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Three encounters with wild bottlenose dolphins (*Tursiops truncatus*) carrying dead calves

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Abstract

We report on three sightings of bottlenose dolphins (*Tursiops truncatus*) in the Sado estuary, Portugal, during which adults were observed carrying dead calves. Two of the involved adults were photo-identified. The animals showed many behaviours similar to those that have been described in captive animals under similar circumstances and also in other free-ranging populations. This intriguing behaviour seems to be a misuse of a strong epimeletic response that is usually vital and therefore generally adaptive.

Introduction

The social bond between female dolphins and their calves is known to be very strong, sometimes lasting for years. It has also been repeatedly observed in captivity that when a calf dies, the mother may carry it around for a long time, even until an advanced state of decay (e.g., Caldwell and Caldwell, 1966; Tayler and Saayman, 1972). This behaviour has also been described in other mammals, in particular the primates (e.g., baboons, Tayler and Saayman, 1972; Altman, 1980; chimpanzees, Goodall, 1986).

As it is more difficult to observe the behaviour of dolphins at close range in the wild, only a few descriptions of similar occurrences are available for natural populations (Hubbs, 1953; Moore, 1953, 1955; Norris and Prescott, 1961). Connor and Smolker (1990) have also recently provided a detailed description of such an occurrence in Shark Bay, Australia.

Here we report on three similar events, observed in the Sado estuary, Portugal, in the course of our behavioural study of the resident dolphin population. (The reports of dos Santos and Lacerda (1987), Harzen (1989), and dos Santos *et al.* (1990), give further details of the study of this population.)

Since 1981, 40 individuals in this population have been repeatedly recognized by natural marks and differences in their dorsal fins (as discussed by Würsig and Würsig, 1977). Eleven animals have been photographed in close association with a calf or a juvenile and are suspected to be females.

Methods

The observations described here were made from a 3.5 m inflatable and a 5.5 m fibreglass boat, both powered by outboard engines. We followed the dolphins from a distance, trying not to influence their behaviour. It is usually possible, after some time, to be in close proximity to the animals without noticeable changes in their activities. Whenever possible, the engines were turned off and the boat left drifting. Photographs were taken with motor-driven cameras and lenses of 50 to 400 mm.

Results

What follows are summarized excerpts of our observation protocols from three different sightings in the Sado estuary. The weather conditions were similar on the three different days, which were hot and clear, with only a slow breeze.

Encounter 1, 26 July 1987

The sighting lasted from 09:50 to 13:50. We were following a group of 12 to 15 dolphins that were swimming directionally with moderate speed, with episodes of feeding. The group seemed to contain 2 calves. At 11:45 we noted an apparently dead calf, being carried by an adult that was following the other dolphins at a considerable distance. As it surfaced, the adult was pushing the calf with its snout. Then it took the calf underwater for dives of about 1 min, during which horizontal distances of 200–300 m were covered. This behaviour lasted until 12:45.

At the end of this 60 min. (during which we were not able to approach closely enough for photo-identification) the adult was seen a few times surfacing without the calf. Although we were unable to determine what happened to the calf, it was our impression that it must have sunk to the bottom.

