Humpback Whale

Megaptera novaeangliae

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DESCRIPTION

Taxonomy and Basic Description

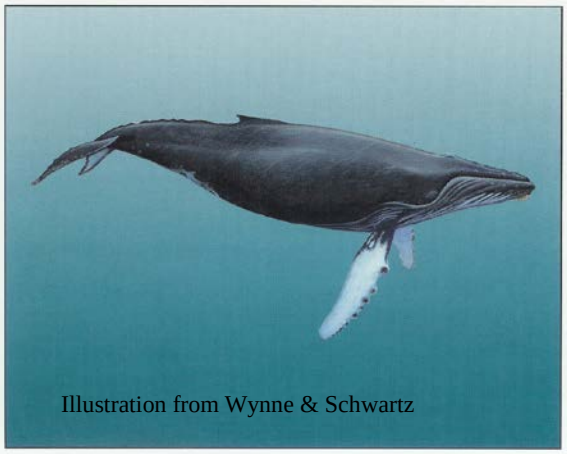


Illustration from Wynne & Schwartz

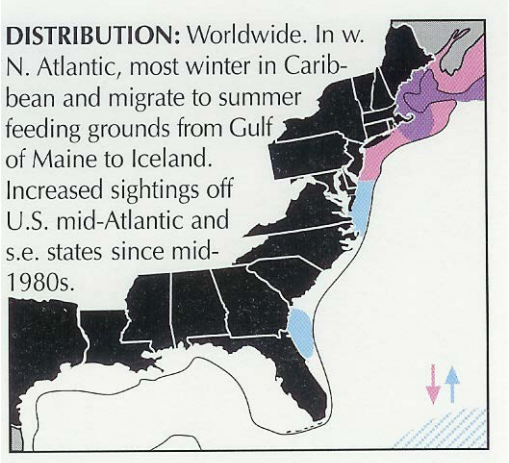
The humpback whale is a moderately large baleen whale. First described by Borowski (1781), the humpback's most distinguishable features include: a robust body with a broad, rounded head; a series of fleshy knobs on the rostrum and lower lip; long flippers (one-third of the body length); broad flukes with an irregular trailing edge; ventral throat grooves (12 to 36) extending to the navel; black with white coloring on the throat and belly with variable amounts of white on the undersides of flukes and both sides of the flippers; and a broad and bushy blow hole. Adults reach 11 to 16 m (36 to 52 ft.) in length and a weight of 36 metric tons (40 tons); females are slightly larger than males (Wynne & Schwartz 1999).

Status

All humpback whale populations are federally listed as endangered under the Endangered Species Act. The US Atlantic stock (Gulf of Maine stock) is defined as "strategic" under the Marine Mammal Protection Act because the average annual fishery-related mortality and serious injury exceeds its Potential Biological Removal (PBR) level of 1.1 whales (Waring et al. 2010).

POPULATION SIZE AND DISTRIBUTION

The humpback whale is worldwide in its distribution. In the western North Atlantic, most winter in the West Indies, where they mate and calve. These whales then migrate to summer feeding grounds from the Gulf of Maine to Iceland. However, a notable number of humpbacks do not undertake this extensive seasonal migration but instead overwinter in mid- and high-latitude regions (Clapham et al. 1993; Swingle et al. 1993). There have been increased sightings of this species off the US mid-Atlantic and southeastern states since the mid-1980s (Swingle et al. 1993; Wiley et al. 1995). In this region, sightings have been reported in all seasons but are more predominant from



Map from Wynne and Schwartz, 1999

January to March (Barco et al. 2002). Whether these increased sightings represent a distributional change or are simply due to an increase in sighting effort and/or whale abundance, is currently unknown (Waring et al. 2004).

The best available estimate of the population size for the North Atlantic is 11,570 humpback whales; of these, 500 to 900 animals are estimated to use US Atlantic waters (Gulf of Maine stock) (Waring et al. 2010). The most recent estimates indicate continued population growth; however, the size of the humpback stock in the US Atlantic Exclusive Economic Zone (EEZ) may be below its Optimum Sustainable Population (OSP). There is insufficient data to reliably determine population trends for humpback whales in the North Atlantic overall.

