Rough-Toothed Dolphin

Steno bredanensis

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I. Characteristics and Taxonomy

Rough-toothed dolphins are named for the vertical ridges, or wrinkles, on their teeth, which give them a roughened appearance. Other English common names include black porpoise, steno, and slophead.

The rough-toothed dolphin is very distinctive when seen at close quarters. It is the only long-beaked dolphin with a smoothly sloping melon that does not contain any hint of a crease as it blends into the upper beak (Fig. 1). These dolphins are not particularly slender, and the anterior part of the body may be stocky. The large flippers are set farther back on the body than in most other small cetaceans. They are equal to about 17–19% of the body length. The dorsal fin is tall and generally only slightly falcate. Some large males have a hump of connective tissue posterior to the anus, which gives the appearance of a pronounced keel. Weight is up to 155 kg. Males grow to larger sizes than females (known maximums of 265 and 255 cm, respectively); some evidence suggests they may occasionally reach 290 cm. Females may have proportionately longer beaks (Miyazaki, 1980; Miyazaki and Perrin, 1994).

The color pattern is moderately complex but consists generally of shades of black, white, and gray (Fig. 1). The body is countershaded, with a white belly and black to dark gray back. The sides are a medium shade of gray and are separated from the darker back by the margins of a dorsal cape that is narrow between the blowhole and the dorsal fin and wider behind the fin. The lower sides and mouth area are often dotted with white patches, splatches, and spots. In warm tropical waters, the belly and the lower jaw may be tinged with pink. Some of the white spots are thought to be scars from bites inflicted by cookie-cutter sharks and perhaps squid. Young animals (Fig. 2) have a muted color pattern and generally lack the white spots (Miyazaki and Perrin, 1994).

II. Distribution

Rough-toothed dolphins inhabit open, deep waters above 500 m in the North Pacific, North and South Atlantic, and South Pacific Oceans. Unlikely they enter water deeper than 1000 m.

III. Population

Density

A. Range

Rough-toothed dolphins are believed to be abundant in their range. They are encountered in the open ocean but are not considered threatened or endangered. They are not a target of any commercial or recreational fisheries.

B. Status

Rough-toothed dolphins are not listed as threatened or endangered under the U.S. Endangered Species Act or the Convention for the Conservation of Antarctic Marine Mammals.

IV. Natural History

A. Distribution

Rough-toothed dolphins are found in the North Pacific, North and South Atlantic, and South Pacific Oceans. They are not known to enter water deeper than 1000 m.

B. Behavior

Rough-toothed dolphins are known to travel in schools, often with other species of dolphins. They are known to feed on squid, other cephalopods, and fish.

C. Reproduction

Rough-toothed dolphins have a long gestation period, with female calves being born in the winter and spring. They nurse for about 6 months before weaning.

D. Life History

Rough-toothed dolphins live to be 40 years old, with a maximum recorded age of 60 years.

E. Ecology

Rough-toothed dolphins are a keystone species, playing an important role in the marine ecosystem.

References


and the prominent and long cylindrical ridge on the ventral part of the frontal bones in rough-toothed dolphins (Van Waerebeek et al., 1999). The postcrania1 skeleton is heavily built, and total vertebral counts generally range from 65 to 67.

Traditionally, morphological characters have been used to infer a close relationship between the rough-toothed dolphin and two other genera of dolphins (Sotalia spp., the tucuxi and costero; and Sousa spp., the humpback dolphins). Recent genetic analyses (LeDuc et al., 1999) have supported the relationship with Sotalia (in the subfamily Stenoninae), but not with Sousa, which groups phylogenetically with the Delphininae. In captivity, hybrids between Steno and Tursiops truncatus (common bottlenose dolphin) have been born (Dohl et al., 1974).

II. Distribution and Abundance

The rough-toothed dolphin is a tropical to warm temperate species and is found in oceanic waters worldwide (Miyazaki and Perrin, 1994). For instance, it prefers waters greater than 1500-m deep off Hawaii (Baird et al., 2008). However, it can also be found over the continental shelf in some shallow, coastal waters (e.g., Brazil– Flores and Ximinez, 1997). Records from the Atlantic Ocean are mostly from between the southeastern United States and southern Brazil across to the Iberian Peninsula and tropical West Africa, with some (probably extralimital) records from the English Channel and the North Sea. The normal range includes the Gulf of Mexico, Caribbean Sea, and Mediterranean Sea. In the Pacific, it occurs from central Japan and northern Australia across to southern Baja California, Mexico, and southern Peru. In the eastern tropical Pacific, it is generally associated with warm tropical waters lacking major upwelling. The range includes the southern Gulf of California and the South China Sea. Records from the west coast of the continental United States and New Zealand are considered extralimital. In the poorly studied Indian Ocean, there are only a few scattered records, but the species probably has an extensive distribution there north of about 20°S.

There are no estimates of global abundance, and surveys to estimate abundance have not been conducted in most parts of the species’ range. However, about 985 occur in the northern Gulf of Mexico (Mullin and Fulling, 2004) and about 146,000 are found in the eastern tropical Pacific (Wade and Gerrodette, 1993). Almost nothing is known about population or stock structure in this species.

