



**North Atlantic Swordfish (*Xiphias gladius*)
Canadian Pelagic Longline Fishery**

**Volume 3: Public Comment Draft Report,
Appendix 7**

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MSC reference standards:

MSC Principles and Criteria for Sustainable Fishing, Nov, 2004.
MSC Accreditation Manual Version 5, August 2005
MSC Fisheries Certification Methodology (FCM) Version 6, September 2006
MSC TAB Directives (All)
MSC Chain of Custody Certification Methodology (CoC CM) Version 6. November 2005
MSC Fisheries Assessment Methodology, Version 1, July 2008

Accredited Certification Body:

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APPENDIX 7 – SITE VISIT CONSULTATION AND SITE VISIT MEETING SUMMARIES

Appendix 7.1: Written Submission Received Prior to the Site Visit
Appendix 7.2: Site Visit Meeting Summaries

**APPENDIX 7.1 – WRITTEN SUBMISSIONS RECEIVED PRIOR TO THE
SITE VISIT**



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July 17, 2009

The Canadian Atlantic pelagic longline fishery for swordfish has applied for certification with the Marine Stewardship Council. We at the Canadian Shark Conservation Society have grave concerns over the status afforded pelagic sharks in this assessment plan and the overall consideration of this fishery as being sustainable with its current practices. It requires considerable reforms in order to meet the certification it is seeking.

Pelagic sharks in general are seriously reduced in number globally due to both directed and indirect fisheries. Three species of concern are the blue shark (*Prionace glauca*), the porbeagle shark (*Lamna nasus*), and the short fin mako (*Isurus oxyrinchus*) shark. All of these species have been listed with COSEWIC. The porbeagle is listed as endangered (COSEWIC 2004), the shortfin mako as threatened (COSEWIC 2006a), the blue as a species of special concern (COSEWIC 2006b). The IUCN have listed the porbeagle and mako as vulnerable and the blue shark as near threatened (Camhi *et al.* 2009).

The Porbeagle Shark

While the porbeagle population has crashed twice due to overfishing and is currently listed as endangered by COSEWIC (COSEWIC 2004), the government has rejected listing it on SARA based on socioeconomic reasons and the belief that the species can recover based on current management practices and forward-projecting age- and sex-structured population dynamics models as seen in Campana and Gibson (2008a).

It is unlikely however, with current fishing and reporting practices that the population will ever recover to levels which will take it off the endangered list. Despite fishing quotas (185 mt) that are said to be below that necessary to allow the species to recover the species is still not healthy. The average age of at maturity has declined due to overexploitation and in the Northwest Atlantic and faster growth rates likely due to reduced competition have been shown. However the authors state that these growth rates may be explained by other various hypotheses (Cassoff *et al.* 2007). Number of pups per litter and the duration of the life cycle have not changed however (Cassoff *et al.* 2007).

As with most shark species, the Canadian pelagic longline industry is a serious threat where the porbeagle is the fourth most common bycatch species. Unless you have observers on board these vessels to monitor the amount caught, landings will tend to be underestimated as there will be no way to monitor discards accurately. These will lead to total landed catch to be underestimated. There are obvious indicators of overexploitation for these sharks and at best, management states that sustainability “may” be possible at

best and it remains to be seen if the porbeagle population can be fished sustainably (Campana et al. 2008b).

The Blue Shark

Blue sharks have suffered a decline of 60% between 1986-2000 (Baum et al. 2003). Currently no measures are being taken to reduce the bycatch of blue sharks and this longline industry and this poses a significant risk to this species. Currently there are no limits set on the bycatch of this species. In fact, little is known about the abundance of this species and no real management plan exists.

Blue sharks are the most frequently discarded fish species by the longline fishing industry, and often exceed 100% of the catch, and mortality estimates are based at 35% (Campana et al. 2009). Discard estimates may exceed over 860,000 blue sharks and they also suffer high post-release mortality (Campana et al. 2009). A way to reduce such high mortality is to change fishing and handling practices. Handling of the sharks by the fishers would play a major role in the survival of the sharks and would likely vary depending on the presence of an observer aboard the vessel. Having 100% observer coverage aboard the vessels would likely ensure proper handling of the sharks and increase survival rates.

Campana et al (2009) also indicated, as do other studies, that hook type, hook size, soak time, fishing vessel and shark length are all major factors influencing mortality rates. J-shaped hooks produce higher mortality than circle hooks as they reduce the probability of being gut-hooked (Kerstetter and Graves 2006, Kaplan et al. 2007). Currently circle hooks are used by a majority of the industry but it is suggested that the industry move to larger hooks to significantly reduce bycatch.

The Shortfin Mako

Shortfin mako sharks are commonly caught in the pelagic longline industry. According to the 2008 ICCAT assessment, stocks have declined and that overfishing is likely occurring. Given the serious decline in both abundance and size of the shortfin mako, it should be considered as ETP regardless of the government's lack of foresight to list it under SARA. There is clearly no real management plan for this shark species and bycatch limits are not set by any biological or scientific data.

Conclusion

The technology exists to lessen the impact of the Canadian pelagic fishery for swordfish on the ecosystem. Selectivity of longline technology is already in use by other nations and should be implemented as a priority for Canada in meeting its domestic and international obligations. Better management and monitoring of the industry must be implemented to ensure that bycatch limits are set or reduced based on sound scientific data, follow the precautionary principle, and are strictly enforced.

Overall, based on the current practices of the longline sword fishing industry and the fact that the bycatch associated with the larger pelagic sharks remains a serious issue, the industry does not meet the MSC standards set out in the certification process. We feel that this fishery does not meet the MSC standard for a sustainable fishery and as such, can not support its certification.

We do recommend that the current industry along with DFO develop technology and practices the reduce or eliminate bycatch and that the industry have 100% observer coverage to closely monitor the landings and discards of the large pelagic sharks and to ensure proper handling of these sharks to ensure higher survival rates upon release.

Sincerely,

S. D. Turnbull
Executive Director
Canadian Shark Conservation Society

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July 17, 2009

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Re: Stakeholder submission for the Marine Stewardship Council's Assessment of the Northwest Atlantic Canadian Longline and Harpoon Swordfish Commercial Fisheries

Dear Ms. Park,

The Caribbean Conservation Corporation (CCC) appreciates the opportunity to provide stakeholder comments on the MSC's Assessment of the Northwest Atlantic Canadian Longline and Harpoon Swordfish Commercial Fisheries. Headquartered in Gainesville, Florida, CCC is the world's oldest sea turtle conservation and research organization. Since our founding in 1959, CCC has worked to conserve and recover populations of endangered and threatened sea turtles in the U.S., the Wider Caribbean and the Atlantic. In recent years our work has expanded to include national and international policy initiatives to reduce the incidental capture of these species in fisheries. CCC is a staunch advocate of research, technological modification, and international cooperation to reduce the significant effects of pelagic longlining on loggerhead (*Caretta caretta*) and leatherback (*Dermochelys coriacea*) turtles. In supporting efforts to maintain and restore healthy ecosystems, CCC seeks solutions to protect sea turtles which do not come at the expense of other species.

This submission focuses on the bycatch and status of loggerhead and leatherback turtles incidentally taken in the longline component of the Northwest Atlantic Canadian Longline and Harpoon Swordfish Commercial Fisheries and measures needed to reduce these levels of capture. While we do not have concerns about the harpoon component of these fisheries, we have concluded that at the present time extensive sea turtle bycatch in the longline fishery disqualify the Northwest Atlantic Canadian Longline and Harpoon Swordfish Commercial Fisheries as sustainable MSC fisheries.

Introduction

The Nova Scotia Swordfish Fishermen's Association and Swordfish Harpoon Association, with 77 license holders and 180 members, respectively, in Nova Scotia, Newfoundland, and New Brunswick, have requested the MSC to assess their swordfish (*Xiphias gladius*) fisheries. These fisheries operate inside Canada's Exclusive Economic Zone and in international waters within the ICCAT Northern Swordfish

Boundary Area north of 35° N and west of 30° West. These fisheries are managed internationally by ICCAT and domestically by the Department of Fisheries and Oceans Canada (DFO). The longline component of the fishery has 90% of the Canadian quota and lands 1,200 tons of swordfish each year while the harpoon component of the fishery lands 10% of the quota or about 130 tons.

ETP species

In this assessment, both leatherback and loggerhead turtles are addressed as ETP species although current legal protection is different for these species in Canada.

I. Loggerhead Turtle

Loggerheads in Canadian waters are currently not protected by legislation, but the Committee on the Status of Endangered Wildlife in Canada (COSEWIC) is reviewing their status.

Loggerhead turtles are categorized as at risk from extinction by the IUCN Red List of Threatened Animals (listed as “Endangered”). They are listed as threatened under the U.S. Endangered Species Act. Loggerheads are also listed on Appendix I by CITES, the Convention on International Trade in Endangered Species, and on Appendices I and II of the Convention on Migratory Species.

In the Northwest Atlantic U.S. nesting populations of loggerheads have been declining dramatically since 1998. Listed as threatened under the U.S. Endangered Species Act in 1978, the species is currently under review by the National Marine Fisheries Service and Fish and Wildlife Service for uplisting to endangered. U.S. loggerheads represent one of the world’s two large remaining nesting assemblages (the other is in Oman). In Florida, where 90% of U.S. loggerheads nest, nesting increased between 1989 and 1998 but has been declining for the last decade. This population declined 26% from 1989-2008 and 41% since 1998 (Witherington *et al.*, 2009). The nesting season currently underway in Florida is comparable to 2007, the lowest nesting year on record since systematized record keeping began in the 1980s.

These declines are occurring on the same beaches where green and leatherback nesting numbers are increasing, leading biologists to conclude loggerheads are subject to significant mortality in the marine environment (Witherington *et al.*, 2009). The 2009 Recovery Plan for the Northwest Atlantic loggerhead identifies incidental capture in fishing gear as the greatest threat to the species’ survival. Loggerheads are especially at risk as they forage in places where they are likely to interact with fisheries on the high seas and in near-shore waters. Large juveniles, which are critical to population growth, are especially at risk from high seas longline fisheries.

Loggerheads leaving their nesting beaches head into the open ocean where they associate with drifting mats of Sargassum for some period of years. As juveniles, they become pelagic foragers for 6-12 years or more before settling into near-shore benthic habitats. Important foraging areas for Northwest Atlantic loggerheads include the western Mediterranean and the Azores and emerging evidence indicates that offshore Canadian

waters provide important foraging habitat for large juveniles, subadults and perhaps even adults.

Canada's pelagic longline fleet of 35 vessels targeting swordfish and tuna has been implicated in thousands of sea turtle interactions in recent years. A recent report by Brazner and McMillan (2008) conservatively estimated the fleet caught 9,592 loggerheads between 1999 and 2006, or an average of 1,199 loggerheads each year during this period. The Canadian fleet's loggerhead bycatch appears to be increasing, with 3,368 interactions in 2006. Interaction rates of 0.75 turtles per 1,000 hooks is a very high catch per unit effort, and well in excess of bycatch in other areas. The majority of bycaught loggerheads are released alive, but estimates of post-release mortality vary and are as high as 40-50%, depending on the location and type of injury, the amount of trailing line left on the turtle, and the condition of the turtle on its release. Hooked turtles take a long time to recover; satellite telemetry suggests that minimum post-hooking mortality is at least 30% (Hays et al., 2003).

Post-hooking mortality in U.S. fisheries, which have numerous mandatory requirements to improve the turtles' chances of survival, are estimated to be 20-25% although the U.S. target net mortality for loggerheads is 17% (2004 Biological Opinion). No genetic studies have been undertaken on loggerheads captured by the Canadian pelagic longline fleet, but turtles captured in the adjacent U.S. longline fishery originate from nesting beaches in Florida, Georgia and the Carolinas and thus can be expected to be captured by the Canadian fleet as well.

Recognizing high rates of interaction are occurring in Canadian waters, the U.S. Recovery Plan for Northwest Atlantic loggerheads identifies minimizing bycatch in Canadian waters as a category '1' priority. Loggerheads in Canadian waters are currently not protected by legislation, but the Committee on the Status of Endangered Wildlife in Canada (COSEWIC) is reviewing their status. It is anticipated that loggerheads will be classified as endangered, or at least as threatened, in Canada and provided with legal protection under Schedule I of the Species at Risk Act (SARA).

Relevant MSC Performance Indicators and Scoring Guideposts for Loggerheads

PI: Outcome Status

The description of this performance indicator is that "the fishery does not pose a risk of serious or irreversible harm to ETP species and does not hinder recovery of ETP species."

As noted above, Canada's small pelagic longline fishery for swordfish and tuna captures significant numbers of loggerheads each year. The fishery has made few efforts to address this problem although numerous modifications to gear and fishing methodology have been proven successful in reducing bycatch. The extent of bycatch poses a risk of serious or irreversible harm and undermines the recovery of this species in the Northwest Atlantic, as demonstrated by nesting declines on U.S. beaches over the last decade or more. Moreover, pelagic longlining has been identified as likely the most significant source of mortality for the western North Atlantic population of loggerhead turtles (NMFS & USFWS, 2008). The Canadian pelagic longline fleet is not constrained by any

catch limits on loggerheads, and catches significantly more turtles each year than the larger U.S. fleet.

PI: Management Strategy

This performance indicator has explicit goals of preventing irreversible harm, ensuring recovery is not hindered, and minimizing mortality.

The Canadian longline fishery for swordfish has no legal or binding requirements to meet the general intent of this performance indicator.

Bycatch reduction is identified as an important need, but neither the industry nor the DFO have addressed these concerns, even after estimates of loggerhead bycatch in 2006 were identified as 3,368 turtles. Proven bycatch reduction techniques in the U.S. pelagic longline fleet, which do not reduce the capture of target species, have been ignored. Thus, the Canadian longline swordfish fishery does not meet the 60 scoring guidepost because there is no management strategy and the measures in place to reduce or minimize mortality of ETP species are inadequate. In other areas, time and area closures, larger circle hooks, bait changes significantly reduce sea turtle bycatch in longline fisheries.

Most of Canada's longline vessels carry dehookers and other handling gear to adhere to the Code of Conduct, but crews are not trained in their proper use. While mandatory training in safe handling and release techniques improves the chances of survival for the turtles which are caught, neither DFO nor the pelagic longline industry has addressed this important need.

It is clear the Canadian government and the longline industry do not have a strategy to reduce mortality. The longline fishery does not meet the 60 scoring guidepost for this performance indicator.

PI: Information /monitoring

The intent of this performance indicator is to ensure that information is collected from the fishery that is relevant to managing 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.

Available information on the incidental capture of loggerheads is based solely on low levels of observer coverage. Canadian fishermen are not obligated to report loggerhead capture, but in all likelihood self-reporting would underestimate capture, as it does for leatherback capture. In recent years levels of observer coverage have varied considerably, with coverage declining since 2002. High levels of observer coverage of 20% or more are needed for at least some period of time to determine the extent of interactions with protected species, especially in the places and at times when interactions are most prevalent, such as Georges Bank in the summer months. Another shortcoming is that no research has been undertaken on loggerheads captured in the fishery.

II. Leatherback turtle

Leatherback turtles are categorized as at risk from extinction by the IUCN Red List of Threatened Animals (listed as “Critically Endangered”). They are listed as endangered under SARA in Canada and the ESA in the USA. Leatherbacks are also listed on Appendix I by CITES, the Convention on International Trade in Endangered Species, and on Appendices I and II of the Convention on Migratory Species. The Canadian designation is based on the fact the “leatherback turtle has experienced a global decline greater than 70% over 15 years” and “in Canadian waters, incidental capture in fishing gear is a major cause of mortality”.

Relatively few data on leatherback interactions with the Canadian pelagic longline fishery for swordfish are available, but at least 170 leatherbacks are entangled or caught each year. Raw observer data submitted by Canada to NAFO on sea turtle interactions with its longline fleet in 2006 noted that 34 loggerheads and 13 leatherbacks were captured, indicating that leatherback interactions in this area were about one-third of the loggerhead interactions. Leatherbacks are most often foul-hooked or entangled in the lines and most appear to be released alive, but their post-release mortality is unknown. In the Northwest Atlantic U.S. pelagic fishery, the target net mortality goal of 13% for leatherbacks reflects the difference in severity between loggerhead and leatherback interactions in pelagic gear (loggerhead interactions have a net mortality goal of 17%).

Permits to allow incidental harm have to be issued by DFO in order for Canada’s Northwest Atlantic longline fishery to interact with endangered leatherbacks. Fishermen are required to report all leatherback interactions and “take every reasonable effort to ensure that entangled leatherback turtles be released in the least harmful manner.” However, an incidental harm permit can only be issued if all reasonable alternatives to the activity that would reduce the impact on the species have been considered and the best solution has been adopted, measures will be taken to minimize the impact of the activity on the species, and the activity will not jeopardize the survival or recovery of the species. The pelagic longline fishery for swordfish fails to meet these standard because not all reasonable alternatives have been considered and not all feasible measures have been taken.

Moreover, the Code of Conduct for Responsible Sea Turtle Handling and Mitigative Measures has little value because it is not mandatory. As noted above for loggerheads, the Canadian swordfish fishery has not been required to modify its fishing practices in any way to protect leatherbacks by adopting proven changes in gear, bait and fishing techniques. Smaller 16/0 circle hooks reduce the severity of interactions but not their frequency (Bolten et al., 2003; Watson et al., 2003, 2005).

Relevant MSC Performance Indicators and Scoring Guideposts for Leatherbacks

PI: Management Strategy

This performance indicator has explicit goals of preventing irreversible harm, ensuring recovery is not hindered, and minimizing mortality.

Without a strategy to minimize or to even reduce mortality, including requirements for gear and methodology proven to be effective in pelagic longline fisheries, such as 18/0 circle hooks, limits on the numbers of animals that can be caught, time and area closures, changes in bait, training in safe handling and release techniques, and adequate observer

coverage, the Canadian longline fishery for swordfish cannot pass the 60 scoring guidepost. Although most vessels carry equipment for the safe handling and release of sea turtles as identified in the Code of Conduct, the fleet does not meet the standards of best available practices.

Clearly, this fishery does not meet the MSC standard to minimize mortality and thus the longline component of the fishery does not meet the 60 scoring guidepost for this performance indicator.

PI: Information / monitoring

The intent of this performance indicator is to ensure that information is collected from the fishery that is relevant managing 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.

Fishermen's reports are the primary source of information used to "assess the effectiveness of recovery efforts and work cooperatively with the fishing industry to find further solutions to assist leatherback turtle recovery." But few data are available. Extrapolations based on low observer coverage estimate that ~170 interactions with leatherbacks take place each year. Not surprisingly, reported incidental capture is significantly lower.

