in the SGSL snow crab fisheries. None are even close to a level where they could be	No action deemed necessary by the assessment team after reviewing this review comment.

				considered a main bycatch species (all are considered to be well under 5% of the total snow crab catch).	
2.2.2	Yes	Yes	NA	PI 2.2.2 requires that 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. Sufficient evidence was provided to justify a score of 100 for this fishery. The continuing very low bycatches are viewed as too low to record in the Region's electronic data system. Fishery Management Staff feel this signifies that the management measures for the gear used in this fishery are effective in essentially eliminating measurable effects of bycatch as a problem.	No action deemed necessary by the assessment team after reviewing this review comment.
2.2.3	Yes	Yes	NA	PI 2.2.3 requires that information on the nature and the amount of bycatch is adequate to determine the risk posed by the fishery and the effectiveness of the strategy to manage bycatch. Sufficient evidence was provided to justify a score of 90 for this fishery. Because all available bycatch data is extrapolated from Observer data, and the achieved coverage is from 10 to 23 percent, thus reducing the level of reported activity that can be fully verified, a score of 100 was not achieved.	No action deemed necessary by the assessment team after reviewing this review comment.
2.3.1	Yes	Yes	NA	PI 2.3.1 requires that the fishery meets national and international requirements for the protection of ETP species, and that the fishery does not pose a risk of serious or irreversible harm to ETP species and does not hinder recovery of ETP species. Sufficient	No action deemed necessary by the assessment team after reviewing this review comment.

				evidence was provided to justify a score of 100 for this fishery. Catches of Spotted Wolffish in the snow crab fishery are considered negligible. There are no reported cases of leatherback turtles being entangled in buoy lines in this fishery. No records exist of any involvement with any endangered whale species. No corals or sponges are captured in this passive gear fishery. No indirect effects on ETP species are known to exist in this fishery. Overall, this is a small-scale seasonal fishery where a total of 449 license holders, half of whom operate vessels less than 65 ft., use a total of 36,600 traps for a catch of 9,500 mt over about three months of overall activity.	
2.3.2	Yes	Yes	NA	PI 2.3.2 requires that the fishery has in place precautionary management strategies designed to: meet national and international requirements; ensure the fishery does not pose a risk of serious harm to ETP species; ensure the fishery does not hinder recovery of ETP species; and minimise mortality of ETP species. Sufficient evidence was provided to justify a score of 95 for this fishery. There are no reported cases of leatherback turtles being entangled in buoy lines in this fishery. No records exist of any involvement with any endangered whale species. No indirect effects on ETP species are known to exist in this fishery. This fishery met all the requirements for a score of 100 except that the Assessment Team was not aware of	No action deemed necessary by the assessment team after reviewing this review comment.

				any quantitative analysis that has been conducted to determine the likely success of the approach used to minimize impact of snow crab fishery on the ETP species encountered.	
2.3.3	Yes	Yes	NA	PI 2.3.3 requires that 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. Sufficient evidence was provided to justify a score of 85 for this fishery. This fishery failed to meet the requirement for a score of 100 because the current level of observer coverage appears inadequate to fully satisfy the information needed to meet this requirement. Therefore, the extent of unreported/undocumented encounters with ETP species is not fully known.	No action deemed necessary by the assessment team after reviewing this review comment
2.4.1	Yes	Yes	NA	PI 2.4.1 requires that The fishery does not cause serious or irreversible harm to habitat structure, considered on a regional or bioregional basis and function. Sufficient evidence was provided to justify a score of 85 for this fishery. This fishery failed to meet the requirement for a score of 100 because there have been significant efforts to document habitat impacts associated with various fishing gears used in Canadian waters and to implement measures to mitigate negative impacts where	No action deemed necessary by the assessment team after reviewing this review comment.

				possible, but none is particularly clear. Trap fisheries in general are considered to have low impact on habitat structure and function. No habitat impact issues have been identified for the snow crab fishery and there is no evidence that it is likely to reduce habitat structure and function.	
2.4.2	Yes	Yes	NA	PI 2.4.2 requires that 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. Sufficient evidence was provided to justify a score of 95 for this fishery. This fishery failed to meet the requirement for a score of 100 because there has been no direct testing by way of before-and-after-fishing comparison of the fishing grounds	No action deemed necessary by the assessment team after reviewing this review comment.
2.4.3	Yes	Yes	NA	PI 2.4.3 requires that 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. Sufficient evidence was provided to justify a score of 95 for this fishery. This fishery failed to meet the requirement for a score of 100 because there has been no direct testing by way of before-and-after-fishing comparison of the fishing grounds because there have been no issues or concerns identified to indicate negative habitat impacts of snow crab fishing.	No action deemed necessary by the assessment team after reviewing this review comment.
2.5.1	Yes	Yes	NA	PI 2.5.1 requires that the fishery does not cause serious or irreversible harm to the key elements of ecosystem structure and function. Sufficient	No action deemed necessary by the assessment team after reviewing this review comment.

