

**FULL TEXTS OF NORTH ATLANTIC SWORDFISH MANAGEMENT / DEVELOPMENT PLANS FROM
CANADA AND ST. VINCENT AND THE GRENADINES.**

Canada's Swordfish Fishery Management Plan: 2018

ICCAT Recommendation 13-02 requires each Contracting Party, and Cooperating non-Contracting Party, Entity or Fishing Entity to submit its swordfish development or fishing/management plan annually to the Secretariat by September 15. This document describes the history, management, socio-economic and future aspirations of the Canadian North Atlantic Swordfish fishery.

1. Overview of the fishery

Canada has a strong management regime, which ensures that the fishery is sustainable, strictly monitored and controlled. As of 2012, in recognition of the strong management regime, which is in place for these fisheries in Canada, the entire Canadian swordfish fishery is Marine Stewardship Council certified. Canada is the first ICCAT member to obtain this certification for its entire swordfish fleet.

Key management elements include:

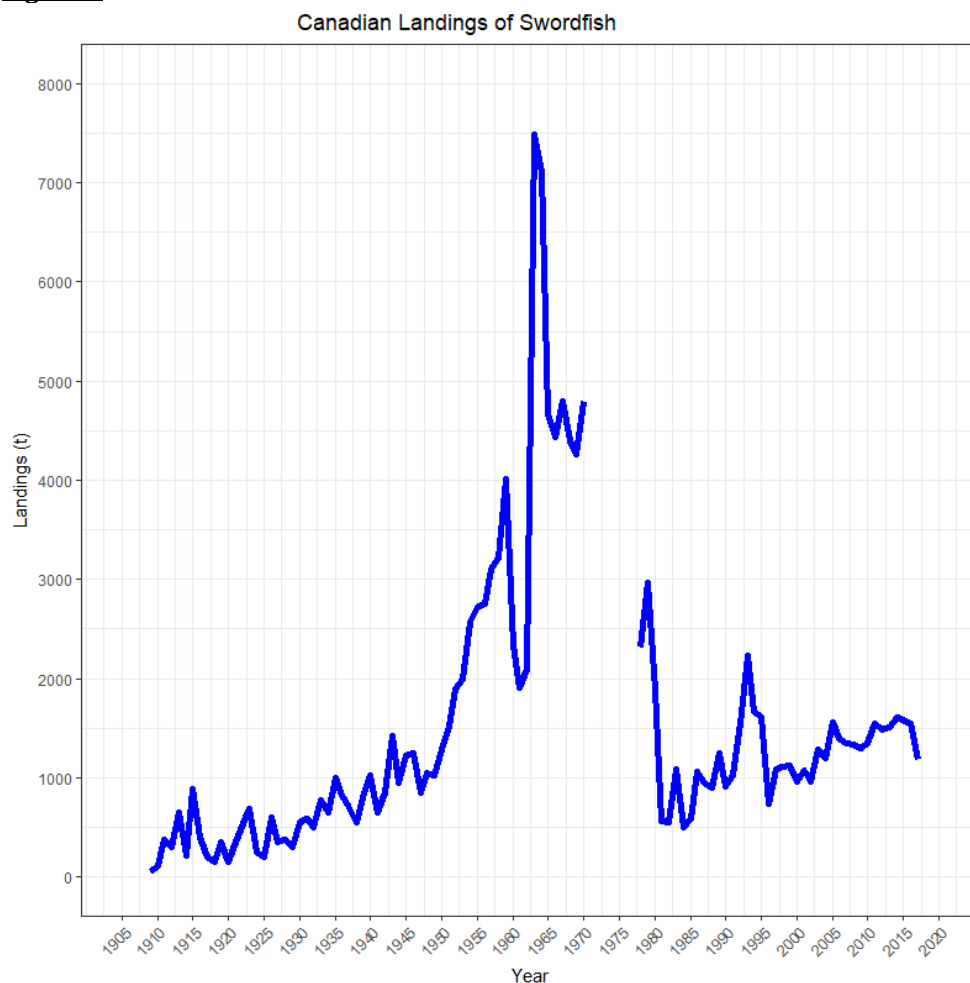
- Effort controls that match availability of fish
- Limitations in the number of authorized licenses
- Gear restrictions
- Targeted time and area closures
- Minimum size limits to protect juvenile fish
- Stringent reporting requirements
- Effective quota management regime

1.1 History – *Description of the catch history and socio-economic importance of the Swordfish fishery, participation in science, etc.*

Canada's Atlantic swordfish fishery began in the late 1880s as harpoon vessels fished throughout Atlantic Canada, and eventually expanded their fishery along the annual migration patterns of the eastern seaboard of North America. In the early 1960s, the fishery shifted from a harpoon to a primarily longline fishery, and landings increased to a high of approximately 7,000t. Recorded landings decreased sharply in the 1970s because of import measures, which affected the ability of Canadian harvesters to market their product. Over the last decade, annual landings have remained relatively stable.

The importance of the fishery to Canada is highlighted in **Figure 1**, which shows Canada's landings dating back to 1909.

Figure 1



The first ICCAT measures were put in place for the North Atlantic swordfish stock in 1991. Minimum sizes were also put in place at that time. In response, Canada implemented domestic measures to limit the harvesting of undersized swordfish, and introduced a limited-entry fishery in 1992.