HABITAT AND NATURAL COMMUNITY REQUIREMENTS

The humpback is considered a pelagic and coastal species. These whales are typically encountered over shallow banks and in shelf waters while feeding or breeding but may traverse open ocean during migration (Leatherwood and Reeves 1983; Wynne and Schwartz 1999). Feeding occurs in the cold, nutrient-rich waters of high latitudes. In the western North Atlantic, several discrete feeding grounds exist extending from the Gulf of Maine to off Iceland and northern Norway. Humpbacks exhibit strong fidelity to a particular feeding ground. Calves will typically return to the same feeding ground as their mother. Off the U.S. Atlantic coast, the primary feeding ground for humpbacks is the Gulf of Maine. Humpbacks begin to arrive in the waters off New England in early spring and remain through the fall. Their distribution in this area has been largely correlated to prey species and abundance, although behavior and bottom topography are also factors in foraging strategy (Payne et al. 1986, 1990). Humpbacks are generally piscivorus but krill are also frequently taken in the northern Gulf of Maine (Paquet et al. 1997).

Humpbacks fast while on breeding and calving grounds. During this time, these whales live off their vast reserve of blubber. Individuals from different feeding grounds mix while on the breeding grounds. Such mixing is also recorded within the group of humpback whales that winter off the U.S. mid-Atlantic coast. Most identified individuals from this group belong to the Gulf of Maine stock, but a few animals from stocks off Newfoundland and in the Gulf of St. Lawrence have been identified on the US mid-Atlantic coast wintering grounds as well (Barco et al. 2001). This population, composed of mostly first-year animals and a smaller number of juveniles and adults, is thought to use the mid-Atlantic/southeast region as a supplemental winter feeding ground. Some individuals have been observed over multiple years indicating repeated use of this area.

CHALLENGES

Although hunting previously caused a major decline in all humpback whale populations, these animals are no longer endangered by that activity. Ship collisions and entanglements in fixed fishing gear are the greatest causes of non-natural mortality in humpback whales. Other factors that may affect the recovery of humpback whales include disturbance or displacement caused by noise and other activities associated with shipping, recreational boating, whale watching or air traffic; pollutants from waste disposal; activities associated with mineral exploration and

extraction; habitat degradation associated with coastal development; and competition with fisheries for prey species. These factors could affect reproductive success in individual whales, alter survival, and impact habitat (NMFS 1991).

CONSERVATION ACCOMPLISHMENTS

SCDNR and SAFMC (South Atlantic Fishery Management Council) personnel serve as members of the Atlantic Large Whale Take Reduction Team (ALWTRT). The ALWTRT works with National Oceanic and Atmospheric Administration (NOAA) Fisheries to develop and amend the Atlantic Large Whale Take Reduction Plan. The goal of the plan is to reduce the incidental take of finback, humpback and right whales in commercial fishing operations so that they can reach or maintain their optimum sustainable population size.

To reduce the incidence of ship strikes, especially in the area of shipping lanes, NOAA Fisheries, in collaboration with other Federal agencies, state agencies including SCDNR, environmental groups, citizen groups and the shipping industry have been working to develop ship strike reduction measures along the US Atlantic coast. Currently, the focus of this effort is on the northern right whale given its highly endangered status; however, such measures are also expected to benefit the humpback.

SCDNR conducted a marine mammals stranding program from 1991 to 2005 to obtain data on marine mammals that strand along the South Carolina coast. NOAA National Ocean Service in Charleston managed the stranding network from 2006-2007. Since 2008 Coastal Carolina University has managed the volunteer SC Marine Mammal Stranding Network in collaboration with NOAA National Ocean Service in Charleston, SC. SCDNR continues to provide logistical and veterinary support to the stranding program. Sightings of humpback whales are fairly common in SC waters. Since 1993 there have been six humpback whale strandings in SC: one in 1993; one in Myrtle Beach in 2001; three in 2006 on Myrtle Beach, Cape Island, and off of Hilton Head Island; and one off of Myrtle Beach in 2009.

