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A CASE OF EPIMELETIC BEHAVIOUR IN A WILD BOTTLENOSE DOLPHIN *TURSIOPS TRUNCATUS* IN THE GULF OF GUAYAQUIL, ECUADOR

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ABSTRACT

While observing a group of bottlenose dolphins *Tursiops truncatus* in the Gulf of Guayaquil, Ecuador (03°00'S, 80°30'W), an adult dolphin was seen to be carrying on its back the dead body of a young female. During a 50 minutes stay with the animals, every attempt to collect the cadaver failed. The dolphin carrying the dead body violently pushed away the cadaver when she was approached. None of the other dolphins in the area showed interest in what was happening and they did no help to push the cadaver. Reports of similar cases in the wild, indicate that this behaviour almost always is directed toward young animals or calves, presumably by the mother. At least in 7 genera of toothed cetaceans this behaviour has been reported, both wild and captive animals.

INTRODUCTION

Epimeletic or care-giving behaviour by cetaceans to sick or injured congeners has been known for a long time. In an extensive revision of epimeletic behaviour amongst cetaceans, NORRIS & PRESCOTT (1961), and CALDWELL & CALDWELL (1966) mention Aristotle to be the first who noticed a strong parental affection in dolphins. Later, in the 18th and 19th century whalers took profit of this fact to increase their catches. During the 20th century the techniques to maintain dolphins in captivity improved and this resulted in more observations. The assistance usually consists of a healthy animal or animals swimming with the incapacitated member, helping it to stay at the surface, or actually taking it away from the apparent source of danger (NORRIS & PRESCOTT, 1961).

The support at the surface of dead dolphins is considered as a form of epimeletic behaviour and it has been observed in cetaceans both in the wild as in captivity. This paper describes a case in the coastal bottlenose dolphin *Tursiops truncatus,* in which an adult dolphin was transporting the body of a dead young individual. First, publications are reviewed of similar cases in several species of cetaceans in which dead animals were supported or lifted by schoolmates.

PREVIOUS WORK

NORRIS & PRESCOTT (1961, p. 292) indicate that Aristotle, twenty-four centuries ago, noted how a Mediterranean dolphin (possibly *Delphinus delphis*) supported the body of a dead baby dolphin. NORRIS and PRESCOTT also mention three other examples in the bottlenose dolphin. *T. truncatus:* MCBRIDE (1940) reported the case of a stillborn baby which was carried to the surface and held there for an extended period by the mother, HUBBS (1955) reported an adult carrying a decomposing baby dolphin on its dorsal fin, and MOORE (1953) saw an adult carrying a partially decayed newborn young on its head. Mexican fishermen reported to NORRIS and PRESCOTT that they had seen an adult "tonina" (presumably *T. truncatus*) carrying a dead baby dolphin on its back. Further NORRIS & PRESCOTT (p. 294) report two cases of an adult pilot whale *Globicephala scammoni* carrying a dead newborn calf, and in another occasion a dead foetus. They also mention the case reported to them where a young, 7 feet long pilot whale which had been shot, was supported by an adult.

CALDWELL & CALDWELL (1966) mention another case reported by MCBRIDE & KRITZLER (1951) of a bottlenose dolphin *T. truncatus* in captivity which attempted to lift her dead stillborn calf to the surface with her beak. TAYLER & SAAYMAN (1972) reported that a female bottlenose dolphin *T. truncatus* in captivity carried her calf, which died shortly after birth, in her mouth for five days before relinquishing it in a state of advanced decomposition. PILLERI (1969) observed epimeletic behaviour in the Bolivian dolphins, *Inia boliviensis* as well in the common dolphin, *Delphinus delphis* between adult animals and in the La Plata dolphin, *Pontoporia blainvillei* between mother and calf (PILLERI and KNUCKEY, 1969; PILLERI, 1971). KASUYA & MIYASAKY (1976) reported the case of a dead, 2-years old Pacific white-sided dolphin *Lagenorhynchus obliquidens* (the age was determinated later by a stained tooth section), supported by a bigger, adult of subadult animal. They state that this behavior is common in this species. COCKCROFT and SAUER (1990) reported how two adult bottlenose dolphins *T. truncatus* attempted to support a dead calf at the surface, one adult on either side of the calf. WELLS (1991) reports how a female wild bottlenose dolphin lifted her one day dead son to the surface, whistling and dropping the calf. The behaviour was repeated until two males appeared and chased her. After the chase the female made no more attempts to recover the carcass. LODI (1992) reports the case of a partially decayed young female rough-toothed dolphin *Steno bredanensis,* supported at the surface by an adult animal of unknown sex in Ilha Grande, Brazil.