Observer coverage of 5% or less is inadequate for making qualitative estimates of fishery related mortality of leatherbacks. It is also inadequate to support measures to manage impacts on ETP species. Thus, the monitoring of leatherbacks does not meet the 60 scoring guidepost.

Conclusions

For the numerous reasons stated above with regard to the bycatch of loggerhead and leatherback turtles, CCC urges the MSC not to approve the application of the Northwest Atlantic Canadian Longline and Harpoon Swordfish Commercial Fisheries as sustainable MSC fisheries at this time. However, we encourage DFO to set appropriate levels of bycatch and legislate best practice measures for the longline component of the Northwest Atlantic Canadian Longline and Harpoon Swordfish Commercial Fisheries in the near future so that the fisheries can reapply for MSC designation.

Sincerely,

A handwritten signature in dark ink, reading "Marydele Donnelly". The signature is fluid and cursive, with the first name "Marydele" written in a larger, more prominent script than the last name "Donnelly".

Marydele Donnelly
Director of International Policy

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MSC Stakeholder Consultation—Assessment for the North West Atlantic Canada longline and harpoon swordfish fisheries

Submitted to TAVEL Certification
Submitted by CPAWS-NS
July 24, 2009

The Canadian Parks and Wilderness Society was founded in 1963 and is Canada's pre-eminent, community-based non-profit wilderness conservation organization. Our organization is a leader in setting the agenda for wilderness conservation at the national, provincial and territorial levels. The mission of Canadian Parks and Wilderness Society-Nova Scotia Chapter (CPAWS-NS) is to keep Nova Scotia wild by protecting, conserving, and restoring biodiversity.

Thank you for providing us with the opportunity to comment on the assessment of the Canadian Atlantic pelagic longline and harpoon swordfish fishery for possible certification by Marine Stewardship Council (MSC).

CPAWS-NS is concerned about certifying the longline swordfish fishery and objects to labeling the swordfish longline industry as sustainable and ecologically sensitive to the marine ecosystem. We strongly urge TAVEL Certification to take great care in assessing the by-catch and discards data available in the fishery and the lack of current stock assessments. Please review our following concerns regarding MSC certification of the Canadian Atlantic pelagic longline and harpoon swordfish fishery.

1.Failure to Assess all Vulnerable Species as By-catch and Discards:

The greatest concern to CPAWS-NS in the longline swordfish fishery is the high level of incidental catch and discards of vulnerable species. Many of these species are classified on conservation lists as threatened, endangered, critically endangered or protected. Non-target species listed as by-catch in the swordfish fishery are as follows:

- Leatherback turtle (*Dermochelys coriacea*): Critically endangered (IUCN); Endangered (COSEWIC); Schedule I (SARA); Endangered (USFWS); Appendix I (CITES)
- Loggerhead turtle (*Caretta caretta*): Endangered (IUCN); Under review (COSEWIC); Threatened (US ESA); Appendix I (CITES); Threatened (USFWS)
- Porbeagle shark (*Lamna nasus*): Vulnerable (IUCN); Endangered (COSEWIC); under review for proposal to CITES (USFWS)
- Shortfin mako shark (*Isurus oxyrinchus*): Lower risk/near threatened (IUCN); Threatened (COSEWIC); Under review (SARA); under review for proposal to CITES (USFWS)
- Blue shark (*Prionace glauca*): Lower risk/near threatened (IUCN); Special

concern (COSEWIC)

- Northern bluefin tuna (*Thunnus thynnus*): Under assessment (COSEWIC); under review for proposal to CITES (USFWS)

CPAWS-NS is concerned that TAVEL has failed to include all endangered, threatened or protected (ETP) species affected by the swordfish longline fishery. CPAWS-NS has learned that for this assessment, only loggerhead and leatherback turtles will be evaluated as ETP species, despite listing by COSEWIC of shortfin mako shark, blue shark and porbeagle shark, all incidental by-catch in the fishery. Since 2001, the proportion of discards in the pelagic longline fishery in Nova Scotia has been approximately 50% by weight.¹ Of this, the majority of the discarded by-catch (>80%) was blue shark, while leatherback and loggerhead turtles, juvenile swordfish, and other sharks were also caught.²

CPAWS-NS refers TAVEL to the MSC guidance document which states that ETP species are those “recognized by national legislation and/or binding international agreements (e.g. CITES) to which the jurisdictions controlling the fishery under assessment are party.” The *Species At Risk Act* recognizes COSEWIC under law as the responsible authority for species classification as extinct, extirpated, endangered, threatened or of special concern. As such, excluding assessments of shortfin mako, blue and porbeagle sharks as by-catch species in the longline swordfish fishery is not in accordance with MSC guidelines and does not follow other Atlantic Canadian MSC assessments.

2. Inadequate Management Measures:

It is impossible to accurately indicate the impacts of this fishery, especially on non-targeted species, as the current management regime for the longline swordfish fishery requires only minimal observer coverage (~5%).³ A limited percentage of observer coverage results in an inadequate amount of data to accurately characterize the true levels of by-catch in this fishery. CPAWS-NS strongly believes a significant increase in observer coverage in the longline swordfish fishery must occur before it can be deemed sustainable by standards of MSC or any other sustainable seafood certification program.

At current, the Canadian pelagic longline fishery has not implemented any hook or other gear requirements to minimize by-catch of non-targeted species of sharks, juvenile swordfish or tuna species. While some voluntary measures have been implemented by the industry to reduce by-catch of sea turtles (e.g. use of circle versus J hooks, training in turtle disentanglement)³, there have been no similar measures implemented to reduce the by-catch of other non-target species. There are several mitigation measures available to reduce by-catch of non-target species including avoidance of peak areas and times of non-target species abundance, reduction of detection of baited hooks, modification of gear (e.g. leader material) or fishing practices (e.g.

^{1,2} How we fish matters: Addressing the ecological impacts of Canadian fishing gear. Ecology Action Centre, Living Oceans Society and Marine Conservation Biology Institute, 25pp.

³ Canadian Atlantic Swordfish and Other Tunas 2004-2006 Integrated Management Plan.

type of bait used, depth of sets of gear), and implementation of discard practices to ensure live animals are properly handled and released at sea.

However, without higher observer coverage, the accurate data required to assess true by-catch of non-targeted species is impossible. Thus implementing proper mitigation measures is difficult without proper information. Investigation into this management issue must be undertaken before the fishery can suitably prepare itself for any sustainable fishery certification.

3. Certification of Longline and Harpoon Practices:

CPAWS-NS supports the efforts of selective, low-impact fisheries, which maintain local economies in coastal communities. The harpoon swordfish fishery serves as a model of sustainable practice. It is our concern that MSC certification of both the harpoon and longline swordfish fishery will no longer be incentive for the longline fishery to improve, and will undermine the better management practices of the harpoon fishery. For this reason and the above stated we expect that TAVEL will agree that the longline swordfish fishery does not meet MSC qualifications and will not be certified.

Thank you for taking time to review our concerns. We look forward to your results of assessment.

Best,

Ashley Sprague
Marine Conservation Coordinator
Canadian Parks and Wilderness Society- Nova Scotia Chapter

Jennifer Spencer
Marine Conservation Assistant
Canadian Parks and Wilderness Society-Nova Scotia Chapter



David
Suzuki
Foundation



Ecology
Action
Centre

July 17, 2009

TAVEL Certification Inc.
Suite 815, 99 Wyse Road
Dartmouth, N.S., Canada
B3A 4S5

Re: Stakeholder written submission for the MSC Assessment of the Northwest Atlantic Canadian Longline and Harpoon Swordfish Commercial Fisheries

Dear Amanda Park,

Attached please find our submission for the longline Unit of Certification for the MSC assessment of the northwest Atlantic Canadian swordfish fishery. We have limited our submission to the longline Unit of Certification as we do not have any serious concerns regarding the harpoon aspect of the Canadian swordfish fishery.

Thank you for your consideration of our submission.

Sincerely,

Scott Wallace

Sustainable Fisheries Analyst
David Suzuki Foundation

Alexandra Curtis

Sustainable Fisheries Scientist
Ecology Action Centre

Rob Johnson

SeaChoice Atlantic Coordinator
Ecology Action Centre

**Written submission for the MSC Assessment of the
Northwest Atlantic Canadian Longline Swordfish Fishery**

Prepared by:

Scott Wallace, Ph.D., David Suzuki Foundation
Alexandra Curtis, Ph.D., Ecology Action Centre

July 17, 2009



David
Suzuki
Foundation

1.0 Introduction

This submission to Tavel Certification Inc. highlights our primary concerns associated with Canada's Atlantic longline fishery for swordfish. Prior to the announcement of the MSC certification process of this fishery, the David Suzuki Foundation and the Ecology Action Centre had identified the Canadian pelagic longline fishery as one requiring widespread management reforms. As part of our efforts we presented a proposal to the Department of Fisheries and Oceans (DFO) in February (Appendix 1) at the Atlantic Large Pelagics Advisory Committee (ALPAC) meeting.

Our proposal called for four main reforms:

- (1) implement scientifically defensible fishery interaction limits for sensitive species caught in Canadian Atlantic pelagic longline fisheries (including, but not limited to loggerhead and leatherback turtles, porbeagle sharks, shortfin mako, and blue sharks), taking into account the best available science on post-release mortality rates of discards;
- (2) implement 100% combined observer and electronic monitoring coverage of all pelagic longline fishing effort to characterize fishery interactions and enforce limits;
- (3) collaborate with fishermen to develop, test, and implement standardized methods for bycatch reduction and post-capture release protocols to enable more accurate and precise estimation of post-interaction mortality rates; and
- (4) develop a system allowing pelagic longline boats to make dedicated swordfish trips using harpoon or other lower-impact gear type if a fishery interactions limit is reached, and report harpoon-caught landings under the pelagic longline quota separately from longline-caught landings to provide transparency and accountability in the event of gear switching.

At present time, none of these proposed reforms have been implemented. In the following submission, we demonstrate that the current operational and management conditions of this fishery do not pass the minimum scoring guidepost on several Principle II performance indicators. The shortcomings of this fishery are all the more flagrant given the individual transferable quota (ITQ) system under which it operates. Inexplicably, the DFO has not exacted any conservation measures or increased observer coverage from the Canadian longline fishery as a measure of ownership responsibility under the ITQ system.

Due to severe species and ecosystem concerns with this fishery, and a failure on the part of the DFO to manage these impacts, the Canadian longline swordfish fishery does not meet the MSC standard as a sustainable fishery.

2.0 ETP species

Relevant Performance Indicators and Scoring Guideposts

PI 2.3.1 Outcome Status

SG 60: Known effects of the fishery are likely to be within limits of national and international requirements for protection of ETP species. Known direct effects are unlikely to create unacceptable impacts to ETP species.

PI 2.3.2 Management Strategy

SG60: 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. The measures are considered likely to work, based on plausible argument (eg general experience, theory or comparison with similar fisheries/species).

PI 2.3.3 Information / monitoring

SG 60: Information is adequate to broadly understand the impact of the fishery on ETP species. Information is adequate to support measures to manage the impacts on ETP species. Information is sufficient to qualitatively estimate the fishery related mortality of ETP species.

2.1 Loggerhead turtle (*Caretta caretta*)

The loggerhead sea turtle was listed as *threatened* under the U.S. Endangered Species Act in 1978, yet widespread declines continue among nesting populations on U.S. beaches¹ The most important U.S. nesting unit, Peninsular Florida, has experienced a decrease of 26% over the 20-year period from 1989-2008 and a 41% decline since 1998.¹ As a long-lived, late-maturing, circumglobal species that utilizes a diversity of marine and coastal habitats over the course of its life cycle, the species is threatened by numerous human impacts. Of these, incidental capture of loggerheads in fishing gear has been identified as the primary threat to the survival of this species. The high impact of fishing on loggerheads is attributable to both the scale of the threat and to its disproportionate association with late juvenile and adult stages, which are critical to population growth due to their high reproductive value and longevity in this species.^{2,3} The fishing gears responsible for the majority of loggerhead takes are longlines, gillnets, and trawls.

Adult loggerheads spend most of their time in coastal and shelf habitats, but most juvenile loggerheads are pelagic, foraging and drifting in open-ocean nursery grounds.⁴ Numerous reports of loggerheads in offshore Canadian waters suggest that this region likely provides important foraging habitat for large juveniles and possibly adults.^{5,6} The majority of known loggerhead occurrences in Canadian waters derive from observations

of loggerheads caught on pelagic longlines in the Canadian Atlantic swordfish and tuna longline fishery. A recent publication conservatively estimated the mean annual catch of loggerhead turtles in this fishery from 1999 to 2006 at 1199 per year, or 0.75 turtles per 1000 hooks. This estimate indicates a disproportionate impact by the relatively small Canadian pelagic longline fleet (ca. 35 active vessels), at nearly double the estimated annual catch in U.S. pelagic longline fisheries,⁷ and roughly 0.5% of annual global pelagic longline catch at more than four times the global average catch per effort.⁸ While the majority of loggerheads are released alive from pelagic longlines, estimates of post-release mortality vary from 1% to 85%, depending on the type of injury sustained, the amount of hook or line remaining on the animal, and the condition of the animal on release.⁹ Additional research suggests that survivors require long recovery periods before they resume normal foraging behavior, with unknown sublethal effects.¹⁰ The trend in U.S. bycatch of loggerhead turtles appears to be declining¹¹, but “the trend in Canada appears to be on the rise”.¹²

Genetic work on turtles captured in the nearby U.S. longline fishery suggests that loggerhead turtles captured in Canadian waters originate from nesting beaches along Florida, South Carolina, and North Carolina.¹³ U.S. nesting populations, in Florida and along the southeastern seaboard, account for the majority of nesting loggerheads in the Atlantic, and are thus critical to the survival of the species. The mitigation of major known sources of mortality and sublethal effects on the valuable late juvenile and adult stages of the species is paramount. The U.S. Recovery Plan for the Northwest Atlantic Population of the Loggerhead Sea Turtle (*Caretta caretta*) has identified minimizing the bycatch of loggerhead turtles in the Canadian portion of their range as a category ‘1’ priority.¹⁴

At present time, loggerhead turtles in Canadian waters are not protected by any domestic legislation. The Committee on the Status of Endangered Wildlife in Canada (COSEWIC) is in the process of reviewing the status of this species in Canada. The status of loggerhead turtles will most likely be given at least a threatened classification if not endangered in Canada. Moreover, every reptile and amphibian (n=34) classified as endangered, threatened, or special concern by COSEWIC’s Subcommittee for Reptiles and Amphibians has also been given legal protection under Schedule I of the SARA.

Mitigation Measures

The Canadian swordfish fishery has no enforceable regulations to mitigate the capture of loggerhead turtles (Table 1). The industry has developed a voluntary *Code of Conduct for Responsible Sea Turtle Handling and Mitigative Measures*. Under the pelagic longline license conditions, fishermen are required to adhere to the *Code*. The *Code* does not serve as an effective measure to minimize mortality, because every clause in the *Code* is completely discretionary, and the general language used in the *Code* lacks specific requirements to reduce turtle bycatch and mortality. Even the most basic mitigation measures for sea turtles, such as hook and bait type, are not mandatory in the Canadian fishery. There are no closed areas designated to protect loggerhead turtles. Aside from voluntary use of small circle hooks (see technical evaluation under management strategy

criterion) and a recommendation to carry handling and release gear, there are no measures in place to reduce the capture rate of loggerhead turtles.

Table 1. Fisheries management measures relevant to bycatch of sea turtles in the Canadian and the U.S. Northwest Atlantic and Hawaiian pelagic longline fisheries for swordfish.

Measure	U.S. fishery in NED area	U.S. fishery in Hawaii	Canadian fishery
Hook type	Min 18/0 circle hooks with max 10° offset	Min 18/0 circle hooks with 10° offset	Voluntary use of 16/0 circle hooks (ca. 90% of hooks)
Hook material	Corrodible non-stainless steel	Unknown	No restrictions
Bait	Whole Atlantic mackerel or squid; artificial bait only allowed with greenstick gear	Mackerel-type	No restrictions
Gangion length	If total length gangion plus float line <100m, gangions must be min 10% longer than float lines	Float lines must be ≤ 20m long; gangion length not regulated (?) but typically 15-20m long	No restrictions
Protected species handling, release, and id training	Mandatory ¹⁵	Mandatory	Voluntary
Handling and release gear	Mandatory	Mandatory	Voluntary dehooking equipment
Depth of gear	N/A	Effort controls by depth	No restrictions
Time of sets	N/A	Shallow side sets only	No restrictions
Closed areas	Several (outside of NED area) ¹⁶	Several ¹⁷	None for turtle protection
Bycatch limits	Three year Incidental Take Permit 1,905 loggerheads (17% net mortality ratio) and 1,764 leatherbacks (13.1% net mortality ratio). ¹⁸	Total fishery interactions limits of 16 leatherback, 17 loggerhead	No turtle limits.
Temperature-determined fishing areas	N/A	Voluntary guidelines	No restrictions
Observer coverage	8% target	100%	5%

2.1.1 Loggerhead Turtle and MSC Performance Indicators

PI 2.3.1 Outcome Status

The description of this performance indicator is that “the fishery does not pose a risk of serious or irreversible harm to ETP species and does not hinder recovery of ETP species.”

There are several pieces of information that indicate that the Canadian longline swordfish fishery does not meet either clause of the 60 scoring guidepost and poses a risk of serious or irreversible harm and hinders the recovery.

- Loggerhead turtle nesting populations have declined by 40% in the last decade (Recovery plan)
- Pelagic longlining has been identified as likely the most significant source of mortality for the western North Atlantic population of loggerhead turtles.
- Canada's rate of loggerhead turtle bycatch is nearly four times the global average catch per unit of effort.
- Canada has no catch limit on loggerhead turtle
- Canada's catch of loggerhead turtles is nearly double that of the adjacent U.S. pelagic longline fishery;
- Canada's bycatch rate has generally increased in recent years;
- the 2008 U.S. Recovery strategy has identified minimizing loggerhead turtle bycatch in Canadian portion of their range as a category '1' priority;
- Canada has no enforceable management measures for the protection of loggerhead turtles.

PI 2.3.2 Management Strategy

This performance indicator has explicit goals of preventing irreversible harm, ensuring recovery is not hindered, and minimizing mortality. The Canadian longline fishery for swordfish has no legal or binding requirements to meet the general intent of this performance indicator.

