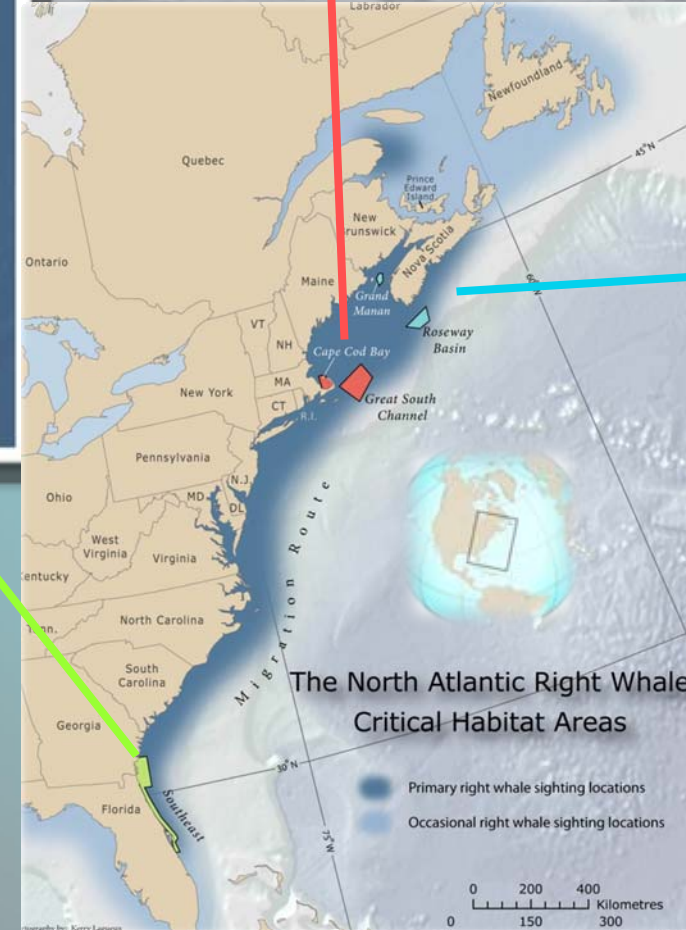


Right Whale Migration and Critical Habitats



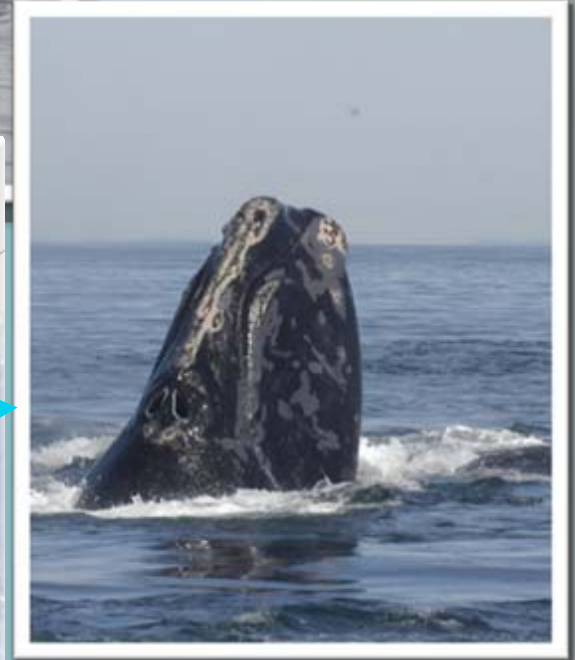
Southeast United States Critical Habitat

Some right whales migrate to the coastal waters of Georgia and northeast Florida in the winter. Adult females give birth; this is the only known calving ground. (November - March)



Cape Cod Bay & Great South Channel

Two critical habitats off the coast of New England where right whales feed, rear their young and socialize year round.