Between 1995 and 2000, further reductions in the Canadian quota on an annual basis resulted in the need for significant changes to the domestic swordfish management strategy, including fleet allocations to each of the harpoon and swordfish longline fleets. These measures were further refined in 2002 with the introduction of Individual Transferable Quotas (ITQs) in the longline fleet and in the harpoon fleet in 2011, which has eliminated the competitive nature of the fishery and provided the fleet with a mechanism to self-rationalize.

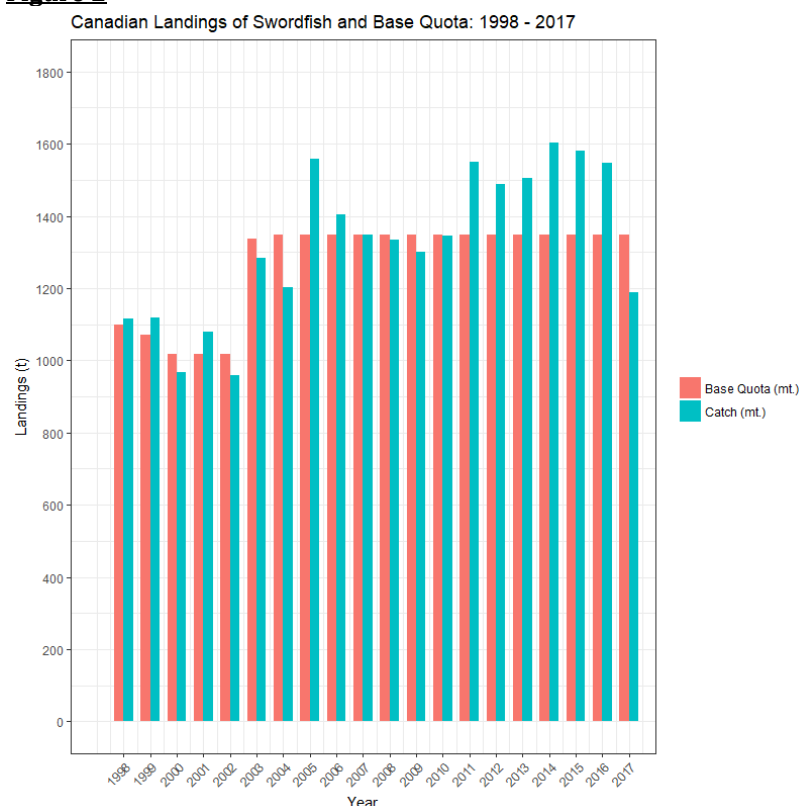
1.2 Current fishery - general information on where, when, how, and socio-economic considerations (e.g., high operating costs, etc.).

Canada's fishery is exclusively commercial, and conducted by fishermen mostly from Nova Scotia, and one licence holder from Newfoundland and Labrador. There is no recreational or sportfish component to this fishery.

Canada has consistently demonstrated the ability to fully utilize its ICCAT quota with average annual landings of 110 % of its annual allocations during the past 7 years, as demonstrated in **Figure 2**. Canadian utilization

of its allocations since 2000, the year the rebuilding plan was introduced, is approximately 104% of its allocation during that time. While harvests in some years exceed initial quota, they are in line with adjusted quota.

Figure 2



Since 2007, Canada has been allocated 10.2% of the ICCAT quota allocations. Nevertheless, Canada has landed approximately 13% of the overall catch for North Atlantic swordfish annually over the past 7 years due to quota transfers.

The current fishery is conducted by harpoon (10% of national quota) and longline (90% of national quota annually) from Georges Bank to east of the Grand Banks of Newfoundland from April through December. Landings by harpoon gear by all fleets over the last 7 years have ranged from 6-18% annually of the overall Canadian catch (longline licence holders are also permitted to use harpoon gear).

Over the past decade, total landings (including dead discards) for the entire Canadian fleet peaked at 1,604 t in 2014, with an average total catch of 1,483t over the past seven years. ***Canadian landings fully demonstrate Canada's capacity to utilize its full quota in line with ICCAT management measures.***

Economic Value

This fishery is socially and economically important to many coastal and First Nations communities throughout Atlantic Canada. Fishermen from close to 50 different ports, primarily in Nova Scotia, participate in the fishery.

Swordfish landings are an important source of revenue for many vessels and ports in Atlantic Canada with a landed value of well over \$15 million (CDN). Principal ports include Shelburne, Sambro, Wood's Harbour and Clark's Harbour in Nova Scotia.

Duration of season

The Canadian commercial fishery follows the seasonal migration of the swordfish through Canadian waters, in accordance with the limitations of the gear types used, weather, and the availability of quota. The Canadian large pelagic longline fisheries which direct for, or incidentally catch swordfish, currently operate from April through December. ICCAT Task 1 data from earlier years when quotas were not restrictive indicates that, catches could occur in any month. Prior to the introduction of ITQs, the swordfish fishing season was concentrated primarily in the summer months due to the quick exhaustion of the Canadian quota under a competitive fishery. Due to unconducive ocean conditions, in 2017 the Canadian fleet harvested 84% of its North Atlantic swordfish base quota during a 4-month season from July through October.