				evidence was provided to justify a score of 100 for this fishery. The Gulf of St. Lawrence ecosystem has been the focus of intense ecological research. There has been no indication that the crab fishery causes any disruption of key elements of the ecosystem.	
2.5.2	Yes	Yes	NA	PI 2.5.2 requires that there are measures in place to ensure the fishery does not pose a risk of serious or irreversible harm to ecosystem structure and function. Sufficient evidence was provided to justify a score of 100 for this fishery. No issues with snow crab fishing have been identified and there is no indication that the fishery causes any form of ecosystem disruption or harm to ecosystem structure and function.	No action deemed necessary by the assessment team after reviewing this review comment.
2.5.3	Yes	Yes	NA	PI 2.5.3 requires that there is adequate knowledge of the impacts of the fishery on the ecosystem. Sufficient evidence was provided to justify a score of 100 for this fishery. Gulf of St. Lawrence has been the focus of intense ecological research. As part of Canada's commitment to ecosystem based management there is an ongoing focus on ecosystem impacts of fishing to ensure that all fishing is ecologically sustainable.	No action deemed necessary by the assessment team after reviewing this review comment.
3.1.1	Yes	Yes	NA	PI 3.1.1 requires that The management system exists within an appropriate legal and/or customary framework which ensures that it: is capable of delivering sustainable fisheries in accordance with MSC Principles 1 and 2; observes the legal rights created explicitly or established by custom of people	No action deemed necessary by the assessment team after reviewing this review comment.

				dependent on fishing for food or livelihood; and incorporates an appropriate dispute resolution framework. Sufficient evidence was provided to justify a score of 90 for this fishery. This fishery failed to meet the requirement for a score of 100 because the fishery management system does not itself incorporate an internal legal dispute settlement mechanism that can be used, and be seen, to directly resolve fishery allocation, access and related fishery management disputes that are of a legal nature. As a general rule, the policy on which a disputed decision has been made cannot be appealed.	
3.1.2	Yes	Yes	NA	PI 3.1.2 requires that The management system has effective consultation processes that are open to interested and affected parties. The roles and responsibilities of organisations and individuals who are involved in the management process are clear and understood by all relevant parties. Sufficient evidence was provided to justify a score of 80 for this fishery. This fishery failed to meet the requirement for a score of 100 because the assessment team found that all fishery management system did not meet any of the criteria or issues for a score of 100.	No action deemed necessary by the assessment team after reviewing this review comment.
3.1.3	Yes	Yes	NA	PI 3.1.3 requires that 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.	No action deemed necessary by the assessment team after reviewing this review comment.

				Sufficient evidence was provided to justify a score of 80 for this fishery. This fishery failed to meet the requirement for a score of 100 because until the Canadian precautionary approach (PA) is fully implemented in Southern Gulf of St. Lawrence snow crab fishery it cannot be said that the PA is completely explicit within and required by management policy. There is no current IFMP for all of the southern Gulf of St. Lawrence snow crab and although the PA is under active development for this overall fishery, harvest control rules have yet to be developed or finalized	
3.1.4	Yes	Yes	NA	PI 3.1.4 requires that the management system provides economic and social incentives for sustainable fishing and does not operate with subsidies that contribute to unsustainable fishing. Sufficient evidence was provided to justify a score of 90 for this fishery. This fishery failed to meet the requirement for a score of 100 because the assessment team believed that there are further sustainable fishing incentives to be achieved by adopting some form of permanent combining of quota shares.	No action deemed necessary by the assessment team after reviewing this review comment.
3.2.1	Yes	Yes	Yes	PI 3.2.1 requires that the fishery has clear, specific objectives designed to achieve the outcomes expressed by MSC's Principles 1 and 2. Sufficient evidence was provided to justify a score of 70 for this fishery. This fishery failed to meet the requirement for a score of 80 because while the	No action deemed necessary by the assessment team after reviewing this review comment.

				Southern Gulf of St. Lawrence snow crab fishery is under the DFO Template for IFMPs, a section on Fishery Specific Objectives is required; the forthcoming IFMP has not been seen by the Assessment Team. Therefore, the requirements of this scoring guidepost cannot be confirmed as being met at this point. A condition was placed on the certification that documentary evidence shall be provided that the fishery has adopted clear, specific objectives designed to achieve the outcomes expressed by MSC's Principles 1 and 2**.**	
3.2.2	Yes	No	NA	PI 3.2.2 requires that the fishery-specific management system includes effective decision-making processes that result in measures and strategies to achieve the objectives. Sufficient evidence was provided to justify a score of 80 for this fishery, but the fishery was awarded a score of 90 by the Assessment Team. This fishery failed to meet the requirements for a score of 100 on of the two issues, because it is not clear to the Assessment Team that decision-making processes respond to all issues identified in research, monitoring, evaluation and consultation, but that is certainly the case for some, and there is no clear evidence of this type of formal reporting taking place to all interested stakeholders. The Assessment Team may want to reconsider its score for this PI.	No action deemed necessary by the assessment team after reviewing this review comment. 100 a and 100 c are automatically covered and the remaining issues are not being fully met. Partial scoring is also considered by the team on the issues not met fully.
3.2.3	Yes	Yes	NA	PI 3.2.3 requires that monitoring, control and surveillance mechanisms ensure the fishery's	No action deemed necessary by the assessment team after reviewing this review comment.

