

ESCORTING BEHAVIOUR: A TERRITORIAL MANIFESTATION IN WILD
BOTTLENOSE DOLPHINS?

COMPORTAMIENTO DE ESCOLTA: ¿UNA MANIFESTACIÓN DE TERRITORIALIDAD
EN BUFEOS SILVESTRES?

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ABSTRACT

During a three-year study (1990-1992) on the bottlenose dolphin *Tursiops truncatus* in the Gulf of Guayaquil, Ecuador (WOOS, 80°10'W), a form of "escorting" behaviour, not recorded in wild populations elsewhere before, was observed in two occasions when dolphins of two different communities met. The events suggest that this species may display a form of territorial behaviour by means of well-coordinated but non-aggressive maneuvers to discourage potential competitors.

Key words: Territoriality, bottlenose dolphin, South America.

RESUMEN

Durante un estudio de tres años (1990-1992) de los bufeos costeros *Tursiops truncatus* en el Golfo de Guayaquil, Ecuador (03°00'S, 80°10'W) se observó dos veces un tipo de comportamiento no registrado en poblaciones silvestres de esta especie que se denominó "escolta". Este consistió en que un grupo de delfines de una comunidad residente acompañó o escoltó durante varios kilómetros a otro grupo foráneo que entró en su territorio. Tal comportamiento sugiere que esta especie puede exhibir cierto tipo de territorialidad por medio de maniobras bien coordinadas pero no agresivas para desalentar a potenciales competidores.

Palabras claves: Territorialidad, buseo, América del Sur.

The concept of a territory seems to be irrelevant to most of the oceanic cetaceans living in a uniform and unrestricted environment. However, this is not the case of some coastal odontocetes such as bottlenose dolphins *Tursiops truncatus* and killer whales *Orcinus orca* which inhabit well-defined home ranges (WELLS *et al.*, 1980, *Cetaceans Behavior: Mechanism and Functions*, Wiley-Interscience, NY, pp:263-317; BIGG 1982, *Rep. Int. Whal. Comm.* 12:384-405; FÉLIX 1997, *Aquatic Mammals* 23: 1-16). Geographical features including submerged rocks, islands, rivers and channels, could be used as landmarks in order to define their limits (WÜRSIG & WÜRSIG, 1979, *Fishery Bulletin* 77:399-412; SHANE *et al.* 1986; *Mar. Mamm. Sci.* 2:34-63; FÉLIX 1997 *op. cit.*). The social structure of coastal cetaceans have been compared to that existing on some territorial land mammals such as ungulates and primates, in which active cooperation when defending the access to feeding territories has been recorded (TAYLER & SAAYMAN, 1972. *Ann Cape Prov. Mus.* 9:11-43; WELLS *et al.* 1980 *op.cit.*). Bottlenose dolphins are also known for their ability to exhibit complex social interactions through

coordinated group activities and by forming long-lasting alliances (WELLS *et al.*, 1987, *Current Mammalogy*. Vol 1. Plenum Press NY and London. pp: 247-305; CONNORS *et al.* 1992, *Coalitions and Alliances in Humans and Other Animals*, Oxford Science Pub. pp: 415-443), but active defense of a territory has not been reported. In this article I inform about a behaviour not observed elsewhere before and referred to as "escorting", that suggests the possibility that coastal bottlenose dolphins may display a form of territorialism.

Between February 1990 and October 1992, the socioecology of the coastal bottlenose dolphin was studied in the Gulf of Guayaquil, Ecuador (03°00'S, 80°10'W) (FÉLIX 1994, *Investigations on Cetacea* 25: 235-256; FÉLIX, 1997 *op.cit.*). This population is organized in communities of about 115 animals with home ranges extending 20-30 km of coast. Dolphins in a community interact regularly with each other in greater degree than with dolphins from nearby areas (WELLS *et al.* 1987, *op.cit.*). In the study area (700 km²), five communities were recorded: 3 resident (sighted year around) and 2 non-resident (seasonally sighted). Residency, community membership

and home range limits were based on 1557 resightings of more than 450 recognizable animals. Resident groups were smaller ($\bar{x} = 18.3$, $n = 156$) and moved less than 100 m from the shore and inside the channels. In contrast, non-resident groups were larger ($\bar{x} = 38.6$, $n = 30$) and moved several hundred meters away from the shore. Occasionally, groups of one non-resident community (referred to as # 3) came inside the home range of the resident communities, specially into the territory occupied by the resident community # 2, whose home range extends approximately 30 km along the east coast of Puná Island (Fig. 1). During the study, it was pos-

sible to observe the interaction between groups of these two communities on several occasions. But in two particular cases, resident dolphins displayed an unusual behaviour, following and "escorting" groups of the non-resident community # 3 for several hours. The dolphins' behaviour is described as follows.

