



# NOVA SCOTIA SPECIES SPOTLIGHT: SWORDFISH (*Xiphias gladius*)

## FISHERY

Three Atlantic swordfish stocks span from Newfoundland and Labrador to Argentina. The northern stock enters Canadian waters from May to November with rising water temperatures in search of food.

Swordfish is targeted by longline and harpoon gear types.

The directed longline fishery for swordfish takes place from April to December, from Georges Bank south of Nova Scotia to beyond the Flemish Cap east of Newfoundland. The harpoon fishery takes place from June through August.

Canada receives ~10% of the 13,200 t total allowable catch (TAC) for North Atlantic swordfish fishing area (SWO-N). In 2020, 734 t were captured in SW Nova Scotia (BIL92), and 602 t were captured elsewhere in Canada (BIL94A).

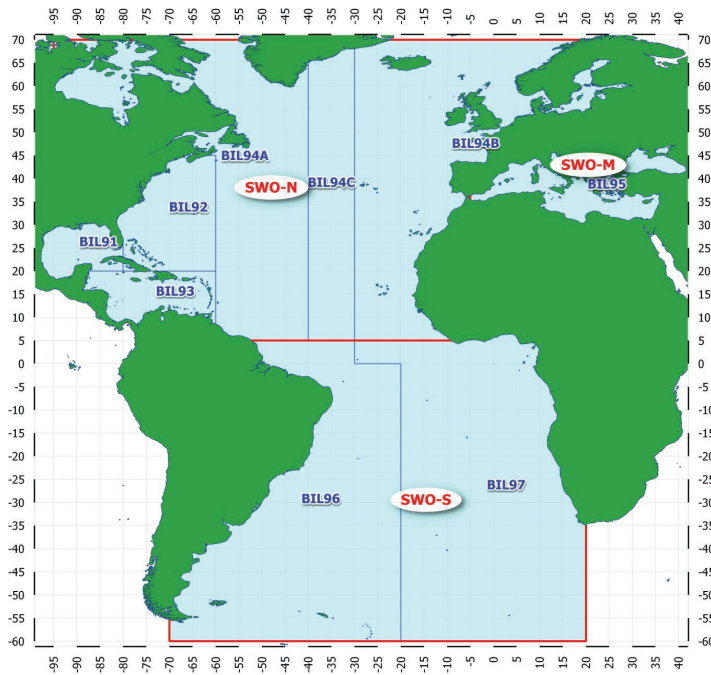


Figure. Swordfish fishing areas in the Atlantic Ocean

## BIOLOGY

Swordfish is in the billfish family, and possess a characteristic long, flattened bill resembling a sword.

Swordfish can swim up to 80 km per hour. They weigh on average from 50 to 200 lbs, measure 1.2 to 1.9 meters in length, but can reach a maximum weight of ~ 1,100 lbs and length of 4.5 m.

Swordfish have the widest temperature range of all billfish, and migrate into Canadian waters in the summer with rising surface water temperatures to feed.

They feed on groundfish, pelagic fish, deep-water fish, and invertebrates throughout the water column, and is uniquely adapted to swim in deep cold waters.

## LIFE CYCLE

Swordfish spawn in western tropical and subtropical waters throughout the year in water temperatures from 23 to 26 °C. Females produce from 1 to 29 M eggs annually and get fertilized by males in the water column.

Eggs measure 1.6 to 1.8 mm in diameter and develop into embryos 2.5 days after fertilization.

Larvae measure 4 mm in length when they hatch and possess a short snout. A bill develops when the larvae reach 12 mm in length.

Juveniles grow quickly to 140 cm in length by age 3, but grow slowly thereafter. Females grow faster than males and reach a larger maximum size.

Females believed to reach maturity by 5 years, and can live up from 9 to 15 years of age.





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## MANAGEMENT AND CONSERVATION

The International Commission for the Conservation of Atlantic Tunas (ICCAT) is an inter-governmental fishery organization responsible for the conservation of tunas and tuna-like species in the Atlantic Ocean and its adjacent seas.