The Canadian longline swordfish fishery does not meet either clause of the 60 scoring guidepost for the following reasons:

- there is no management strategy;
- there are insufficient measures in place to minimize mortality
 - no bycatch limits
 - no bait restrictions
 - no depth restrictions
 - no spatial closures
 - no temporal closures
 - no temperature based regulations
 - no hook restrictions
 - no soak time restrictions
 - no incentives for changing fishing gears
- there are no national requirements, with the exception of CITES trade prohibitions, to protect loggerhead turtles;
- available data suggests an increasing trend in overall loggerhead catch;
- existing measures do not come close to meeting best practices found internationally;
- existing measures are not reducing interactions and therefore there is no plausible argument that the measures are minimizing mortality.

Most vessels carry dehooking equipment as part of their adherence to the *Code of Conduct*. While this equipment may reduce harm and mortality for turtles that have been caught, it does not minimize mortality by reducing the catch. If the Canadian swordfish longline fishery had a *strategy* to minimize mortality of loggerhead turtles, minimizing the catch rate of loggerheads would take priority.

For example, data from hook-size studies suggests that large (18/0 and 20/0) circle hooks combined with mackerel bait most significantly reduces captures of loggerheads.¹⁹ A *strategy*, at minimum would thus require mandatory hook types (18/0 or larger) and mackerel bait type. What presently exists is the voluntary transition to circle hooks resulting in ~75-90% of the fleet using the smaller 16/0 circle hooks on swordfish trips and no bait restrictions.^{20,21} The fishery management plan for the swordfish fishery states:

Due to the feeding nature of swordfish, more than 15% of the catch is attributed to foul hooking and since very few fish are foul hooked using circle hooks, there would be a significant catch reduction in this portion of the fishery if J-hooks were not used, thus the reluctance for the complete switch to circle hooks.²²

In addition to mandatory, large circle hooks, other mitigation measures used elsewhere (e.g., Hawaii) include regulations on gangion length, bycatch/interaction limits, temporal and spatial closures, and a sufficient level of observer coverage to demonstrate the effectiveness of these strategies.

The industry written *Code of Conduct for Responsible Sea Turtle Handling and Mitigative Measures* falls short of being considered a defensible strategy to legitimately protect loggerhead turtles. It is voluntary and all the language in the document clearly shows the discretionary nature of the *Code* (i.e., fishermen should...).

Lastly, swordfish can be taken by alternative gear types such as harpoon. All longline licensed vessels are also authorized to use harpoons to capture swordfish.²³ Providing incentives to shift gears and accountability for gear type declarations (e.g. electronic monitoring of gear use at sea) would further demonstrate a strategy and willingness to actually minimize mortality.

Clearly the Canadian government and the longline industry do not have a strategy to minimize mortality. Published trends in loggerhead turtle catch have shown no reduction in catch and in fact the research suggests an increasing trend.²⁴ Overall there is no plausible argument that the existing measures are sufficient to minimize mortality. The longline unit of certification does not meet the 60 scoring guidepost for this performance indicator.

PI 2.3.3 Information / monitoring

The intent of this performance indicator is to ensure that information is collected from the fishery that is relevant to managing 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.

Under the licensing conditions of the longline fishery, there is no requirement for license holders to report the capture of loggerhead turtles. All known information is from on board observer coverage. Comments on observer coverage that are common to the information/monitoring indicator for all ETP, bycatch, and retained species are provided in a separate section following species-specific comments.

As further explained in comments on observer data, this fishery fails against the scoring guidepost.

2.2 Leatherback turtle

Leatherback turtles are designated as *endangered* under Canada's Species at Risk Act. As stated in the *reason for designation*, leatherback turtle has experienced a global decline greater than 70% over 15 years and "in Canadian waters, incidental capture in fishing gear is a major cause of mortality".²⁵ Under Section 32 of SARA it is stated that, "No person shall kill, harm, harass, capture or take an individual of a wildlife species that is listed as an extirpated species, an endangered species or a threatened species". Canada's pelagic longline fishery for swordfish interacts with at least an average of 170 leatherback turtles each year.²⁶ Indications are that most leatherbacks are released alive, but the post-release mortality associated with these interactions is unknown.²⁷

In order for the Atlantic longline fishery to continue harming an endangered species, the Minister of Fisheries and Oceans, under the SARA, issues a permit to allow for incidental harm. Under this permit, fishers are required to report all leatherback interactions and must "take every reasonable effort to ensure that entangled leatherback turtles be released in the least harmful manner."

Legally, under Section 73(3) of the SARA, an incidental harm permit can only be issued if:

- a) all reasonable alternatives to the activity that would reduce the impact on the species have been considered and the best solution has been adopted;
- b) all feasible measures will be taken to minimize the impact of the activity on the species or its critical habitat or the residences of its individuals; and
- c) the activity will not jeopardize the survival or recovery of the species.

A legal challenge to the issuance of harm permits has not been brought forward, but certainly there is a case that (a) not all reasonable alternatives have been considered and (b) not all feasible measures have been taken.

Consider the Hawaiian swordfish longline fishery which has a hard annual cap of only 16 leatherback turtle interactions enforced through 100% observer coverage. The Canadian swordfish fishery does not even have bait or hook restrictions, two widely accepted mitigative measures shown to reduce the level of interaction (also see previous section on loggerhead turtles).²⁸ Other feasible measures such as spatial and temporal closures and

depth requirements for fishing gear have not been considered. Also, as described previously in this document, the *Code of Conduct for Responsible Sea Turtle Handling and Mitigative Measures* falls short of being considered a defensible strategy.

2.2.1 Leatherback Turtle and MSC Performance Indicators

PI 2.3.2 Management Strategy

This performance indicator has explicit goals of preventing irreversible harm, ensuring recovery is not hindered, and minimizing mortality. The Canadian longline fishery for swordfish has no strategy to minimize mortality and therefore does not pass the 60 scoring guidepost for the following reasons:

- there are insufficient measures in place to minimize mortality
 - no bycatch limits
 - no bait restrictions
 - no depth restrictions
 - no spatial closures
 - no temporal closures
 - no temperature based regulations
 - no hook restrictions
 - no soak time restrictions
 - no incentives for changing fishing gears
- existing measures do not come close to meeting best practices found internationally;
- existing measures are not reducing interactions and therefore there is no plausible argument that the measures are minimizing mortality.

As described under section 2.1.1, most vessels do carry dehooking equipment as part of their adherence to the Code of Conduct. While this equipment may reduce harm and mortality for turtles brought on deck, it does not minimize mortality in a general sense, it only reduces mortality of those already captured on the longline. If the Canadian swordfish longline fishery had a *strategy* to minimize mortality to leatherback turtles, it would first need to demonstrate that it was attempting to minimize the catch rate by implementing the measures found in the bullets above.

While the Canadian government and the longline industry claim to have a strategy to satisfy national requirements (in itself refutable, as shown), the strategy does not minimize mortality as required by the MSC standard. Overall there is no plausible argument that the existing measures are sufficient to minimize mortality. The longline unit of certification does not meet the 60 scoring guidepost for this performance indicator.

PI 2.3.3 Information / monitoring

The intent of this performance indicator is to ensure that information is collected from the fishery that is relevant managing 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.

The management of leatherback turtles under the Recovery Strategy and incidental harm permits rely upon the reporting of information from the fleet as the primary method to assess the effectiveness of recovery efforts.

Under the requirements of the incidental harm permits found in the license conditions, “the licence holder/operator is required to provide information regarding interactions with species at risk [leatherback turtles] while conducting fishing operations”. In preparing this submission we requested a copy of all reported leatherback records under this provision. Only 2007, 2008, and 2009 (to June) data were made available due the fact that earlier data is not stored in a format that is easy to retrieve.²⁹ Available data indicate that 31, 32, and 9 leatherbacks respectively have been encountered in 2007, 2008, and 2009 by pelagic tuna and swordfish licenses. Most of the records (77%) are reported from the “Restricted Tuna” license.

Extrapolated observer coverage from these same fleets was used to inform the Allowable Harm Assessment where it was estimated that ~170 encounters take place each year. The reported incidental capture appears to be significantly lower than what was found through the extrapolated observer data suggesting that underreporting is likely occurring.

The other source of information used to understand the impact of the fishery on leatherback turtles is the use of on board observer data. As described in the comments on observer coverage in a later section, observer coverage at present levels is insufficient for making qualitative estimates of fishery related mortality of leatherback turtles species and is inadequate to support measures to manage impacts on ETP species. The current information and monitoring system for leatherback turtles does not meet the 60 scoring guidepost.

3.0 Bycatch Species

Relevant Performance Indicators and Scoring Guideposts

PI 2.2.1 Outcome Status

SG60: Main bycatch species are likely to be within biologically based limits, or if outside such limits there are mitigation measures in place that are expected to ensure that the fishery does not hinder recovery and rebuilding. If the status is poorly known there are measures or practices in place that are expected [to] result in the fishery not causing the bycatch species to be [outside] biologically based limits or hindering recovery.

PI 2.2.2 Management Strategy

SG 60: 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 measures are considered likely to work, based on plausible argument (e.g., general experience, theory or comparison with similar fisheries/species).

PI 2.2.3 Information / monitoring

SG 60: Qualitative information is available on the amount of main bycatch species affected by the fishery. Information is adequate to broadly understand outcome status with respect to biologically based limits. Information is adequate to support measures to manage bycatch

3.1 Blue shark

Based on observer data between 2002 and 2007, about 36% of the total catch (by weight) in the longline fishery for swordfish is blue shark. Blue shark is the main bycatch species in this fishery. Approximately 600t of blue shark is discarded each year by Canada's Atlantic longline fishery,³⁰ of which 35% are thought to die either on the line or from post-release hooking mortality.³¹ This species is caught internationally by all pelagic longline fishing nations. North Atlantic catch mortality is not well characterized, but estimates range from 27,000 mt to 100,000 mt.^{32,33}

Blue shark in Canada's Atlantic waters is designated by COSEWIC as special concern. The reason for designation is that the abundance index for the entire Northwest Atlantic population has shown a decline of 60% between 1986 and 2000.³⁴ Indices of abundance in and near the Canadian waters show variable trends from no decline to 60% decline from the 1980s to early 2000s.³⁵ There is evidence for a decline in mean length in longline fisheries in Canadian waters 1986-2003.

As stated in the COSEWIC report, “the primary threat is bycatch in pelagic longline fisheries; although the threat is understood and is reversible, it is not being effectively reduced through management.”

At present time there are no management measures in Canada’s longline fishery intended to reduce the mortality of blue sharks. The recently published 2009 IUCN report, *The Conservation Status of Pelagic Sharks and Rays, Report of the IUCN Shark Specialist Group*, found that only the U.S. and New Zealand have any management for blue sharks.³⁶ There are no bycatch limits, no handling requirements, no gear configuration requirements, no bait requirement, and not even voluntary guidelines or a code of conduct.

As one of many nations engaged in pelagic longlining, Canada contributes to the high mortality of blue sharks in the North Atlantic.

3.1.1 Blue Shark and MSC Performance Indicators

PI 2.2.1 Outcome Status

This performance indicator is intended to evaluate whether a fishery poses a risk of serious or irreversible harm to the bycatch species and whether the fishery hinders recovery of depleted bycatch species.

There is considerable debate and uncertainty around the status of blue sharks in North Atlantic.³⁷ Data deficiencies throughout the North Atlantic have made stock assessment of this species problematic. Some analyses suggest that blue shark abundance is within B_{msy} but has experienced a wide spread decline over the last several decades. The fishery undoubtedly poses a risk of serious harm to blue sharks and certainly hinders their recovery.

There are no biologically based limits and no rebuilding targets. Canada’s fishery also has no mandatory measures in place to limit the bycatch of blue shark. Thus, the fishery fails to meet the 60 scoring guidepost for this species, since its status is poorly known, no biologically based limits exist, and no measures or practices are in place to minimize impact.

PI 2.2.2 Management Strategy

The intent of this performance indicator is to measure whether “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.”

Given the uncertainty about the status of blue shark, precautionary management would suggest that Canada should be managing this species using the best available science. In this case, the best available science has shown strong declines in Canadian waters and in the northwest Atlantic in general. That is why COSEWIC has designated them as *special*

concern. There is little doubt that pelagic longline fisheries in general pose a risk of serious or irreversible harm to blue shark populations.

At the very least, precautionary management of blue shark bycatch must attempt to minimize its impact on the population. There are no such provisions in the Canadian fishery. Studies have shown that circle hooks³⁸, soak time³⁹, bait type⁴⁰, and even type of leader⁴¹ can all contribute to a reduction in the catch and mortality of blue shark. No such provisions are part of Canada's management of blue shark caught by the swordfish fishery.

Furthermore, a recent study has found that the 'vessel' effect contributed the most to the survival or mortality of a hooked blue shark.⁴² What this implies is that fishing practices such as ripping the hook out of the mouth (which often rips out the jaw) and gaffing could also be managed. There are no training procedures, code of conduct, voluntary measures, or obligatory equipment to reduce handling impacts.

Given the global concern around blue shark capture in pelagic longline fleets, a responsible fishery that adopts precautionary management should at the very least attempt to minimize its impact on this species by implementing a management strategy that reduces the mortality. The Canadian longline fishery for swordfish fails against the 60 scoring guidepost for this performance indicator.

PI 2.2.3 Information / monitoring

Because blue shark comprises 36% of the catch, they are found on nearly every set. Due to the regularity and high level of blue shark catch, even the low levels of observer coverage currently existing in the fishery are sufficient to broadly characterize the fishery and to support measures, if there were some, to manage bycatch. However, they are insufficient to characterize mortality of the blue sharks, since condition at release is not recorded, so the fishery fails against the 60 scoring guidepost for this performance indicator.

4.0 Retained species

Relevant Performance Indicators and Scoring Guideposts

PI 2.1.1 Outcome Status

SG 60: Main retained species are likely to be within biologically based limits or if 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. 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.

PI 2.1.2 Management Strategy

SG 60: 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 measures are considered likely to work, based on plausible argument (eg, general experience, theory or comparison with similar fisheries/species).

PI 2.1.3 Information /monitoring

SG 60: Qualitative information is available on the amount of main retained species taken by the fishery. Information is adequate to qualitatively assess outcome status with respect to biologically based limits. Information is adequate to support measures to manage main retained species.

4.1 Shortfin mako shark

Shortfin mako are the 3rd most common incidental catch species in the pelagic longline fishery for swordfish (Table 2). Canada's pelagic longline fisheries land about 60-80 t per year.⁴³

Atlantic shortfin makos were recently the focus of a 2008 ICCAT assessment.⁴⁴ Data deficiencies make the stock assessments highly uncertain, but the 2008 assessment concluded that the North Atlantic shortfin mako stock had declined by about 50% since the 1950s and that overfishing is probably occurring. Furthermore recent biological data suggest that the productivity of shortfin mako is much lower than previously thought.⁴⁵

Shortfin mako have been designated in Canada as *threatened* by COSEWIC⁴⁶ and are presently being considered for listing under Canada's Species at Risk Act. A case was made in our earlier submission to Tavel that shortfin mako should be evaluated as an ETP species but that was rejected by the certifier as no listing decision has yet been made.

The U.S. National Marine Fisheries Service recently determined, based on “best available science”, that overfishing is occurring on shortfin mako and that the stock is approaching an overfished condition.⁴⁷ As a result of this notice, action must be taken by NMFS to end overfishing and implement conservation and management measures to rebuild affected stocks.

The IUCN has identified the U.S. as being the only country operating in the North Atlantic with any management of shortfin mako.⁴⁸ Canada’s management of sharks is found in the Canadian Atlantic Pelagic Shark Integrated Fisheries Management Plan (2002-2007). The only mention of shortfin mako management measures in the Plan states “the fishery for all other shark species, including shortfin mako, will be on a by-catch basis.”⁴⁹ With the exception of a non-restrictive and non-biologically-based catch guideline of 250 t that has existed in management plans since at least 1995⁵⁰, there are no further management strategies to reduce shortfin mako catch.

The 2006 *Assessment of the Recovery Potential of Shortfin Mako Sharks in Atlantic Canada* suggested that a catch limit of 100 t (also based on catch history, not biology) would be prudent and “as a precautionary measure, commercially-caught makos could be released alive as a measure to reduce mortality.”⁵¹ Shortfin mako are not mentioned anywhere in the license conditions for the swordfish fishery. The Integrated Fisheries Management Plan for swordfish states “Management measures pertinent to shark by-catch in the pelagic longline fishery are fully addressed under the Canadian Atlantic Shark Integrated Fisheries Management Plan - 2002-2007.” The shark IFMP, as described above, has no mandatory or biologically-based shortfin mako management measures.

Table 2. Observed catch of species (by weight) in Canada’s Atlantic longline fishery for swordfish, from 2002-2007. Note: Data qualified by trips where species sought was either “swordfish” or “swordfish and tunas, etc.”

Species	Retained (kg)	Discarded (kg)	Total (kg)	% of total catch	% discarded
Swordfish	443276	16377	459653	48.3	3.6
Blue shark	50	345343	345393	36.3	100.0
Bigeye	22951	1090	24041	2.5	4.5
Shortfin mako	17620	4381	22001	2.3	19.9
Porbeagle	12981	8920	21901	2.3	40.7
Bluefin tuna	9252	11711	20963	2.2	55.9
Leatherback turtle		12666	12666	1.3	100.0
Yellowfin tuna	9623	263	9886	1.0	2.7
Albacore tuna	7501	652	8153	0.9	8.0
Loggerhead turtle		6949	6949	0.7	100.0
Common dolphin	6460	212	6672	0.7	3.2
Ocean sunfish		2234	2234	0.2	100.0
White Marlin	508	1108	1616	0.2	68.6
Tiger shark		1195	1195	0.1	100.0
Thresher		1129	1129	0.1	100.0
Green sea turtle		1070	1070	0.1	100.0
Blue marlin	91	716	807	0.1	88.7
Longfin mako		760	760	0.1	100.0
Black Marlin		679	679	0.1	100.0
Longnose lancet fish		505	505	0.1	100.0
Pelagic stingray		500	500	0.1	100.0
Turtle sp.		375	375	0.0	100.0
Atlantic pilot whale		300	300	0.0	100.0
All others		1150	1405	0.1	81.9
Total	530313	420285	950853	100	44.2

4.1.1 Shortfin Mako and MSC Performance Indicators

PI 2.1.1 Outcome Status

As described previously, the recent ICCAT assessment and recent actions taken by the U.S. are evidence that shortfin mako are being overfished and therefore would be beyond any biologically based limits (such limits do not exist). Furthermore, there are no measures in place in the Canadian fishery that are expected to reduce Canada’s contribution to the overfishing of this population. Therefore, the Canadian longline swordfish fishery does not meet the 60 guideline for this performance indicator.