On November 6, 1991 (11:30 h), I was observing a group of 4 dolphins of the resident community # 2 socializing in the outlet of the Puná Vieja Channel, a core area for this community (Fig. 1). At 11:55 h additional dolphins arrived from the north. At first, there were 4 animals but little by little more animals appeared until a large group (40-50 animals) was

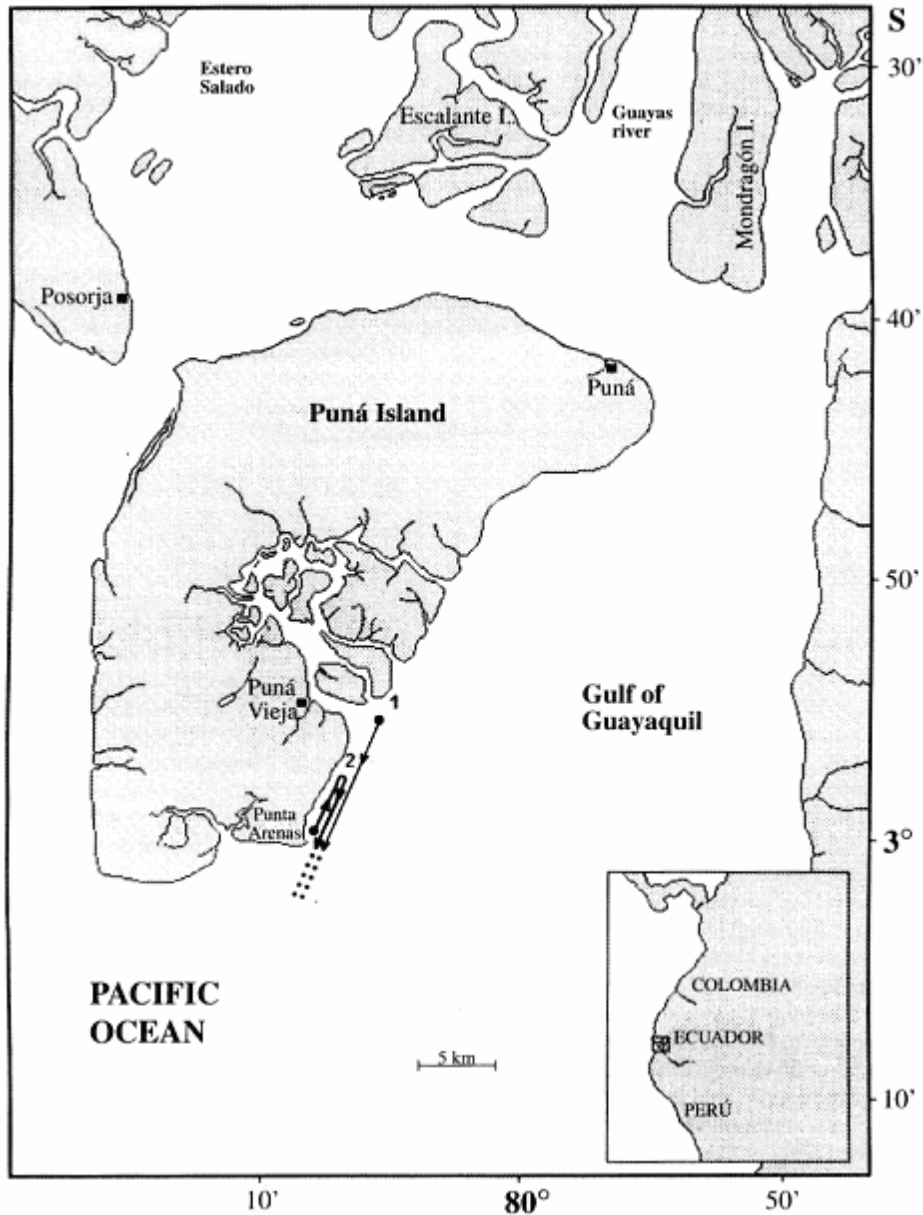


Figure 1. Sites where groups of dolphins of resident community # 2 and non-resident community # 3 met (points). Numbers indicate the order of the observations according to the text, and arrows show the direction taken by dolphins.

