

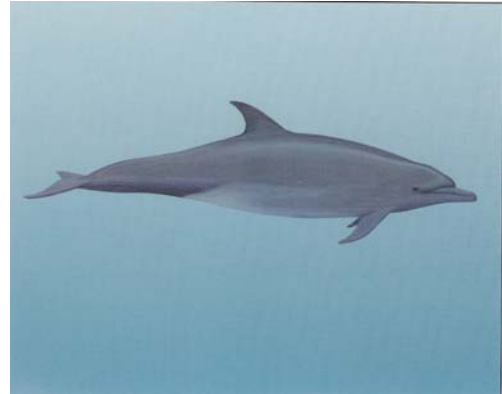
## Bottlenose Dolphin

### *Tursiops truncatus*

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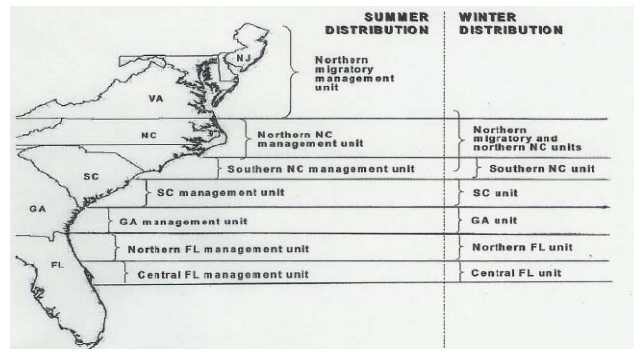
#### DESCRIPTION:

The bottlenose dolphin, *Tursiops truncatus*, was first described by Montagu in 1821. The taxonomy of the Genus *Tursiops* has been somewhat confused. Currently most researchers agree that there is a single species, *Tursiops truncatus*, with a number of regional forms. The body and head are robust with a short, thick, well-defined beak. Based on distribution, genetics, morphology, parasites and prey items, two “ecotypes” are recognized: the “coastal form” is shorter and slimmer than the larger “offshore form.” Flippers are pointed and the flukes are deeply notched. The teeth are small and conical and range between 40-52 in the upper row and 36-48 in the lower row. Dorsal fin is tall, falcate, with a broad base and located mid-back. Adult size varies considerably and ranges from 1.9 to 3.6 m (6-12 ft) (Wynne & Schwartz, 1999). It has been reported to weigh up to 650 kg (1,432 lb) (Minasian *et al.* 1984).



**Status:** The species is not listed as threatened or endangered under the Endangered Species Act (ESA). In 1993, NOAA Fisheries - treating the coastal population as a single migratory stock - designated the stock as strategic under the Marine Mammal Protection Act (MMPA) due to a massive die-off of coastal bottlenose dolphins during 1987-88 (Waring, *et al.* 2002). Research conducted over the last several years, however, confirms that a complex mosaic of stocks exists for the coastal ecotype. As an interim measure, pending additional research to better identify stock structure, seven management units within the range of the “coastal migratory stock” have been defined (see below). Even though the bottlenose dolphin is the most common marine mammal along the U.S. southeastern coast, certain coastal stocks do appear to be depleted based on the most recent stock assessments (Waring *et al.* 2002; MMC 2004).

Management units of the coastal ecotype of bottlenose dolphins along the Atlantic coast of the U.S. as defined from recent results from genetic, stable isotope ratio, photo-identification, and telemetry studies (per Hohn 1997).



The western North Atlantic offshore bottlenose dolphin (offshore ecotype) is also not listed as threatened or endangered under the ESA. The average annual fishery-related mortality and serious injury (1996-2000) does not exceed the Potential Biological Removal (PBR) level for this stock. 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). Therefore this is not a strategic stock under the MMPA. However, the total fishery related mortality and serious injury for this stock is not less than 10% of the calculated PBR (242) and, therefore, cannot be considered to be insignificant and approaching zero mortality and serious injury rate.

#### POPULATION :

Two bottlenose dolphin ecotypes inhabit waters in the western North Atlantic Ocean; a shallow water or nearshore/coastal ecotype and a deep water or offshore ecotype (Curry and Smith 1997). Based on work to date, it appears that the western North Atlantic offshore stock consists primarily of the offshore ecotype. Relatively little is known about the distribution of the offshore ecotype except that it is typically concentrated along the continental shelf break in deeper waters and can, in lower concentrations, extend beyond the continental shelf into continental slope waters (Kenney 1990). Although the ranges of the coastal and offshore ecotypes overlap to some degree, Torres *et al.* (2003) found a statistically significant break in the distribution of the two ecotypes at 34 km (18 nautical miles) from shore. According to Torres *et al.* (2003), the offshore ecotype is found seaward of 34 km and in waters deeper than 34 m (112 ft) and the coastal ecotype is found within 7.5 km (4 nautical miles) of shore. The best available abundance for the offshore stock of bottlenose dolphins is 29,774 (northern U.S. Atlantic = 16,689; southern U.S. Atlantic = 13,085) animals. Data are insufficient to determine current population trends for the offshore stock (Waring, *et al.* 2004).



