

Information on the Collection of Biological Data for Sharks

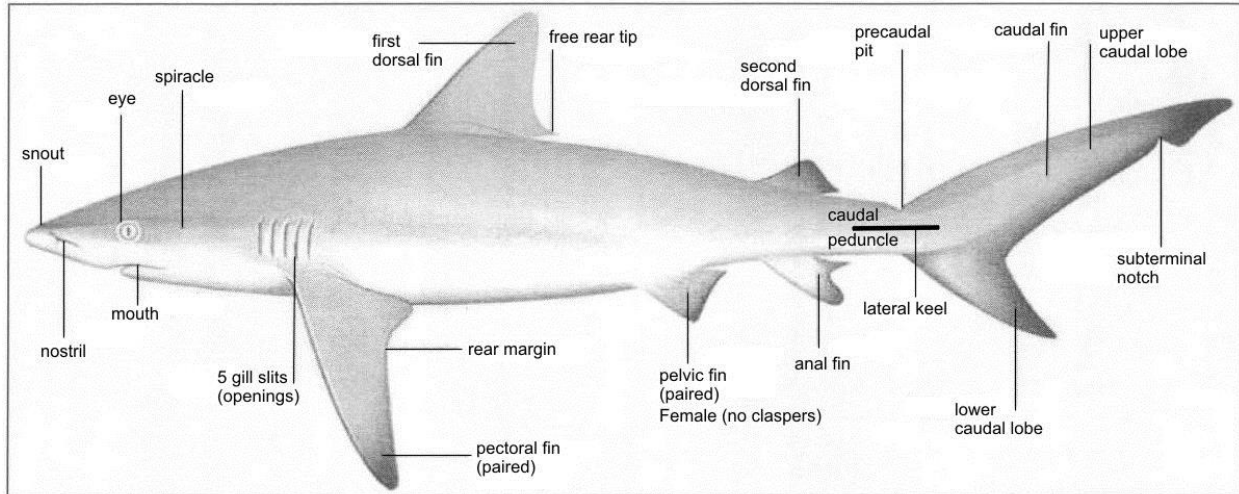
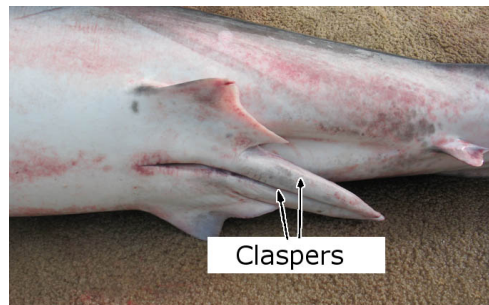


Photo modified from *Sharks*. L Campagno, C Simpfendorfer, JE McCosker, K Holland, C Lowe, B Wetherbee, A Bush, and C Meyer.

Species: See Appendix A: Species Identification Guide

Sex: Male sharks can be identified by the presence of two claspers (finger-like projections) located behind the anus. Females do not have claspers.



Length: Should be measured from the tip of the shark's snout to the longest part of the tail fin, in centimeters (cm).



Photo: Dr. Scott Grant

Weight: See Appendix B: Estimated weights (kg) for sharks based on Fork Length (cm)

Catch Disposition: NAFO requires that sharks be identified as Alive, Dead, or Unknown.

- Alive – body and/or gill movements, reaction to being handled. Can include uninjured, injured, or moribund sharks.

Uninjured sharks show the following characteristics:

- Shark quickly moves and/or reacts to being handled.
- Frequent gill movements.
- Fishing hook is visible (example: mouth-hooked) & has **NOT** been swallowed or hooked in the gills.
- Shark is not bleeding; **OR** is bleeding slowly & **NOT from the gills**. Blood may be seen around mouth and/or jaw.
- Jaw is okay & looks functional. Injury is only a hook puncture and/or small extraction wound after careful hook removal, possibly with some bleeding from the wound.
- When fishing gear is wrapped around a shark, gear is not restricting its movement **OR** gear is removed with minimal shark damage & its fins/tail are functional after gear removal.

Injured sharks show *at least one* of the following characteristics:

- Shark is moving and/or reacts to being handled.
- Gill movements.
- Shark is gill-hooked **OR** hook is not visible & has been swallowed.
- Blood is flowing freely & continuously (=gushing) from any wound on the shark & shows no sign of slowing down or stopping.
- Jaw is damaged, but still usable.
- Injuries are present (larger than hook puncture **OR** minimal hook extraction wound), but **NOT** immediately life-threatening. Examples: fins are frayed/damaged/torn, but still usable.
- If body wounds are present – though muscle may be visible – they are **NOT** deep enough to expose internal organs

Moribund sharks show *at least one* of the following lethal injuries:

- Bleeding from torn or severed gill arch. Shark probably will **NOT** survive when its gills are bleeding, although the shark looks alive when released.
 - Jaw broken, unusable **OR** missing, so that a shark cannot swim/hunt/feed.
 - Serious damage to eyes or head.
 - Multiple fins missing.
 - Body wounds deep with internal organs visible.
 - Amount of bleeding can be used to determine if a shark is moribund
- Dead – no body or gill movements, no reaction to being handled, *rigor mortis* (stiff body). Sharks should not be identified as dead if showing any signs of life.
- Unknown – should be used when evaluation is not possible

Appendix A: Species Identification Guide

Contents:

Basking Shark (BSK)

Blue Shark (BSH)

Greenland Shark (GSK)

Porbeagle (POR)

Shortfin Mako Shark (SMA)

Thresher Shark (ALV)

White Shark (WSH)

Teeth in Identification

Basking Shark (*Cetorhinus maximus*)

Common Names:

Bone Shark, Nurse Fish, requin pélerin (fr)

Description:

- Second largest fish in Canadian waters & around the world (behind Whale Shark).
- Swims slowly near the surface, often with its huge mouth wide open (*see right photo below*): filter-feeding on plankton & small crustaceans with its feathery “gill rakers” (*see photo above*).
- ***Colour:*** Grayish-brown all over body; often has a mottled appearance.

Size:

Juvenile: 1.6 m

Average Size: 7 m

Maximum: 15 m (50 ft)

Identification Keys:

- Often seems to have a mottled appearance.
- First dorsal fin origin further back on body, relatively rounded top, leading edge at a distinct 45° degree angle & much larger than the second dorsal fin.
- *Extremely large gill slits*, which wrap *almost completely* around the top & bottom of its head.
- Huge mouth with many tiny teeth.
- Large, conical snout.



Photo: The Gulf News

Photo Copyright: ElasmDiver.com

A Basking Shark's first dorsal fin at the water's surface may be confused with that of a Great White Shark.



Basking Shark



White Shark

Blue Shark (*Prionace glauca*)

Common Names:

Blue Dog, requin bleu (fr)

Description:

- One of the most common pelagic sharks seen in NL waters.
- A long & slender body, with long pectoral fins & distinct colouration.
- **Colour:** Deep indigo blue on top, vibrant blue on its sides, fading to a completely white underbelly.

Size:

At Birth: 40-51 cm

Average Size: 3.4 m

Maximum: 4.0 m (13 ft)

Identification Keys:

- Long pectoral fins.
- Long, slender body.
- Distinct countershading: dark blue colour on top, bright blue on the sides, fading to a completely white underbelly.
- Crescent-shaped tail fin, with notched-top lobe much larger than the bottom lobe.
- Second dorsal fin equal in size to & directly above anal fin.
- Nictitating membrane over eye (*see right photo*).
- Teeth differ: on TOP jaw are triangular & curved, with finely serrated edges ("saw-edged"; *see photo-last page*); teeth on BOTTOM jaw are straight, pointed & often smooth-edged or slightly serrated.



Photo: Santiago Montealegre-Quijano

Greenland Shark (*Somniosus microcephalus*)

Common Names:

Ground Shark, requin du Groenland (fr)

Description:

- Large, flabby shark that is generally slow-moving.
- **Colour:** Varies slightly: adults can be brown, black, purplish gray or slate gray all over body; may also have dark bands or small white spots on body.

Size:

Juvenile: 38 cm

Average Size: 4.5 m

Maximum: 7.3 m (24 ft)

Identification Keys:

- Round-edged tail fin, with top lobe larger than bottom lobe.
- No anal fin.
- Small, spineless, equal-sized dorsal fins.
- Small, round-edged pectoral fins.
- Very small eyes.
- Very small gill slits.



Photo: Bob Kean



Photo: Harry Mercer

Porbeagle Shark (*Lamna nasus*)

Common Names:

Mackerel Shark, requin maraîche (fr)

Description:

- One of the most common pelagic sharks seen in NL waters.
- Large black eyes, short conical snout, heavy spindle-shaped body (like White Shark), distinct white patch on the trailing edge of first dorsal fin, also secondary keel on tail.
- ***Colour:*** Blue-gray on top, fading to a completely white underbelly.

Size:

At Birth: 60-75 cm

Average Size: 2.4 m

Maximum: 3.5 m (11.5 ft)

Identification Keys:

- Distinct short, conical snout & large dark eyes.
- Upper and lower jaws have smooth-edged teeth with a pointed cusp on each side (see photo-last page).
- Distinct white patch on the trailing edge of first dorsal fin (see red circle below).
- Crescent-shaped tail fin, with top & bottom lobes almost the same size.
- Tail fin has both primary and secondary keels. (see yellow circle above).



May be confused with Shortfin Mako Shark, or White Shark.



