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Carrying of dead calves by free-ranging Texas bottlenose dolphins (*Tursiops truncatus*)

D. Fertl and A. Schiro

Marine Mammal Research Program, Texas A & M University, 4700 Avenue U, Bldg 303, Galveston, TX, 77551, USA

Epimeletic, care or attention-giving, behavior by cetaceans has been observed in various captive and free-ranging cetaceans. Epimeletic behavior is classified as 'nurturant', if care or attention is directed toward young, 'succorant', if directed towards individuals in distress (Caldwell & Caldwell, 1966). The three major components of succorant behavior, as classified by Caldwell and Caldwell (1966), are standing by, excitement, and supporting behavior. These observations are not limited to succorant behavior, but are also witnessed during nurturant behavior towards dead calves. Apparent nurturant behavior towards dead, and even decomposing calves, has been observed in both captive and free-ranging situations (see Table 1). We provide three anecdotal reports, furnished by the Texas Marine Mammal Stranding Network (TMMSN), of free-ranging Texas bottlenose dolphin (*Tursiops truncatus*) reactions to dead calves.

Record 1

On 16 March, 1986, near Rockport, Texas (27°56.9′N 97°00.2′W), fishermen observed an adult dolphin that appeared to be trying to keep a calf from washing ashore on an inshore island. Several other adult dolphins were moving in a clockwise direction around the presumed mother and calf.

When the fishermen attempted to approach the group, the circling dolphins began tail-slapping. The calf was obviously dead, bloated with its mouth open. This incident was observed for the two hour duration of the fishermen's stay.

The following day, a TMMSN volunteer circum navigated the island and carefully scanned the shoreline with binoculars. The dead calf was not found, but a group of dolphins was observed occasionally tail-slapping the water. Later that day, at an unspecified location, one of the fishermen's sons found a similar scene to that witnessed the previous day, an adult keeping a dead calf afloat, while other dolphins circled around them in a clockwise direction.

Record 2

At 08:30 on 22 March, 1986, the TMMSN was notified of a dead dolphin floating in the Corpus Christi ship channel (27°50.7′N 97°03.8′W). Upon the arrival of TMMSN volunteers at 10:00, an adult was observed pushing a dead calf with its rostrum. Whenever the boat approached within 50 m, the adult would dive with the body and surface 50 m further away. The adult then kept the dead calf at the surface, as several other dolphins milled nearby. The boat engine was stopped and the boat drifted near the calf. As one of the volunteers grasped the calf's tail, the presumed mother continued to nudge the body, making it appear life-like. When one of the observers was confident that the calf was dead, the body was lifted into the boat. The mother made several frantic rushes underneath and near the boat.

Further examination of the calf (which measured 116 cm and weighted 15.9 kg) revealed dolphin rakemarks and bitemarks. Rakemarks were especially evident on the right flipper, thought to be where the adult had been holding the calf. The post-mortem was incomplete and did not yield a conclusive cause of death.

The condition of the animal recovered in record two was considerably worse than that described in Record one. With the proximity of dates and a distance of 19 km (12 miles) between the two reports, it is possible that the same animals were involved in Records one and two.

Record 3

During late spring, 1992, at the Port Mansfield jetties (26°34′N 97°17′W), tourists observed a dolphin holding a dead calf on her rostrum while swimming along the jetties. The animal swam with the dead calf for two days; on the third day the calf was seen lying on the north jetty. The adult was seen swimming in the vicinity of the body for that day, after which the adult disappeared.

Epimeletic behavior may be considered generally adaptive for the survival of possibly genetically related individuals within specific groups

Table 1. Cetacean species in which carrying dead calves has been described.