Bay of Fundy & Roseway Basin

Two critical habitats in Canadian waters where right whales feed and socialize. The Bay of Fundy is a nursery ground for 60% of mothers and calves. Right whales are also seen in the Gulf of St. Lawrence. (June - December)

Right Whale Identification



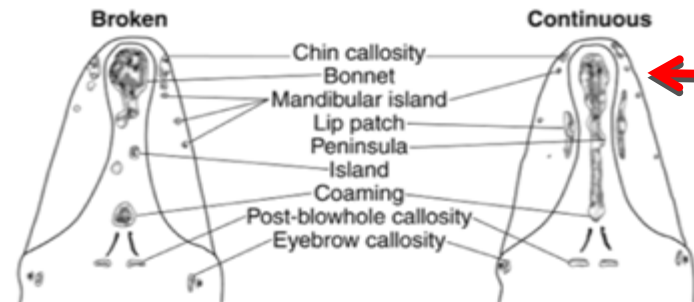
Callosity

Callosities – are patches of raised, thickened, black skin that form distinct patterns.

Close up view



Every right whale has a different callosity pattern that researchers use to tell right whales apart. Callosities are located on the top of the whale's head, upper ridge of the lower lips, on the chin, along the mandibles (jaws), above the eyes, and behind the blowholes. Callosities are unique to right whales.

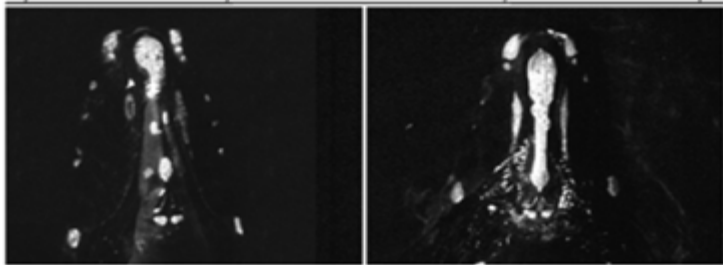


Right whales are individually identified using the natural callosity markings and scars.

Cyamids - are tiny amphipods also known as whale lice. They are about the size of a dime, live on skin callosities and account for the white or yellow appearance in the callosity pattern.



A single right whale can have as many as 10,000 cyamids living on it.



Right Whale Characteristics



V spout (or blow)