				management measures are enforced and complied with. Sufficient evidence was provided to justify a score of 85 for this fishery. This fishery failed to meet the requirement for a score of 100 because while no official concerns over the level of compliance or the degree of deterrents achieved in the fishery were detected by the Assessment Team, the data shown in the MSC section of the background section indicate general declining levels of enforcement resources being applied to this fishery while the number of occurrences (violations detected) and the number of charges laid appear to be increasing.	
3.2.4	Yes	Yes	NA	PI 3.2.4 requires that the fishery has a research plan that addresses the information needs of management. Sufficient evidence was provided to justify a score of 90 for this fishery. This fishery failed to meet the requirement for a score of 100 because the research activities that are conducted in support of Gulf of St. Lawrence snow crab management do not really extend beyond the normal stock assessment process and therefore do not extend to P3 considerations.	No action deemed necessary by the assessment team after reviewing this review comment.
3.2.5	Yes	Yes	Yes	PI 3.2.5 requires that there is a system of monitoring and evaluating the performance of the fishery-specific management system against its objectives, and that there is effective and timely review of the fishery-specific management system. Sufficient evidence was provided to justify a score of 70 for	No action deemed necessary by the assessment team after reviewing this review comment.

				this fishery. This fishery failed to meet the requirement for a score of 80 because it is unclear when the new IFMP will be available publically. Therefore it cannot be determined at this time if it will contain provisions for regular internal and occasional external review. A condition was placed that specifies that documentary evidence shall be provided there is a system of monitoring and evaluating the performance of the fishery-specific management system against its objectives and that there is an effective and timely review of the fishery-specific management system in place.	

Any Other Comments

Comments	Conformity Assessment Body Response
I would have preferred to have more information on the data, methods and results of the stock assessment included in the introductory section assessment report, so as to allow for a more complete peer review.	The assessment team considered this point and included more detail on the stock assessment of this stock in section 3.1.

Appendix 4 Stakeholder Submissions

Please refer to the following link for the client sharing letter
http://www.msc.org/track-a-fishery/in-assessment/north-west-atlantic/aspans-snow-crab/assessment-downloads-1/Client_Sharing_letter_NS_Snow_Crab_May_2011_Signed_Copy.pdf

Association des crabiers acadiens
183 A, boul. J.D.Gauthier
Shippagan (Nouveau-Brunswick) E8S 1M8
(506)-336-1240

Association des crabiers de la Baie
2, du Havre, C.P. 157
Gascon (Québec) G0C 1P0
(418) 396-5500

A.P.P.C.A.
278, avenue des pêcheurs
Shippagan, (Nouveau-Brunswick) E8S 1J6
(506)336-1414

R.P.P.I.M.
675, chemin Principal
Cap-aux-Meules (PQ) G4T 1G6

Association des crabiers gaspésiens
C.P. 159
Grande-Rivière (Québec) G0C 1V0
(418) 385-4883

Crabiers du Nord-Est
207, boul. J.D.Gauthier
Shippagan (Nouveau-Brunswick) E8S2K8
(506) 336-2526

P.E.I. Snow Crab Fishermen Association
15, Colonel Gray Dr.
Charlottetown, P.E.I. C1A 2S4
(902) 853-7221

June 28, 2011

Mad. Clare Murray
Global Trust Certfication Ltd.
Rivercourt Business Center
Riverlane,
Dundalk, Co. Louth, Ireland

Madam Murray,

We are writing to you on behalf of the above mentioned traditional snow crab organizations whose members are prosecuting the Area 12 fishery of Southern Gulf of St-Lawrence snow crab stock. We want to register our strong opposition to the selection of Mr. Robert Allain as a member of the fishery assessment team that will be responsible for the certification process of the Scotian Shelf and the Gulf of St Lawrence snow crab trap fisheries.

Mr. Robert Allain is not a suitable candidate since he was Fisheries and Oceans Canada Senior Manager of these fisheries between 2001 and 2008 and, as such, cannot be perceived or expected to be an independent certifier of the Area 12, Area 12E, Area 12F and Area 19 fisheries.

...2

Simply put: for Mr. Allain to deny an MSC certification for these fisheries would amount to recognizing his failure as a Senior Fisheries Manager during the last seven years of his career while an MSC certification of the fisheries will amount to a good marketing advantage for his professional skills.

It is our strong belief that this MSC certification process should be sheltered from such obvious conflicts of interest.

A separate letter sent to Mr. Norsworthy and copied to you contains additional information related to the inadequacy of Mr. Allain's candidacy within this certification process.