Geographic distribution

Harpooning for swordfish currently occurs primarily along the edges of Georges and Browns Banks, and targets large swordfish swimming or "basking" in surface waters during the day.

The Canadian large pelagic longline fishery extends from Georges Bank south of Nova Scotia to beyond the Flemish Cap east of Newfoundland when swordfish, the main species targeted, migrate into and adjacent to the Canadian Exclusive Economic Zone (EEZ). Longline fishing effort generally progresses from west to east and back again and from offshore to inshore along the edge of the continental shelf following swordfish movements associated with seasonal warming trends of surface water temperature, and a northward movement of the edge of the Gulf Stream. Swordfish migrate into the Canadian EEZ during summer and fall to feed in the productive waters of the continental shelf slope and shelf basins, areas where water temperatures form a distinct thermocline.

Until recently, the geographic distribution of the pelagic longline fishery tended to be quite similar from one year to the next. However, since 1998, there has been an increase in fishing activity east of the Grand Banks (beyond the Canadian EEZ) out to and beyond the Flemish Cap where catch rates have tended to be higher than other areas. This is also an area where longline fleets from other nations, such as Japan and the US, target large pelagic species. However, in recent years the activity has been focused in areas closer to port, namely along the Scotian Shelf edge from the Hell Hole to the Laurentian Channel and Emerald Basin.

First Nations Participation

Since 2000, the Canadian Government has facilitated a transfer process to provide increased access to this fishery for First Nations participants. Currently, 9 of the 77 swordfish longline licenses are held by First Nations bands in Newfoundland, Nova Scotia and New Brunswick. The revenue generated from this fishery is important to these small communities, which face significant economic hardships.

2. Existing management

Overview

Limitations on the number of licenses

Since 1992, entry to the swordfish fishery, regardless of fleet sector, is limited to current licences. Licences have been fixed at this number, but may be reissued, within certain policy restrictions, from one harvester to another.

Rigorous monitoring, control, and surveillance of the fishery

Canada takes a comprehensive approach to enforcement that includes sophisticated vessel monitoring systems on all longline vessels, aerial surveillance, dockside monitoring, and at-sea observers.

Strong legislative and regulatory framework

In addition to the requirement for fleets to annually submit a Conservation Harvesting Plans specific to Swordfish and other tuna fleets and the fully Integrated Fisheries Management Plan, the Canadian swordfish fishery is governed by a suite of legislation, policy and regulations.

- International Commission for the Conservation of Atlantic Tuna (ICCAT)
- Fisheries Act
- Atlantic Fishery Regulations (AFR), 1985
- Fishery (General) Regulations, 1993
- Oceans Act, 1996
- Species at Risk Act, 2002
- International Plan of Action (IPOA) and Canada's National Plan of Action (NPOA) for reducing incidental catch of seabirds in longline fisheries
- IPOA for Shark Conservation
- Coastal Fisheries Protection Act, 1985
- Department of Fisheries and Oceans Act, 1985
- Atlantic Fisheries Restructuring Act, 1985
- Aboriginal Communal Fishing Licences Regulations, 1993
- Commercial Fisheries Licensing Policy for Eastern Canada 1996
- Sustainable Fisheries Framework: Conservation and Sustainable Use Elements
 - Precautionary Approach policy
 - Foraging Species policy
 - Sensitive Benthic Areas policy
 - By-catch policy (under development)

2.1 Fleet structure

The current Canadian fleet can be characterized as small-scale, with only a few vessels greater than 20 metres. The implementation of quota reductions in ICCAT resulted in significant economic hardship to the Canadian fleet, and led to extensive changes to Canada's domestic management framework, including significant reductions in access for Canadian swordfish harvesters.

Harpoon-only

There are 1,138 swordfish harpoon-only licences in Atlantic Canada. Of this total, current allocations restrict participation and, as such, only approximately 60 harpoon licensed fishers are active each year. Approximately half of these fishers make dedicated trips for swordfish while the remaining licence holders have a licence which allows for the harpooning of a swordfish should they have the opportunity while harvesting another species.

Longline

There are a total of 77 pelagic longline licences as well as a unique offshore tuna licence, in Atlantic Canada. The longline licence holders are also permitted to harvest using harpoon gear.

The introduction of quota reductions as a result of the 10-year rebuilding plan agreed to in ICCAT has meant that not all Canadian licence holders can participate in an economically feasible swordfish fishery. Canada's introduction of an ITQ system in 2002 facilitated fleet self-rationalization to allow the fleet to better match fishing capacity with quota available to Canada and the longline fleet.

Nevertheless, approximately 1/4 of the 77 commercial swordfish licence holders remain inactive as it is not possible to prosecute an economically viable fishery for all licence holders with current quotas. The approximately 44-52 licence holders participating in the fishery each year are subject to strict fishing, monitoring and reporting requirements.

A unique offshore tuna licence, introduced in 2000, allows the license holder to conduct longline fishing operations Atlantic-wide. Pelagic longline vessels are also licensed to fish with harpoon gear, but since 2000, any landings by harpoon gear are attributed to the longline quota.

Time/Area Closures

Time and area closures to protect sensitive species or life-stages (e.g. a closure to protect large female swordfish) and marine protected areas are utilized in this fishery, and have resulted in the displacement of 10% of the active fleet from traditional fishing grounds.