formed by 12:30 h. These new animals belonged to the non-resident community # 3 and briefly interacted with the dolphins that I was observing. Only a few animals seemed to mingle, but the quantity of dolphins present made it difficult to record detailed behavioural observations. Shortly after that, more dolphins belonging to the resident community # 2 showed up: thus, forming two large groups in the area. The non-resident group then started heading south along the south-east coast of Puná Island, as did the resident group (13:00 h). For 2 hours and 20 minutes the resident group, whose members increased from 4 to approximately 50 - 60 as the observation progressed, followed and "escorted" the community # 3 group for 8 km until they reached the south-eastern tip of the island (Punta Arenas, Fig. 1). I followed both groups in a 5 m outboard motor boat, alternating from one group to the other in order to observe their composition and behaviour. Both groups consisted of all age and sex classes (calves, subadult and adult animals) and moved in an elongated formation with compact subgroups. Surface activity, including turns, mounting over other animals and leaps, was noted in several of these subgroups. During the escorting, the two groups maintained a distance of 100 - 200 m between them, with the group of the resident community always located on the coast side. The group did not attempt to join each other, although some individuals from both communities were seen together while bow-riding briefly when I went from one group to the other. Upon reaching Punta Arenas, non-resident dolphins continued south and moved out of sight at 14:50 h, while resident dolphins remained at the site several more minutes, then began to split up into subgroups that headed in different directions (15:15 h).

Three months later, on February 19, 1992, a similar behaviour was observed again between groups of these two communities at almost the same site. In this occasion, I was on my way north to Punta Arenas when I found a group of 30-35 dolphins of the resident community # 2 also heading north at 12:05 h (Fig. 1). The group was formed by several subgroups with some dolphins exhibiting surface activity since I initially spotted them. Within this group was a dolphin recognized as one of only 6-8 animals I sighted two hours before at the same location, showing that such a larger group must have formed recently. At 13:05 h, some 4 km more to the north, the group suddenly changed their direction in 180° and headed towards the south. At the same time, ca. 300 m offshore I observed another large southbound group of 50 dolphins from the non-resident community # 3. Similar to that occurred on November 6, 1991, both groups moved with the same speed in elongated formation and maintained a distance of 200 - 300 m away from each other, with the resident group always located closer to the shore. When they arrived at Punta Arenas 55 minutes later, after 4 km of "escorting", the non-resident group continued moving southward, whereas the resident group remained around the point and finally

dispersed into small subgroups, finishing the observation in the same way as the previous encounter.

On three other occasions (May 28, 1990, May 16, 1991 and May 14, 1992), groups of the resident community # 2, met briefly with large groups of the community # 3, but during these interactions the "intruders", after spending only a short time in the area, moved offshore and were not "escorted" by residents as when they moved along the coast.

The presence of non-resident groups in the area is likely food related, since they occur mainly during season when schooling fishes are plentiful (FELIX 1994, *op. cit.*). Resident dolphins seem to feed mainly on individual, less gregarious and bottom dwelling prey. The analysis of the stomach contents of three animals found stranded support such a difference in prey preference: two animals had in their stomachs rests and otoliths of the bottom fish *Cynoscion* sp. (Sciaenidae) and the other one had rests and otoliths of the small schooling anchovy *Cetengraulis mysticetus* (Engraulidae) (FELIX 1994, *op. cit.*). Since there are two ecotypes of the species, a coastal and a larger offshore form (LEATHERWOOD & REEVES, 1983 The Sierra Club Handbook of Whales and Dolphins, Sierra Club Books, 302 p.), it could be the case that the non-resident community belongs to the offshore form. The absence of aggressiveness suggests that the competence between these two communities of dolphins is not that intense, possibly because both prey on different resources. Thus, this transitory presence of groups from community # 3 could not be interpreted as a direct threat for resident dolphins, having "escorting" rather than a warning meaning. It is not discarded, however, that other aggressive but even more subtle behaviours such as changes in vocalization rate or threatening postures, could exist as part of the whole territorial context, but they were not documented or tested during this study.

Although there were no signs of aggression among individuals during the "escorting" periods, the reaction of the resident group seemed a well-coordinated defensive maneuver that persisted until the "intruding group" left its territory. So far, aggressiveness in wild odontocetes has been reported in both social and sexual contexts, e.g. dominance, courtship, and specially during agonistic fighting among males (MCBRIDE & HEBB 1984, J. Comp. Phys. Psych. 41:111-123; NORRIS 1967, Aggression and Defense, Univ. California Press, pp. 225-241; CLARKE & PALIZA 1988, Rep. Int. Whal. Comm. 38: 235-241; CONNORS *et al.* 1992 *op. cit.* FELIX, 1997 *op. cit.*). Because the escorting behaviour was manifested only when non-resident groups moved along the coast and not when they moved off shore, is possible that other aspects besides the necessity to monopolize specific feeding areas are involved: for example, to preserve suitable sites for resting and nursing in known and protected bays or channels could be additional motives for defending a coastal area. Coastal communities of bottlenose dolphins probably compete for food resources and room as

land mammals do, they have territories as well-defined as their land counterpart, but our current knowledge about how ecological pressures are affecting them is insufficient to understand important aspects of their society.

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