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Body Length, Swimming Speed, Dive Duration, and Coloration of the Dolphin *Sotalia fluviatilis* (Tucuxi) in Nicaragua

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The Miskito Coast of Nicaragua on the Caribbean Sea contains one of the richest shallow-water marine regions in Central America. Located along the Miskito Coast is a large tract of wilderness–the Cayos Miskito Reserve–that extends from the border of Honduras (N 15°00′, W 83°08′) south to about 2 km south of the community of Wauhta (N 13°32′, W 83°32′). It encompasses offshore waters, a cluster of islands (Miskito Keys), and 190 km of coastline, including four large lagoons and associated estuaries. The lagoons support a number of marine mammals, including the tucuxi (*Sotalia fluviatilis* Gervais), a dolphin known locally as *Lam* in Miskito or *bufeo negro* in Spanish.

The tucuxi is a small dolphin with a coastal marine form and a smaller freshwater form (da Silva and Best, 1996). The marine form has a coastal distribution, inhabiting bays, estuaries, and near-shore waters (Leatherwood et al., 1976). Its range extends along the Atlantic and Caribbean coasts from Florianópolis in southern Brazil to Honduras (da Silva and Best, 1996).

Marine *S. fluviatilis* have been best studied in South America, with relatively little being known about populations in the northern part of its range. In 1996 we initiated a project to assess the ecology and distribution of *S. fluviatilis* in the Cayos Miskito Reserve of Nicarauga (see Edwards and Schnell, 2001). During this study, data on body length, swimming speed, dive duration, and coloration were recorded and are reported below.

On 20 April 1997, two carcasses of adult tucuxi were found ashore in the Cayos Miskitos Reserve near the community of Haulover (13°40′N, 83°32′W; skeletons deposited in Sam Noble Oklahoma Museum of Natural History; catalog numbers SNOMNH 30001 and 30002). External marks indicated that the animals had become entangled in gill nets and drowned, thereafter being removed and tossed back into the water by fishermen. The two carcasses were found close to one another and were in a mild state of decomposition, one being a male (length of 1.61 m from tip of rostrum to notch of fluke) and the other a female (length 1.72 m). On 22 April 1997 near the same locality, the carcass of an adult female (length 1.65 m; photograph in Edwards and Schnell, 2001:fig. 2) was brought in by a fisherman who had recently caught it in a gill net.

Body lengths for these specimens are close to the only other reported measurement for a this dolphin in Nicaragua (an adult male from the Reserve, length 1.87 m; Carr and Bonde, 1999). The lengths also are similar to those for the marine form from South America (1.7 m ± 0.2 SD, n = 17; da Silva and Best, 1996). The longest body lengths recorded for marine *S. fluviatilis* are 1.87 m for a male and 2.06 m for a female (Barros, 1991). The freshwater form generally is smaller (1.4 m ± 0.2 SD, n = 27; da Silva and Best, 1996).

On 11 April 1997, a group of three adult tucuxi was observed leaving the Wauhta Lagoon (which empties through an inlet into the Caribbean Sea at Wauhta) just before low tide. With a global-positioning-system (GPS) unit we were able to time and track the animals, traveling parallel to them as they exited the inlet. Their surface speed varied from 5.8-6.4 m/s (21-23 km/h). These values are within the range recorded for other small cetaceans.

Much like the behavior observed for Dall's porpoise, *Phocoenoides dalli* (Law and Blake 1994), *S. fluviatilis* traveled at high velocities near the surface of the water, surfacing briefly but not leaping clear of the water. Surfacing was accompanied by explosive breathing, where the animals exhaled forcefully, and movements through the water produced rooster-tails as the animals swam. The three tucuxi continued to swim rapidly until out over the shallow-water sand bars of the inlet to Wauhta Lagoon. Tucuxi swam in this manner on other occasions while feeding (chasing fish) and avoiding boats. However, most movements involved slower subsurface travel, accompanied by rolling at the surface.

Dive durations were recorded for tucuxi feeding in lagoons or inlet areas of the Reserve and are reported for the first time for this species. The average dive duration lasted 40 s ± 28 SD (range 11-90 s, n = 10), which is similar to other dolphins and porpoises that make use of similar habitats or are of comparable size.

Coloration of *S. fluviatilis* in the Reserve was typical for the species (da Silva and Best 1996), ranging from very dark gray to very light gray and even to a rosy hue dorsally and white to pink ventrally. Some animals showed small amounts of dark gray mottling (<1 cm) around the rostrum and lower jaw, while others had distinct striping on the face. The striping consisted of two light gray lines about 2 cm wide that started from a common point at the lower jaw and extended posteriorly (about 4 cm apart, one above the eye and the other near or through the eye) until they faded into the general body coloration. We also observed animals that were light colored with a rosy hue on their dorsal side. Although pink dorsal coloration has been documented for the Amazon River dolphin, *Inia geoffrensis* (Trujillo, 1994), as has pink ventral coloration for other species, such coloration had not been described for *S.*

fluviatilis. Changes in ventral coloration are thought to be related to increased activity. In some species, the pink or rosy hue is due to increased blood supply to the skin for thermoregulation (Best and da Silva 1989). Changes in dorsal coloration of *S. fluviatilis* may result from similar thermoregulatory processes, or may be due to rapid sloughing of skin from prolonged exposure to low salinities. In the Reserve, animals with a rosy dorsal hue were observed most often late in the field season (late May or June as rainfall began to increase), when air and water temperatures were highest, and lagoon and coastal salinities were lowest (0-10 ppt).

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