In contrast to these reports, CONNOR & SMOLKER (1990) have observed during more than eight hours the behaviour of a mother bottlenose dolphin *T. truncatus* towards her deceased offspring in Shark Bay, Western Australia. In this case the mother engaged in a series of "excursions" swimming away from, and returning to the calf time after time, but she never touched the calf.

The reports cited so far refer to intraspecific behaviour, but CALDWELL & CALDWELL (1966, pp. 767, 768 and 773) cite three cases of interspecific epimeletic behavior, all observed in captivity; BROWN & NORRIS (1956) reported that a bott-

lenose dolphin *T. truncatus* attempted to lift a dead Pacific white-sided dolphin *L. obliquidens* to the surface after that it had been killed; ESSAPIAN (1962) reported a case in which a male bottlenose dolphin *T. truncatus* lifted a dead common dolphin *Delphinus delphis;* and GILMORE (1962) and CALDWELL, BROWN & CALDWELL (1963) reported that a male pilot whale *Globicephala scammoni* carried a dead female Pacific white-sided dolphin *L. obliquidens* for several hours.

THE OBSERVATION IN THE GULF OF GUAYAQUIL

Since February 1990 I have been making weekly surveys in a fiberglass boat with outboard motor in the inner estuary of the Gulf of Guayaquil, Ecuador (03°00'S, 80°30'W), doing an ecological study of a population of coastal bottlenose dolphins *Tursiops truncatus* (see FELIX in this volume). More than 400 dolphins have been identified individually by their natural marks, mainly on the trailing edge of their dorsal fins (see WÜRSIG & WÜRSIG, 1977).

On 4. December 1991, accompanied by Mr. Jake León, I was observing a group of bottlenose dolphins which were foraging at the inlet of Puná Vieja channel, Puná Island (02°55'S, 80°05'W) on the estuary of the river Guayas, Ecuador. After two hours staying with the same group of dolphins which was observed at close range, a dead floating dolphin at some 200 m distance, drew the attention. The group was left behind to inspect the animal. While we were heading towards it, we saw another dolphin which was pushing the body against the tidal current and in our direction. The dead dolphin was an immature female of about 2 m in length, maybe 2 or 3 years old (in accordance with SERGEANT, CALDWELL & CALDWELL, 1973). The body was complete but slightly swollen and smelling of decomposition. Parts of the intestines hang out of the anal-genital slit. The dorsal fin, flippers and flukes were present. In several places where the skin had disappeared, the blubber was visible. No signs of external wounds were seen. Judging from the external condition we presumed that the young dolphin died 2 or 3 days before.

The dolphin supporting the cadaver was an adult one of unknown sex, and could be identified as No. 271 of my catalogue. The young dolphin had no nicks in the dorsal fin and certainly had not been catalogued.

The swimming dolphin (No. 271) was holding its head and neck under the dead body which floated belly-up. No. 271 stayed in a position with its body obliquely outward at an angle of about 20°, keeping the flukes free for pushing. At the same time it kept the dorsal fin hooked in the axilla of the dead animal (fig. 1). Every few seconds No. 271 had to leave this position to breathe, appearing at one or other side of the dead dolphin at the surface, and then shortly afterwards, continuing to carry the body. The hard working dolphin appeared very nervous, making very sudden, erratic movements. On the flippers and flukes of the cadaver many parallel tooth scratches were visible. Although this was not directly observed in the field, these marks were probably caused by No. 271, when it was pulling the fins with its mouth, sometimes. After a few minutes number 271, transporting the dead animal passed through

Fig. 1 — The young dead dolphin is carried belly up by the adult one, which kept its head below the dead body and its dorsal fin hooked in the axilla (dark at right of the center).

Fig. 2 — The cadaver is violently pushed out our reach by No. 271. Note de nicks on the trailing edge of its dorsal fin (left). These allowed its identification.

the middle of the group of dolphins which we initially had been observing. Apparently no other animal seemed to be affected by what No. 271 was doing. No other dolphin tried to help, not even while foraging very close to the couple. A few times one or two dolphins approached for a short time, swam around and then left.