Yours truly,

Robert Haché, authorized by:

Joël Gionet, president, Association des crabiers acadiens
Robert F. Haché, president, Crabiers du Nord-Est
Daniel Desbois, president, Association des crabiers gaspésiens / Ass. des crabiers de la Baie
Martin Noël, Association des pêcheurs professionnels crabiers acadiens
Robert Thériault, Representant of crabers, Regroupement des pêcheurs des Iles-de-la-Madeleine
Carter Hutt, president of P.E.I. Snow crab Fishermen Association

Cc: Mr. Jay Lugar, Fisheries Outreach Manager, Americas, MSC

Mr. Jean-Marc Dupuis, Deputy Minister, Agriculture, Aquaculture and Fisheries of New Brunswick
Mr. Norman Johnston, Deputy Minister, Ministry of Agriculture, Fisheries and Food of Quebec
Snow Crab producers from New-Brunswick
Snow Crab producers from Quebec

On the 18th October 2012 the CAB issue a variation request to the assessment team as a response to the above stakeholder submission.

http://www.msc.org/track-a-fishery/in-assessment/north-west-atlantic/aspans-snow-crab/assessment-downloads-1/SSGL_snow_crab_variation_Assessment_Team_2011.pdf

(REQUIRED FOR FR AND PCR)

The report shall include all written submissions made by stakeholders about the public comment draft report in full, together with the explicit responses of the team to points raised in comments on the public comment draft report that identify: a. Specifically what (if any) changes to scoring, rationales, or conditions have been made. b. A substantiated justification for not making changes where stakeholders suggest changes but the team makes no change.

Appendix 5 Surveillance Frequency

Table 14: Fishery Surveillance Plan for Southern Gulf of St Lawrence

Score from CR Table C3	Surveillance Category	Year 1	Year 2	Year 3	Year 4
5	Normal Surveillance	On-site surveillance audit	On-site surveillance audit	On-site surveillance audit	On-site surveillance audit & Re-certification Site Visit

Appendix 6 Client Agreement

(REQUIRED FOR PCR)

The report shall include confirmation from the CAB that the Client has accepted the PCR. This may be a statement from the CAB, or a signature or statement from the client.

(Reference: CR: 27.19.2)

Appendix 5.1 Objections Process

(REQUIRED FOR THE PCR IN ASSESSMENTS WHERE AN OBJECTION WAS RAISED AND ACCEPTED BY AN INDEPENDENT ADJUDICATOR)

The report shall include all written decisions arising from an objection.
(Reference: CR 27.19.1)

Appendix 7 License Buyers and Vessels under the Certificate

1. 3088929 NOVA SCOTIA LIMITED
2. A & L SEAFOODS LIMITED
3. A. L. LEBLANC LIMITED
4. A.J.Y. FISHERIES LIMITED
5. ABRIEL FISHERIES LIMITED
6. ACADIA SHELLFISH COMPANY
7. ACADIAN FISH PROCESSORS LIMITED
8. ADVOCATE SEAFOODS LIMITED
9. AEGIR SHELLFISH INCORPORATED
10. ALLAN A. ADAMS
11. AMOS AND ANDY FISHERIES LIMITED
12. ANDERSON COVE SEA FOODS LTD.
13. ANGELS FISHERIES LIMITED
14. AQUASHELL HOLDINGS INC.
15. AREY & SONS SEAFOODS LIMITED
16. ARM OF GOLD FISHERIES LIMITED
17. ASPY BAY FISHERIES LIMITED
18. ATLANTIC LOBSTER (1999) LIMITED
19. ATLANTIC PEARL SEAFOOD LIMITED

20 B S T LOBSTER SALES LIMITED
21 B.M.C. SEAFOODS LIMITED
22 BAKERS POINT FISHERIES LIMITED
23 BIRCH STREET SEAFOODS LIMITED
24 BLUE WAVE SEAFOODS INCORPORATED
25 BREAKWATER FISHERIES LIMITED
26 BRENT & MELISSA FISHERIES LIMITED
27 BROGAN'S FISHERIES LIMITED
28 BRUCE SAUNDERS
29 C.E.A. FISHERIES LIMITED
30 CALIXTE POIRIER'S FISH HAVEN LTD.
31 CANSO SEAFOODS LIMITED
32 CAPE JOHN CRABS & SEAFOODS LIMITED
33 CAPTAIN EARL'S SEAFOODS LIMITED
34 CARMEN JOLLOTA
35 CASEY FISHERIES LIMITED
36 CEILIDH FISHERMEN CO-OP LIMITED
37 CHARLES & ROBERT BLADES LIMITED
38 CHARLESVILLE FISHERIES LIMITED
39 CHASE'S LOBSTER POUND LIMITED
40 CHOICE ATLANTIC SEAFOODS INCORPORATED
41 CLEARWATER SEAFOODS LIMITED PARTNERSHIP
42 COMEAU'S SEA FOODS LIMITED
43 COMEAUVILLE SEAFOOD PRODUCTS LIMITED
44 CUPID'S COVE DEVELOPMENTS LIMITED
45 D.B. KENNEY FISHERIES LIMITED
46 DAVE'S FRESH CLAMS
47 DAVID E. HIMMELMAN
48 DAWN TILL DUSK SEAFOODS LIMITED
49 DEAN'S BAIT BOX LIMITED