PI 2.1.2 Management Strategy

Canada presently has no active management for shortfin mako. The current management of the swordfish fishery has no disincentives to avoid shortfin mako. Instead, shortfin

mako comprise a valuable retained component of the catch managed with a non-restrictive guidelines that are set at an amount about three times the average annual landings (~80 t) and two and half times higher than the amount recommended in the mako recovery potential assessment (100 t). According to DFO personnel, DFO has unofficially adopted the 100 t guideline as a management target, but that target does not exist in any public management plan or license condition.⁵² Furthermore, it should be noted that even the 100 t limit is not biologically based. The recovery potential assessment states “[e]stimates of allowable harm could not be calculated”.⁵³ While Canada is only one of several nations impacting this species, it is evident that there have been no measures implemented to reduce the Canadian portion of the impact. The Canadian longline swordfish fishery does not meet the 60 guidepost for this performance indicator.

PI 2.1.3 Information /monitoring

There are no specific reporting requirements for shortfin mako, however, most of the catch is retained (80%, Table 2), so the landings provide a reasonable account of the total catch. The longline component of the Canadian swordfish fishery meets the first clause of this scoring guidepost. The second clause assumes that the fishery manages retained species using a biologically based limit. That is not the current situation. If a limit was to be imposed, the current information and monitoring system would be unable to qualitatively assess the outcome status and therefore this fishery would not meet the 60 scoring guidepost.

4.2 Porbeagle shark

Porbeagle shark in the northwest Atlantic are designated as *endangered* by both COSEWIC and IUCN. Porbeagle are not listed under Canada’s SARA despite the population having been reduced to approximately 12-24% of its abundance in 1961.⁵⁴

Although Canada’s own stock assessments indicate that this species has been overfished, Canada remains as the only country in the northwest Atlantic with a directed fishery on this species. Porbeagle shark are the fourth most commonly encountered bycatch species in the swordfish fishery (Table 2). Between 2002 and 2007 the average annual reported landings of porbeagle in the non-directed longline fisheries was 21 t, during this same time period the average directed landings were 139 t.⁵⁵

Aside from Bluefin tuna, porbeagle is the only non-directed catch species in the swordfish longline fishery with a catch limit based on a peer-reviewed scientific assessment and with a recovery plan. Existing limits have been set to allow for rebuilding but despite 15 years of decreasing catch limits, there are no signs of recovery.

In 2006, ICCAT called on its members to “take appropriate measures to reduce fishing mortality in fisheries targeting porbeagle (*Lamna nasus*) and North Atlantic shortfin mako sharks (*Isurus oxyrinchus*)”.⁵⁶ However this binding agreement does not apply to

Canada as the recommendation does not apply to Parties who have conducted peer-reviewed stock assessments for the species.

In June 2009, there was a joint ICCAT/ICES porbeagle assessment. The results of this meeting are not yet publicly available. Findings from this assessment may reveal new information on the stock status.

4.2.1 Porbeagle Shark and MSC Performance Indicators

PI 2.1.1 Outcome Status

Porbeagle shark caught in the Canadian longline swordfish fishery combined with directed landings are possibly but not likely (60 guidepost) within biologically based limits. The northwest Atlantic population of porbeagle sharks are the only population of pelagic shark in the world to have received a full stock assessment (IUCN report), they have come under increasing management, and many countries including Canada have imposed restrictive guidelines. However, despite nearly 15 years of ever-increasing reductions in catches there is no sign of recovery (IUCN report). The best available science suggests that even if target fisheries were stopped and further limits placed on porbeagle bycatch, it could take at least 30–60 years for this population to recover.⁵⁷ Overall, there is no evidence to suggest that current catch rates are “likely” within biologically based limits and therefore does not meet the 60 scoring guidepost.

PI 2.1.2 Management Strategy

This performance indicator requires that there are management measures in place that are highly likely to maintain the species within biologically based limits. As described above, there is no evidence that this strategy is working and therefore there is no case to be made that management measures are highly likely to be maintaining the species within biologically based limits. The longline fishery does not meet the 60 scoring guidepost.

PI 2.1.3 Information /monitoring

There are no reporting requirements for porbeagle shark catch in the swordfish fishery. Based on observer data, the discard rate is quite high (~40%) and therefore landings are not a true indicator of the actual catch. In the event that a catch limit or some other management measure was imposed upon the swordfish fleet, the current level of monitoring would be unable to qualitatively assess the outcome status and therefore this fishery would not meet the 60 scoring guidepost.

5.0 Comments on Information/Monitoring for ETP, Bycatch, and Retained Species

PI 2.1.3, 2.2.3, and 2.3.3 for all species

The intent of these performance indicators is to ensure that information is collected from the fishery that is relevant managing ETP, bycatch, and retained 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 species.

Since 1978, the pelagic longline fishery has received various levels of observer coverage. From 2000-2007, the observer coverage on swordfish trips has ranged from a low of 1% in 2007 to a high of 22% in 2002.⁵⁸ These data have been used to conservatively estimate discard levels for loggerheads, leatherbacks, blue, shortfin mako, and porbeagle. Information is thus adequate to broadly understand the impact of the fishery on ETP, bycatch, and retained species. However, low observer coverage generally provides only a partial and conservative understanding of the impacts because fishermen modify their behaviour (e.g., areas fished, treatment of bycatch, reporting of bycatch) when an observer is on board. Furthermore, the observer program does not have adequate spatial, temporal, and vessel representation. For example, in 2002, the year with the highest observer coverage, only 24 individual vessels had observers on board. In 2007, the extent of the observer coverage on swordfish directed trips was reduced to one vessel and one trip. There has been a steady decline in observer coverage since 2002 (Figure 1).

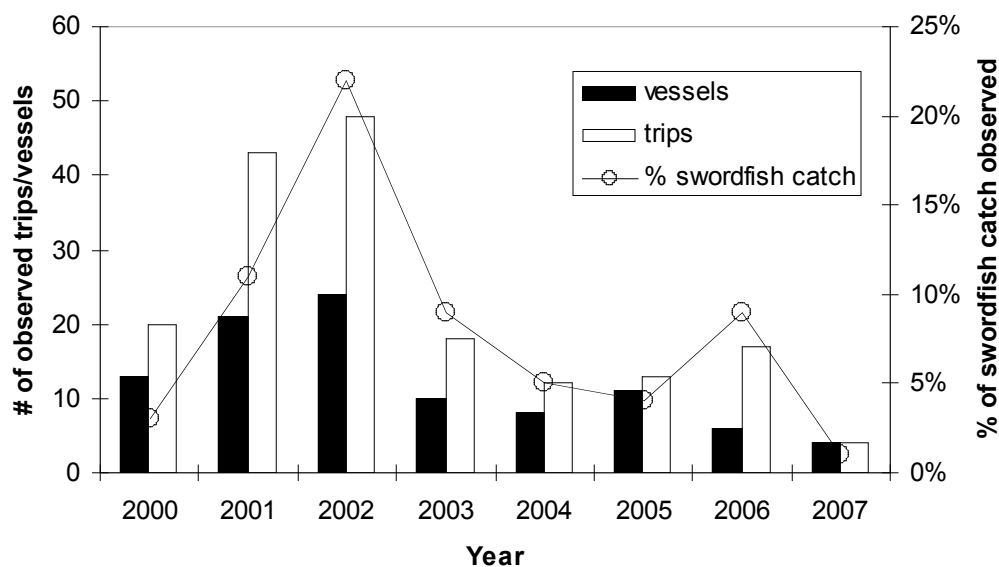


Figure 1. Observer coverage in Canada's Atlantic pelagic longline fishery between 2000 and 2007. Note: This figure includes all longline trips including those directing on tuna.

Observer coverage (spatial, temporal, and vessel) in recent years is insufficient for making qualitative estimates of fishery related mortality of ETP, retained, and bycatch species, and is inadequate to support measures to manage impacts on ETP, retained, and bycatch species. Data collected by observers is also neither sufficiently detailed to determine the likelihood of survival of animals post-release, nor to properly quantify population impacts (only weights of each species per set are routinely recorded, not

numbers of animals). Therefore this fishery fails against the performance indicators 2.1.3, 2.2.3, and 2.2.3 scoring guideposts for each species.

Observer coverage is anticipated to be increased moderately for the 2009 season (possibly to 10%). Given the spatial and temporal complexities of the fishery, the severe conservation concerns associated with this fishery, and the implicit incentives to change fishing behaviour and reporting practices when observers are not on board, an observer coverage rate of 30-100% is likely necessary to properly manage for bycatch species. High observer coverage rates or electronic monitoring systems are employed under catch share systems in the U.S. and in Canada's Pacific waters because such a system should constitute a shift of burden of proof to the fishermen that they are fishing within limits and regulations. No such measures have been required under the ITQ system of the longline fishery in Atlantic Canada.

6.0 Ecosystem Impacts

Relevant Performance Indicators and Scoring Guideposts

PI 2.5.1 Outcome Status

SG60: 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.

PI 2.5.2 Management strategy

SG60: There are measures in place, if necessary, that take into account potential impacts of the fishery on key elements of the ecosystem.

The measures are considered likely to work, based on plausible argument (eg. general experience, theory or comparison with similar fisheries/ ecosystems).

PI 2.5.3 Information / monitoring

SG60: Information is adequate to identify the key elements of the ecosystem (e.g. trophic structure and function, community composition, productivity pattern and biodiversity). Main impacts of the fishery on these key ecosystem elements can be inferred from existing information, but have not been investigated in detail.

PI 2.5.1 Outcome status

Northwest Atlantic pelagic ecosystem: structure and function

Major changes to the Northwest Atlantic pelagic ecosystem in recent decades have been well documented: changes in species composition and abundance^{59,60,61}, declines in mean trophic level of catches^{62,63}, and increases in temperature and acidity of waters due to climate change.⁶⁴ The losses of large predatory species, such as swordfish and large

pelagic sharks, continue to have significant implications for both the structure and the function of the Northwest Atlantic pelagic ecosystem.

Swordfish play an important role in the pelagic community, as a member of the apex predatory guild (billfishes, tunas and sharks).⁶⁵ This guild has been reduced in abundance by exploitation by commercial fisheries: analysis of long-term longline catch data has shown that predatory fish biomass in the region has been decreased to 10% of historical levels.⁶⁶ Targeting of particular species has led to changes of the species composition within the guild; the smaller billfishes and tuna species have increased as their predators and larger competitors have declined.^{67,68}

Swordfish are not a ‘keystone’ predator, nor is any single species in this guild known to be: diets overlap and species have similar habitat requirements.⁶⁹ Consequently, it is difficult to determine clear ecological responses to the loss of a single predatory species. Losses of apex predatory species from this guild, such as elasmobranch-consuming sharks, have been shown to have triggered trophic cascades in the Northwest Atlantic pelagic ecosystem.⁷⁰ As nearly all species captured by this fishery (Table 2) have been depleted since their historical levels and are now of conservation concern, further targeting and bycatch of these species may lead to (or have already caused) the compromised functioning of the predatory guild.

The thresholds necessary to trigger a trophic cascade are unknown for any species.⁷¹ However, we do know that the continued losses from the apex predatory guild (i.e., billfish, tuna and shark species represented in Table 2), have the potential to lead to further top-down trophic cascading effects, including mesopredator release and competitive release, with unknown cross-ecosystem consequences.⁷² Additionally, climate change-induced bottom-up trophic restructuring may come into play, and interact synergistically with top-down effects.^{73,74}

Given the changes to the community and trophic structure resulting from commercial fishing in the region, and the potential for trophic cascade with continued losses from this predatory guild, we cannot comfortably state that 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. Therefore, the Canadian longline fishery for swordfish fails the SG60 for this performance indicator.

PI 2.5.2 Management strategy

The DFO Integrated Management Plan for swordfish outlines general objectives, strategies and management measures aimed at ecosystem conservation (Section 6, *Specific Management Objectives*, Table 3A, “Conservation of the ecosystem”). However, we have found serious limitations in this Plan.

The first of the general objectives under the “Conservation of the ecosystem” section is *Maintaining community diversity by protecting benthic communities susceptible*

to disturbance. This objective is the only one that deals explicitly with community diversity, but is restricted to the benthic system: nothing in the plan protects community diversity of the pelagic system the Plan is meant to conserve. Further, the specific management measure for this objective protects only the benthos of the Gully Marine Protected Area. As swordfish and other species in the predatory pelagic group are highly migratory, it is unlikely that exclusion of longlining in this area will assist in maintenance of Northwestern Atlantic pelagic community diversity.

The second general objective is *Maintaining species diversity*. Here, the Plan attempts to reduce the chances for the loss of genetic diversity by maintaining large breeding populations, and reduce mortality for non-target species. However, no specific targets are outlined and instead ambiguous management measures are made (e.g., “Control fishing mortality”) without quantitative limits. The related third general objective, *Maintaining population diversity*, attempts to avoid the fishing of spawning groups. However, management areas are not described and instead left to the ICCAT to determine. Additionally, how ‘management’ and ‘maintenance’ of these areas will be carried out is not discussed.

The fourth general objective is *Maintaining trophic structure*. Here, there are no management measures outlined, as it notes knowledge is currently ‘insufficient’ to establish any strategies. The issue of trophic structure and potential for trophic cascade in the Northwest Atlantic pelagic ecosystem is of great concern, as outlined in sections pertaining to PI 2.5.1. It is clear that additional research and monitoring are necessary to ensure that trophic structure will in fact be maintained under exploitation by this fishery; and that the Plan is insufficient at this time.

There are no provisions in the Canadian Atlantic Swordfish Longline Licence Condition that specifically address ecosystem conservation strategies. Under the DFO’s Conservation and Sustainable Use policies, despite plans for benthic habitats and forage fishes, no policy has yet been developed for pelagic ecosystems or predatory communities.⁷⁵

The Canadian Atlantic swordfish fishery does not have measures in place that take into account potential impacts of the fishery on key elements of the ecosystem, especially for the maintenance of trophic structure, which is one of the major concerns under PI 2.5.1. Without quantitative targets and restrictions, measures are not considered likely to work, based on plausible argument. Therefore, the fishery fails to meet the SG60 requirements for this performance indicator.

PI 2.5.3 Information / monitoring

Although there is information available at a general level about changes in the Northwest Atlantic pelagic ecosystem over time, there is little that is specific to the impacts of swordfish capture in Canadian waters. As outlined in DFO’s Management Plan, the limited information gathered is species-specific for swordfish as a resource, and does not incorporate community or ecosystem-level information. Consequently, there is

inadequate knowledge of the impacts of the fishery on the ecosystem. Additionally, as outlined in the section above, knowledge of trophic structure and function are unknown, rendering DFO unable to establish strategies for their maintenance.

We do not believe that currently available information is adequate to identify key elements of the ecosystem, such as trophic structure and function; nor that main impacts of the fishery on these key ecosystem elements can be inferred from existing information. The Canadian Atlantic swordfish fishery therefore fails to meet the SG60 requirements for this performance indicator.

7.0 Final Remarks

In this submission we have evaluated the Canadian Atlantic longline swordfish fishery against various key performance indicators under Principle II of the MSC's Fisheries Assessment Methodology. This Unit of Certification does not meet the minimum scoring guidepost for several performance indicators and therefore we strongly recommend that this fishery not meet the MSC standard for a sustainable fishery.

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**Proposal to monitor and reduce interactions with
non-target species in the Canadian Atlantic pelagic
longline fishery**

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Proposal Outline

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** For the purposes of this proposal, we use the terms “bycatch” and “incidental catch” to mean both landed and discarded catch. A “fishery interaction limit” for a species is the total number of allowable interactions of any kind, including both landed and discarded animals of that species, whether alive or dead at discard. A fishery interaction limit may take into account, for example, the effects of fishery-caused mortalities on a species and the likelihood of a fishery interaction resulting in mortality.*

Fishery Overview and Conservation Concerns

The Canadian Atlantic pelagic longline fisheries have one of the highest levels of incidental catch in any Canadian fishery, with discard rates ranging from 37 - 62% of the catch by weight between 2000-20007.¹ Large pelagic species, such as swordfish and tuna, were historically fished with harpoon and rod and reel (both of which continue to be used, in a reduced capacity) prior to the introduction of pelagic longlines in the 1960s.² Both of these methods are extremely selective, with little to no impact on non-target species.³ The introduction of pelagic longlines shifted the magnitude of the bycatch and discarding of non-target species to a much larger scale, rendering the Canadian Atlantic fishery one of the more ecologically severe in Canada.

Incidental catch and discards in this fishery include numerous sensitive species that have been assessed at the global level by the International Union for Conservation of Nature (IUCN) as being at high risk of global extinction, many of whose Atlantic populations also have been or are being assessed by the Committee on the Status of Endangered Wildlife in Canada (COSEWIC) as being of special concern, threatened, or endangered in Canada (Table 1). One species regularly reported as discarded bycatch, the leatherback turtle (*Dermochelys coriacea*), is also listed as endangered under the Species at Risk Act (SARA). Despite high levels of incidental catch reported for several sensitive species^{1,4-6} and declines observed or suspected likely in several populations of the same species,^{4,5,7-9} the current integrated fisheries management plans (IFMPs) for swordfish, “other” tunas, and sharks only limit landed or discarded bycatch of some commercial non-shark species.

Post-release survival rates for individuals returned ‘alive’ are poorly understood for all of these species, but vary depending on the nature of the fishery interaction (e.g. hooking versus entanglement), severity of injury (e.g. mouth-hooked versus hooked in digestive tract), extent of gear removal prior to release, and condition of the animal upon release.¹⁰ Post-interaction survivorship of blue sharks (*Prionace glauca*) on scientific pelagic longlines off Hawaii are 95-100% of the 95% of sharks released in good condition.¹¹ In Canada, 80-90% of blue sharks are released alive,⁵ with unknown survivorship. Anywhere between 5-98% of leatherback turtles and 15-99% of loggerhead turtles (*Caretta caretta*) released alive are expected to survive depending on the factors specified above.¹⁰ Even if all animals caught incidentally were released alive, at the rates of catch estimated in the pelagic longline fisheries, the mortality rates cited above likely add up to significant negative impacts on the long-term sustainability of the populations of these species. In addition to estimated post-interaction mortality, sublethal effects of fisheries interactions may be considerable.¹⁰

Table 1. Sensitive species commonly caught incidentally in the Canadian pelagic longline fisheries.