In addition, the Minister of Fisheries and Oceans may, in any year, close any area to fishing for a specified time should any grave environmental or conservation concerns arise.

2.2 Quota management

In 2000, Canada implemented a change to the strictly competitive fishery by introducing distinct gear sector allocations for the two different gear types, along with the 5t by-catch allocation for the offshore tuna licence. It also introduced self-administered trip limits in the longline fleet, daily hauls once 65% of the fleet allocation was reached and a segregated swordfish by-catch quota within the competitive fleet. In 2002, further measures were introduced to the longline fleet and Fisheries and Oceans Canada (DFO) introduced ITQs on a trial basis. This approach proved very successful in terms of quota management, increased length of season, fleet rationalization, and allowed for reorientation of effort toward other tunas. This program was approved on a permanent basis in 2003. The maximum concentration of quota through permanent transfers is limited to 5%.

Within the harpoon sector, the quota is assigned competitively and through an Individual Quota system.

The first step in determining the annual fishable quota for any year is to adjust the national allocation for any over-runs or roll-over amounts from the previous year. Adjustments are credited to or deducted from the gear sector that incurred them, with the exception of the unique offshore tuna licence. That licence receives a 5t by-catch limit annually from the top of the adjusted global quota and is not permitted to roll-over any underages of quota. The remaining Canadian quota is then allocated to the harpoon sector (10%) and to the longline sector (90%).

Canada's 2017 initial allocation of North Atlantic Swordfish was 1348 metric tonnes; from which 5t was allocated to Canada's offshore tuna fleet for swordfish bycatch.

In consultation with industry, Canada incorporates measures into each fleet's annual harvesting plan to ensure that Canada does not exceed its annual adjusted quota of North Atlantic swordfish while permitting fleets to harvest close to their assigned quota. Individual fleet quotas are monitored by the Department, as well as independently by the two main industry associations.

2.3 Monitoring, Control and Surveillance

Canada takes a comprehensive approach to enforcement that includes sophisticated VMS on all longline vessels (not just those over 20 meters as required by ICCAT), aerial surveillance, dockside monitoring, at-sea boardings and 10% at-sea observers coverage despite no ICCAT requirements for observers onboard swordfish vessels smaller than 20 meters. The Offshore Surveillance (OSO) unit of Conservation and Protection conduct aerial and vessel surveillance annually, consisting of both the swordfish and tuna fishery. In 2017, 241 vessels were observed and recorded for engaging in large pelagic fishery throughout the year. Of note, this number includes vessels that have been observed on multiple occasions. In 2017, 110.85 air surveillance hours were directly accrued for swordfish fishery. In 2017, at sea patrols, using large patrol vessels, accumulated 310.50 surveillance hours directly to the swordfish fishery in 4WX/5ZE. Also, Fishery Officers conduct patrols, inspect vessels and swordfish buying/processing facilities and conducted audits of the Dockside Monitoring Program in this fishery. In total, 793.5 fishery officer enforcement hours were expended on the swordfish fishery in 2017.

License holders who fail to comply with the domestic regulations and conditions of license are liable for prosecution that may include fines, and suspension of license privileges. Both the dockside monitoring and at-sea observer programs are fully funded by industry.

All fishing activities must be recorded in DFO-approved logbooks and *Species at Risk* logs in the manner prescribed by the Department. This includes the provision of information on all discards of protected species, dead or alive. Swordfish harvesters must also abide by strict licence conditions, which include:

- Areas closed to fishing to protect swordfish broodstock, to prevent bycatch of bluefin tuna, and to protect sensitive marine protected areas;
- Minimum fish size restrictions;
- Requirements to hail out and hail in for all fishing trips;
- Dockside monitoring of all landings, in which every ton of fish is recorded by an independent 3rd party;
- Requirements for proper handling and release of identified species at risk including leatherback turtles and white shark.
- Requirements for proper handling and release of sensitive shark species identified by ICCAT including: white, bigeye thresher, hammerhead, oceanic whitetip, silky and basking sharks (this requirement for white and basking sharks was added for the 2018 fishing season).
- Requirements for proper handling and release of all live interactions with Porbeagle and Shortfin Mako shark species (this requirement for this species was added for the 2018 fishing season).

Canada also has in place strict port access requirements for all ICCAT members landing swordfish in Canadian ports that go beyond the existing ICCAT port State measures.

2.4 Mitigation of non-target species bycatch

Due to the nature of this fishery, reducing by-catch and dead discards is important. To that end, industry has implemented a number of mitigating measures, such as:

- Mandatory use of circle hooks, which aim to reduce non-target species by-catch rates and to increase the probability of post release survival;
- Live release recommended, to the extent possible, of all sensitive species;
- and
- Collaborating with DFO in a research program examining patterns of by-catch in the pelagic longline fishery, with a view to mitigating catches of s sharks and turtles.

As a licence condition, pelagic longline licence holders must follow a code of conduct for the handling and release of marine turtles. All active vessels must carry safe handling and release equipment to mitigate harm as much as possible when handling and releasing marine turtles. Active participants in this fishery are trained by the Canadian Sea Turtle Network and certified on the use of this equipment. A copy of the valid certificate must be on board the vessel and be provided to a fishery officer upon request.

3. Scientific Work

3.1 Data and Information Collection in Support of Scientific Work

Canada's management of the swordfish fishery relies first and foremost on the best available science advice.