50 DEEP COVE AQUA FARMS LIMITED
51 DELAPS COVE FISH PRODUCTS LTD.
52 D'EON FISH MARKET LIMITED
53 DOUGLAS B. DELANEY
54 E.W. HOLMES FISHERIES LIMITED
55 F. THIBAULT SEAFOODS INCORPORATED
56 FISHERMAN'S MARKET INTERNATIONAL INCORPORATED
57 FORCHU FISHERIES LIMITED
58 FORD FISHERIES
59 FORT POINT FISHERIES LIMITED
60 FREDERICK O. TRASK
61 G.M. NEWELL LIMITED
62 GARY WILLIAM HEIGHTON
63 GERALD SHAW
64 GERRET ENTERPRISES INCORPORATED
65 GIDNEY FISHERIES LIMITED
66 GUNNING COVE INDUSTRIES LIMITED
67 2447521 NOVA SCOTIA LIMITED
68 H. HOPKINS LIMITED
69 HALL'S HARBOUR LOBSTER POUND LIMITED
70 HERVIC ENTERPRISES LIMITED
71 HIGH LINER FOODS INCORPORATED
72 HOPKINS & DEVINE FISHERIES LIMITED
73 HOUMARD ACADIE INCORPOREE
74 HUSKINS FISHERIES LIMITED
75 I M O FOODS LIMITED
76 I. DEVEAU FISHERIES LIMITED
77 INLET SEAFOODS LIMITED
78 INNOVATIVE FISHERY PRODUCTS INCORPORATED
79 INSHORE FISHERIES LIMITED

80 ISLANDFRESH SEAFOOD INCORPORATED (CLARK'S HARBOR DIVISION)
81 J & T FORD FISHERIES LTD.
82 J.K. MARINE SERVICE LIMITED
83 J.T. SEAFOODS LIMITED
84 JAMES L. MOOD FISHERIES LIMITED
85 JEDDORE SEAFOODS LIMITED
86 JOEL SMITH FISHERIES LIMITED
87 K & N FISHERIES LIMITED
88 KAISER MARINE INC.
89 KA'LE BAY SEAFOODS LTD.
90 L. & C. TIDD FISHERIES LIMITED
91 L.J. ROBICHEAU & SON FISHERIES LIMITED
92 LADY GAUDET FISHERIES LIMITED
93 LEO G. ATKINSON FISHERIES LIMITED
94 LOBSTER WORLD INC.
95 LOBSTERS 'R' US SEAFOOD
96 LOUISBOURG SEAFOODS LIMITED
97 LOVE ME FISH AND LOBSTER INCORPORATED
98 LOWER ARGYLE FISHERMAN'S CO-OPERATIVE
99 MACCABEES FISHERIES LIMITED
100 MARINER'S CHOICE FISH PRODUCTS LIMITED
101 MARTIN CROWELL ENTERPRISES LIMITED
102 MARTINE MARIE FISHERIES LIMITED
103 MEAGHER'S SEAFOOD LIMITED
104 METEGHAN LOBSTERS LTD.
105 MONICA RAE FISHERIES LIMITED
106 MURRAY A. PURCELL
107 MURRAY PORTER
108 NAUTICAL SEAFOODS LTD.
109 NORTH BAY FISHERMEN'S CO-OP ASSOC. LTD.

110 NORTH NOVA SEAFOODS LIMITED
111 NORTHSYDE PROCESSING LTD.
112 NOVA'S FINEST FISHERIES INC.
113 OCEAN CHOICE PEI INC.
114 OCEAN LEADER FISHERIES LIMITED
115 OCEAN TRAWLERS LIMITED
116 OCEAN VIEW FISHERIES LIMITED
117 OCEANS' BEST SEAFOOD LIMITED
118 O'NEIL FISHERIES LIMITED
119 OCEAN PRIDE FISHERIES LIMITED
120 PATUREL INTERNATIONAL COMPANY
121 PAUL BELLIVEAU
122 PECHERIES CHETICAMP FISHERIES INTL. INC.
123 PETER GERRARD
124 PETIT DE GRAT PACKERS LIMITED
125 PETITE LOBSTER FISHERIES LIMITED
126 PITTMAN'S LOBSTERS
127 PREMIUM SEAFOODS LIMITED
128 PUBNICO TRAWLERS LIMITED
129 QUALITY SEAFOODS LIMITED
130 R & K MURPHY ENTERPRISES LIMITED
131 R. BAKER FISHERIES LIMITED
132 R.I. SMITH LOBSTER COMPANY LIMITED
133 RBN FISHERIES LIMITED
134 RIVERPORT FISH COMPANY LIMITED
135 RODERICK MURPHY & SONS LIMITED
136 RODNEY L. O'NEIL
137 ROMEO J. POIRIER
138 ROYAL HARBOUR SEAFOODS INC.
139 RYER & RYER LOBSTERS LIMITED