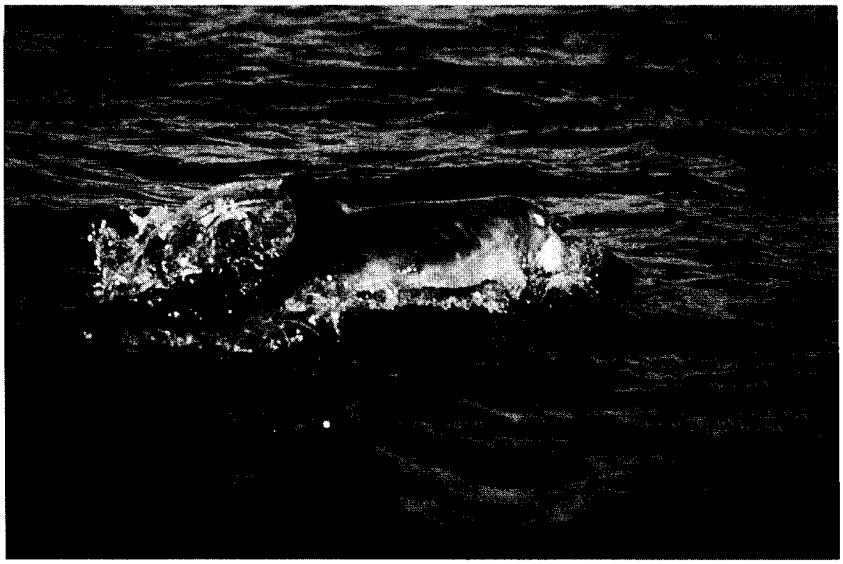

Figure 1. The dead calf is turned over to a normal body position by the adult dolphin. (Encounter 2)

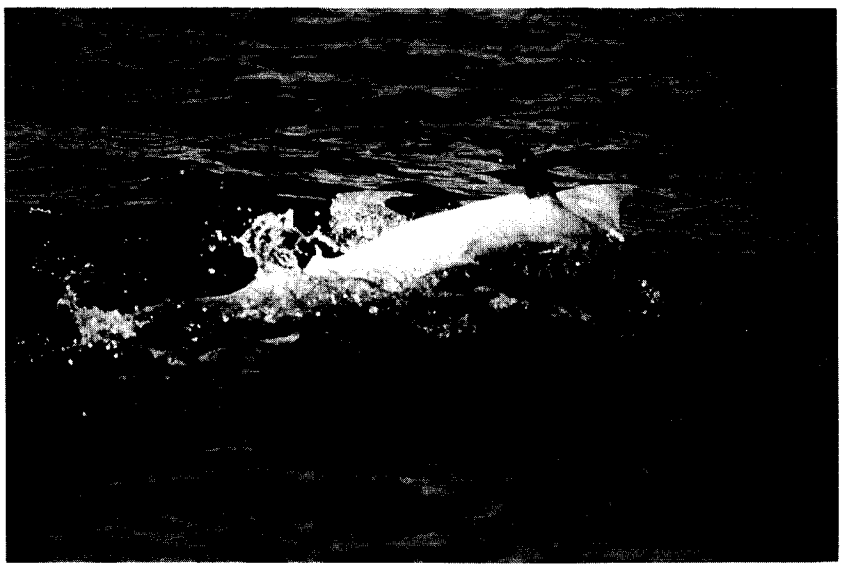

Figure 2. The dead calf immediately goes back to the belly-up position, drifting motionless in the water. (Encounter 2)

Encounter 2, 21 August 1987

At 09:13 an adult and a calf were seen about 200 m away from shore, inside the estuary. The calf was motionless, belly-up at the surface. The first behaviour we noted from the adult was a front leap, during which the animal rotated its body, reentering the water with its dorsal side first. It then pushed the calf repeatedly, trying obviously to turn it over into a normal belly-down position. But as soon as this succeeded, the calf's body would again turn over to a belly-up position, showing no other movement. We then concluded that the calf was dead (see Figures 1 and 2).

At this stage we could not get closer than 20 m, otherwise the adult would start to push the calf away from us, changing direction frequently. However, we

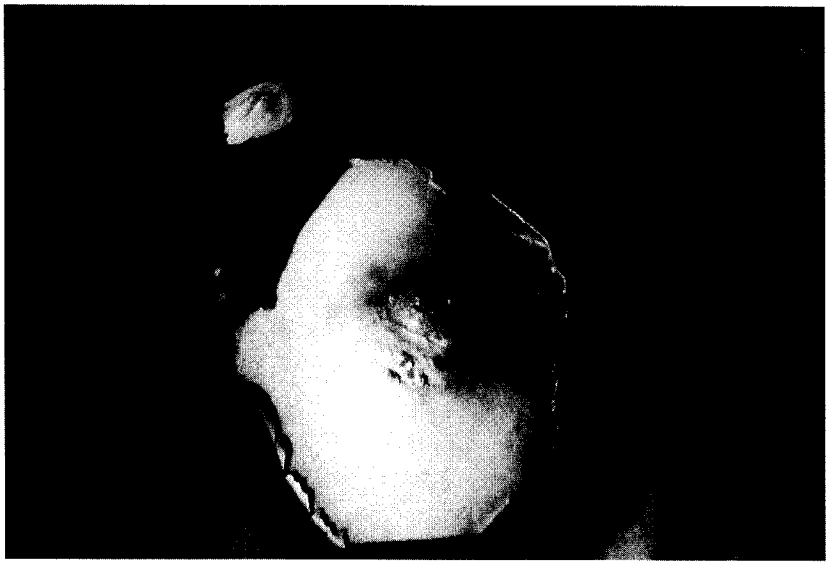

Figure 3. Abscess and skin peeling off on the posterior right lower jaw. (Encounter 2)