As the foundation for reliable research and stock assessments, the Canadian Atlantic statistical systems provide real time monitoring of catch and effort for all fishing trips. In 1994, an industry-funded Dockside Monitoring Program (DMP) was established in Atlantic Canada, according to DFO standards, for the swordfish longline fleet.

Overview of Atlantic Canada's statistical system and Dockside Monitoring Program:

- In place since 1996, this system has applied to all fleets and included monitoring of all trips, even when no fish were caught.
- At the completion of each fishing trip, independent and certified Dockside Monitors must be present for off-loading, and log record data must be submitted by each fisherman to the Monitoring Company that inputs the data into a central computer system.
- Log records contain information on catch, effort, environmental conditions (e.g., water temperature) and bycatch.
- Log records from trips with catch must be received from fishermen before they can proceed with their next fishing trip (log records from zero catch trips can be mailed in at a later time). This ensures Canada has 100% coverage of properly completed log records and individual fish weights.

3.2 Research

Canada has been a leader in supporting ICCAT's scientific investigations of the swordfish resources in the Atlantic for the past several decades. Canada has a tradition of contributing a scientific leader to the Coordinator role for the three stock assessments conducted by the SCRS (North Atlantic, South Atlantic, and Mediterranean), and such well-known scientists as Drs. J. Beckett, J. Porter and J. Neilson have contributed to this important role. Currently, the leadership role extends to ecosystem related issues with assessment support for Bluefin tuna and North Atlantic swordfish.

As a result of Canada's well-recognized ability to collect and maintain fisheries statistics of importance to the stock assessment, Canada contributes the longest series of catch rate information to the North Atlantic stock assessment, commencing in 1963. Canada also initiated ground-breaking research on satellite archival tagging studies of swordfish that attracted international recognition and continues to participate in international efforts to learn more about sea turtle migration and incidental mortality. They are supported in those efforts by Canadian swordfish harvesters who understand the importance of marine stewardship. A new research project established in 2016, by the DFO in collaboration with the Atlantic Canadian Swordfish and Other Tunas Longline Fishery, is the deployment of short-term Pop-up Satellite Archival Tags on live released shortfin mako sharks caught in the longline fishery. The project will determine post-release mortality of the shortfin mako shark and contribute to total fishing mortality for inclusion in future national and international stock assessments.

Canadian researchers also collaborated with researchers from the United States to establish a joint Canadian-American Swordfish Index of abundance from the two countries longline fisheries. The goal was to provide a more comprehensive fishery dependent time series of relative abundance indices.

New Research 2017/2018

For 2018, Canada will help establish an international research program for Swordfish in the Atlantic Ocean. This program will aim to improve knowledge of the stock distribution, age and sex of the catch, growth rate, age at maturation, maturation rate, spawning season and location and diet. This undertaking will benefit from samples contributed by Portugal, Brazil, Spain, Italy and Canada. Data and analyses from this program will contribute to more robust assessment of swordfish status by permitting the development of more spatially and biologically realistic population models used in both assessment and ICCAT Management Strategy Evaluation (MSE) contexts. Principal data collection will occur in 2018, with analysis of samples continuing into subsequent years. Through this program Canada will develop capacity and infrastructure to continue collection and analysis of swordfish biological samples into future years. Building off of these new data as well as Canada's historical fisheries data, the planning stages of species distribution model development will also take place in 2018.

To develop indicators of swordfish stock status in non-assessment years, DFO is testing the use of length frequency and animal growth models. These emerging methods will be applied to swordfish data to estimate size at maturity and the spawning potential ratio of the stock.

3.3 Industry/NGO collaboration

Industry is fully engaged in the conservation and management efforts for this species to ensure its sustainability, including participation in scientific research, funding of independent at-sea observers to monitor the fishery and funding independent third party monitors who observe and record all landings at dockside. The harpoon fleet provides funds or in-kind vessel support for scientific research in lieu of at-sea observer coverage.

Harvesters and environmental non-governmental organizations (ENGOS) offer their expertise and experience in the development of Canada's Integrated Fisheries Management Plans, and are encouraged to provide additional financial or technical contributions for at-sea research related to this stock.

For example, the Canadian harpoon and longline fleets have been collaborating with DFO in an archival tagging project to track migratory patterns of the swordfish stock to get a better understanding of its movements and migrations throughout the North Atlantic. The data from this project is still currently being used in new analysis, such as the construction of a swordfish habitat preference model.

Canada's Sustainable Fisheries Framework forms a foundation for implementing an Ecosystem Based Management approach in the management of its fisheries. Of particular note for the ICCAT managed fisheries is the advancement of ecosystem objectives and policies related to biodiversity through a By-catch Management Project, and a work plan specifically aimed at addressing bycatch and discarding in Canadian large pelagic fisheries. The work plan includes projects aimed to both manage discards as well as control incidental mortality in large pelagics fisheries. For example, the longline fleet is supporting the archival tagging of sea turtles to better understand their movements and migration as well as estimate post release mortality. DFO and the Atlantic Canadian Swordfish and Other Tunas Longline fishery conducted several collaborative projects to inform national or international management efforts for large pelagic sharks. Notably among these was a pelagic longline survey, designed to provide a fishery-independent index of abundance for porbeagle shark, as well as satellite tagging of shortfin mako and porbeagle sharks to refine post-release mortality estimates following recent changes in capture and handling practices by the fleet. Satellite tagging for both species will continue in 2018.