140 SABLE FISH PACKERS (1988) LIMITED
141 SALT WATER FISHERIES LIMITED
142 SAMBRO FISHERIES LIMITED
143 SANDY & SONS FISHERIES LIMITED
144 SCOTIA GARDEN SEAFOOD INCORPORATED
145 SEA BROOK FISHERIES LIMITED
146 SEA CREST FISHERIES LIMITED
147 SEA STAR SEAFOODS LIMITED
148 SEABRIGHT FISHERIES LIMITED
149 SELDON MILLER FISHERIES LIMITED
150 SFT VENTURE
151 SHATFORD'S LOBSTER POUND LIMITED
152 SHIP'S LOBSTER POUND (2005) LIMITED
153 SIMPLY FRESH SEAFOODS INC.
154 SNE SEA PRODUCTS INCORPORATED
155 STEVEN D. PORTER
156 STONEY ISLAND FISHERIES LIMITED
157 STRICTLY LOBSTER LIMITED
158 SURF SEAFOODS (2009) LIMITED
159 THREE PORTS FISHERIES LIMITED
160 TOR BAY FISHERIES LIMITED
161 TRIPLE "M" SEAFOODS LIMITED
162 TRI-ROCK SEA PRODUCTS LIMITED
163 TRUE NORTH SALMON CO. LTD.
164 TWIN SEAFOOD LIMITED
165 UNAMA'KI OYSTER FARM & PROCESSING PLANT LTD.
166 US-FOUR FISHERIES LIMITED
167 VICTORIA CO-OPERATIVE FISHERIES LIMITED
168 W.C. NICKERSON FISHERIES LIMITED
169 WAYNE TURPLE

170 WEST PUBNICO SEAFOOD LTD.
171 WM. R. MURPHY FISHERIES LIMITED
172 YARMOUTH BAR FISHERIES LIMITED
173 YARMOUTH BAR LOBSTER COMPANY LIMITED

Area	VRN - Vessel	
19	100572 - SUMMER JANE	160442 - LADY ANGELE
	102320 - NOVA LADY	160527 - WHEELIN' N DEALIN'
	104977 - TWO BEGINNINGS	160540 - BENNY BOY'S
	105056 - BAY LEADER I	160576 - JASON RENE
	105120 - B & J VENTURE	160584 - FISH FULL THINKING
	105215 - BAY BOYS PRIDE	160588 - AMY & ASHLEY
	105528 - WAGMATCOOKEWEY II	160590 - FAIR-BORN
	105770 - TANYA C	160618 - KING MATTHEW
	150194 - STEVE & CYRIL	160677 - MAC BOYS
	150863 - MITCH & SISTERS	160778 - WEATHER OR KNOT
	151444 - STORM GALE	160781 - DAD'S LADS
	151642 - GRAND ETANG LADY	160797 - EMMA LIAM
	152028 - LEVI & CURTIS	160820 - K.D. PROVIDER
	152925 - A'S & J'S	160822 - JOSEPH K
	153430 - MORNING STAR VIII	160826 - JAN & GRACE
	153436 - PEA & SONS	160853 - CAM WATERS
	153826 - HIGHLAND DUTCHES II	160864 - MISTER DOG
	153861 - IRON RING	160959 - FISHERS PRICE I
	153890 - MY FAVOURITE	160978 - REEL LUCKY
	154404 - MIGHTY JAYDEN	161009 - SARAH & MATTHEW
	154466 - HIGHLAND HUNTER	161010 - WENDY HELEN
	155055 - MARY A V	161021 - L'ÉCOSSOIS
	155932 - L'OASIS VIII	161172 - MEAGAN & JULIA
	156394 - DONALD ALLISTER	161309 - NICOLE & BOYS II
	156399 - TEXAS TORNADO	161329 - JEROME C
	156443 - JAMIE & JONAH	161373 - MISS HAILEY 1
	156447 - X.S. THRUST	161385 - HIGH ISLAND SIX

	156448 - TANYA MICHELLE	161400 - HEATHER MARY III
	156481 - LE GODOUQUE	161470 - DAWN TREADER I
	156489 - LADY NICOLE I	161621 - A FRAYED KNOT 11
	156491 - SWORD DANCER 11	2237 - KEVIN AND GARY
	156493 - CRAIG & JENNA	2696 - SIMON L 11
	156498 - DOUBLE TROUBLE I	27176 - CATHY ERLENE
	156499 - HIGHLAND GIRL	3056 - AMET LIGHT
	156511 - GUY AND GLEN II	3980 - TIM & ROXANE
	156520 - VALLEY'S PRIDE	6815 - MERCADOR 11
	156526 - EDDIE & SONS	7805 - WILMA MARIE
	156529 - EVELYN J	7868 - LITTLE TIKES
	156810 - PETE'S PAIR-A-DICE	159182 - FIDDLE & BOW
	158945 - SEA LION	159190 - LAWRENCE C.
	158947 - LE MOINEAU	159210 - BUSTER'S PRIDE
	158973 - WITHOUT FEAR	159232 - HIGHLAND HURRICANE
	158987 - ALLISON & KRISTA	159245 - DOUBLE D & DAUGHTERS
	158990 - OCEAN COMMOTION '00	159265 - BRITZY GAL
	159000 - SKIPPER'S PRIDE	160268 - MARCELLA'S BUOY
	159005 - ZEPHYRUS	160310 - JACOB LEOPOLD
	159010 - STEVEN CARRISSA	160331 - DUN WISH'N
	159012 - JADE & BOYS	160386 - LE CAPROUGIEN I
	159056 - MISS BROOKLYN	159161 - MATTHEW & REILLY
	159107 - SARAH MELISSA	159174 - ISLAND VENTURE II
	159159 - GREY HOUND II	159175 - DELLA MAE