The coastal ecotype is continuously distributed along the Atlantic coast south of Long Island, around peninsula Florida and along the Gulf of Mexico coast. Based on genetic studies, however, Curry (1997) concluded that the nearshore animals in the northern Gulf of Mexico and the western North Atlantic are separate stocks. Within the western North Atlantic, the stock structure of coastal bottlenose dolphins is complex. Efforts to distinguish stocks are complicated by the fact that animals from different stocks cannot be separated on the basis of appearance and by the fact that different stocks sometimes have geographic ranges that overlap temporally and spatially (MMC 2004). Preliminary results from studies involving genetics, photo-identification, telemetry, and stable isotopes suggest the existence of at least seven stocks of the coastal ecotype in the western North Atlantic from which the current management units were defined (Waring, *et al.* 2002). Estimates of abundance for each management unit of western North Atlantic coastal bottlenose dolphins during the summer (May-October) are as follows: Northern migratory

(5681); Northern NC oceanic (3,383); Northern NC estuary (919); Northern NC both (4,302); Southern NC oceanic (1,157); Southern NC estuary (141); Southern NC both (1,298). Estimates of abundance for the winter (November-April) are: NC mixed, which consists of the northern migratory, Northern NC, and Southern NC, (6,474); South Carolina (3,513); Georgia (767); Northern Florida (354); and Central Florida (10,652). There are insufficient data to determine the population trend for the coastal bottlenose dolphin stock (Waring, *et al.* 2002).

#### HABITAT:

Bottlenose dolphins are both a coastal and an oceanic species, with the coastal ecotype preferring waters of less than 30 meters (98 feet) in depth. The habitats they occupy are diverse, ranging from rocky reefs to calm lagoons and open waters. The coastal ecotype is adapted for warm shallow waters. Its smaller body and larger flippers suggest increased maneuverability and heat dissipation. These dolphins occur along the outer coastline and in bays, sounds, inlets, estuaries and other inland waters. The offshore ecotype seems to be adapted for cooler, deeper waters. Certain characteristics of their blood indicate that this form may be better suited for deep diving. They typically occur in deep waters of the continental shelf and inner continental slope.

#### THREATS:

A variety of factors both natural and human-related can affect bottlenose dolphins. Natural factors include predation by large sharks, disease, parasites, exposure to naturally occurring biotoxins, changes in prey availability, reduction or loss of habitat due to environmental variation. Human-related causes of mortality and injury to this species include loss of habitat due to coastal development, exposure to pollutants, vessel strikes, entanglement in debris, noise and pollution related to oil and gas development. Bottlenose dolphins have also increasingly become the target of dolphin watching and wild dolphin interaction programs. There is growing concern that these activities may result in altered behavioral patterns, especially where people enter the water with dolphins and where they are fed. In the latter case, behavioral patterns alter significantly and increased aggression may occur (Bryant 1994).

In addition, recreational and commercial fisheries directly and indirectly affect bottlenose dolphins. Coastal bottlenose dolphins are taken as bycatch in various kinds of fishing gear including gillnets, seines, longlines, shrimp trawls, and crab pots (Waring, *et al.* 2002). Bycatch of offshore bottlenose dolphins has been observed in the pelagic drift gillnet, pelagic pair trawl, New England multispecies sink gillnet, North Atlantic bottom trawl, mid-Atlantic coastal gillnet, and pelagic longline fisheries. The pelagic drift gillnet and pelagic pair trawl fisheries no longer exist. Mortalities of bottlenose dolphins due to ingestion of hooks and/or line have also been documented (see Gorzelany 1998; Well *et al.* 1998). The gear most likely had been discarded or was consumed by the dolphin via a fish that had been hooked and broke away with the gear. Estimates of fishery-attributed interactions suggest that mortality exceeds the PBR of several coastal stocks considered depleted by the 1987-1988 die-off and, thus, may be impeding their recovery.

## CONSERVATION:

A take reduction plan has been developed for coastal bottlenose dolphins, to reduce the incidental take of animals in commercial fishing operations to below the PBR. The Bottlenose Dolphin Take Reduction Team (BDTRT), which works with NOAA Fisheries in developing the take reduction plan, is composed of various stakeholders including fishermen, state and federal managers, scientists and conservationists. The short term goal of the plan is to reduce, within six months of its implementation, the incidental mortality or serious injury of western North Atlantic coastal bottlenose dolphins incidentally taken in commercial fishing operations to levels less than the PBR level. The long term goal of the take reduction plan is to reduce, within five years of plan implementation, incidental mortality and serious injury of coastal bottlenose dolphins incidentally taken in the course of commercial fishing operations to insignificant levels approaching a zero mortality rate goal (ZMRG). The BDTRT has developed a number of recommendations to achieve these goals and to be incorporated into the Bottlenose Dolphin Take Reduction Plan (BDTRP). NOAA Fisheries is currently in the process of developing a regulatory package based on the BDTRT's recommendations and public comment to implement the recommendations of the BDTRT and the provisions of the BDTRP.

## PRIORITY CONSERVATION OBJECTIVES:

The BDTRT has made a number of recommendations to be incorporated into the BDTRP for coastal stocks including regulatory recommendations, based on management units, that apply to specific fisheries and generally seek to reduce soak times, the amount of fishing gear in the water at any given time, or to modify practices in order to limit interactions with and the take of bottlenose dolphins. The BDTRT also adopted non-regulatory recommendations for all management units including education and outreach, as well as improved research, monitoring, collection of strandings data, and observer coverage.

In addition, the following were identified by the Marine Mammal Commission in its 2003 Report to Congress (MMC 2004) as pressing conservation issues:

- Improve understanding of stock structure and population trends in order to assess the greatest threats to bottlenose dolphins.
- Determine the significance of periodic die-offs especially to relatively small, isolated populations of bottlenose dolphins;
- Assess the impact of contaminants on marine mammals, particularly the repercussions of high contaminant loads in bottlenose dolphins on individual animals as well as their offspring;
- Measure the effects of interactions between humans and dolphins in the wild, including behavioral disruption, habituation, injury, and death; and
- Mitigate threats to bottlenose dolphins posed by entanglement in fishing gear.

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