Shortfin Mako Shark (*Isurus oxyrinchus*)

Common Names:

Mako, requin-taupe bleu (fr)

Description:

- Fastest shark in the Northwest Atlantic Ocean & a “jumper” when hooked.
- Sleek, spindle-shaped body.
- **Colour:** Distinct countershading: metallic indigo blue on top & completely white underbelly.

Size:

At Birth: 70-77 cm

Average Size: 2.7 m

Maximum: 4.5 m (15 ft)



Identification Keys:

- Crescent-shaped tail fin, with top & bottom lobes almost the same size.
- Distinct primary keel on tail (no secondary keel; see Porbeagle).
- No white patch on the trailing edge of the first dorsal fin (see Porbeagle).
- Second dorsal fin much smaller than the first dorsal fin.
- Moderately short pectoral fins with pointed tips (see Longfin Mako Shark-next page).
- Teeth are visible, even when its mouth is closed.
- Teeth are long, slender & smooth-edged, with no side-cusps (see Porbeagle; see photo-last page).
- Long, conical snout with a white underside.

May be confused with Porbeagle Shark, or White Shark.



Shortfin Mako Shark may be confused with Longfin Mako Shark, or Porbeagle Shark, or White Shark.

Longfin Mako Shark has *long pectoral fins with rounded tips*.

Longfin Mako Shark



Shortfin Mako Shark



Thresher Shark (*Alopias vulpinus*)

Common Names:

Common Thresher Shark, requin renard commun (fr)

Description:

- Extremely long top lobe of the tail fin with narrow tip.
- ***Colour:*** Brown, grey, blue-grey or black on top with metallic hues; white underbelly extending over pectoral fin bases.

Size:

At Birth: 1.5 m

Average Size: 4.5 m

Maximum: 6.1 m (20 ft)

Identification Keys:

- Second dorsal fin much smaller than the first; origin well behind the rear tip of pelvic fins.
- Small jaws & teeth.
- Sharp, curved teeth - no serrated edges.
- Extremely long top lobe of the tail fin (may be as long or longer than its body length); short bottom lobe.
- Short, stubby snout with a white underside.
- Large eyes far forward on head.



White Shark (*Carcharodon carcharias*)

Common Names:

“Great” White Shark, requin blanc (fr)

Description:

- Large, heavy, spindle-shaped shark.
- **Colour:** Distinct countershading: varies from lead gray, brownish-gray or black on top & completely white underbelly.

Size:

Juvenile: ~100 cm

Average Size: 4.6 m

Maximum: 6.4 m (21 ft)

Identification Keys:

- Crescent-shaped tail fin, with top & bottom lobes about the same size.
- Strong primary keel on tail (no secondary keel; see Porbeagle).
- Long, conical snout with a white underside.
- Relatively small, black eyes.
- Triangular-shaped teeth with serrated edges (“saw-edged”; see photo-last page).
- Large, triangular-shaped first dorsal fin, pointed top, & much larger than the second dorsal fin. No white patch on the trailing edge of first dorsal fin (see Porbeagle).



A White Shark's first dorsal fin at the water's surface may be confused with that of a Basking Shark (*see previous page*).

Body may be confused with Porbeagle Shark, or Shortfin Mako Shark.



Photo: Bruce Burton

Teeth - in general:

- The shape, number & appearance of teeth vary a lot between shark species, and can be one of the most important characteristics for correct species identification.
- Depending on the species, tooth appearance can differ between the top & bottom jaws of an individual shark (*see Blue Shark*), or from the front to the back of its mouth.

BOTTOM Jaws:



Porbeagle Shark



Shortfin Mako Shark

TOP Jaw:



Blue Shark

BOTTOM Jaw:



White Shark

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Appendix B: Estimated weights (kg) for sharks based on Fork Length (cm)

Note: The table below draws from NOAA data with the exception of Porbeagle data, which has been compiled based on Canadian At-Sea Observers.

FORK LENGTH	Blue	Shortfin Mako	Porbeagle*	Common Thresher	White	FORK LENGTH
488					1486	488
472					1347	472
457					1217	457
442					1096	442
427					984	427
411					880	411
396					783	396
381					694	381
366					611	366
351					536	351
335		448			468	335
320		387			405	320
305	175	332			348	305
290	160	283			298	290
274	137	239		282	252	274
259	115	199		240	211	259
244	95	165		201	175	244
229	78	135	152	169	143	229
213	63	108	128	139	116	213
198	49	86	108	113	92	198
183	39	67	83	90	72	183
168	29	51	69	70	55	168
152	22	38	46	54	41	152
137	16	27	37		29	137
122	11	19	27		20	122
107	7	12	20			107
91	5	8	12			91
76	2	4				76
61	1					61
46						46
FORK LENGTH (CM)	Blue	Mako	Porbeagle*	Common Thresher	White	FORK LENGTH (CM)

[*Unpublished Canadian ASO data]



WEIGHT IN KILOGRAMS