From the beginning we did not want to interfere, thinking that the dead dolphin possibly came floating by, attracting the curious No. 271 and would be soon left. However, No. 271 kept on carrying the dead dolphin and we decided to take a closer look to examine the body more thoroughly. But every time we tried to get close to the body, No. 271 interfered, coming between the launch and the body, frequently with the head out of the water, looking and turning rapidly, slashing with its tail, possibly a threatening behavior; it would then go back to the body, pushing it downwards forcefully, out of our reach (fig. No. 2). At least ten times we tried to get hold of the body, but the defending dolphin reacted every time in the same way as described, so we finally gave up the attempts and decided to observe the scene from a distance. We stayed with these dolphins for fifty minutes. In the meantime, we had drifted 500 m with the tide into the channel, while the dolphin still kept on pushing the dead body upstream. This was the situation when we left.

Apart from the sounds produced by the turbulent water, disturbed by the hiperactive dolphin while pushing away the body, no sounds usually produced by dolphins, were heard. No. 271 had not been observed in the original group, so we do not know when it started to transport the body, or for how long this behaviour was continued after our observation. The next day we returned to the same position but there were no dolphins there.

DISCUSSION

Of the 22 mentioned cases of dolphins carrying a dead body, including the present observation in the Gulf of Guayaquil, sixteen cases refer to animals in the wild and six to animals in captivity. The bottlenose dolphin. *T. truncatus* was involved in twelve cases, seven in the wild and five in captivity. In ten similar cases six other genera of toothed whales *(Delphinus, Globicephala, Lagenorhynchus, Inia, Pontoporia* and *Steno)* were involved, of which only three were in captivity. That the bottlenose dolphin *T. truncatus* is present in most cases is not surprising because it is the most intensively studied species, both in the wild and in captivity. So the behaviour discussed here is not necessarily more common in *T. truncatus* than in other genera. But one may say that both in *T. truncatus* and in other genera of toothed whales, a dead animal carried at the surface by an adult is probably young and, in most cases, is a calf. Although it is difficult to know in the wild what is the relationship and/or the sex of the animals involved in such epimeletic behaviour, I presume that adult animals supporting dead calves at the surface are likely to be their mothers. And it seems that the supporting of the cadaver continues until decomposition has well begun.

The dolphin No. 271 was seen for the first time in February 1990 and afterwards was recognized twice, but the animal never seemed to be accompained by a calf, or guiding one. Still, it is likely that there was a parental relationship between this dolphin and the dead young animal. Usually when a little dolphin is observed, swimming close to an adult, it is assumed that is a mother with her calf. It must be kept in mind that when a calf grows older, it begins to be guided by different adults or other mothers and to swin around with young animals, becoming more independent. That is why after about one year it is very difficult to tell a calf's mother from others mothers. SCOTT, WELLS & IRVINE (1990, p. 241) showed that bottlenose calves typically remain with their mothers for 3—6 years. This was based on results of their study during twenty years of a bottlenose dolphin community in Florida, U.S.A. The study of this species in the Gulf of Guayaquil tends to support this. If the estimated age of the dead young dolphin is correct, this would indicate that this dolphin was still accompanied by her mother.

In the case of dolphin No. 271, a parental relationship with the dead young is also to be presumed because the other dolphins appeared indifferent to the scene. In spite of the fact that within the group there were at least three females with a calves, these animals passed at only a few meters but they continued feeding. CALDWELL & CALDWELL (1966, p. 769) point out that females of bottlenose dolphin *T. truncatus* have a well-developed pattern of both standing-by and supporting behaviour, directed towards the young and adults of their own kind as well as towards other species. Such behaviour, evident in dolphin No. 271, was not noticed in the other females of the group. This suggests that in the wild this kind of epimeletic behaviour can be expected only when there is a direct parenthood between the dolphins involved.

Carrying the cadaver against the current also means considerable energy cost, because in some parts of the Gulf the current may be in excess of 4 knots (STEVENSON, 1981), but this apparently did not affect the behaviour of No. 271. Possibly it wanted to carry the dead body towards a specific site, perhaps within the home range where the dolphin feels more protected, or perhaps a commonly used and a better known place. No. 271's way of acting, pushing away the dead dolphin when we approached her, also indicates the existence of a strong affective bond that reflects a well-developed sense of protection towards the calf. CONNORS & SMOLKER (1990) compare these reactions with similar behaviours observed in several species of primates (e.g. baboons, chimpanzees and gorillas). It has been suggested that epimeletic behaviour may have evolutionary adaptative consequences, specially when the animals are genetically related (COCKCROFT & SAUER, 1990). However, in cases as mentioned here the benefit, if any, will be minimal because the giver doesn't obtain any response from the help-receiving one and then there isn't any direct benefit at all. Considering the complexity of the attitudes manifested during the cooperative behaviour in cetaceans, NORRIS & DOLH (1980) speculate about the possibility that the involved animals can perceive the context of a situation and therefore are able to react to it.

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