Figure 4. The mouth of the calf is wide open, and the skin is peeling off at several places. (Encounter 2)

could see that the calf had an abscess on the head, several lacerated, bleeding wounds, the skin was peeling off and the mouth was wide open (see Figures 3 and 4).

About 15 minutes later, we detected a group of 13–15 other dolphins (including at least one other calf) that appeared to be feeding on the bottom about 500–800 m away. After 20 minutes, an adult animal came from this group to join the adult-dead calf pair, approaching with some apparent hesitation, turning back and forth. The first adult was now calm, keeping its head close to the dead calf, and the rest of its body submerged except for its fin, a posture identical to that which Connor and Smolker (1990) have called 'snagging' (see Figure 5).

The first adult spent about 30 min pushing and rolling the calf, more and more violently, even hurling the calf in the air (see Figures 6 and 7),

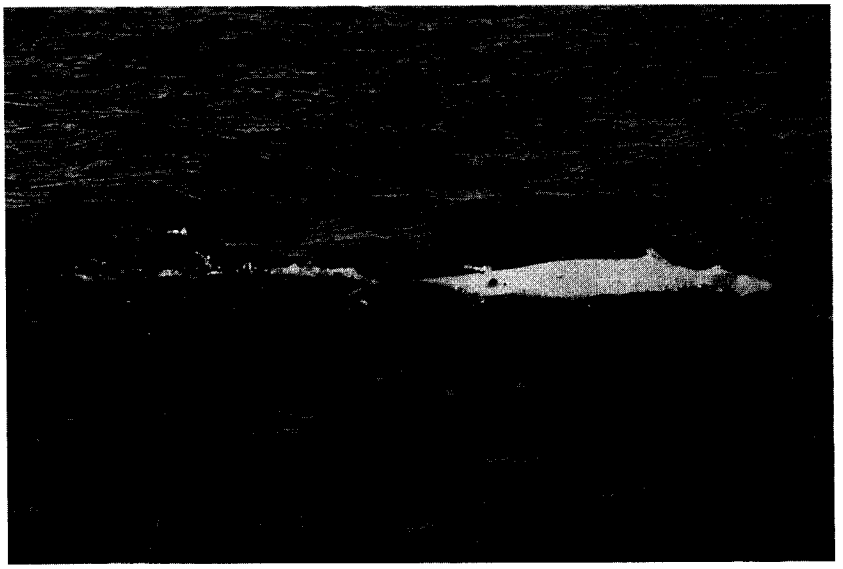

Figure 5. The adult "snagging" near the dead calf. (Encounter 2)

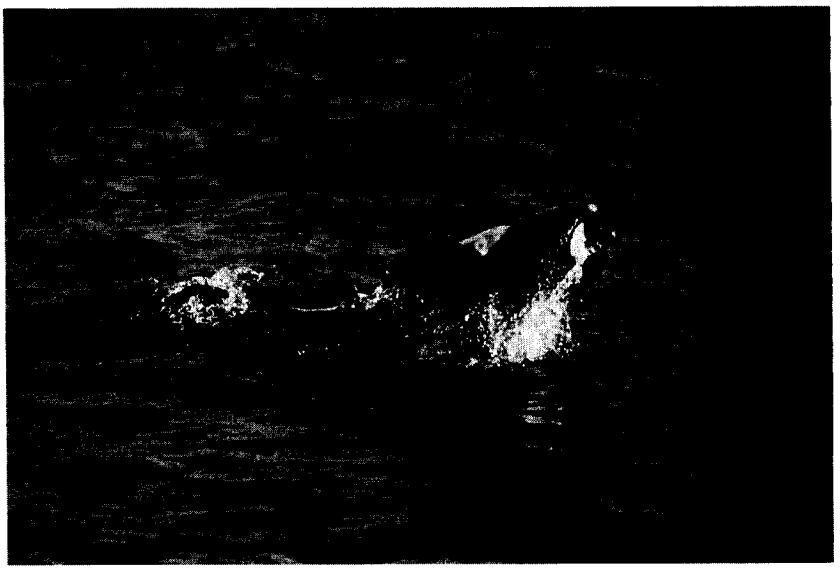

Figure 6. The dead calf is pushed vigorously. (Encounter 2)

alternating with short 'snagging' episodes, or with some series of dives, when we could not see it for several minutes.