Paddle-shaped flippers

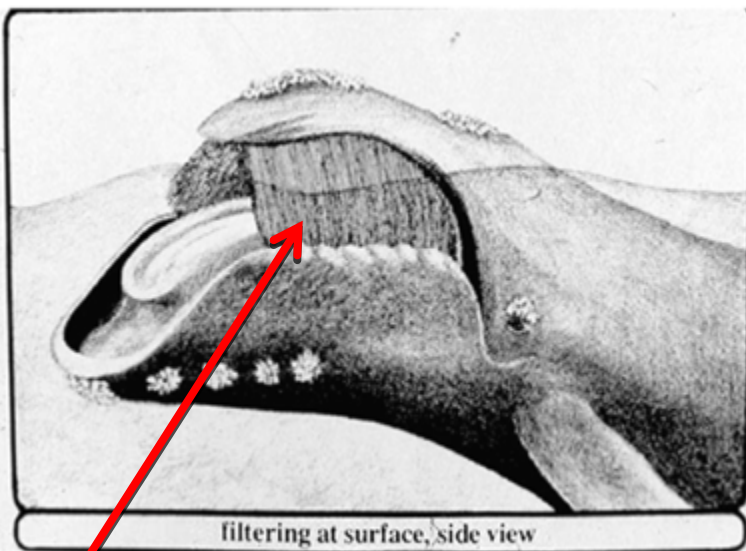


No dorsal fin

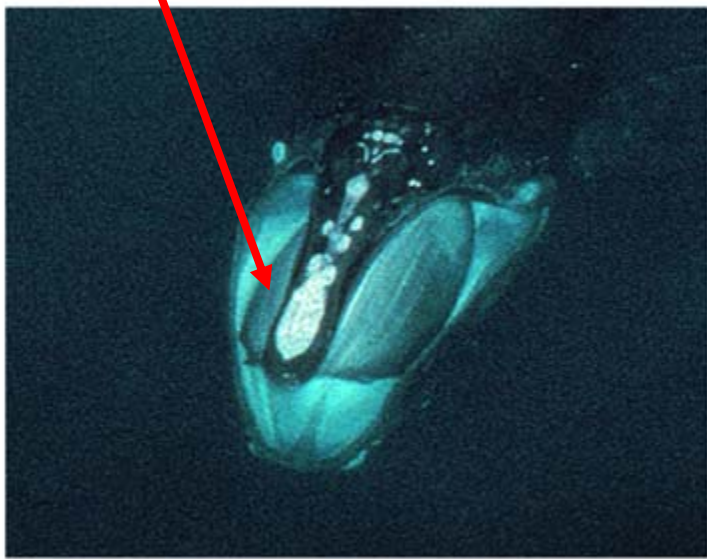


All black tail (flukes) lifted as they dive

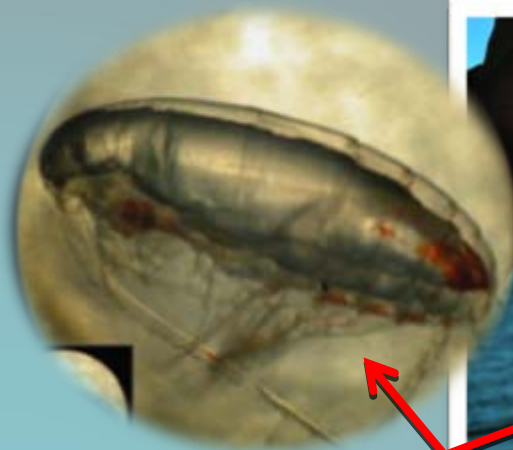
Right Whale Feeding



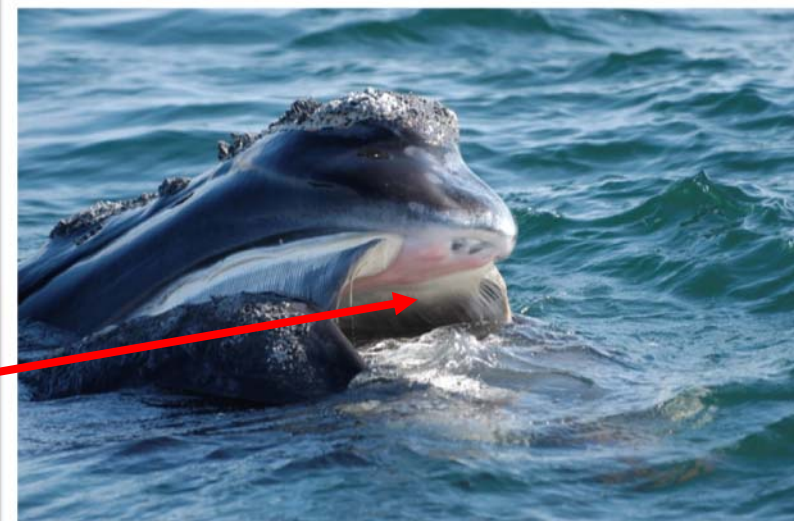
Baleen - There are ~220-270 baleen plates on each side of the upper jaw. They are used to filter food (plankton) from the water. Baleen plates are made from a protein called keratin, the same protein found in human hair and fingernails.



Right whales are filter feeders. They sieve copepods from the water at or just below the surface, down to depths of 200+ metres. Copepods are caught in hair-like fringes along the inside of the baleen plates.



Copepods – Right whales feed almost exclusively on a plankton called copepods. They are rich in oil and smaller than a grain of rice. Right whales eat about 500,000 calories per day. (~1,785 hamburgers)



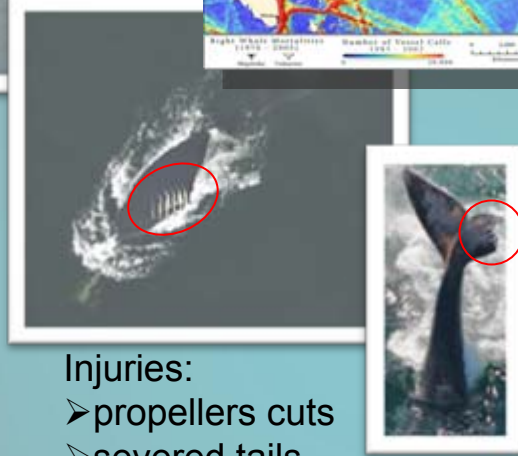
A photograph showing a whale breaching the water surface, creating a large splash. In the background, a large offshore oil rig is visible on the horizon under a cloudy sky.