Common name	Species	IUCN	COSEWIC
Porbeagle shark	<i>Lamna nasus</i>	Vulnerable	Endangered
Shortfin mako	<i>Isurus oxyrinchus</i>	Lower risk/near threatened	Threatened
Blue shark	<i>Prionace glauca</i>	Lower risk/near threatened	Special concern
Leatherback turtle	<i>Dermochelys coriacea</i>	Critically endangered	Endangered
Loggerhead turtle	<i>Caretta caretta</i>	Endangered	Expected April 2009
N. bluefin tuna	<i>Thunnus thynnus</i>	Data deficient	Under assessment

Methods to Reduce Incidental Catch and Discards

An effective solution to reduce the impacts of this fishery on sensitive species can be achieved through the implementation of fishery interaction limits and comprehensive observer coverage (i.e., 100% coverage). Under this type of management regime, license holders are obligated to fish within established limits for a suite of species (both target and incidental). This form of management has several advantages over traditional methods of reducing the impact on non-target species. First, fishermen are accountable for their catch. Second, a strong disincentive integrated into the management of the fishery results in innovation by fishermen to suit their fishing methods rather than top-down imposition of regulations. Third, comprehensive observer coverage provides fleet-wide accountability necessary for achieving public accountability. Fourth, comprehensive observer data can be used for a variety of scientific purposes, including characterizing the nature of fishery interactions with and increasing our understanding of the basic biology of non-target pelagic species.

Current Fisheries Management Regime

The current management system for Canada's pelagic longline swordfish fishery has minimal observer coverage (~5%) and no enforceable disincentives or limits on non-tuna sensitive species. In contrast, Canada's Pacific groundfish fishery (seven license types) has been under a system of 100% video monitoring and bycatch limits (including landings and discards) for 27 species since April of 2006. As a result of these reforms, the fishery now operates completely differently and is largely an "avoidance fishery" meaning that the fishing gear is set primarily with the goal of reducing the catch of species with low limit, as opposed to the goal of maximizing the target catch. This is a fundamental change in how the fish are accessed. Additionally, other Atlantic Canadian fisheries have much higher observer coverage and lower percentage discard rates than the pelagic longline fisheries for swordfish and tuna (e.g. Northern shrimp, >65ft).

The United States has encountered similar challenges in its pelagic longline fisheries, and has responded to them to varying degrees in different fisheries. Two particularly relevant cases are the U.S. Northwest Atlantic and the Hawaiian pelagic longline fisheries for swordfish. In both cases, either part or all of the fishery was closed in response to high rates of bycatch of legally protected leatherback and loggerhead turtles. The Northwest Atlantic fishery was closed in the Northeast Distant Region until fishing experiments showed that use of large (18/0) circle hooks resulted in the desired reduction in bycatch rates when compared to the J-hooks formerly used. The fishery was then reopened in the NED region with specific requirements for fishing gear and appropriate gear and training to handle incidentally caught turtles. The Hawaiian fishery went further and, after a complete closure of the fishery in 2001, reopened in 2004 under specific gear and training requirements, defensible limits for total fishery interactions with loggerhead and leatherback turtles, and 100 percent observer coverage to enforce these limits.

At present, the Canadian pelagic longline fishery for swordfish has no hook or other gear requirements to minimize bycatch, minimal observer coverage, and only nominal, non-restrictive guidelines for the landed bycatch of porbeagles (Table 2). Although the Canadian longline swordfish fishers voluntarily use 16/0 circle hooks in the majority of sets, a synthesis of experiments on effects of gear on bycatch levels concluded that larger circle hooks (e.g. 18/0 or 20/0) are more effective at decreasing fishery interactions with sea turtles.¹² One of the greatest advantages of a fisheries management system with enforceable fishery interaction limits is that the management of gear configuration (i.e., hooks, bait, depth of sets, gear substitution) ultimately can be delegated to the fishermen as they fish to stay within their limits.

Table 2. Fisheries management measures relevant to bycatch in the Canadian and the U.S. Northwest Atlantic and Hawaiian pelagic longline fisheries for swordfish.

Measure	U.S. fishery in NED area	U.S. fishery in Hawaii	Canadian fishery
Hook type	Min 18/0 circle hooks with max 10° offset (outside NED min 16/0 non-offset circle hooks)	Min 18/0 circle hooks with 10° offset	N/A
Hook material	Corrodible non-stainless steel	Unknown	N/A
Bait	Whole Atlantic mackerel or squid; artificial bait only allowed with greenstick gear	Mackerel-type	N/A
Gangion length	If total length gangion plus float line <100m, gangions must be min 10% longer than float lines	Float lines must be ≤ 20m long; gangion length not regulated (?) but typically 15-20m long	N/A
Protected species handling, release, and id training	Mandatory	Mandatory	voluntary
Handling and release gear	Mandatory	Mandatory	Voluntary dehooking kits
Bycatch limits	N/A	Total fishery interactions limits of 16 leatherback, 46 loggerhead	Non-restrictive guideline for landings of porbeagles
Temperature-determined fishing areas	N/A	Voluntary guidelines	N/A
Observer coverage	8% target	100%	5%

Political and Legal Context

The motivations for monitoring and addressing incidental catch in the Canadian Atlantic pelagic longline fisheries include national legislative mandate, institutional policy, international responsibilities and commitments, and economic incentive and disincentive. DFO is mandated under SARA to provide for the recovery of at-risk species, including the leatherback turtle. Action to mitigate known important sources of mortality for this species, including incidental catch in the pelagic longline fisheries, is long overdue. DFO also has committed to ecosystem based management of its fisheries, and monitoring and addressing

the levels of incidental catch in any fishery is paramount to the implementation of this policy.

At the international level, as a contracting party to the International Commission for the Conservation of Atlantic Tunas (ICCAT), Canada has agreed to resolutions calling for improved data collection on incidental catch in its Atlantic swordfish and tuna fisheries of turtles and sharks. As a member of the United Nations Fisheries and Agriculture Organization Committee on Fisheries (FAO COFI) and the United Nations General Assembly, Canada has signed onto international instruments and agreements urging:

- i. improved monitoring, assessment, and management of shark populations and fisheries (FAO International Plan of Action on Sharks, also reflected in Canada's National Plan and UNGA 62/177);
- ii. reduction of shark bycatch and bycatch mortality (UNGA 62/177);
- iii. implementation of the FAO COFI Guidelines to Reduce Sea Turtle Mortality in Fishing Operations (UNGA 60/31); and
- iv. a science-based approach to the implementation of ecosystem-based management (UNGA 61/105).

In addition to responding to these international measures, Canada would, by implementing the proposed actions outlined below, position itself as an international leader in the management of its pelagic longline fisheries, providing ammunition at the international level to gain protections for the sensitive, highly migratory species that Canada is obligated to protect and restore.

Economic incentives also may drive change in fishing practices and fisheries management. The interest by the swordfish fishing industry in obtaining Marine Stewardship Council (MSC) certification reflects the increasing emphasis at the consumer level on certifiably sustainable sources of seafood. The certification process is rigorous and requires transparency, verifiable information on fishing practices and sustainability, and regulation rather than voluntary practices. Thus, increased observer coverage and bycatch reduction measures on a fishery-wide regulatory basis may be sensible financial investments towards achieving certification.

Recent legislation and legal actions in the United States also may provide economic disincentives to a continued failure to manage the level of bycatch in the pelagic longline fisheries. Under the 2007 *Magnuson Stevens Reauthorization Act* (MSRA), the National Marine Fisheries Service (NMFS) is required to identify nations responsible for the bycatch of "protected living marine resources" for potential unilateral action to cut off imports of commercial fish and fish products. The threat of such an action under the MSRA was made more tangible and realistic by an analogous precedent set with a recent petition to NMFS for rulemaking to implement provisions on swordfish imports under the *Marine Mammal Protections Act*.

Proposed Actions

A clear necessity exists to develop a system for monitoring and managing bycatch in the Canadian Atlantic pelagic longline fishery, including a framework for incorporating existing and new information relating to the population-level effects of fisheries interactions with sensitive species. Given the tandem problems of low observer coverage and unregulated incidental catch of sensitive species in the Canadian pelagic longline fisheries, and considering the precedents set in U.S. longline fisheries and Canada's Pacific groundfish fishery to reduce, manage, and monitor incidental catch of sensitive species, we are proposing that Fisheries and Oceans Canada (DFO) :

- (1) implement scientifically defensible fishery interaction limits for sensitive species caught in Canadian Atlantic pelagic longline fisheries (including, but not limited to loggerhead and leatherback turtles, porbeagle sharks, shortfin mako, and blue sharks), taking into account the best available science on post-release mortality rates of discards;
- (2) implement 100% combined observer and electronic monitoring coverage of all pelagic longline fishing effort to characterize fishery interactions and enforce limits;
- (3) collaborate with fishermen to develop, test, and implement standardized methods for bycatch reduction and post-capture release protocols to enable more accurate and precise estimation of post-interaction mortality rates; and
- (4) develop a system allowing pelagic longline boats to make dedicated swordfish trips using harpoon or other lower-impact gear type if a fishery interactions limit is reached, and report harpoon-caught landings under the pelagic longline quota separately from longline-caught landings to provide transparency and accountability in the event of gear switching.

Additional fisheries management benefits that can be expected to accrue as a direct result of these actions include enforcement of dead bluefin tuna discard quotas, enforcement of regulations governing the landing of live versus dead incidental catch, enforcement of regulations against discards of dead incidental catch eligible to be landed, and better scientific information on both target and non-target species.

The proposed actions should be achievable over a period of about three years, and will require a suite of research and development to provide solutions appropriate to the Atlantic Canadian pelagic longline fisheries. The Ecology Action Centre and the David Suzuki Foundation are prepared to assist with identifying and soliciting funds and other resources to meet these challenges.

An initial decision at the upcoming Atlantic Large Pelagics Advisory Committee (ALPAC) meeting February 24-25 to pursue the objectives outlined above should include commitments to

- (a) a pilot project to assess the use of comprehensive observer coverage (including the application of video monitoring) and fishery interaction limits as a means of reducing the catch of sensitive species; and
- (b) increasing at-sea observer coverage to a minimum of 30% until a reformed management system requiring 100% combined observer and video monitoring coverage is established.

Timeline and Milestones for Proposed Pilot Project

Year 1

- review and selection of appropriate methods to estimate defensible fishery interaction limits for high priority species (including, at a minimum, leatherback turtles, loggerhead turtles, and porbeagle sharks)
- completion of analyses to produce fishery interaction limits for high priority species
- research and development into the adaptation of video monitoring technology to pelagic longline fisheries
- performance testing of video monitoring through comparison to simultaneously collected observer data and logbook records
- fishery-specific research and development of bycatch reduction measures (e.g. gear modifications, temperature-based guidance of fishing effort)
- development and adoption of industry standards for handling incidentally caught animals to minimize and standardize post-release mortality

Year 2

- adoption of fishery interaction limits for leatherback and loggerhead turtles and porbeagle sharks
- selection of appropriate methods to estimate defensible fishery interaction limits for other sensitive species caught incidentally in significant numbers in the Canadian Atlantic pelagic longline fisheries (including, at a minimum, blue sharks and shortfin mako sharks)
- completion of analyses to produce fishery interaction limits for other sensitive species
- implementation of video monitoring (if proven feasible and effective) on all operating Atlantic pelagic longline vessels,
- continued groundtruthing of video monitoring and logbooks based on simultaneous observer coverage
- ongoing fishery-specific research and development of bycatch reduction measures

Year 3

- adoption of bycatch limits for unaddressed sensitive species, including blue sharks and shortfin mako sharks
- determination of appropriate level of continued observer coverage for scientific and enforcement purposes based on status of video monitoring system
- ongoing fishery-specific research and development of bycatch reduction measures

Final Remarks

The technology and institutional capacity exist to make the Canadian pelagic longline fisheries much cleaner and lower in impact on the pelagic ecosystem, as well as better monitored and managed. Canada is one of the few industrial fishing nations to continue to employ the harpoon as a method of capture, and significant improvements in longline technology are being used by other fishing nations. Any further delays in instituting key measures to move in this direction would represent a failure to fulfill federal responsibility

for effective management and conservation of marine species, including those species at risk of extinction in Canadian waters as determined by COSEWIC.

In 2004, the DFO demonstrated strong leadership in reforming Canada's Pacific groundfish fisheries. At that time, the Department gave the fishing industry an ultimatum to reduce its catch of depleted rockfish species and become accountable for their catch or face the risk of being closed down. In March 2005, the Pacific groundfish industry responded to this ultimatum through the formation of the *Commercial Industry Caucus Pilot Integration Proposal*. By April 2006, over 500 groundfish boats using traps, longlines, troll gear, and trawls had become fully accountable for their catches through the use of bycatch limits and comprehensive observer coverage.

The underlying elements and principles of the *Pilot Integration Proposal* are much the same as we are proposing for the Atlantic Canadian pelagic longline fishery. In the words of British Columbia's *Commercial Industry Caucus*, "ultimately, the existence of an ecologically sustainable and economically viable fishing industry depends on the accountability of fishermen for their entire catch, improved scientific understanding of stock abundance, and monitoring of all catch" [emphasis added].

We look forward to working with the Department of Fisheries and Oceans to realize the necessary changes to Canada's Atlantic pelagic longline fishery.

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July 15, 2009

Dear Amanda Park,

Thank you for providing us with the opportunity to comment on the assessment of the Canadian Atlantic pelagic longline and harpoon swordfish fishery for possible certification by Marine Stewardship Council (MSC).

Greenpeace considers the longline fishery to be of utmost concern and strongly objects to labelling the longline fishery as sustainable in its current state. As we understand this fishery is the first pelagic longline fishery to be evaluated under the MSC, and particular care should be taken in assessing the adverse impacts to vulnerable species from high bycatch and discard rates, for which longline fisheries are known.

Unsustainability Criteria

Pelagic, longlined swordfish is found on Greenpeace's Redlist. The Redlist is a list of seafood species that come from fisheries or farming practices which are clearly the most damaging and in need of immediate attention. Species found on the Redlist have been evaluated based on scientific criteria and failed key sustainability indicators. Longlined swordfish is found on the Redlist in Canada and the USA for three key reasons:

1. Bycatch of threatened or protected species. The longline fishery has adverse impacts on populations of non-target species that are classified on domestic or international conservation lists as threatened, endangered, critically endangered or protected.

- Leatherback turtle (*Dermochelys coriacea*): Critically endangered (IUCN); Endangered (COSEWIC); Schedule I (SARA); Endangered (USFWS); Appendix I (CITES)
- Loggerhead turtle (*Caretta caretta*): Endangered (IUCN); Under review (COSEWIC); Threatened (US ESA); Appendix I (CITES); Threatened (USFWS)
- Porbeagle shark (*Lamna nasus*): Vulnerable (IUCN); Endangered (COSEWIC); under review for proposal to CITES (USFWS)

- Shortfin mako shark (*Isurus oxyrinchus*): Lower risk/near threatened (IUCN); Threatened (COSEWIC); Under review (SARA); under review for proposal to CITES (USFWS)
- Blue shark (*Prionace glauca*): Lower risk/near threatened (IUCN); Special concern (COSEWIC)
- Northern bluefin tuna (*Thunnus thynnus*): Under assessment (COSEWIC); under review for proposal to CITES (USFWS)

2. Responsible or partly responsible for ecosystem alteration through cascade effects.

Swordfish are large and ecologically significant predators in many ocean areas. Their further decline could lead to changes in marine community structures, particularly in the context of the removal of 90% of the ocean's large predatory fish that has already occurred.

3. Inadequate management measures relating to bycatch. To date, the Canadian pelagic longline fishery has not implemented any hook or other gear requirements to minimize bycatch, and there is minimal observer coverage. There are nominal, non-restrictive guidelines for landed bycatch of porbeagles, and the current integrated fisheries management plans (IFMPs) for swordfish only limit landed or discarded bycatch of certain commercial non-shark species.

Of greatest concern to Greenpeace in this fishery is the high level of incidental catch and discard of vulnerable species. While the harpoon fishery is selective, with little to no impact on non-target species, the longline fishery is one with devastating ecological implications for various ailing turtle, shark and fish populations. The capture and discard of these species, even if released alive, threatens the future health and sustainability of these populations and undermines conservation efforts, as they face cumulative negative impacts over time with continued fishery interaction. The capture of juvenile loggerheads in these longline fisheries is putting the population at risk, as their survival is critically important to population stability and growth.

Greenpeace affirms that before certification of this fishery can be considered, fishery interaction limits must be established and full at-sea compliance monitoring within these limits must be enforced, with measures put in place to eliminate the bycatch of threatened and protected species.

Failure to include Endangered, Threatened or Protected Species (ETP) species under the default assessment tree

For the purposes of this assessment, only leatherback and loggerhead turtles will be evaluated as ETP species, despite listing by COSEWIC of shortfin mako shark, blue shark and porbeagle shark, all of which are caught incidentally in the fishery. The *Species*

at Risk Act recognizes COSEWIC under law as the responsible authority for species classification as extinct, extirpated, endangered, threatened or of special concern. As such, pursuant to the MSC guidance document which states that ETP species are those that are “recognised by national legislation and/or binding international agreements (e.g. CITES) to which the jurisdictions controlling the fishery under assessment are party.”

Greenpeace urges the reconsideration by TAVEL in assessing shortfin mako, blue and porbeagle sharks as ETP species in accordance with MSC guidance and as performed by other Atlantic Canadian MSC assessments.

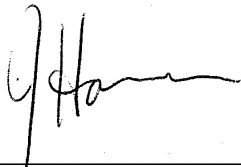
Greenpeace supports the efforts by more selective, low-impact fisheries such as the harpoon swordfish fishery that serve as models for sustainable practice. Although the gear type will be assessed separately, if this fishery is certified alongside the non-selective, destructive longline fishery, there will be no incentive for the longline fishery to improve, thus undermining better practice and current longline fishery improvement initiatives. For these reasons and those stated above, we assume TAVEL will agree that the longline component of the fishery will not meet the qualifications for certification.

Thank you very much for considering our concerns. We look forward to the results of the assessment and would be happy to discuss any of the above points with you.

Sincerely,

A handwritten signature in black ink, appearing to read "SK", written over a horizontal line.

Sarah King
Oceans campaigner
Greenpeace Canada

A handwritten signature in black ink, appearing to read "JH", written over a horizontal line.

John Hovevar
Oceans Campaign Director
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July 17, 2009

Ms. Amanda Park
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Re: Marine Stewardship Council Certification of the North West Atlantic Canada longline and harpoon swordfish fishery

Dear Ms. Park,

Turtle Island Restoration Network (TIRN) is writing to register as a stakeholder in the public process to determine whether the Northwest Atlantic Canada longline and harpoon swordfish fishery should be certified by the Marine Stewardship Council (MSC).