During one of these absences of the adult, at 09:37, we decided to take the calf into the boat, but we put it back in the water after a few minutes because the adult approached and began circling us.

Then the second adult approached the pair again and both adults dove; the calf was left drifting alone at the surface. One minute later the first adult surfaced close to the calf, and so did the second adult a few seconds later. These dives continued for about 15 minutes, while the rest of the group was still about 500 to 800 m away, in the same probable feeding activity.

The first adult was now pushing the calf less frequently, and was more involved in the diving activity, together with the second adult. Later, four or five

Figure 7. The dead calf is hurled into the air. (Encounter 2)

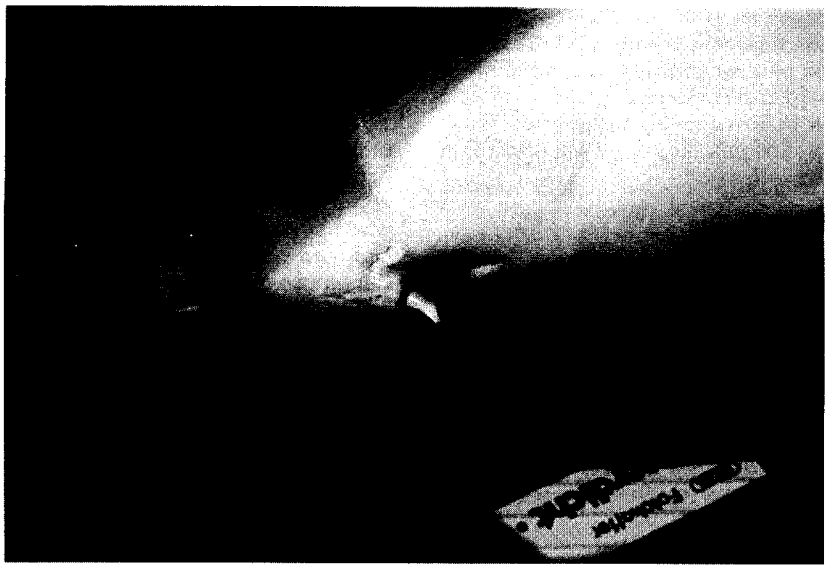

Figure 8. This dead calf was a male, with fetal folds still visible. (Encounter 2)

other adults also approached, and they all dove, leaving the calf adrift at the surface with some sea gulls circling above.

After a long dive (about 3 min in duration) we saw three adults surfacing at a distance of at least 50 m from the calf, rather aroused, making several front leaps and moving rapidly towards the rest of the group. We saw no other adult in the vicinity of the calf for about 10 min. At 10:12, we took the calf into our boat and continued to observe the group. In the meanwhile, additional photos and measurements of the calf were made. It was a 125 cm long male, with fetal folds still visible (Figure 8).

The dolphins continued to move away, maintaining their diving activity, and we followed them until 12:48.

The first adult close to the calf was photo-identified as "Elegante", an animal that was first

