

BEHAVIORAL RESPONSES OF ROUGH-TOOTHED DOLPHINS TO A DEAD NEWBORN CALF

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A rare and interesting event in which rough-toothed dolphins (*Steno bredanensis*) supported a dead newborn calf was observed between 25 and 30 April 2001 off the island of La Gomera in the western Canary Islands. The six sightings described here were made as part of an ongoing research project focusing on human-cetacean interactions off La Gomera. The observation platform was an 11-m wooden whale watching boat based in Vueltas, Valle Gran Rey, operating year-round off the south and southwest coast of the island. Rough-toothed dolphins are resident in the study area (Ritter 2001, Mayr and Ritter 2005). Data were recorded continuously in an *ad libitum* manner (Altmann 1974, Martin and Bateson 1993), spoken to a voice recorder. Photographs were taken opportunistically of as many members of the encountered groups, using a single lens camera equipped with a 300-mm telephoto lens. However, photo-ID efforts were limited due to the fact that observations were made during regular whale watching trips.

Rough-toothed dolphins occur throughout the world oceans, preferring deep waters and sea surface temperatures of 25°C (Leatherwood and Reeves 1983, Miyazaki and Perrin 1994). Group sizes range from several individuals to fifty or more. Little is known about the behavior of this species, but there is increasing evidence for a complex social organization (*e.g.*, Mayr 2004). Behaviors observed off La Gomera during past years included travel, surface feeding, dive, rest, and milling (Ritter 2002). Site fidelity as well as strong social bonds between individuals of different age classes were documented. The dynamic nature of group/subgroup composition indicates a fission–fusion type of social organization (Mayr and Ritter 2005).

The first sighting involving the observation of adult dolphins together with a dead calf was made on 25 April 2001 at 1030. A group of 15–20 rough-toothed dolphins was spotted 1.15 km away from the coast (28°03'31"N, 17°19'83"W). The animals were widely dispersed and apparently surface feeding, as indicated by repeated changes of the swimming direction of the whole group and a high surface activity with fluke-up dives, skimming, and frequent leaps. Cory's shearwaters were present and one dolphin was seen pursuing a flying fish. An adult dolphin in the group was observed with a dead newborn calf (Fig. 1). The animal was continuously pushing the carcass toward the surface either with its beak, melon, and front part of the back or taking it into its mouth. It repeatedly performed arched or lateral surfacings and showed other erratic movements close to the surface. From time to

time the animal apparently left the newborn, only to retrieve it after short periods. When left alone, the dead calf was submerged for up to several minutes.

Close to the adult animal—presumably the animal that had given birth to the calf and therefore termed “the mother”—two more adult dolphins were swimming in a highly synchronous way, usually slightly in front of and constantly escorting the mother, hence called an “escort.” The group then changed behavior to slow travel and at 1130 began to swim in loose formation (interanimal distances of 2–5 body lengths). Subgroups of three animals, seven animals and a juvenile were observed shortly approaching the mother and its calf, which were still escorted by two animals. Later, the group formation became more dispersed again, with single animals seen more frequently at the surface. Surface activity increased, seabirds were present, and leaps were seen, indicating another period of surface feeding behavior. We left the group at 1230, when the animals were widely dispersed again.

On the next day (26 April) we sighted a group of fifteen or more rough-toothed dolphins moving very slowly and including the mother and her dead calf. The behavior of the mother was very similar to that observed during the first sighting. Tight subgroups, an escort of two animals as well as a single juvenile swimming in close proximity to mother and dead infant were observed.

On the following 4 d, groups of rough-toothed dolphins were resighted four times, always with the mother and the dead calf. The distance from the coast ranged from 0.84 to 2.57 km (mean 1.78, SD = 0.68) with a corresponding mean depth of 102 m (range 60–120, SD = 20.19). Total time of observation was 4 h 40 min. The estimated group size during these sightings was in the range of ten to twenty animals. Group composition appeared to always be the same, judging from individuals in the group that were identifiable by natural markings of the fin and other features (see Mayr 2004). Nineteen individual dolphins were photo-identified during this period (between three and twelve per sighting). There was an overlap of up to 83% identified individuals among days. The same individuals were resighted during up to four sightings (range 2–4, mean 2.5, SD = 0.65).