TIRN is also writing to oppose certification of the fishery as proposed and currently operated due to the use of longlines and the high rate of by-catch of endangered and threatened sea turtles and other marine life. This fishery should not be certified without a full investigation of the by-catch and impacts to protected species and other marine life. To even be considered for certification, the fishery must also be required to adopt strong protective measures to ensure that sea turtles and other species do not continue to be captured, harmed and/or killed on longline hooks for swordfish. With our oceans in crisis, overfishing rampant and marine ecosystems in decline, it is unthinkable that the MSC would even consider certifying as sustainable a fishery such as this one given its high take of sea turtles and other species and lack of any conservation measures.

Turtle Island Restoration Network (www.seaturtles.org) is an international organization that fights to protect endangered sea turtles in ways that make cultural and economic sense to the communities that share the beaches and waters with these gentle creatures. TIRN is a nonprofit environmental organization incorporated in California, U. S. The Sea Turtle Restoration Project (STRP), founded in 1989, is the sea turtle program of Turtle Island Restoration Network. Turtle Island Restoration Network also engages in salmon protection through the Salmon Protection and Watershed Network, based in Olema, California. With offices in California, Texas, Papua New Guinea, and Costa Rica, STRP has been leading the international fight to protect sea turtle populations worldwide. STRP views the sea turtles' dilemma not only as a single-species environmental tragedy that needs immediate attention, but also as a vehicle for shifting the paradigm of how the human species views its relationship with the natural world and the oceans.

TIRN through STRP has been advocating for the elimination of the impacts of longlining on protected species, particularly in the Pacific where leatherback populations have declined by more than 90 percent in less than a decade. Northern Pacific loggerheads have declined by more than 80 percent. Scientists have attributed the precipitous declines of leatherback and loggerhead females at all major Pacific nesting beaches to unchecked longline bycatch of these species. Sea turtles throughout the Pacific are hovering on the brink of extinction. While bycatch rates from individual longline vessels are low, the high level of longline fishing effort in the Pacific makes the cumulative bycatch of reproductively mature sea turtles a serious threat to their survival. At present, the death of even small numbers of the leatherbacks or loggerheads has serious consequences for their future survival.

As a direct result of our actions, the U. S. Pacific longline fishery for swordfish has been closed in different regions for different lengths of times due to violations of the Endangered Species Act by National Marine Fisheries Service related to excessive “take” of sea turtles and marine mammals. In response, the U. S. Pacific longline fishery for swordfish has adopted mitigation measures that have helped to reduce sea turtle take. However, even with these improvements, incidental take in the U. S. fishery of sea turtles, false killer whales, tuna, shark and other species remains a serious problem that continues to threaten their long-term survival and recovery.

With the Pacific situation in mind, we were alarmed to learn that the longline fishery in North West Atlantic Canada for tuna and swordfish “takes” an estimated 1,200 loggerhead and 170 leatherbacks a year. TIRN is very concerned that this fishery is allowed to operate without any protections for protected species. We understand that:

- there is no management strategy;
- there are insufficient measures in place to minimize mortality
 - no bait restrictions
 - no depth restrictions
 - no spatial closures
 - no temporal closures
 - no temperature based regulations
 - no hook restrictions
 - no bycatch limits
 - no soak time restrictions
 - no incentives for changing fishing gears
- there are no national requirements, with the exception of CITES trade prohibitions, to protect loggerhead turtles;
- available data suggests an increasing trend in overall loggerhead catch; and
- existing measures do not come close to meeting best practices found internationally.

Given these facts, it is quite shocking that the Marine Stewardship Council is even considering the certification of this fishery, which appears to operate with a complete lack of concern for marine biodiversity. However, on the up side, perhaps this process will provide the opportunity to reform this fishery so that it will adopt measures to protect endangered species and reduce by-batch.

Without such reform, we believe that this fishery should not be allowed to even sell its product to the United States. I am attaching for your reference a press release about our active petition to the U. S. government to ban the imports of any swordfish that does not meet the standards required under the U. S. Marine Mammal Protection Act. The full petition and related documents may be viewed at:

<http://www.seaturtles.org/article.php?id=1272>. This petition has widespread support from the conservation community, U. S. fisheries and state and federal policymakers. We expect action on this petition in the near future. We hope that this certification process will spur on reforms in the North West Atlantic Canada fishery for swordfish so that people in the U. S. may continue to choose to eat it.

Thank you so much for your consideration of our views.

Sincerely yours,



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Federal Government Considers Ban on Imported Swordfish to Protect Marine Mammals

SAN FRANCISCO — The U.S. Commerce Department announced today that it is considering banning the imports of foreign swordfish until exporting countries can provide proof that their fishing practices are equally protective of marine mammals — including whales, dolphins, and sea lions — as methods used by U.S. fishermen. Today's announcement, published in the Federal Register, comes in response to a [petition](#) filed in March by the Turtle Island Restoration Network and the Center for Biological Diversity seeking enforcement of the Marine Mammal Protection Act. [See the Federal Register Notice.](#)



The Act requires any country wishing to export fish products to the United States to provide proof that the country's fishing practices do not harm or kill marine mammals in excess of U.S. standards. Information gained from a Freedom of Information Act request has revealed that the U.S. government has ignored this mandatory duty for decades, though evidence shows that foreign fishing fleets kill hundreds of thousands of marine mammals every year. Swordfish fleets, which use gillnets and longlines, are particularly deadly to marine mammals.

"All the U.S. government has to do to save thousands of whales, dolphins, and seals each year is enforce existing law," said Mike Milne, of Turtle Island Restoration Network. "Restricting access to the U.S. market is a golden opportunity to make the global fishing fleet more sustainable."

The Marine Mammal Protection Act was designed to help ensure that U.S. fishers are not put at a competitive disadvantage from poorly-regulated foreign fleets and to put market pressure on foreign nations to improve their fishing practices to reduce impacts on marine mammals. Nevertheless, despite the fact that most swordfish is caught with fishing gear that entangles and kills marine mammals, the U.S. government has allowed the importation of swordfish from more than 40 countries without requiring any proof of impacts on marine mammals. Banning swordfish imports would also benefit endangered sea turtles that are captured and killed on longlines set to catch swordfish — a primary cause of the decline and near-extinction of the Pacific leatherback sea turtle. The U.S. is the one of the world's top importers of swordfish, bringing in more than 20 million pounds every year.

"Right now most consumers have no clue that the swordfish steak on their plate comes with a side of dead dolphins, whales, seals and sea lions," said Andrea Treece, staff attorney for the Center for Biological Diversity. "By banning imported swordfish until foreign fleets clean up their acts, the United States can lead the way in making international fisheries more sustainable and ensure that U.S. consumers aren't unintentionally harming the creatures they care about."

Domestic swordfish fishers use longlines, gillnets, and harpoons to catch swordfish. While U.S. longline and gillnet fisheries still catch significant numbers of marine mammals and other non-target

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species, regulations imposing time-area closures and requiring the use of net-extendors, acoustic deterrents, dehooking devices, and various safe-handling measures have substantially reduced marine mammal bycatch and mortality in U.S. fisheries. A harpoon fishery for swordfish in southern California has no marine mammal bycatch.

"Marine mammal populations around the globe are suffering because the shelves of the American supermarkets are filled with illegal imports of foreign swordfish," Milne added. "It's time the U.S. government followed the law and protected the American people's love of and desire for healthy marine mammal populations."

The government is accepting comments on the petition for the next 45 days.

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MSC Stakeholder Consultation Summary – Site Visit for the North West Atlantic Canada longline and harpoon swordfish fisheries

Submitted to: Tavel Certification
Date: July 17, 2009

Introduction

WWF-Canada is working to conserve biodiversity, restore ecosystem health and ensure resource use is sustainable throughout the Northwest Atlantic. Our specific priorities in the Northwest Atlantic region include cod bycatch reduction, cold-water coral protection, right whale recovery, and habitat protection.

We appreciate the opportunity to participate in the MSC evaluation process for the Northwest Atlantic Canada longline and harpoon swordfish fisheries. Our main concern with this certification is in regards to the bycatch sustained by the longline swordfish fishery. It is our hope that this MSC certification process will play a role in ensuring this and other Atlantic Canadian fisheries are assessed critically and appropriately.

WWF believes the ecosystem approach is needed to restore healthy ecosystems and sustain productive fisheries. Bycatch reduction, habitat protection and effective management are critical to the ecological sustainability of any fishery.

We are committed to and continue to work with global seafood players and all stakeholders to rebuild depleted fish populations, protect biodiversity and restore ecosystem health throughout the Northwest Atlantic.

Key Conservation Concerns

Our main concern regarding the longline swordfish fishery is in regards to the catch of sharks (bycatch and incidental take). Specifically:

1. the lack of accurate population estimates of most species taken
2. the lack of accurate estimates of the take of shark species

Endangered, Threatened or Protected (ETP), Bycatch and Retained Species

Our main focus in the assessment process deals with Principle 2, whose intent 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.**”

Pelagic longline fisheries are non-selective fisheries that take significant numbers of non-target species. Globally, they are the world's most widespread hunting activity with approximately 5 million baited hooks set each day on 100,000 miles of line throughout the world's oceans.¹ Many of the targeted and non-targeted species taken by longline fisheries are very sensitive to overexploitation. In many longline fisheries, non-target species represent a significant proportion of the catch. For example, in some longline fisheries, blue sharks comprise between 25 - 50% of the total catch.² For this reason, shark bycatch associated with longline fisheries is considered as one of

the most challenging problems to shark management.¹ The issues with longline fisheries are compounded when we consider that for many of these species taken, there are no accurate estimates of the total take or information on their current population size.

There are similar concerns in Canada about the longline swordfish fishery. This fishery needs to be better managed to line-up with best practices to reduce the catch of non-target species, particularly of sensitive species such as sharks, sea turtles, marine mammals and other large pelagic fishes (e.g. tunas and marlins). Since 2001, the proportion of discards in the pelagic longline fishery in Nova Scotia has been approximately 50% by weight.³ Of this, the majority of the discarded bycatch (>80%) was blue shark, but leatherback and loggerhead turtles, juvenile swordfish, and other sharks were also caught.³ Discards may be released alive, however, port-release mortality is not well understood for most bycatch species.^{1,3} As well, given that many of these species are also taken in other Canadian and foreign fisheries, therefore the impact cannot be assessed without taking into consideration the cumulative fishing mortality of these highly migratory species.

It is our understanding that shortfin mako, porbeagle and blue sharks will not be assessed as ETP species despite their being recognized by Canadian scientific experts and listed by COSEWIC as threatened, endangered and special concern, respectively, in Canada. The assessment team should consider the particular sensitivity and extent of the bycatch of these species (identified by MSC as 'retained' and 'bycatch' species) when scoring impacts. Of particular concern for these species is that the take limits that exist in the integrated fisheries management plans are not based on scientific advice but rather on the history of their catch in this fishery.

The observer coverage for this fishery (~5%⁴) needs to be evaluated to determine if it is sufficient and effective to assess total removal of all species. A sustainable fishery must demonstrate that it is not having adverse impacts on the ecosystem. To this end, it is imperative that there is an accurate understanding of the total removals (intentional and not) of all species taken.

Management

Principle 3 assesses the fishery in regards to its management system and one requirement is that the management system shall:

'require that assessments of the biological status of the resource and impacts of the fishery **have been and are periodically conducted**'.

The last stock assessment for Atlantic swordfish, conducted in 2006, indicated that the northern swordfish stock is nearly rebuilt to B_{MSY} although there is some uncertainty associated with this conclusion.⁵ The next stock assessment for this species is scheduled for September 2009. Since 2003, the total allowable catch of swordfish in the North Atlantic has been set by ICCAT at 14,000 t per year of which the Canadian portion (1,348 t in 2005) is allocated to the fleet according to the Canadian Atlantic Swordfish and Other Tunas Integrated Management Plan.⁴ This plan is currently outdated (most recent plan is for the period from 2004-2006) and does not address some recent issues such as the recent assessments by COSEWIC for several shark species (e.g. blue and shortfin mako sharks assessed in 2006).

It is unclear how often the impacts of this fishery, particularly on non-targeted species are assessed. The current management regime requires only minimal observer coverage (~5%), which may be less than that required to adequately characterize the true levels of bycatch in this fishery.

Principle 3 also requires that the fishery shall:

‘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); minimize mortality of this catch where it cannot be avoided, and reduce discards of what cannot be released alive.**’

While measures have been implemented voluntarily by the industry to some extent for sea turtles (e.g. use of circle versus J hooks, training in turtle disentanglement),⁴ there has been no similar measures implemented to reduce the bycatch of other non-targeted species, particularly sharks which represent a substantial portion of the bycatch in this fishery. Another aspect that has not been addressed is the possibility that the use of circle hooks to reduce sea turtle bycatch may have an adverse effect on other species (e.g. increase in the catches of sharks⁶). There are many possible mitigation measures that could be implemented to reduce bycatch of non-target species including avoidance of peak areas and periods of non-target species abundance, reduction of detection of baited hooks, modification of gear (e.g. leader material) or fishing practices (e.g. type of bait, depth of sets), and implementation of discard practices to ensure live animals are handled and released properly.²

However, without accurate information on the true levels of the bycatch it is not clearly understood what mitigation measures should be implemented in this fishery. A comprehensive investigation of this issue must be conducted and necessary mitigation measures identified and implemented.

Given the nature of this fishery to take large amounts of non-target, and particularly sensitive species such as sharks, sea turtles and cetaceans, increased precaution must be exhibited with regards to managing the impacts to non-target species, habitats and the wider ecosystem.

Again, we thank the assessment team for the opportunity to participate in the certification process for this fishery.

References

- ¹ Crowder and Myers. 2001. A comprehensive study of the ecological impacts of the worldwide pelagic longline fishery. First Annual Report to The Pew Charitable Trusts.
- ² Gillman *et al.* 2007. Shark Depredation and Unwanted Bycatch in Pelagic Longline Fisheries: Industry Practices and Attitudes, and Shark Avoidance Strategies. Western Pacific Regional Fishery Management Council, Honolulu, USA
- ³ How we fish matters: Addressing the ecological impacts of Canadian fishing gear. Ecology Action Centre, Living Oceans Society and Marine Conservation Biology Institute, 25pp.
- ⁴ Canadian Atlantic Swordfish and Other Tunas 2004-2006 Integrated Management Plan
- ⁵ International Commission for the Conservation of Atlantic Tunas. 2006. Report of the 2006 Atlantic swordfish stock assessment session. ICCAT SCRS/2006/015.
- ⁶ Ward *et al.* 2008. The effects of circle hooks on bycatch and target catches in Australia's pelagic longline fishery. *Fisheries Research* 97(3): 253-262.

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**APPENDIX 7.2 – SUMMARY OF SITE VISIT MEETINGS, JULY 21 -24,
2009.**

Northwest Atlantic Swordfish Site Visit

July 22, 2009

Longline UoC Client Meeting – Troy Atkinson, Lenwood Smith

Reference Documents: Client Submission and NSSA Code of Conduct

Principle 1

- 77 longline licences issued in Atlantic Canada – 35 active every year, up to 45 land fish in any year
- 100% of licence holders are member of the Nova Scotia Swordfishermen's Association
- Licences are 2-fold: swordfish and other tuna are permitted to be landed. 2 separate licence fees, 2 licences, but are inseparable.
- Season is 12 months – but do not fish for swordfish and tuna 12 months of the year – typically swordfish fishery will start in May/June, and in general fishery is complete in October, however a few may fish into November
- ITQ system since 2003 – 2 years prior to 2003 fishery was managed by trip limits, prior to trip limits fishery was competitive
 - ITQ development was a result of cooperation between industry and DFO. DFO needed a management mechanism to deal with quota, so they approached the Association for a solution. Harvesters proposed ITQ, following consultation by DFO and vote of industry conducted by DFO, ITQ was implemented and sharing formula was devised
 - Prior to ITQ almost all 77 vessels were active, after ITQ only 35-45 active
- Longline licence also states that other gear types can be used, including harpoon and troll
- Swordfish is managed under ITQ, other species are subject to catch limits – harvest levels of other tuna have been below defined limits, so there has been an initiative to move to ITQ
- With respect to over-allocation, there is a clause that states that the stock will not be overfished, and overages will be dealt with. The over-allocation is permitted because of the knowing under harvest by the United States
- Average set 20 miles; 980-988 hooks
- Bluefin tags are allocated to active longline vessels – tags are issued for both the Western and Central Atlantic
- To avoid discards there are inter-fleet transfers for bluefin tuna

Principle 2

- Under the Species At Risk Act harvesters are issued an incidental harm permit for leatherbacks, following the results of the RPA conducted by DFO which indicated that the catch within the longline fleet does not hinder recovery
- Association purchased equipment for the safe release of turtles for all members of the Association
 - Tools are very effective, fleet is using tools to release animals while also saving time, and money (less gear loss)
- 3 years ago there were ~170,000 circle hooks, and 70,000 J hooks used. In 2008 95% circle hooks (136,950) and 5% J-hooks (6,400) – based on sales
 - DFO can provide data out of logbooks to support this
- There has been a paper written recently by Erin Curruthers to document the success of circle vs. J hooks
 - Troy will provide copy of paper

North West Atlantic Swordfish Site Visit

July 23, 2009

World Wildlife Fund (WWF) – Aureue Cosandey-Godin, Robert Rangeley, Tonya Wimmer

Reference Documents:

- *WWF-Canada engagement in the MSC Swordfish Certification (Presentation)*

General

- Certification compliments other initiatives to ensure oceans health
- Sciences of sharks and swordfish new
 - Experience with longline fisheries
- Main concern is with the longline component
- Have had discussions with the longline association but no tangible work – mostly around the Gully.