Red – high density shipping.
Yellow & light blue – lower density.

- blunt trauma
- broken bones



- 28 vessel strikes
(~50% of all known deaths)
- 21/28 (75%) have occurred since 1991



Injuries:

- propellers cuts
- severed tails

Mitigation measures:

- Mandatory ship reporting (1999)
- Recommended routes (2006)
- Speed rule (≤ 10 knots) and seasonal and dynamic management areas (2008)
- Area to be avoided, amended lanes (2009)

Mitigation measures:

- 2003 - Bay of Fundy shipping lane moved.
Risk reduced by 90%.
- 2008 Roseway Basin Area To Be Avoided.
Voluntary vessel operator compliance ~80%.
- Both measures were adopted by the International Maritime Organization (special agency of the United Nations) and implemented by Transport Canada.

North Atlantic right whales are Endangered

Right whales are found in the waters of Atlantic Canada from June through December. Their range extends from their official habitat in the lower Gulf of St. Lawrence by the Seaside Basin Area to the Scotian Shelf, with occasional sightings in the Gulf of St. Lawrence.

BIO-ADOPTED Frequency
limits have been established
for ships of 90G gross tonnage
and greater during the period
of 1 June through 31 December
(SRS 15-06-2003)

A:	427.18 ± 0.6	NF 102 ± 0.6
B:	427.37 ± 0.6	NF 106 ± 0.6
C:	427.56 ± 0.6	NF 110 ± 0.6
D:	427.75 ± 0.6	NF 114 ± 0.6

Seaside Basin
Area Not to be Avoided

Not to be used for navigation. See Canadian Hydrographic Service charts 4033 (2003 edition), 4011 and 4012.

Right whales are injured or killed by collisions with vessels and entanglement in fishing gear.

If you see a right whale, let anyone that there may be more in your party know. Do not approach. Give priority to your own boat and if you may witness important evidence of harassment, entanglement, or dead/fairly stricken whales report immediately to the nearest Coast Guard Vessel Traffic Watch (VTF) or Environmental Emergencies 1-866-567-4277.

Your help is greatly needed and appreciated.

Canadian Whale Institute

Science, Service, Sustainability

Science, Service, Sustainability

Compliance Guide for Right Whale Ship Strike Reduction Rule (50 CFR 224.106)

ATTENTION: All vessels greater than or equal to 65 ft (19.8 m) in overall length and subject to the jurisdiction of the United States and all vessels greater than or equal to 65 ft in overall length entering or departing a port or place subject to the jurisdiction of the United States.

YOU MUST SLOW TO THE SPEEDS OF 10 KNOTS OR LESS IN SEASONAL MANAGEMENT AREAS

Northeast U.S. Seasonal Management Area

Feeding Areas

Feeding Areas

East Coast
Starts 1° 15' N
Includes all waters of
Cape Cod Bay and
Northern Boundary of
42°14'N, 071°12'W to
42°14'N, 070°12'W
Does not extend back to shore.

West Coast
Starts 1° 15' N
Waters Bounded by:
42°14'N, 071°12'W to
42°14'N, 070°12'W
42°14'N, 070°12'W to
42°14'N, 069°12'W
Does not extend back to shore.

Great Salt Channel
Starts 1° 15' N
Waters Bounded by:
42°14'N, 069°12'W to
42°14'N, 068°12'W
42°14'N, 068°12'W to
42°14'N, 067°12'W
Does back to existing jet.

The above areas are subject to seasonal management restrictions.

Mid-Atlantic U.S. Seasonal Management Areas

**Chesapeake Bay
Migratory Corridor**
November 1 through April 30

Southeast U.S. Seasonal Management Area

Calving and Nursery Grounds
November 15 through April 15

The above areas are subject to seasonal management restrictions.

Voluntary Seasonal Management Areas (VSMAs) may be established by NOAA Fisheries. VSMAs are encouraged to avoid areas where a minimum of 10 knots or less while transiting through coastal areas. NOAA Fisheries cannot enforce VSMAs to maintain their voluntary compliance communication model. This review is NOAA's usual safety compliance advice.