The minimum size limit for swordfish is 125 cm (lower jaw to fork length, LJFL) with 15% tolerance, or 119 cm (LJFL) with 0% tolerance and evaluation of discards.

ICCAT stock assessments indicated the North Atlantic stock is not overfished or actively overfishing.

The swordfish fishery in Canada is certified by the Marine Stewardship Council for both longline and harpoon gear types.

## SEAFOOD LABELLING

	Terminology	Description
<b>Common Name</b>	<b>English:</b> Swordfish <b>French:</b> Espadon	Accepted common name(s) for <i>Xiphias gladius</i>
<b>Production Method</b>	Wild	Harvested from the ocean
<b>Certifications</b>	Marine Stewardship Council (MSC)	Certifies that fish products come from wild fisheries that meet environmental standards for sustainable fishing
<b>Product Forms</b>	Round	Unprocessed
	Dressed	Deheaded and eviscerated, tail and fins removed
<b>Catch Methods</b>	Long-line	Caught by set longlines with baited hooks
	Harpoon	Caught by harpoon
<b>Size Grading</b>	Puppies	33 – 49 lbs
	Pups	50 – 99 lbs
	Markers	100+ lbs

## PROCESSING/HANDLING

### ICCAT Conversion Factor

Round weight = Dressed weight \* **1.33**

Round weight = Gutted and Gilled \* **1.14**, or

Round weight = Dressed weight \* **1.584 - 0.479**

### Primary Products

Dressed

### Secondary Products

Gutted and Gilled, Loins, Steaks

### Post-Harvest Primary Processing

Harvest » Slaughter » Bleeding, Evisceration » Vessel Stowage » Off Loading » Packaging » Storage » Transportation

### By-Product

Heads, Viscera, Skin, Bones, Fins

### Post-Harvest Processes Impacting Quality

- Delay in Slaughter
- Product Exposure
- Bleeding Practice
- Product Chilling (delay in chilling, temperature abuse)
- Gentle Handling (Gaff punctures and ragged cuts)
- Cleanliness of Gut



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## CHEMICAL COMPOSITION

	Proportion (g / 100 g)	
	Raw	Cooked
<b>Moisture</b>	73.40	68.3
<b>Protein</b>	19.70	23.4
<b>Fat</b>	6.65	7.93
<b>Carbohydrate</b>	0.00	0.00
<b>Ash</b>	1.44	1.71

USDA Nutritional Database ID, 15110 (Raw), 15111 (Cooked)

Swordfish is considered an intermediate fat content fish.

## STORAGE

Chilling should commence as quickly as possible once brought on board a vessel. A mixture of brine and ice to produce a slurry is adequate for removing excess heat from the animal, whereas iced storage is appropriate for maintaining fish at the temperature of melting ice.

Damage to swordfish flesh can occur by crushing under the weight of a large quantity of ice and will accelerate product deterioration.

Freezing can extend the shelf life of the product, but swordfish remain susceptible to fat oxidation and textural changes over the long term if not adequately protected by packaging.

Frozen storage at -18 °C is effective for maintaining a shelf life for up to 6 months, whereas -30 °C is effective for maintaining a shelf life of up to 12 months, for a good quality product. The best quality is maintained for a shorter storage period at these temperatures.

## KEY FOOD SAFETY AND QUALITY CONCERNS

Swordfish possess high concentrations of the amino acid histidine within their tissues, and temperature abuses allow microbes found naturally in the marine environment to grow and convert it to histamine. Histamine is a biogenic amine that if consumed leads to an allergic-type reaction called scombroid poisoning.

Swordfish flesh may present with a jelly-like consistency, caused by parasitic infection. Parasites found naturally within the flesh that no immediate risk to product quality. Freezing to below -35 °C for at least 15 hrs, or below -20 °C for at least 7 days is effective to kill parasites.

Swordfish can bioaccumulate environmental contaminants and a primary hazard is heavy metals. Organic mercury (methylmercury) can accumulate within the flesh and limit of 1 ppm is permitted by Health Canada.

## REFERENCES

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