Principle 2 Comments:

- Swordfish population – assessment is positive, and moving forward
- Within the harpoon fishery, large females are an issue
- To knowledge, there is no known research to support viability of offspring from large females being higher
- Would like to see a clearer understanding of life history and population

Principle 2 Concerns:

- Is there a true level of catch knowing with respect to bycatch, and are the impacts of the take on ecosystem known?
- Concerns with bycatch and science (or lack of) with respect to sharks
- Assessment Team Question: What is your perspective on the longline code of conduct?
 - WWF – result of NGO work with industry
 - Compliance is presumably high – observer data may provide a sense of this
- Circle hooks are important in decreasing turtle bycatch but more detrimental to sharks – catchability either same or higher – trends are also related to bait and bait/hook combo
- 2 instances of N. Bottlenose whale interactions in the fishery, not sure if specific to longline

- With the circle hook, swordfish can get away, and there are less foul catches (hook the body or tail)
- Observer Coverage
 - 5% required
 - 10% this year as part of the bycatch program
 - There is no objection to the level of coverage, however cost is an issue
 - NSSA funds observer coverage – each fisher pays an equal share, and observers are assigned randomly
- Turtles
 - Some harvesters are already recording loggerhead catch in SARA logbook, although not required
 - Dead loggerheads are very few
 - All vessels are equipped with gear to release turtles with minimal harm
 - 72 members of the fleet participated in a turtle release workshop – every active licence holder was in attendance, and there were a number of non-active harvesters participating as well
 - Concerned with the number of take estimated takes provided by DFO
 - Loggerhead are more of an issue when targeting tuna than when targeting swordfish. There is a larger overlap of tuna and loggerhead habitat than the overlap of loggerhead and swordfish habitat
- Bait
 - Tuna – squid
 - Swordfish – mostly mackerel
- Code of Conduct for safe handling of sea turtles developed by Association
 - Developed to proactively begin to address turtle issues, also wanted to get ahead of DFO, so that DFO would not later come and say 'you must'
 - Measures are voluntary, however it is thought compliance is high
 - If harvesters are known to be operating outside the code of conduct, then their membership may not be renewed
 - Without valid membership in the association harvester cannot attain additional fish, cannot transfer fish, would have to negotiate their own management plan with DFO and would have to cover the costs associated with their observer coverage
 - DFO is not enforcing the Code of Conduct, Association is responsible for enforcement. Mainly enforced by hear say and access to observer data. Observers are required to record gear type (i.e. hook type)

Principle 3

- NSSA has 2-3 meetings per year with the membership and additional Directors meetings are conducted as required
- NSSA involved in discussions with DFO on Management Plan, ALPAC, Scotia Fundy Advisory Committee
- DFO has been quite cooperative to aid in conducting science with regards to issues of concern within the fleet
- Relationship with DFO effective, and improved in the last few years
- Troy has attended ICCAT 11-12 times in the last 13 years – this aids with relationship with DFO because of increased involvement and knowledge

- NSSA has its annual meeting in January, issues then brought forward to Scotia-Fundy, and if applicable Atlantic wide, concerns will be brought forward to ALPAC from Scotia Fundy
 - Association meets before Scotia-Fundy and after ALPAC, there may be a meeting of the Association in between if necessary

North West Atlantic Swordfish Site Visit

July 21, 2009

Department of Fisheries and Oceans – Chris Annand, Steven Campana, Scott Coffen-Smout, Kerri Graham, Laura Hussey, Brian Lester, John Neilson, Bryan Wood

Principle 1

- Swordfish assessment informed by SPA, VPA considered backup
- Recommendation to look at newer stock assessment models – a demonstration of suggested models will be tabled at the next stock assessment meeting
 - Learning curve so it is not likely that it will be the main form of advice in next stock assessment (Fall 2009) – but will be gradually introduced in the future
- Not likely that the Fall 2009 assessment will vary from the previous assessment with respect to the modelling approach
- No recent recruitment information
- If it appears that the TAC will be exceeded – ICCAT has provision to change what was allocated to countries from the United States to stay within the defined TAC
- Rebuilding plan defined B_{MSY} as target by ICCAT
- Discussion of F_{MSY} identified by ICCAT
- Assessment for swordfish every 3-4 years – management plan sets consistent catch for years between stock assessments
 - Annual meetings of SCRS and species working group conducted to examine data submitted regarding information on fishery catch rates (US, Canada and Spain). Trends in catch rates are examined to determine if change is required
 - No specific criteria to implement change but if it is agreed that change is required, it would be transferred to the Commission
- Tolerance for undersized swordfish
 - 100% DMP so good compliance with size – landing of small fish is more of a problem further south, but not in this fleet
- Observer coverage
 - 5% of seadays could represent a larger percent of the catch. For example 2008 – 4.4% of days, but 7-8% of the catch
 - Fleet pays for observer coverage
 - Harvesters have to take observer if told
 - Observer coverage is issue driven (applied where required), not blanket coverage
 - Longline sector has been subject to 100% DMP since the mid-1990s
- Harvesters are required to complete a logbook every trip and to hail in/out every trip
- ICCAT has tried to rank fisheries with respect to data availability and the level of understanding of catch, stock size, etc – swordfish is on the top of the list
- Discard information from other fisheries/sources is included in the assessment
 - Discards in Canada and the United States are insignificant
- A lot of effort is taken at ICCAT to ensure catch is accurate

Principle 2

- Birds
 - Birds are not a significant concern within the fleet, due in part to the time of day which gear is set
 - Very few reports of interactions with birds in the observer data

- There is a report on the level of bird bycatch available, and will be provided as follow-up to the site visit
 - For bird populations which are interacted with there are no concerns of population status
 - Seabird Plan of Action in place
- Circle hooks have been used by the fleet to minimize impact on sensitive marine species (i.e. turtles)
 - Harvesters are required to record hook type in log book, as well the observer records hook type
 - DFO to provide hook type data
 - The use of circle hooks is voluntary not mandatory, but is included in the Code of Conduct which is mandated under the Conditions of Licence
- Under SARA, harvesters are required to complete SARA logbooks, reporting type of interaction, location, species, and fate of individual
- SARA requires that all SARA listed species are returned to the water with the least amount of harm, there is a prohibition on the capture and retention of animals listed under SARA
- There are a large number of interactions with blue sharks within the fleet, in some instances more blue sharks caught than target species. Recent research on the estimates of mortality of hooked blue shark indicates that 20% that are alive when released die. Estimated 13% dead at time of capture, and 35% die at some point in the process (this may vary by 5%)
 - Blue shark population status is unsure – catch rate trends are contradictory, there has been 2 assessments of blue shark conducted by ICCAT, however the result of neither assessment was good
- Assessment Team Question: What are the limits on bycatch?
 - Shortfin – 100t and encouraged to release alive ones. This is a guideline, but has never been reached. In recent years 60-70t retained
 - Porbeagle – 185t total for both the directed fishery and what is caught as bycatch.
 - 50t allocated to the longline and groundfish fisheries to cover bycatch.
 - If exceeded fishery shut down
 - All tunas subject to ICCAT quotas
 - Challenge for some shark species is there are no defined reference points, so to define a number of appropriate interactions would be difficult
- Loggerhead turtles are on the COSEWIC assessment schedule
 - DFO working on loggerhead RPA
- Loggerhead have a strong association with warmer water, so more interaction within the tuna targeted trips than swordfish targeted trips
- DFO is examining the level of observer data, precision of data, and what is going to be acceptable. Recently the fleet has been evolving more toward a multi-species tropical tuna fishery which may require changes in observer coverage level/distribution
- Area closures
 - Bluefin Exclusion Zone -
 - “Hell Hole” – implemented to decrease bluefin bycatch
 - Gulley MPA – developed to provide protection to bottlenose whale and probeagle
 - Swordfish Broodstock Closure – implemented to aid in limiting harvest in areas of large concentrations of females
 - At this point in time the information available on turtle interactions is not sufficient to determine areas of heavy interactions or if it is a problem

Principle 3

- DFO is responsible Canadian body for the implementation of measures defined by ICCAT with respect to management of tuna and tuna like species
- Formulating a position in Canada with respect to advice of ICCAT involves discussion with the industry. Prior to ICCAT Canada meets a couple of times to review recommendations, set goals, examine SCRS report and conducts discussions with industry and the province to formulate position
- Following ICCAT's decision on TAC, which is a multi-year TAC set for 2-3 years, the Canadian delegation returns with quota and recommendations on management
- Implementation of ICCAT measures involves:
 - January – Department holds internal meetings to conduct post season review, includes science, C&P, economics, Oceans and examines what new measures are required to be addressed with regards to ICCAT
 - February – ALPAC examines changes at ICCAT and provides recommendations of the Advisory Committee to the Minister
 - Minister and fleet finalizes Conservation Harvest Plan (CHP) for each sector and addresses changes discussed at ALPAC
- Canada has not been in a position to set TAC higher than what ICCAT sets. There is an objection procedure in place, however, Canada has taken the position to follow advice
- Evidence that ICCAT's approach is precautionary in that the stock has been rebuilt. Canadian position at ICCAT has been to take the precautionary approach, will suggest TAC changes reflective of changes in stock assessment.
 - Quota adjustment rules – move TAC with trends in biomass is part of the Canadian position this year
- Assessment Team Question: Stock assessment indicates 50% probability at MSY, any consideration that this probability should be more cautious?
 - Response: examine of increased probability in bluefin, trend to move that way – however, TAC decision rule with respect to quota will encourage it
 - Canada's position is to wait to see what science recommends prior to recommending moving to 75%
- With respect to the carryover of quota, DFO is working with other countries to develop an approach to deal with the issue. Within the Allocation Plan there is a statement dealing with carry over – Point 3 indicates that if TAC looks to be exceeded, there will be a reduction in quota the following year
- The view in Canada is that 100% carryovers should not exist as they do currently. There is an upcoming recommendation to decrease carry over as stock declines, therefore linking carry over to biomass, science and uncertainty
- Assessment Team Question: What happens with 40% overage in the harpoon fleet?
 - 40% overage decided because historically the harpoon sector experienced years of good and bad catches (some years catch really good and easy to catch, with other years catch being low) – so it was decided to cover off years of low catches, the quota could be exceeded in good years. Overage was covered off by fish left in the water by the longline fleet
 - However, in recent years the harpoon fleet has experienced a run of several good years, with increased landings, but overages still occurring

- Since 2003 there has been no Canadian quota overage because the ITQ fleet has not caught their quota
 - If it appeared that the harpoon fleet was going to exceed quota, and the longline sector was going to harvest their entire quota, there would be a discussion with the fleet to determine solution. Catches are carefully monitored through daily hauls
 - In 2000, 2001, 2003 the Canadian quota was exceeded, which led to the move to ITQ within the longline fleet
- Monitoring
 - Daily reports from harpoon harvesters
 - Trip reports from longline sector (all 100% DMP)
 - Legal mechanism to make adjustments – can close 1 person in longline to deal with the ‘bad seed’ or could close the whole fleet
- In the last 5 years the Minister has always followed ICCAT decisions, with no measures in place being contrary to ICCAT advice, in fact in some instances the Minister may require more than ICCAT (i.e. ICCAT recommended all vessels greater than 24m have VMS, DFO required that all vessels are equipped with VMS)
- Meeting minutes from ALPAC are available and include recommendations to the Minister. Industry is understanding if decision put forward is contrary to what industry proposed, however, they do want their opinion included
- Stakeholders have a clear input into the management decision making process through ALPAC
- Currently there is no requirement for the Minister to rationalize why a decision was made, however this may be a requirement under the new Fisheries Act
- Assessment Team Question: Has ICCAT given any consideration to MSE style evaluation?
 - Has not received a lot of attention at ICCAT with regards to swordfish
 - Has with respect to bluefin
- Objectives of Eastern Scotian Shelf Integrated Management (ESSIM)
 - Fishing industry plan that will address issues of fishery with ESSIM objectives
 - Each industry will develop an action plan to illustrate how they meet the ESSIM objectives - this has been presented at the industry roundtable and approved – will be presented to Scotian Shelf Advisory Committee
 - Under IFMP there is work to tie ESSIM objectives to fishery objectives
 - Framework put together how they will be incorporated in fisheries management is in the early stages of development
 - There is a 3 year work plan on how/when fisheries will be brought in line with the objectives
- Current IFMP rolled over since 2006
 - IFMP not updated because of the new template and consideration of Fisheries Renewal
 - Annual CHPs outline changes in management
- Enforcement/Compliance
 - Small fishery relative to other Atlantic Canadian fisheries (50/60 vessels compared to thousands of lobster vessels), so coverage is proportionate
 - 140 fisheries officers in region
 - Nature of fishery is concentrated in the west
 - Hope to have new patrol vessels in 5 years, currently at sea presence is done in cooperation with the Coast Guard

- Other surveillance activities include: longline VMS requirement, hail in/hail out requirements, 100% DMP, C&P holds authority to make standards with respect to observer performance, Aerial surveillance (5-6/week), and at-sea boardings
- 5% at sea observer coverage required, but there have been several years with increased coverage (2001 and 2002)
- Performance Review
 - IFMP states performance review is required (copy of review provided during site visit)
 - In January the pelagic working group meets to discuss IFMP objectives and to determine if objectives have been met – results are circulated at ALPAC
 - With the new IFMP template there will be more specific guidance on the review process and how often the review is conducted
- Research Plan
 - Each year at ALPAC there is a review of research that was conducted in the previous year, as well upcoming research is identified and discussed
 - There has been an increase in science program staff from 2 to 4, which will aid in attaining research goals
 - In the past the “lions share” of research time has been spent on bluefin tuna as compared to swordfish (60/40-70/30 split)



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WWF-Canada engagement in the MSC Swordfish certification

WWF-Canada
July 23, 2009



WWF

Who are we?

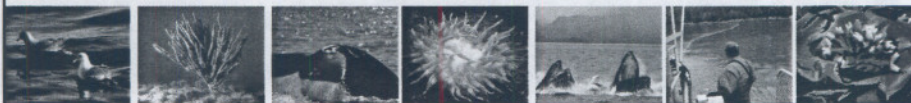
The Global Conservation Organization (panda.org)

WWF-Canada (wwf.ca)

Mission:

- Healthy Seafood
- Stable Fisheries
- Abundant wildlife
- Vibrant coastal communities

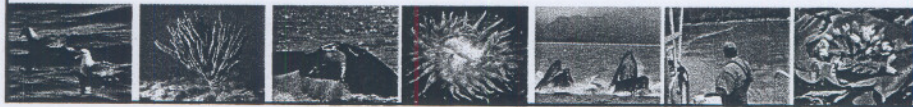
Healthy, biologically diverse and resilient ecosystems that are best suited to climate change impacts on Canada's oceans





Our Approach

- Advocacy: influencing decision-making in the interests of conservation
- Politically non-partisan and non-ideological
- We support or work with anyone who shares our conservation mission
- Cooperative approaches first and informed by local perspectives
- Evidence based conservation using science



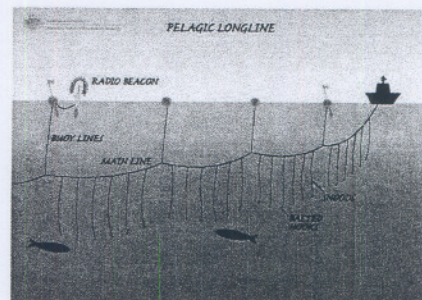
Global longline fisheries

- Most extensive fishery
- Target: swordfish, tuna, other tunas
- Non-selective technique
 - Catch of many non-target > target species
 - Many not be economically sound

Canadian swordfish fishery

WWF Concern:

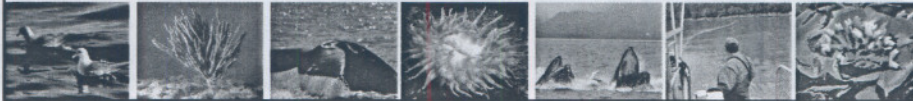
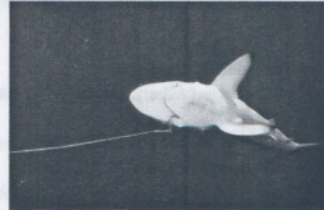
- Longline component of certification
- Bycatch of non-target species





Bycatch in longline fisheries

- Discarded and retained catch of non-target species
- Species taken:
 - Sharks
 - Sea turtles
 - Marine mammals, seabirds, tuna, marlins
- Impacts:
 - On non-target species
 - Is take allowed?
 - Are there catch limits? Are they biologically-based?
 - Are they inclusive of total level of catch (i.e. from other fisheries, post-hooking mortality etc.)
 - To the ecosystem (integrity, balance, cascading impacts, connectivity etc.)



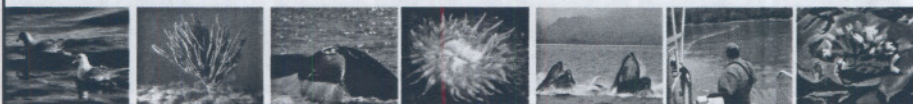
Certification Principles & Criteria

Principle 2: *management of fisheries designed to assess and restrain the impacts of the fishery on the ecosystem*

- Maintains natural functional relationships and should not lead to trophic cascades or ecosystem state changes
- Conducted in a manner to avoid or minimize mortality of, or injuries to ETP species
- Where exploited species are depleted, fishery conducted to allow recovery and rebuilding to occur

Types of species assessed:

- Retained : shortfin mako & porbeagle sharks
- Bycatch : blue shark
- ETP : leatherback and loggerhead seaturtles





Principle 2: Retained Species – Shortfin Mako

Issues:

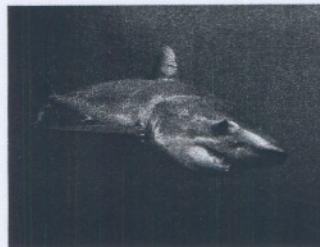
- COSEWIC: Threatened (2006)
- IUCN: overfishing likely occurring
- Population abundance and trajectory unknown; productivity likely low

Fisheries interactions:

- No directed fishery; landed as by-catch
- Highly valuable
- Majority of mako bycatch in Maritimes Region from pelagic longline (~73.2% in 2004-06)
- Average landings is 60-80t in Canadian longline fishery
- ~80% of the bycatch is retained

Management measures:

- No management measures; Non-restrictive guidelines of 250 t
- Recovery Assessment Potential (RAP) suggests 100t limit, however, this is not in current Fisheries Management Plan
 - Neither limits are biologically-based



Issue = Uncertainty

- Population abundance
- Post-hooking mortality
- No limitations (or not biologically-based)



Principle 2: Retained Species – Porbeagle

Issues:

- COSEWIC: Endangered (2004)
- IUCN: overfished
- Population assessment: reduced to ~11% 1961 virgin biomass

Fisheries interactions:

- Fishery: History of multiple collapses over short time frame
- Highly valuable
- Average take is 50-60t in Canadian fisheries (other than directed)
- ~ 40% discarded (live and dead)
- No post-hooking mortality estimate (not included in landings)
- Foreign take could be major factor

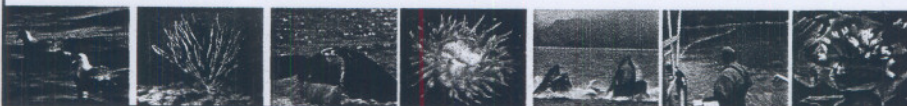
Management measures:

- 185t TAC: directed fishery (135t); by-catch (50t)
- Catch limit based on peer-reviewed scientific assessment



Issue = Uncertainty

- Total removals
- Post-hooking mortality





Principle 2: Retained Species – Blue shark

Issues:

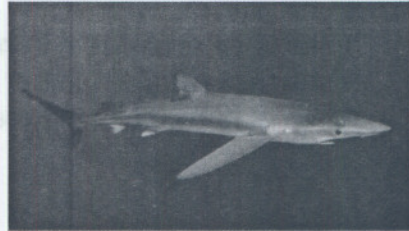
- COSEWIC: Special Concern (2006)
- IUCN: overfished
- Possibly abundance inconclusive: data deficiencies

Fisheries interactions:

- Not highly valuable
- North Atlantic catch mortality: 27,000 – 100,000t
- Main bycatch species in Canadian swordfish fishery
- 100% discarded
- Total catch mortality: ~1000t/year
- ~35% die on line or post-hooking mortality

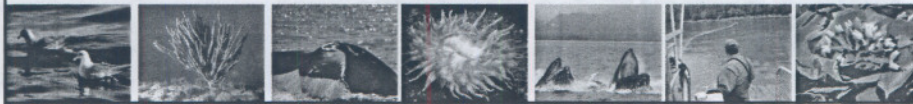
Management measures:

- No management measures in longline fishery
- A precautionary TAC of 250t applies to all fisheries (directed and bycatch)
 - Not biologically based limit



Issue = Uncertainty

- Population abundance
- Total removals
- No limitations (or not biologically-based)



Principle 2: ETP species – Leatherback and Loggerhead seaturtles

• COSEWIC:

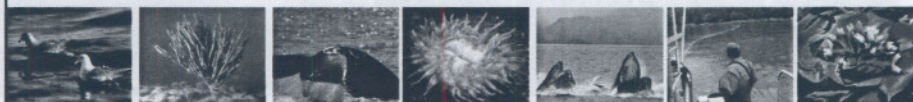
- Leatherback: Endangered
- Loggerhead: Under review

• Incidental capture in fishing gear is primary threat to the survival of both species

- Leatherbacks: average 170/year interact with swordfish gear
 - Release mortality unknown
- Loggerheads: Canada's catch rate: 2x US & 4X global average CPUE; increased in recent years
 - Release mortality between 1-50%

• Mitigation measures

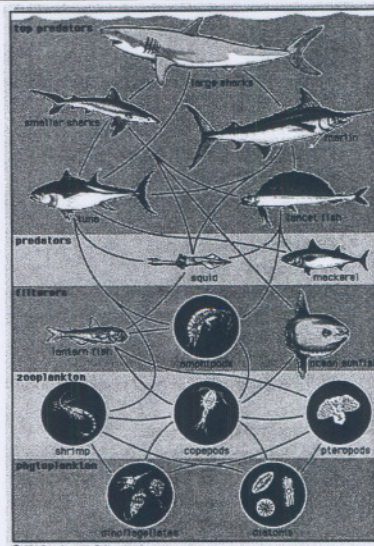
- No enforceable regulations in Canadian swordfish fishery
 - Voluntary Code of Conduct; recommendation to carry handling and release gear
 - Widespread use of circle hooks
 - No requirements for bait or hook type, closed areas
 - No measures to reduce the capture (prevention)



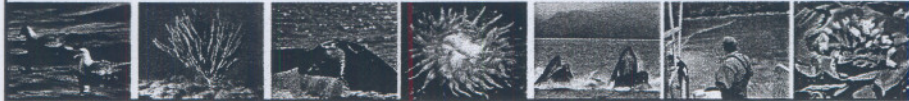


Principle 2: Ecosystem

Impacts on ecosystem from the removal of a large number of species, particularly top predators



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Certification Principles & Criteria

Principle 3: fishery is subject to an effective management system

Key requirements:

- Biological status of the resource and impacts on the fishery have been and are periodically conducted
- Make use of fishing gear and practices to avoid capture of non-target species, minimize mortality of this catch where it can't be avoided and reduce discards of what cannot be released alive





Principle 3

Integrated Fisheries Management Plan

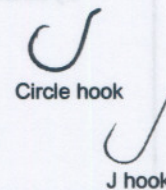
- Out-of-date : 2004-2006
- Fails to include recent species assessments and appropriate mitigation measures (blue and shortfin mako sharks)

Periodic assessment

- Frequency of assessment is unknown
- Post-hooking mortality rate is unknown for most species
 - Presume released alive = survived

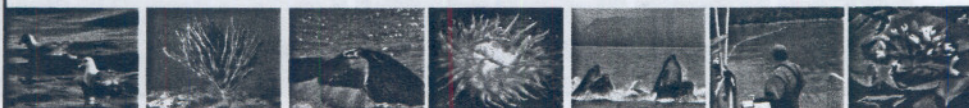
Mitigation measures

- Measures in IFMP focus primarily on sea turtles
 - Some mention of measures to reduce tuna bycatch and practicing live release



Summary

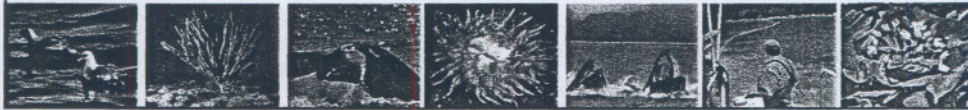
- Bycatch in longline fishery is a serious concern
- Lack of population assessments & estimates of true level of bycatch is a concern – especially for shark species
- Need to show due diligence in regards to assessment of impact of fishery on species and ecosystem





Uncertainties & Questions

- Does the current management scheme address these ecosystem & species concerns?
- Is current observer coverage (~5%) sufficient to determine true levels of bycatch?
- Have sufficient mitigation measures been implemented to address all bycatch concerns



An example of collaborative solutions

WWF works with the fishing industry to:

- Identify, improve & reward leading sustainable fisheries
- Promote bycatch-friendly gear (Smart Gear Competition)
- WWF uses our international resources to promote sustainable seafood initiatives.



\$30,000 prize



PRINCIPLE 1: TARGET STOCK STATUS AND HARVEST STRATEGY

1.2.1 Harvest strategy

“There is a robust and precautionary harvest strategy in place.”

Comment: Size structure of population not accounted for in harvest strategy – should be part of robust and precautionary management (see size structure progression over years in Figure 1). Managing to B_{MSY} is not a precautionary practice.

1.2.2 Harvest control rules and tools

“There are well-defined and effective harvest control rules in place.”

Comment: Accounts of high-grading and unreported discards of juveniles in longline fishery, so “effective” is questionable. Harvest control rules also do not account for post-release mortality of swordfish after release, which is considered likely to be high.

The ICCAT Swordfish Report for 2008-09 stated: “The Committee is concerned that in some cases regulations have resulted in the discard of swordfish caught in the North stock and, to a certain extent, could have influenced similar behavior of the fleet that fishes the South Atlantic swordfish stock. The Committee considers that regulations may have had a detrimental effect on the availability and consistency of scientific data on catches, sizes and CPUE indices of the Atlantic fleet. The Committee expressed its serious concern over this limitation on data for future assessments.” (implications for information/monitoring and assessment of stock status too).

PRINCIPLE 2: NON-TARGET ECOSYSTEM IMPACTS

These points are in addition to those made in our written submission.

2.1 Retained Species

(shortfin mako, porbeagle, bluefin, albacore, bigeye, yellowfin tuna)

Need to fully consider the vulnerable status of shortfin mako and porbeagle populations, assessed by COSEWIC as threatened and endangered, respectively, even though these were not assigned to the ETP category for this assessment.

Bluefin Tuna

2.1.1 Outcome status

Comment: Population is severely overexploited. Accounts of high, unreported discards of bluefin, especially juvenile, most of which are discarded dead, and for those discarded alive, post-release mortality is also expected to be high. These unaccounted-for discards can be expected to have a pronounced negative effect on the population status.

2.1.2 Management Strategy

Comment: Longline fleet continues to push for and buy more quota to land legal size bluefin as bycatch than they receive as a base allocation for dead discards – strong indication that underreporting is systematic. Situation is set up to encourage discarding and underreporting of bluefin, because without bluefin tags, boats may not go out on longlining trips.

2.1.3 Information/Monitoring

Five percent observer coverage is inadequate to monitor and characterize bluefin discards, and for

reasons mentioned above, unlikely to capture good picture of the impact of longlining on the bluefin population.

2.2 Bycatch Species

(blue shark, blue marlin, white marlin)

Need to fully consider the vulnerable status of blue shark and marlin populations, assessed as "special concern" by COSEWIC and in need of rebuilding by ICCAT, respectively, even though these species were not assigned to the ETP category for this assessment.

Blue Marlin

2.1.1 Outcome status

Comment: Population is severely overexploited, but longline vessels land and discard substantial levels of blue marlin, negatively impacting the population. Contrary to ICCAT regulation demanding live release of all blue and white marlins brought to the vessel alive, blue marlins continue to be landed in substantial quantities on swordfish longlining trips. We also have heard that they are landed *by harpoon* under the swordfish longline license (undeniably targeted alive in the latter case). How is bycatch on harpoon trips under the longline license being monitored/enforced?

2.1.2 Management Strategy

Comment: DFO has made no efforts to manage the bycatch of marlins in the longline fishery, nor to enforce the ICCAT regulation on marlin release. Consequently, measures can be considered "not in place" for marlin bycatch management in this fishery.

2.1.3 Information/Monitoring

Comment: Five percent observer coverage is inadequate to monitor and characterize blue marlin discards. No information has been made available to support bycatch management or reduction, and despite ICCAT recommendations to the contrary, Canada is not involved in any research programs to identify gear technology that reduces the mortality of this species.

General comments on Principle 2:

- Tuna vs swordfish directed sets very different types and magnitudes of impacts on different species, but not well characterized. Are swordfish landed as bycatch in tuna-directed sets included in this assessment?
- Have heard repeatedly from diverse sources that use of 16/0 circle hook is aimed at limiting the number of swordfish caught when targeting bigeye tuna, so not surprising that it is ineffective at purported purpose of decreasing turtle mortality. Again, not a measure for bycatch reduction.
- Observer trips not considered representative (one expert has said they avoid productive areas, so less bycatch, but also less fish)

PRINCIPLE 3: INSTITUTIONAL AND OPERATIONAL FRAMEWORK

3.1 Governance and Policy

3.1.4 Incentives for sustainable fishing

System does not tend to incentivize fishers to fish sustainably. ITQs with minimal monitoring have effectively given fishers the incentive to maximize their profit through such practices as high-grading

and fishing to *minimize* swordfish catch rates to enhance catch of other tunas within the swordfish quota (thereby also affecting many other unwanted sensitive species).

3.2 Fishery-specific management system

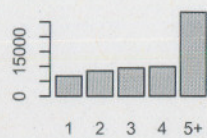
3.2.2 Decision-making processes

No informal processes exist to achieve fishery-specific objectives of ecosystem management because there is not even any discussion of bycatch (other than bluefin and porbeagle) as a standard part of the agenda at public management meetings. By the same token, decision-making processes do not respond to serious issues identified in either a timely or a transparent manner, if at all.

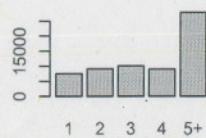
3.2.3 Compliance and enforcement

MCS mechanisms exist, but no reasonable expectation that effective because do not account for negative incentives (high-grading, non-reporting of bycatch, changes in behaviour with observers). Fishermen are often thought not to comply with management system – underreporting of SARA species, high-grading, non-reporting of dead bluefin, even shark finning in recent years (banned in 1994).

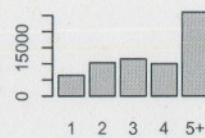
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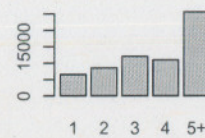
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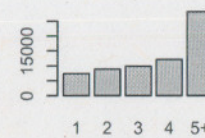
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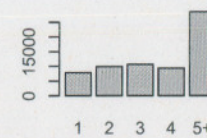
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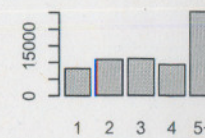
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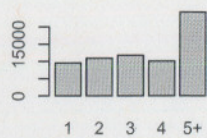
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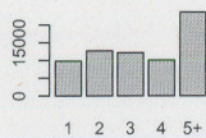
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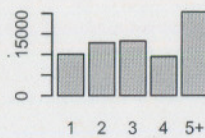
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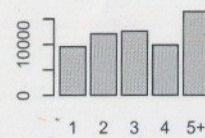
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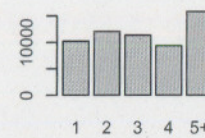
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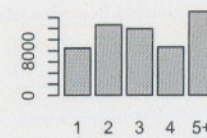
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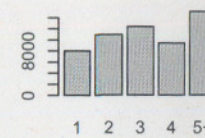
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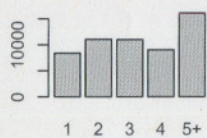
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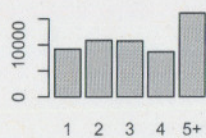
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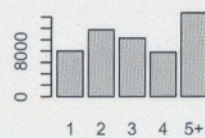
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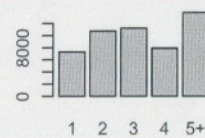
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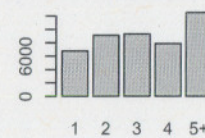
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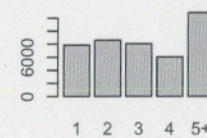
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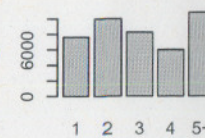
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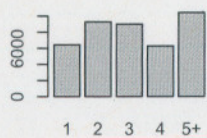
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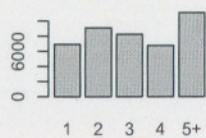
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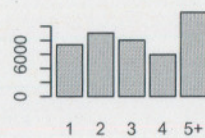
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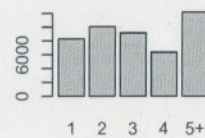
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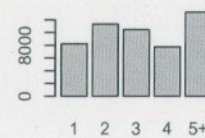
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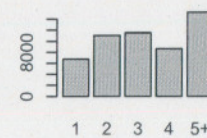
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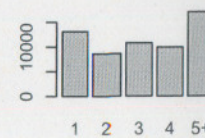
2003



2004



2005



North West Atlantic Swordfish Site Visit

July 23, 2009

Ecology Action Center (EAC)/David Suzuki Foundation (DSF) – Romney McPhee (Interested Citizen), Rob Johnson (EAC), Alex Curtis (EAC), Scott Wallace (DSF), Bill Wareham (DSF). (Note: Scott Wallace and Bill Wareham of David Suzuki Foundation attended via conference call).

Reference Documents:

- *Written submission for the MSC Assessment of the Northwest Atlantic Canadian Longline Swordfish Fishery, prepared by: Scott Wallace (DSF) and Alexandra Curtis (EAC).*
- *Proposal to monitor and reduce interactions with non-target species in the Canadian Atlantic pelagic longline fishery, prepared by Susanna Fuller and Alexandra Curtis (EAC) and Scott Wallace (DSF). Provided as Appendix 1 to Written Submission.*

General Comments

- Concerns with fishery date back a decade and did not start with the MSC assessment
 - Need improved management
- Campaign with DSF prior to MSC
 - No bycatch limits
 - Minimal monitoring
 - Most sustainable gear (harpoon) only 10% of catch
- Identified fishery as needing management reform
- Analogous to halibut fishery 5 years ago
 - ENGOs had same concerns on west coast Canadian halibut fishery– put in submission 5 years later management reform has happened – MSC application on pause – now back on track and supported by ENGOs
- Target species may be ok – but all other species are a concern
- Observer coverage, accountability, limits on bycatch
 - Now BC has both caps on catch limits and 100% observer coverage
- MSC help with improving fishery

Principle 1

- Not managed based on how many fish in caught in each size class
- Not robust to encourage age groups
- Not fully rebuilt in terms of age structure
- Harvest control rules and tools
 - High grading and discard of juveniles
 - Management does not account for post release mortality

Principle 2

- Shortfin mako and porbeagle - COSEWIC status
- Bluefin tuna
 - High unreported discards
 - Bluefin on longline gear most often come on board dead
 - Request for more quota indicates high discard
 - If harvesters run out of tags for bluefin they cannot continue to fish, this encourages discarding
 - Such action would be eliminated if more quota

- Say that there is no discarding and that all is reported, regardless there needs to be a system of accountability, the level of observer coverage needs to be appropriate and there needs to be adequate spatial/temporal coverage
 - In this fishery spatial/temporal coverage not sufficient
- Consider marlins as vulnerable
 - Blue marlin catch is significant in longline fishery
 - Have heard harpooners in longline fleet get marlins – clearly targeting
 - Harpooned longline can not be identified as harpoon clearly therefore should be separate from harpoon only
 - In terms of management DFO has not made any effort to manage marlin
- Shortfin mako may become SARA species.

Principle 3

- ITQ no incentive for sustainable fisheries
 - Promotes maximization of money
- Decision process – no discussion of all bycatch, only bluefin or porbeagle (because of commercial value) at ALPAC or Scotia-Fundy
- Decisions do not respond to serious regular concerns
- There are issues related to compliance and enforcement within the fleet.

General discussion

- Whole fishery based on bycatch – in this area there has been no change on how the fishery is executed despite concerns with bycatch
- Want to see – increased observer coverage, hard scientific based limits on bycatch, measures to decrease interactions in first place (i.e. hook size, time/space closures)
- Don't want to argue with COSEWIC number of turtles, important question is have they done everything to avoid – no.
- Not convinced that harm permits for leatherback turtles are effective
- Number in allowable harm not population based, therefore not happy with it
- Porbeagle measures are guidelines – no enforcement if they go beyond that
- Assessment team question: What do you think of the Code of Conduct?
 - Never a big fan of voluntary compliance – have to be sceptical of that – personal motivation to engage or not.
 - With respect to sea turtles - one of the most endangered species in the ocean, firm regulation is required
 - No evidence of decreased levels of catch in observer coverage
 - Focused on release of turtles, not avoidance
 - In US always revising and updating lists – not sure how up to date they are in Canada
 - Main emphasis needs to be on avoidance, decreased catch, not just safe release
 - Incentives to avoid not there
 - Hard cap of 46 loggerheads per year and 17 leatherback per year in the Hawaii longline fleet. Before this they were catching thousands – new measures, 100% observer coverage, depth regulations, decreased effort, ect. decreased catch of turtles by 90%
 - Lack of transparency at ALPAC, not clear how what is presented at meeting is considered in decisions
 - Presented observer proposal at regional level. Response was bycatch working group will be reconvened at some date.

- Assessment team question: Birds, are they an issue or not?
 - There does not seem to be a lot of seabirds caught, no major concerns.