III. Ecology

The ecology of the species is quite poorly studied (Miyazaki and Perrin, 1994). There have been only a few reports of feeding habits. In the wild, it feeds on a variety of fish and cephalopod species, some coastal and some oceanic. Some large fish may be taken, as suggested by the robust dentition of the species. Algae have been found in the stomachs of stranded specimens, but they may have been ingested incidentally.

Rough-toothed dolphins frequently associate with other species of cetaceans, especially other delphinids in the eastern tropical Pacific, where they also often associate with flotsam. Lone animals have been seen with short-finned pilot whales (Globicephala macrorhynchus) and Fraser’s dolphins (Lagenodelphis hosei) in the Sulu Sea.

Little is known of diseases and pathology, but Japanese animals have been observed with osteopathological conditions. Only a handful of internal parasites have been recorded, although there are undoubtedly others. Externally, cyamid whale lice have been observed, and the cookie-cutter shark is a partial predator.

IV. Behavior and Physiology

Detailed, long-term behavioral ecology studies on rough-toothed dolphins have only been conducted in the past decade or so, and our
knowledge is only beginning to accumulate. There now have been such studies in several areas, including the Canary Islands, Caribbean (Honduras), and Hawaii (Ritter, 2002; Gotz et al., 2006; Kuczaj and Yeater, 2007). They are found in moderate-sized groups, most commonly of 10–20, although larger groups have been seen in some areas—up to 50 in the Canary Islands (Ritter, 2002), over 50 in the eastern tropical Pacific, 300 in Hawaii, and 160 in the Mediterranean. Mass STRANDINGS have been recorded in several areas.

These animals are not generally fast swimmers and they often appear rather sluggish in the wild. They do ride bow waves and are known for their habit of skimming along the surface at moderate speed with a distinctive splash. Synchronous swimming in tight formation is common, and recently it has been suggested to facilitate “eavesdropping” on the echolocation clicks of other individuals (Gotz et al., 2006; Kuczaj and Yeater, 2007). Although not highly acrobatic, various leaps and other aerial behaviors have been seen. Photoidentification of individual dolphins has only recently been conducted, and preliminary results suggest that rough-toothed dolphins may have more stability in their associations than do other species of small delphinids (Kuczaj and Yeater, 2007). Few studies of site fidelity have been conducted, but in the Hawaiian Islands, site fidelity appears to be high and inter-island movements relatively rare (Baird et al., 1999).

Although the maximum recorded dive was only to 70 m, rough-toothed dolphins can probably dive much deeper than this. Behavioral and morphological evidence suggests that they are well adapted for long, deep dives. Submergences of up to 15 min have been recorded. A variety of clicks and whistles have been recorded from these dolphins. Highly directional ECHOLOCATION clicks, with some pulses as high as 200 kHz, are known.

The physiology of the rough-toothed dolphin has not been well studied, and not much is known, other than that they have some anatomical adaptations that tend to be associated with deep-diving.

V. Life History

Detailed studies of life history have only been conducted in Japanese waters. There, males reach sexual maturity at about 14 years and 225 cm, and females at 10 years and 210–220 cm. The maximum age is 32–36 years, although some animals may live significantly longer (Miyazaki, 1980; Miyazaki and Perrin, 1994). Length at birth is thought to be about 1 m.

VI. Interactions with Humans

Rough-toothed dolphins have been held captive in a number of oceanaria, and some success has been encountered in keeping them alive in the captive environment, especially in Hawaii (Dohl et al., 1974). One lived for over 12 years in captivity. They have been found to be bold and inventive, and one “creative porpoise” at Sea Life Park in Hawaii astounded its trainers by grasping the concept of inventing novel behaviors (Pryor et al., 1969). Although they generally do not survive long, several live-stranded animals have also been kept-captive, and some have been released back to sea.

Although not generally the major target, rough-toothed dolphins have been taken in directed dolphin fisheries in Japan, Sri Lanka, Indonesia, the Solomon Islands, Papua New Guinea, St. Vincent, West Africa, and possibly St. Helena in the South Atlantic (Miyazaki and Perrin, 1994). Probably much more significant is the incidental kill of dolphins in fishing nets. Takes in tuna purse-seine nets are known for the eastern tropical Pacific, and gillnet catches have been documented at least in Sri Lanka, Brazil, and the offshore North Pacific. This is one of the main species involved in stealing bait from fisherman’s hooks off Hawaii, and sometimes animals get caught on the hooks as well (Nitta and Henderson, 1993). Undocumented catches probably occur in most other areas of the range as well.

Habitat degradation impacts and effects of pollutants are probably somewhat less severe for this species than for other, more-coastal small cetaceans. Although little directed work has been done on environmental contaminants, relatively low levels of PCBs and DDTs have been recorded from the few specimens examined so far (O’Shea et al., 1980). However, conservation-oriented studies are almost nonexistent, and therefore the uncertainty that exists about population status for this species should be acknowledged.

See Also the Following Articles
Cetaceans = Delphinids = Skull Anatomy = Teeth

References