The groups were typically widely dispersed and traveling slowly (<2.5 kn) or surface feeding in association with sea birds. Tight and synchronously swimming subgroups, typical for this species (Ritter 2002), appeared regularly. An escort was seen together with the mother and the calf during three of these sightings, swimming 50 m or less away from them. Moreover, there was one juvenile animal staying close to the mother during three of the sightings.

Throughout sightings III–VI, the dead calf floated at the surface when it was not carried by the mother. These periods lasted only seconds at first and subsequently up to minutes. During sighting VI, the dead calf was showing obvious signs of decay (yellow patches, sloughing pieces of skin). It was also constantly floating on its back when left alone by the mother.

During sighting V, the mother was leaving its calf alone for periods of minutes. However, when a gull approached the newborn, it was chased away by the dolphins; this behavior was observed twice. Once, the calf was retrieved and taken away from the approaching boat after it was floating alone at the surface. Moreover, the calf was also now carried at the surface by the two adult animals from the escort, for example,

by swimming with their back beneath it. This latter behavior, that is, that all three animals were observed to support the dead calf, was recorded again during the last sighting.

Supporting and standing-by behavior appears to be widespread in mammals. There are several accounts of such behavior for a variety of cetacean (mysticete and odontocete) and noncetacean species (mentioned in Caldwell and Caldwell 1966, Harzen and Dos Santos 1992, Fertl and Schiro 1994). The described behaviors include standing by injured, dying, or net-trapped conspecifics, following boats after a member of the group had been captured, and supporting sick or dead animals at the surface. In rough-toothed dolphins, a similar incident to that described here was observed by Lodi (1992) in Brazil, when an adult female supported another (dead) adult female at the surface for several hours.

It remains unclear how long such behavior might last in cetaceans as observations tend to be of short duration. Caldwell and Caldwell (1966) and Harzen and Dos Santos (1992) report several incidents wherein members of different cetacean species must have carried a calf for several days. Observations of a pilot whale (*Globicephala macrorhynchus*) mother carrying a dead and considerably decomposed calf (Publicaciones Turquesa 1999) also indicate that odontocete mothers may stay in contact with their dead offspring for substantial periods of time. Nevertheless, the observations reported here appear to represent the first well-documented case covering a period of several days.

Analysis of photo-ID images showed that fifteen out of the nineteen identified members were members of a cluster of animals that was assumed to represent a social unit by Mayr (2004). During sightings V and VI, adult animals other than the mother were observed in bodily contact with the dead calf. At least two of the adults of the group—one of them identified as an escort animal—were treating the calf as the mother did during the first sightings. This shows that supporting behavior in rough-toothed dolphins was performed by individuals that could not have been the mother of the calf. A similar observation in bottlenose dolphins was reported by Cockcroft and Sauer (1990), when “two animals were attempting to support a dead calf, . . . one adult on either side of the calf” (p. 31). Supporting behavior of more than one animal toward individual cetaceans have been described for several delphinid species (Caldwell and Caldwell 1966).

There appears to be an additional level of supporting and standing-by behavior in the observed group(s). For example, slow travel had never been observed before and, thus, may have been an accommodation to the mother's special situation. Also, the fact that the group was resighted several times in the same area indicates that it did not move much during the 5-d period of observation. It is therefore hypothesized that the group(s) as a whole adjusted its behavior to the exceptional circumstances caused by the death of the newborn. Observations by other researchers support this idea. Groups tend to stay with conspecifics in distress (Caldwell and Caldwell 1966, Cockcroft and Sauer 1990, Harzen and Dos Santos 1992, Lodi 1992, Fertl and Schiro 1994). Moreover, several individuals may support a conspecific at the same time (Caldwell and Caldwell 1966, Cockcroft and Sauer 1990), indicating that a social group may be affected by a member's injury or death.

Rough-toothed dolphins are one of the lesser known odontocetes. The species is usually encountered in groups of ten to fifty animals (Myazaki and Perrin 1994). Off La Gomera group sizes ranged from one to seventy (mean 12.5; Ritter 2003). Recent findings have shown that this species is resident off La Gomera, possibly with several (sub)populations in the Canarian Archipelago (Mayr 2004, Mayr and Ritter 2005). Little is known about the rough-toothed dolphins' social behavior. Mayr (2004) reports Half Weight Indices of up to 0.89, suggesting strong bonds between individuals which may last for years. The behaviors described here also underline that this species is highly social with distinct and lasting relationships between members of the same population.

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SUPPLEMENTARY MATERIAL

The following supplementary material is available for this article:

Figure 1

This material is available as part of the online article from:

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