4. Eco-certification

Canada's swordfish fisheries are acknowledged to be well-managed and through the efforts of the SCRS and ICCAT they are shown to be sustainable as well. Consequently, Canada's entire North Atlantic swordfish fishery has received Marine Stewardship Council (MSC) certification. The harpoon portion of Canada's Northwest Atlantic swordfish fishery earned sustainable seafood certification in June 2010, following a comprehensive fishery assessment process carried out by an independent, accredited certifier and the longline fishery was awarded MSC certification in April 2012. Maintaining the certification will largely depend on ICCAT's progress on issues such as harvest control rules whose resolution depend on a coordinated effort by scientists and managers from all CPCs.

5. Interests/aspirations

In light of the role played by Canada to develop and implement a successful ICCAT rebuilding plan and the need for an increased quota to ensure the viability of the Canadian swordfish fishery for the coastal communities across Atlantic Canada which depend on fishing opportunities for North Atlantic swordfish, Canada will be seeking increased access to this fishery.

Canada has a demonstrated historical participation in the fishery, dating back to the late 1800s, and has a consistent record of compliance with ICCAT measures. Canada has also, on an ongoing basis, contributed significantly to the collection and provision of accurate data, and scientific research in order to enhance the work of the Commission.

While Canada, like other ICCAT members, accepted significantly lower quotas during the rebuilding period of the fishery. While un conducive ocean conditions led to Canada not being able to utilize its full quota in 2017, Canada is the only ICCAT member which has consistently demonstrated its ability to fully utilize its quota. Based on this information, Canada will be seeking increased access to this fishery moving forward to ensure viability for its' coastal communities.

Average annual landings have totalled 110% of Canada's initial annual allocations during the past 7 years. Since 2007, Canada has been allocated 10.2% of the total ICCAT quota for North Atlantic swordfish. Nevertheless, Canada has landed approximately 13% of the overall catch for North Atlantic swordfish annually over the past 7 years due to receiving quota transfers.

ICCAT members should recognize the aspirations of coastal and developing nations, while remedying the current situation of over-allocation.

North Atlantic Swordfish Management Plan St. Vincent and the Grenadines

1.0 Introduction

The Fishery Management Plan (FMP) for the Atlantic Swordfish authorizes the commercial harvest of the species listed in section 2 of this FMP. Commercial fishing is authorized during the fishing year unless otherwise specified. Section 4.1 describes the procedures for determining harvest levels for the species. Section 5.1 addresses permit and participation, authorized gear, time and area and catch restrictions. Sections 5.2 to 5.5 designate monitoring and reporting requirements for the fishery.

The national swordfish quota for the North Atlantic is harvested by St. Vincent and the Grenadines flagged vessels. No portion of the annual quota and yield is allocated to foreign harvesters or foreign processors.

1.1 General Objective

St. Vincent and the Grenadines aims to create the circumstances for an economically prosperous swordfish fishery through the application of judicious and responsible fisheries management practices, based on sound scientific research and analysis to ensure the sustainability of fishery resources and associated ecosystems for the benefit of future, as well as current generations.

1.2 Specific Objectives

- Adoption of conservative harvest levels based on ICCAT Total Allowable Catch recommendations for Atlantic Swordfish stocks
- Promotion of management measures that, while meeting conservation objectives, also avoid disruption of existing economic structures
- Maintenance of the license limitation programme, modified as necessary to decrease excess fishing capacity in consideration of the efficient use of the swordfish fishery resources
- Increase the utility of High Seas observer data for management of the fishery resources
- Increase the quality of monitoring and enforcement data through MCS strategies and improved technology.
- Continue to cooperate with CRFM, ICCAT, WECAFC, St. Vincent and the Grenadines government agencies and other institutions to meet conservation requirements, promote economically healthy and sustainable fisheries and maximize efficiencies in management and enforcement programmes.
- To adhere to ICCAT minimum size conservation recommendations of 25kg / 125 cm LJFL for live weight and 63 cm cleithrum to keel measurement for dressed weight.

2.0 Characteristics of Swordfish (*Xiphias gladius*)

2.1 Species: Sword fish (*Xiphias gladius*)¹

FAO Names: En- Swordfish; Fr – Espadon; Es – Pez espada

- The body is long and cylindrical
- In adult fish, the upper jaw extends into a very long flat sword
- The eyes are large
- Young fish up to 1m long have small teeth, which virtually disappear when they reach adulthood
- The dorsal and anal fins are both made up of two widely separated parts in adults, but these are continuous in young and juvenile fish
- The first dorsal fin is much larger than the second; the first has 34 to 49 soft rays, the second dorsal fin has 4 to 6 soft rays
- The first anal fin is larger than the second; the first anal fin has 13 to 14 soft rays, and the second has 3 to 4
- The second anal fin is slightly further forward than the second dorsal fin
- The pectoral fins are somewhat rigid, and each is situated on the lower part of the two flanks, with 16 to 18 rays
- There are no pelvic fins
- The adult fish's caudal fin is crescent-shaped; in young fish, it is indented into the fork
- There is a single pronounced side keel on each side of the caudal peduncle
- The anus is close to the source of the first anal fin

2.2 Swordfish Biology²

Swordfish (*Xiphias gladius*) are members of the family Xiphiidae and are in the suborder Scombroidei. They can reach a maximum weight in excess of 500 kg. They are distributed widely in the Atlantic Ocean and Mediterranean Sea. In the ICCAT Convention area, the management units of swordfish for assessment purposes are a separate Mediterranean group, and North and South Atlantic groups separated at 5°N.