Area	VRN - Vessel
12E	100278 - TAMARA LOUISE
	12244 - MYLENE H
	12720 - LINDA GILLES
	11873 - ALBERTO (L)
	100278 - TAMARA LOUISE
Area	VRN - Vessel

12F	153436 - PEA & SONS
	160324 - BEAUFORT I
	160781 - DAD'S LADS
	161309 - NICOLE & BOYS II
	5712 - DARREN & DAPHNE
	6815 - MERCADOR 11
	8095 - GHISLAIN GUY
	8228 - CAP BLANC IV
	9436 - JANATA
	11870 - CAP ADELE
	100877 - CURTIS & MICHAEL
	101169 - GRAY DAWN I
	102684 - WESTERN WIND II
	155734 - PAULA & CONNIE III
	175700 - DIANE ROSE
	176154 - LUCKY DRAW I
	176430 - PHOENIX IX

Area	VRN - Vessel		
12	100810 - MAJESTIC BLUE	160356 - PRINCESS TANAISHA	176194 - ELIE-GINO
	101803 - MADELINOT WAR LORD	160370 - WEATHER OAR KNOT III	176200 - JASON L.
	102983 - MISS CALYPSO	160415 - MICHELLE'S MIST	176205 - MARIE PATRICIA
	104491 - REST ASSURED NO. 1	160488 - MARY & ELIZABETH	176217 - MARY DAVID
	105326 - SANBRENDORE	160530 - OVERKILL I	176226 - ENMALI
	105658 - DEMON'S TWIN	160610 - SECOND WIND 03	176228 - L'ÉTALE III
	105714 - KELLEY'S PRIDE	160615 - JÉRÉMIE J.C	176230 - THEODORE V
	107050 - SPLISH SPLASH 007	160648 - HILTON WADE	176246 - UGJIT SMAGNISG
	11013 - SERGE LUC	160672 - LADY MARGARET I	176247 - MI GWITETM 81
	11464 - G.M.C.	160677 - MAC BOYS	176253 - NEVER ENOUGH 1
	11659 - MARIE-MANON	160742 - MA BELLE II	176254 - LE BIOCK
	11708 - SIMDAN	160781 - DAD'S LADS	176257 - CAPRAL D.
	11709 - L'OCÉANIQUE	160794 - ESGENOÔPETITJ	176266 - L'OLIVIER DES MERS
	11710 - COREGONE	160796 - SUNSET SAILOR '04	176275 - MYRIAM D.

	11711 - LE NORMAND	160846 - ALLY AUSTIN	176278 - MEG & MAX
	11867 - G.C.M.P.	160923 - TJIPOGTOG	176287 - MARCO JOSEE
	12374 - HACHE III	160936 - PRINCE OF TIDES 2001	176288 - FANNY L
	12434 - NICOLE REMI	160944 - MISS TORNADO	176301 - MARC-OLIVIER
	12449 - DEAN C.R.	161002 - JESS MAN JAX 04	176322 - PHÉLYN
	12490 - ALAIN G	161008 - LANA MARIE	176342 - JEMYSIM
	12492 - LE GRAND DUC	161013 - HAVE A LITTLE FAITH	176401 - AARON ANCIL
	12523 - MARIE-BERTHE	161023 - KRISTINE & SARAH	176406 - FRANCIS GESPEC 55
	12644 - C.M.R.	161058 - VANGIE GIRL	176421 - FCMERCATOR BPC
	12886 - MICHEL C	161059 - CRAZY ORANGUTAN	17810 - POINTE-BASSE
	12887 - HELENE PIERRE	161060 - CONOR	17823 - SARAH-KAY
	137520 - GABRIEL N.	161073 - STAR OF SEA	17832 - MIGMAWEI AMSTEL
	150011 - DEN C MARTIN	161085 - THERESA DIAMOND	17872 - LE ROIS DES MERS II
	150014 - KATRENA LESLIE	161148 - RAISE N KAIN	18837 - G D NOEL
	150065 - J.B.C.	161156 - SAMANTHA & ALISHA	3565 - SHIRLINE V
	150243 - SURF KING II	161158 - DON'T PANIC YET	3609 - SOPHIE-LUCIE
	150344 - LADY DANY	161176 - JEAN LUC & ALEXANDRE"06"	5556 - LADY NICOLLE
	150349 - REJEAN N	161205 - JEAN-DENIS MARTIN	5558 - SIR WILFRED
	150354 - MARTIN BRUNO	161219 - SEACOW POND SKIPPER	5576 - PRAGA
	150455 - SERGE RENE	161231 - WATER TIGHT ALIBI 06	5581 - HARRY FRYE
	150456 - L'ÉPAULARD # 1	161285 - GOING BACK II	5585 - SERGE EMY D
	150467 - MARIO C	161324 - JASON R	5603 - JEREMY DAVE
	150579 - YVON DANIEL II	161344 - OCEAN COMMOTION 07	5624 - TONY YAN
	150635 - MYRTLE ELAINE	161366 - MISS DARALYN 2007	5625 - MARIE DINA
	150640 - PHILLIPE PIERRE	161508 - GOING FOR BROKE	5626 - BERNARD G
	150691 - WINDJAMMER	161509 - CRABIN FEVER	5639 - CARLO G
	150762 - GRAY LADY	17105 - JEAN MATHIEU	5640 - C.R.R.
	150899 - J.P.F.	17119 - L'OTARIE	5642 - KELLIE - MAX
	150945 - A J CHIASSON	17120 - POISSON D'OR	5647 - MARIE EVE
	151051 - MISS GUYLAINE	17121 - MAREE HAUTE I	5648 - REGINE DIANE
	151146 - S.J.MAGALIE	17254 - CARL-STEVENS JEAN	5651 - DONALD CHANTAL
	151347 - MISS LAMEQUE	17354 - MANON YVON	5664 - RED BANK #1
	151577 - SHEILA & EVAN	17441 - CAPE MAY	5671 - LADY SONIA