Species	Captivity/Wild	Reference
Dephinus bairdii[1]	Captive	Brown *et al.* (1966)
Megaptera novaeangliae	Wild	Caldwell and Caldwell (1966, p 777)
Globicephala scammoni[2]	Captive	Brown *et al.* (1966)
Globicephala scammoni[2]	Wild (2 reports)	Norris & Prescott (1961, p 294)
Lagenorhynchus obliquidens	Captive	Caldwell & Caldwell (1966)
Lagenorhynchus obliquidens	Wild	Kasuya & Miyazaki (1976)
Phocaena phocaena[3]	Captive	Andersen (1969)
Stenella coeruleoalba	Captive	Brown *et al.* (1966)
Steno bredanensis	Wild	Lodi (1992)
Tursiops aduncus[4]	Captive	Tayler & Saayman (1972)
Tursiops gilli[4]	Wild	Hubbs (1953)
Tursiops gilli[4]*	Wild	Norris & Prescott (1961, p 293)
Tursiops truncatus	Captive	Caldwell & Caldwell (1966)
Tursiops truncatus	Wild	Cockroft & Sauer (1990)
Tursiops truncatus	Wild (3 reports)	Harzen & dos Santos (1992)
Tursiops truncatus	Captive (at least 2 reports)	McBride & Kritzler (1951, p 254)
Tursiops truncatus	Wild	Moore (1953, p 136)
Tursiops truncatus	Wild	Moore (1955)
Tursiops truncatus	Captive	Tavolga & Essapian (1957, p 23)
Tursiops truncatus	Wild	D. Waples (Sarasota, FL, pers. comm. 1993)

[1]*Delphinus delphis.*
[2]*Globicephala macrocephalus.*
[3]*Phocoena phocoena.*
[4]*Tursiops truncatus.*
*Referred to as 'tonina' by Mexican fishermen, authors presumed species to be *T. gilli.*

(Cockcroft & Sauer, 1990), particularly for dolphins that appear to be dependent on school structure for survival (Norris & Dohl, 1980; Norris & Schilt, 1988). Schooling in dolphins may be supported by reciprocal altruism, which carries with it an opportunity for the development of complicated social relationships (Connor & Norris, 1982). While extended support of a dead calf may appear misguided or maladaptive (Harzen & dos Santos, 1992), Griffin (1984) reminds us '... that vivid human thinking occurs at times of extreme grief ... and may be accompanied by behavior that accomplishes no practical result'. The circling behavior described in Record 1 is similar to observations made for rough-toothed dolphins (*Steno bredanensis*) (Lodi, 1992) and captive bottlenose dolphins (Caldwell & Caldwell, 1964). Circling behavior in such situations was interpreted as distress or excitement by Caldwell and Caldwell (1964). A model of a conscious society with individual relationships based on a variable set of emotional drives fits observations of epimeletic behavior well (Connor & Norris, 1982).

Particularly intriguing is the fact that nurturant behavior towards dead calves does not always occur (Caldwell & Caldwell, 1964; Shane, 1977). Evidence suggests that when carrying of a dead calf occurs, it is mainly females that exhibit the behavior. As members of a multi-male, multi-female mating system, dolphin females are the caretakers of the young. The long period of infant dependency in cetaceans appears to correspond to an intense learning period for the calf (Brodie, 1969). The loss of the calf may leave the mother with the strong drive to attempt to aid the calf, even if it is dead.

Attention to dead offspring has also been observed in other marine mammals such as sea otters, *Enhydra lutris* (Kenyon, 1969), West Indian manatees, *Trichechus manatus* (Hartman, 1979), California sea lion, *Zalophus californianus* (Graham Worthy, pers. comm., 1993); and harbor seals, *Phoca vitulina* (Rosenfeld, 1983); as well as in a number of terrestrial mammals such as baboons, genus *Papio* sp. (Tayler & Saayman, 1972; Altmann, 1980; Smuts, 1985), hanuman languars, *Presbytis entellus* (Hardy, 1977), orangutans, *Pongo pygmaeus* (Montgomery, 1991), chimpanzees, *Pan troglodytes* (Goodall, 1986), gorillas, *Gorilla gorilla* (D. Watts, pers. comm. in Connor & Smolker, 1990), elephants, *Loxodonta africana* (R. M. Bere in Douglas-Hamilton, 1975; Moss, 1988), and

ungulates (B. Smuts, pers. comm. in Connor & Smolker, 1990). As noted by Connor and Smolker (1990) and iterated by Lodi (1992), only with continued in-depth reporting of such apparently maladaptive behavior can an understanding of this phenomenon be reached.

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