Swordfish feed on a wide variety of prey including groundfish, pelagic fish, deep-water fish, and invertebrates. They are believed to feed throughout the water column, and from recent electronic tagging studies, undertake extensive diel vertical migrations.

Swordfish mostly spawn in the western warm tropical and subtropical waters throughout the year, although seasonality has been reported in some of these areas. They are found in the colder temperate waters during summer and fall months. Young swordfish grow very rapidly, reaching about 140 cm LJFL (lower-jaw fork length) by age three, but grow slowly thereafter. Females grow faster than males and reach a larger maximum size. Tagging studies have shown that some swordfish can live up to 15 years. Swordfish are difficult to age, but about 50% of females were considered to be mature by age five, at a length of about 180 cm.

3.0 Description of Atlantic Swordfish Fishery Stocks

According to ICCAT provisional report Doc. No. SCI-036 / 2013, the total Atlantic estimated catch (landings plus dead discards) of swordfish (North and South, including reported dead discards) in 2014 (20,686 t) is on the levels of (+3%) of the reported catch in 2013 (20,127 t).

For the past decade, the North Atlantic estimated catch (landings plus dead discards) has averaged about 12,000 t per year. The catch in 2014 (10,801 t) represented a 47% decrease since the 1987 peak in North Atlantic landings (20,236 t). These reduced landings have been attributed to ICCAT regulatory recommendations and shifts in fleet distributions, including the movement of some vessels in certain years to the South Atlantic or out of the Atlantic.

Two stock assessment platforms were used to provide estimates of stock status for the North Atlantic swordfish stock, non-equilibrium surplus production model (ASPIC) and Bayesian Surplus Production Model (BSP2). The stock is considered rebuilt, consistent with the 2009 evaluation. Compared with the 2009 ASPIC base case model, the trajectory of biomass and F ratios are similar until the late 1990s, thereafter the current model predicted slightly lower fishing mortality rates and higher relative biomass, but certainly within the estimated 80% confidence bounds. Results from the 2013 assessment indicated that there is a greater than 90% probability that the North Atlantic Swordfish stock has rebuilt to or above B_{MSY} .

4.0 St. Vincent and the Grenadines Current Fishery

St. Vincent and the Grenadines has a High Seas fishing fleet which are foreign owned vessels registered in St. Vincent and the Grenadines. The High Seas fishing fleet is of an industrial nature, harvesting tuna and tuna like species. There are Thirty-three (33) such vessels of between 23 to 52 meters in length fishing in the Atlantic.

The current high seas fishery is a Long line tuna fishery utilizing long line gear and licensed to target albacore, big eye tuna, yellowfin tuna and swordfish. St. Vincent and the Grenadines is an active member of the International Commission for the Conservation of Atlantic Tunas and contributes fishing operations data for informing assessment and management of these species. As a CPC, St. Vincent and the Grenadines is obligated to participate in the SCRS yearly. Direct revenues collected from this High Seas fisheries sector include registration fees which are collected by the Department of Maritime Administration every five (5) years and High Seas fishing licenses which are collected by the Fisheries Division on an annual basis.

4.1 Quota Allocation

St. Vincent and the Grenadines has thirty-three (33) vessels fishing within the ICCAT convention area and an annual quota of seventy-five (75) mt is allocated. Any used portion or excess of the annual adjusted quota may be added to or shall be deducted from the respective quota of the adjustment year (the catch year 2 years from the one in question). The maximum underage which may carry over in any given year shall not exceed 50% of the initial quota.

Two of the larger vessels which conduct transshipments, Dae Sung 216 and Dae Sung 226, are allocated twenty (20) mt of North Atlantic Swordfish each while one (1) mt each is allotted to the remaining thirty-one vessels. The catch data is compiled and reviewed monthly to ascertain compliance.

In 2015, St. Vincent and the Grenadines authorized Dae Sung 216 and Dae Sung 226 to conduct transshipments thereby creating a greater demand for North Atlantic Swordfish compared to previous years. These vessels were allocated quotas of twenty-five (25) mt each thus allowing for St. Vincent and the Grenadines to better utilise the allotted quota. It should be highlighted that it is envisaged that the fleet capacity of St. Vincent and the Grenadines would increase and as such there may be a need for increased quota allocations to the country.

The table below outlines the catches for the period 2013 to 2016.

North Atlantic Swordfish	2013	2014	2015	2016	2017
Initial Quota (mt)	75	75	75	75	75
Adjusted Quota (mt)	112.5	112.5	112.5	85.5	85.5
Catches (mt)	4.2	39.8	102	33.4	TBD*

*TBD - To Be Determined

5.0 Management and Enforcement Considerations

5.1 Authorization to Fish

The High Seas Fishing Act (2001) requires High Seas fishing vessels to have a license prior to engaging in any fishing activities. In accordance to licensing regulations, St. Vincent and the Grenadines flagged vessels shall only operate in ICCAT area after they have received prior approval from the Fisheries Division. Vessels which operate in ICCAT only proceed to operate in that area after the vessel has been included in ICCAT's list of approved and authorized vessels.