Monitoring speed restrictions of 10 knots or less when required is a National Standard. Vessels along the U.S. East Coast during times when right whales are likely to be present, the risk of ship strikes is high. The NOAA is the National of studies and various reports to those endangered whales that result from collisions with ships.

USA

Vessels may operate at a speed greater than 10 knots and if necessary to maintain a safe accompanying speed in an area where conditions severely restrict maneuvering as determined by the pilot or master.

If a deviation from the 10 knot speed restriction is necessary, the following criteria must be met and noted in the logbook:

- Reasons for deviation
- Speeds reached
- Speeds reached were important
- Latitude and longitude of area of deviation
- Time of day
- Number of the vessel and ship name
- The typical entry

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U.S. Department of Commerce

National Oceanic and Atmospheric Administration

Mid-Atlantic Fisheries Service

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Entanglement Reduction



Entanglements can occur around the head, flipper, body and tail. The result to the animal ranges from minor to severe; some entanglements are lethal. (minimum number of mortalities are 9 known deaths, 2 in Canadian gear)

76 right whales seen entangled in fishing gear since 1980 ...

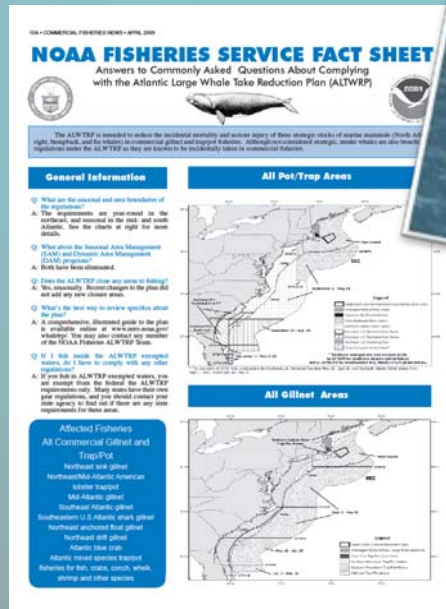
However !!!

Analysis of scars on right whales seen between 1980-2006

- 78% have been entangled at least once
- 50% have been entangled 2-6 times

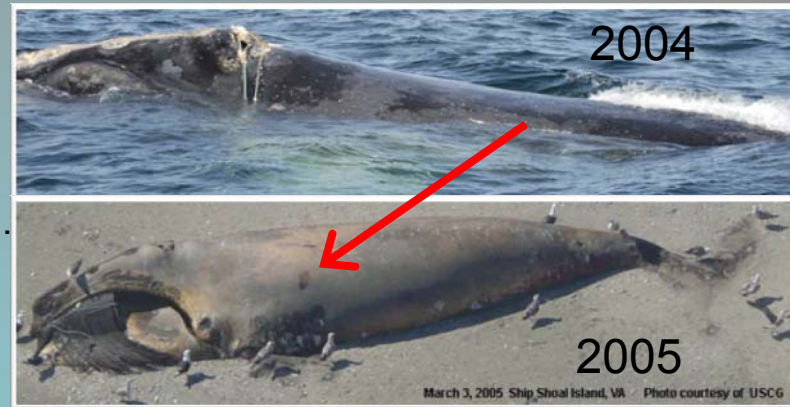
Mitigation measures in U.S. waters:

- Disentanglement teams Maine to Florida
- Formation of Atlantic Large Whale Take Reduction Team in 1996 to advise NMFS in the development and evaluation of modifications to fisheries to reduce injury/mortality of large whales (right, humpback and fin)



Mandatory gear modifications

- Weak links on buoy lines and anchored gillnet panels
- Sinking ground lines for all trap/pot and anchored gill net fisheries except inside coastal exemption
- Gear marking on buoys and buoy lines
- Seasonal restrictions/closures



Mitigation measures in Canadian waters:

- Volunteer disentanglement team in Bay of Fundy
- Recognition of the entanglement threat to right whales in 2009 Recovery Strategy
- Stewardship programs to increase awareness of entanglements with the fishing industry