	151628 - LISE G	175075 - L'OMEGA I	5672 - PHILIPPE M.
	151913 - LADY GODIN	175141 - PELICAN	5673 - KARINE G
	152116 - GAETAN H	175148 - LADY TRACEY II	5678 - F L G
	152728 - N.A.R.C.K.	17550 - LADY JULIE	5684 - GHYSLAIN V
	152773 - CANDY STORE	175503 - CAPTAIN'S LADY II	5692 - TURMEL B
	153356 - ANGLO STAR-92	175621 - GAMBLER V	5703 - LINDA GUY
	153568 - MARTIN & SYLVIE	175692 - DANIE MARTINE	5704 - ISABELLE VI
	154017 - SEBASTIEN	175693 - RUDY L I (LE)	5716 - LISA DELPHIS M
	154433 - SOSEP	175694 - CAROLINE H. I	5718 - S.B.L.
	154983 - TIME N' TIDE	175695 - MICHEL ROBERT	5720 - L'ILE LAMEQUE II
	154994 - C.H. NOEL	175716 - BEL ESPOIR	5722 - R.M.L.
	155103 - CODY RAY	175805 - MARIE CLAUDE	5729 - JIMMY L II
	155135 - FISHERMEN THREE	175926 - MARNAGE	5733 - LADY CLAUDINE
	155781 - G.M.C. 1	175927 - KAVEN D II	5737 - MARTIN CHRISTINE
	155940 - OASAPEGEL	175954 - FRANCIS ERIC	5740 - L.E.F.
	155995 - MATHIEU MARIE-PIER	176089 - BOGUE 2000	5743 - JACQUES MARC
	156042 - MONICA LISE	176098 - L'ÉTALE NO.2	5746 - LADY SYLVIA N
	156407 - 21A19321	176101 - ALAIN YVES	5748 - LE M.A.S.
	156801 - HY - TORQ	176107 - RINA-PIERRE	5750 - AURELE-GUY
	156842 - MALPEQUE MERMAID	176151 - GUILLAUME - SAMUEL I	5751 - JULIE PATRIC
	156884 - CHOPPY WATERS	159153 - MY III SONS V	5753 - KARA-MATT
	156914 - STRAIT CROSSING	159213 - BIBIANNE MARIE II	7085 - LYNE III
	157025 - PURA VIDA	159321 - TYHAWK	7125 - SABRINA & KRISTA
	158921 - WATER WORLD II	159346 - DREAM CATCHER	7285 - PASCALE G
	158927 - JASON SYLVAIN	159366 - DAWSON'S CREEK	7391 - LORETTA C ANN
	158937 - RISKY BUSINESS 2000	160236 - THUNDERHAWK	7644 - SEA ANGEL
	158971 - A.L. ATLANTIQUE	160244 - MEGOEEG GITPO	8153 - DELVIKA
	158986 - CINDY H. III	160301 - NEW SHIP AHOY	8223 - ISAAC LANE
	158990 - OCEAN COMMOTION '00	160331 - DUN WISH'N	8225 - BRENDA CAROLINE
	159011 - LAST GASPE	160334 - MURPHY BOYS	8261 - ECHOURIE (L')
	159096 - CRASY HORSE I	8763 - STEVE L	8299 - MELTEM
	159103 - ANCESTOR	8764 - JEAN YAN	8461 - MARIE ALINE V
	159105 - MISS TRICIA LYNN	8771 - BEL ONIL	8495 - JOSEE RICHARD

	159109 - KRISTA MARIE III	8829 - LYN MARK	8506 - LILIANNE-KEVIN
	159123 - STAR WALKER	8831 - JEAN REAL	8560 - GINO L.
	159139 - SERENITY 2000	8960 - LADY CENTENNIAL	8612 - EPAULARD III (L')
		9633 - FREDERIC C	8662 - RAY L.

Appendix 8 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 recovery[40]:

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.

40 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

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.

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 system[41.]

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;

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

d. mechanisms in place to limit or close fisheries when designated catch limits are reached;

e. establishing no-take zones where appropriate.

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.