When operating on the high seas, a vessel shall conduct activities strictly in compliance with the terms and conditions as stipulated in its license. When operating in the jurisdiction of ICCAT, the vessel shall conduct activities in compliance with the applicable conservation and management measures of ICCAT.

5.2 Vessel Monitoring System

St. Vincent and the Grenadines has established a High Seas Unit within the Fisheries Division for the monitoring of the High Seas vessels. All vessels are required to install a satellite based Vessel Monitoring System (VMS) regardless of size. The VMS on board is required to be maintained functional at all times whether at sea or in port. Transmission of position reports are carried out actively every hour. The VMS also allows St. Vincent and the Grenadines' monitoring personnel to observe the movement of the vessels within the ICCAT Convention Area. Vessels that operate outside their authorized areas of operation are considered to have violated St. Vincent and the Grenadines' regulations and are subject to disciplinary actions in accordance with the High Seas Fishing Act (2001) and Regulations (2003).

5.3 Observer Programme

St. Vincent and the Grenadines is in the process of establishing its Observer Programme which will facilitate the placement of scientific observers on board its High Seas fishing vessels for the purpose of collecting fisheries specific data and in accordance with the High Seas Fishing Regulations (2003). The Observers will monitor the High Seas vessels and report on their compliance with local legislation as well as ICCAT recommendations for the managed species.

5.4 Inspection Programme

Fisheries Fish and Fish Products Regulations (2006) allows for the inspection of vessel discharges to ascertain the fish which is landed is fit for consumption. The traceability of fish is addressed in the St. Vincent and the Grenadines Fish and Fish Products Regulations Section 35.

The Procedural Manual for the Official Control of Fish and Fish Products (2011) outlines the proper procedures for the inspection of fish and fish products as well as those relating to the proper control of fish and fish products for domestic markets, export markets and the importation of fish. These include licenses, health certificates and other inspection forms which can be used to allow reliable traceability of fish and fish products (based on HACCP standards) from the net to the primary distributors.

An inspection Programme whereby St. Vincent and the Grenadines Fisheries Division officers inspect a sample of the catches of its High Seas fleet at ports in Trinidad is in its initial phase. One inspection was made in the first quarter of 2017 and five inspections in the third quarter.

5.5 Monitoring, Control and Surveillance (MCS) Data Management

A system for the procurement, storage and propagation of MCS data is established and maintained by St. Vincent and the Grenadines taking into consideration the confidentiality requirements and personnel handling of matters relating to the MCS measures and disclosure relevant to any violation. The dissemination of any VMS data or other such data by any authorized officer is prohibited unless approved by the Chief Fisheries Officer.

The following measures for the procurement, storage and propagation of MCS data are described below:

- Fishing Vessel Records - In accordance to the High Seas Fisheries Regulations (2003), the owners shall be required to complete an application together with supporting documents to St. Vincent and the Grenadines for the issuance of a license. The minimum information as prescribed in the regulations shall be recorded on the license. Data for each vessel shall be stored electronically within the St. Vincent and the Grenadines Fisheries Division. As a result of confidentiality of ownership information though, this data is restricted from public access. However, all data shall be reported to the FAO in accordance with the 1993 FAO Compliance Agreement.
- Catch – All St. Vincent and the Grenadines High Seas vessels are required to report their catches regularly in accordance with the High Seas Fishing Regulations (2003). This information is provided to the St. Vincent and the Grenadines Fisheries Division on a monthly basis. The Division (through the work of data collectors) also collects catch and effort, biological and socio-economic data from the domestic fleet.
- VMS Data – St. Vincent and the Grenadines flagged vessels are required to report their positions, via the vessel monitoring system, on a schedule approved by the Fisheries Division. Monthly reports are done by the High Seas Unit.
- Observer Data – Observers submit all data obtained from the fishing activities observed onboard the vessel after the completion of a trip.
- Transshipment Data – Transshipments at sea are prohibited unless permission is granted by the Minister according to the High Seas Fisheries Regulations 2003. Any vessel which intends to conduct transshipments is required to obtain prior approval from the Fisheries Division and can only commence transshipments after the approval is granted. Data on transshipment operations shall be reported to the Fisheries Division in accordance to the Regulations.

5.6 Reporting Requirements

St. Vincent and the Grenadines provides information on vessels and their activities to ICCAT as well as the FAO in accordance with the requirements of the relevant reporting obligations in the Compliance Agreement.

5.7 Sanctions

The Prohibition and Offences section (Part VI) of the High Seas Fishing Act 2001, calls for the imposition of sanctions for any violation committed in contravention of the Act, its regulations, circulars, notices and instruments. Sanctions are levied depending on the nature and severity of the offence, the extenuating circumstances and the damage to the marine environment and includes, inter alia, the imposition of fines up to two (2) million US dollars.

Literature cited

1. ICCAT Circular #5517/ 2017, Egypt - Swordfish Fishing Plan
ICCAT 2015, Report for Biennial Period, 2014 - 2015, Part II, V