A take reduction plan has been developed for Atlantic large whales, including the humpback whale, to reduce the incidental take of animals in commercial fishing operations to below the Potential Biological Removal (PBR) level. PBR is an estimate of the maximum number of animals, not including natural mortalities, which may be removed from a marine mammal stock while allowing that stock to reach or maintain its Optimum Sustainable Population (OSP). The minimum annual rate of human-caused mortality and serious injury to the Gulf of Maine stock from 2004 – 2008 averaged 4.6 whales (Waring et al. 2010). Therefore, despite efforts of the plan to reduce large whale entanglements and other activities to reduce ship strikes, annual mortalities are still exceeding PBR for this stock (1.1 whales) (Waring et al. 2010). SCDNR personnel will continue to serve on the ALWTRT in order to help develop and implement programs and activities designed to reduce humpback whale non-natural mortalities to insignificant levels approaching the Zero Mortality Rate Goal (ZMRG). The ZMRG (currently defined as 10% of PBR) for humpback whales is 0.11 animals.

Numerous individuals from scientific, management and conservation communities have been working for some time to improve the status of the humpback whale. One of the outcomes of

these efforts has been development of the humpback whale recovery plan. Another was a major research initiative known as the Years of the North Atlantic Humpback (YONAH) (Smith et al. 1999) conducted from 1992 through 1993. This project was a large-scale intensive study of humpback whales throughout most of their entire North Atlantic range, from the West Indies to the Arctic. It addressed large-scale issues, such as size and structure of the population, vital population rates, migratory movement, and structure of the mating system. Information resulting from this study will serve a baseline against which to evaluate, among other things, whether the population is increasing or decreasing over time.

CONSERVATION RECOMMENDATIONS

- Identify essential/critical humpback whale habitat in US waters.
- Identify and minimize possible adverse impacts of human activities and pollution on important habitat by commenting on such things as proposed offshore drilling activities and other energy development activities which could impact important humpback habitat such as offshore wind farms or proposed changes to ocean dumping laws.
- Reduce mortality and injury from entanglement in fishing gear and ship strikes by working with commercial fishermen and the maritime industry to modify fishing gear and harbor approach routes, vessel operational procedures and speeds, and by improving early warning systems to notify vessel traffic of whales in the area.
- Within South Carolina's waters, identify and implement seasonal and/or geographic regulations for fishing gear that may kill or injure humpback whales. Collaborate with other jurisdictions to implement similar fishing gear recommendations.
- Evaluate cumulative impacts of vessel collisions on humpback whale populations.
- Continue photo-identification studies of humpback whales.
- Continue biological studies on stranded humpback whales.
- Develop a standardized protocol for sampling tissues of humpback whales using strandings and biopsies.
- Identify and evaluate feeding competition between humpback whales and fish species and the impacts of prey abundance on whale populations.
- Employ radio tags, underwater listening stations and genetic techniques to define migration routes and transit times for humpback whales.
- Continue assessment of mortality levels and population structure of the wintering aggregation of humpback whales in the mid-Atlantic/southeast region.
- Develop a protocol for monitoring physical and chemical factors that could decrease habitat suitability for humpback whales.
- Assist in defining measurable criteria for monitoring the success of implemented management measures within the ALWTRP.
- Educate fishermen on the importance of reporting entangled whales to improve such counts.
- Improve coordination with federal, state and non-governmental agencies/groups involved in education, outreach and cooperative efforts by supporting regional meetings and workshops to facilitate the exchange of information on whale strandings and ship strikes and to develop and implement procedures to reduce fishing gear entanglements and ship strikes. Examples would include such things as educational brochures for fishermen and

maritime interests informing them about regulatory changes in regards to fishing gear modifications or vessel operating procedures in critical whale habitat areas.
- Develop educational materials in support of humpback whale recovery plan objectives.
- Collaborate with other research, monitoring, and outreach groups to combine efforts to protect the humpback whale.

MEASURES OF SUCCESS

SCDNR personnel will continue to serve on the ALWTRT in order to help develop and implement programs and activities designed to reduce humpback whale non-natural mortalities to insignificant levels approaching the Zero Mortality Rate Goal (ZMRG). The ZMRG (currently defined as 10 percent of PBR) for humpback whales is 0.11 animals. Success of any individual program will be measured according to its apparent contribution toward this goal. Additionally, information resulting from the YONAH study will serve a baseline against which to evaluate whether the population is increasing or decreasing over time.

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