

Prey-transfer in the marine tucuxi dolphin, *Sotalia fluviatilis*, on the Brazilian coast.

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The first record of prey-transfer behaviour between adult and calf animals in *Sotalia fluviatilis* is recorded. Five clear episodes of prey-transfer from adult animals to calves were observed, occurring in northeastern Brazil at Pipa's Beach. These results suggest that food-sharing is a naturally occurring behaviour in the marine tucuxi dolphin, and that it may act as both a food supply and as an opportunity to obtain information about the food that is eaten by other group members.

The marine tucuxi dolphin, *Sotalia fluviatilis*, is the most common marine mammal in inshore waters of the Atlantic coast of Central and South America (Borobia et al., 1991; Carr & Bonde, 2000). A population was monitored in north-eastern Brazil at Pipa's beach. Groups with an average of 4.2 animals, usually including calves (Spinelli et al., 2002), use two bays at that site. Foraging is a frequent activity presented by the animals at this site. The calves were observed hunting, but were never seen catching a prey, in contrast to adults which were often successful when hunting.

This study describes the first record of prey-transfer behaviour between adult and calf animals in the marine tucuxi dolphin, *Sotalia fluviatilis*. The study was conducted in Madeiro Bay (06° 13' S 35° 04' W) and in Curral Bay (06° 13' S 35° 3' W), in Pipa's Beach, Rio Grande do Norte State, Brazil. In these bays the water is calm, because it is protected from the strong winds by 20 m-high cliffs. We monitored the animals with binoculars from a vantage point at the top of the cliff, from 2000 to 2003, for 78 days, 6 h per day, totalling 451 h of observation. All the observations were done by at least two trained researchers. The events we describe here were witnessed opportunistically, during *ad libitum* sampling, and they are part of a systematic observation of this species at this site. The animals were classified as adults and calves. This latter category is broad, and includes animals with approximately 1/3 to 3/4 the size of an adult animal.

We recorded five clear episodes of prey-transfer from adult animals to calves occurring at our field site. We observed the transfer of a prey, from an adult animal to a calf on four occasions at Madeiro Bay (23 June 2000; 24 August 2000; 14 December 2001; 17 September 2002) and on one occasion at Curral Bay (21 October 2003). The sequence of behaviour was as follows: an adult animal, after successfully catching a fish, swam slowly towards a calf, keeping the prey in its mouth. The adult and the calf positioned themselves side-by-side and the fish was transferred to the calf's mouth. During three of these episodes the same adult animal could be identified by marks on the dorsal fin (animal L3, Link, 2000). On three other occasions (28 January 2000; 23 June 2000; 18 September 2002), in Madeiro Bay, calves were seen with a fish in their mouth, following a successful prey-catch by an adult during a foraging event in which the calf had not participated, but the exact moment of the prey-transfer was not observed.

These results suggest that food-sharing is a naturally occurring behaviour in the marine tucuxi dolphin, and that it may act as both a food supply and as an opportunity to get information about the food that is eaten by other group members. In primates, food-sharing is a well-studied behaviour and it has been reported in chimpanzees, *Pan troglodytes* (Boesch, 1991), brown capuchin monkeys, *Cebus apella* (Ferreira et al., 2002) and species from the Callithricidae family (Ruiz-Miranda et al., 1999; Snowdon, 2001). In these species, food-sharing and stealing provide infants with prey or fruit that are difficult to catch (Ruiz-Miranda et al., 1999; Snowdon, 2001), but also have a role in helping in the acquisition of diet (Rapaport, 2001; Roush & Snowdon, 2001). There are few reports on prey-transfer or food sharing in cetaceans. Connor & Norris (1982) reported prey-sharing in false killer whales, *Pseudorca crassidens*. Brower & Curtsinger (1979, cited by Connor & Norris, 1982) observed fish sharing in rough-toothed dolphins, *Steno bredanensis*, and Lodi & Hetzel (1999) suggested that in this species, adult animals transfer fish to calves. Connor & Smolker (1985) observed that bottlenose dolphins, *Tursiops* sp., remained very close to any individual that had caught a prey, displaying a behaviour that was termed begging. They did not actually see food sharing, but they reported behaviours that were suggestive of food sharing. There are reports of prey sharing in killer whales, *Orcinus orca*, when the prey is large, such as a marine mammal, but not for small prey, such as fish (Baird & Dill, 1995; Guinet et al., 2000). Although all these reports are mostly anecdotal, both cognitive ability (Reiss et al., 1997; Rendell & Whitehead, 2001) and stable associations, such as in females

and immatures (Tavolga & Essapian, 1957; Whitehead & Mann, 2000), which are characteristic of cetaceans, are predictive of social learning (Coussi-Korbel & Fragaszy, 1995).

Although this is the first report of prey-transfer in the marine tucuxi dolphin, we suggest that this behaviour should be further investigated. We witnessed few events of this behaviour during the period of observation. This is not surprising, considering that this is a difficult behaviour to observe, as it occurs very rapidly, and probably, at least some of the time, when the animals are under water. But the potential relevance of this behaviour for infant learning and survival suggests that it should occur often. Dolphins require the development of complex hunting skills to capture a prey. A calf has to practise for several months before being able to catch a fish and may spend years before becoming nutritionally independent (Mann & Smuts, 1999; Connor et al., 2000). In other dolphin species, calves eat prey even before they are weaned, and certainly before they are able to hunt (Mann & Smuts, 1999; Baird, 2000; Whitehead & Mann, 2000). Therefore, assistance in foraging, such as prey-transfer, is probably a frequent and necessary behaviour in *Sotalia fluviatilis* during nursing and until the calf learns how to catch its own prey and acquires full hunting skills. The conditions that favour the occurrence of prey-transfer in the marine tucuxi dolphin may be very specific and should be further investigated to better understand it. We have not, so far, enough evidence to confirm whether this is a frequent behaviour in this species or a local tradition of this population, displayed by some animals. This is similar to bottlenose dolphins, which display different feeding methods according to food type and local conditions (Shane & Wells, 1986; Pryor et al., 1990). Calves are frequently seen accompanied by adults in this area, probably their mothers, as the general pattern of parental care in most mammal species suggests (Clutton-Brock, 1991). The long interbirth interval in this species (two to three years, Santos et al., 2001) is evidence of a long period of offspring dependence, which can be associated with the need to learn hunting skills. This characteristic, added to the mother's presence, could have favoured the appearance of this behaviour.

In conclusion, our results confirm the occurrence of prey-transfer in *Sotalia fluviatilis*. Given that this is the first report for the species and the fact that few events were observed, it is difficult to assert the generality and frequency of this behaviour, both for this population and the species in general. The relevance of this behaviour for the development of the calves, and the lack of information on the conditions of occurrence and its participants, suggest that further investigation of this topic may bring important information for the conservation of the species and the understanding of their behaviour.

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