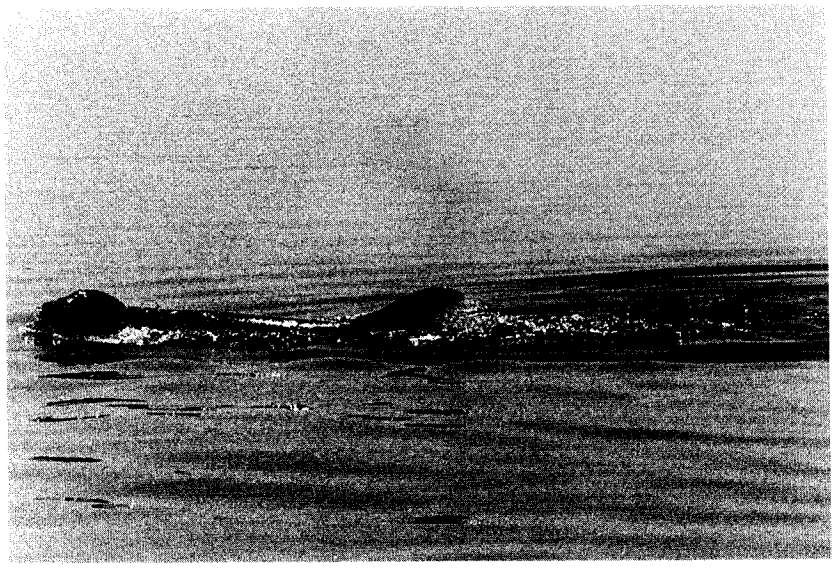

Figure 9. The adult pushes the calf in a cross-like position. (Encounter 3)

recorded in the estuary on 14 July 1981. This individual had been photographically recognized on 14 previous sightings in different years, 10 of which were of groups where at least one calf was detected. However, this was the first time the animal was detected in close association with a calf.

Encounter 3, 26 August 1988

At 10:10, a group of about 10 dolphins, including a few calves, were seen moving slowly with some episodes of diving or feeding at the surface. The positions of the animals, and also the size of their subgroups were changing almost as often as they surfaced. Periods of slow movement were alternating with episodes of aroused feeding and leaping. We had been following them without approaching until 11:48 when we realized that one of the calves was motionless. An adult was pushing it in a cross-like position (Figure 9). It did so three or four times in a row and then positioned itself to take the calf underwater. Such dives lasted between 2 and 3 min, after which the adult surfaced with the calf. After a while the adult started to toss the calf around in the air, still alternating with long dives, on which the calf was also taken. Distances of 100–300 m were covered during these dives. Pushing and tossing of the calf became more and more violent. In its attempt to place the calf in the right position across the snout before diving, the adult performed arching movements of the head and body.

For the whole period of observation, until 13:20, it continued to change swimming directions very frequently. The adult never dove alone, and never let us approach closer than 50–100 m.

The adult close to the calf was identified as "Quatro", an animal that was first recorded in the estuary on 15 March 1986. This individual had been photographically recognized on 22 previous sightings in different years, 16 of which were of groups where at least one calf was detected. "Quatro" itself had been photographed in close association with a calf on two previous sightings, on 23 June 1986 and 25 July 1987.

Discussion

There are many similarities between the behaviour elements described above and those previously reported. It is apparent from these observations that supporting and carrying a dead calf is also a frequent behaviour in this dolphin population. Common to all three events was that only one adult was directly interacting with the dead calf, there was always physical contact between them, and the group to which the animal belonged seemed engaged in its normal activities, without any special attention being paid to the concerned adult.

In encounter B, though, at least one animal from the group approached the adult and the calf, apparently inspecting the situation. Our impression was that this animal also influenced the first adult to leave the calf and to join the group's activities. It is of course possible that our presence also affected the dolphins' behaviour.

Although we do not know how long these behaviours lasted, at least in the second occurrence it is obvious that the calf had been carried around for several days after its death.

As this type of behaviour is practically impossible to observe in the wild from its onset (most likely before the calf's death) it is difficult to discuss its causes or functions at the stage when the calf is already in an advanced state of decay.

However, dolphins and other cetaceans have been known for a long time to give epimeletic responses to conspecifics (and even to other animals) that are unable to stay afloat, responses that are particularly intense in the case of distressed juveniles (Caldwell and Caldwell, 1966). As this type of behaviour might be decisive when a relative is ill or injured, it clearly represents a strong and entrenched behavioural adaptation.

The extended support of a dead calf seems to be a misuse of an adaptive response. One may speculate that either these presumed mothers are unable to abandon a calf even if they are familiar with the consequences of death, or that they didn't evaluate the situation correctly perhaps due to lack of experience of dead offspring. The harsh pushing of a calf is an apparent attempt to stimulate it or to obtain a reaction, and may reflect an inability to assess the calf's state.

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