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AERIAL BEHAVIOR IN FIN WHALES
(*BALAENOPTERA PHYSALUS*)
IN THE MEDITERRANEAN SEA

Different kinds of aerial behavior are well known in many large whale species such as *Megaptera novaeangliae* (Whitehead 1985a), *Eschrichtius robustus* (Norris *et al.* 1983), *Eubalaena glacialis* (Clark 1983, Payne 1990), *Balaena mysticetus* (Würsig *et al.* 1985, 1989), *Balaenoptera acutorostrata* (Edds and Farlane 1987) and *Physeter macrocephalus* (Waters and Whitehead 1990). However, aerial displays in *Balaenoptera physalus* (fin whale) are considered very rare (Whitehead 1985b, Pryor 1986). Herman and Tavolga (1988) reviewed some of the possible reasons for breachings in mysticetes. Though they consider that further study is needed to clarify and understand the context in which breaching appears, they believe that breaching may represent: (1) a way to communicate over long distances, (2) a spacing mechanism, (3) a sexual display, (4) a threat to intruders (including boats), (5) general excitement or arousal, and (6) play (at least among calves).

In the Mediterranean Sea, *Balaenoptera physalus* is the most common species

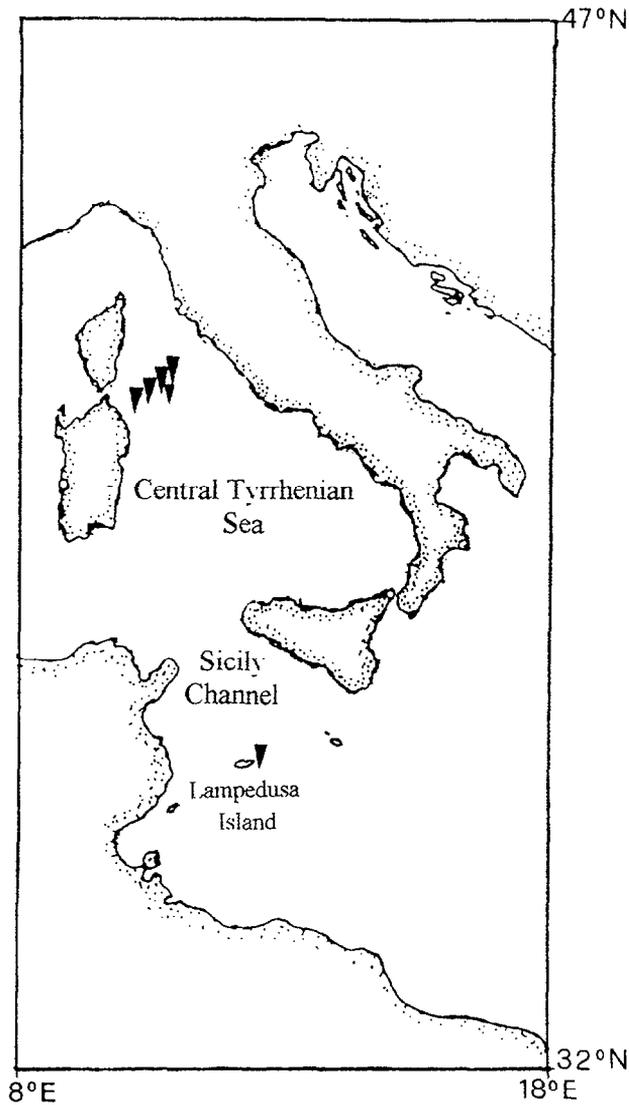


Figure 1. Locations of the observed breaching.

among the large whales. Marini *et al.* (1992b) hypothesized that the Mediterranean population may be relatively isolated from those in the Atlantic Ocean; it spends the summer in the feeding grounds of the northern Liguro-Provençal basin (Orsi Relini *et al.* 1992). Marini *et al.* (1995) suggest that it spends the winter along the North African coasts. This hypothesis seems to be supported by recent results on the difference in genetic characteristics between Mediterranean and Atlantic specimens (Berubè *et al.* 1994).

Table 1. Breachings of *Balaenoptera physalus*.

Obs. no.	Date	Hour	Coordinates	Sea state (Beaufort)	Wind direction	Group size	No. of individuals performing	Behavior (see Fig. 2, 3)	No. of breaches observed
1	19/01/90	1232	41°22'N 10°23'E	3-4	N-NE	1	1	3a	2
2	27/06/90	1505	41°32'N 10°41'E	0-1	NE	1	1	2a, 2b	2
3	12/09/91	1317	41°28'N 10°31'E	3-4	E	2	2	3a	2
4	20/01/92	1345	41°36'N 10°52'E	3	W	2	2	3a, 3b	4
5	01/08/92	1410	41°27'N 10°43'E	0	W	2	2	3a, 3c	10
6	22/03/94	1425	35°32'N 12°39'E	0	No wind	3	2	3a	2

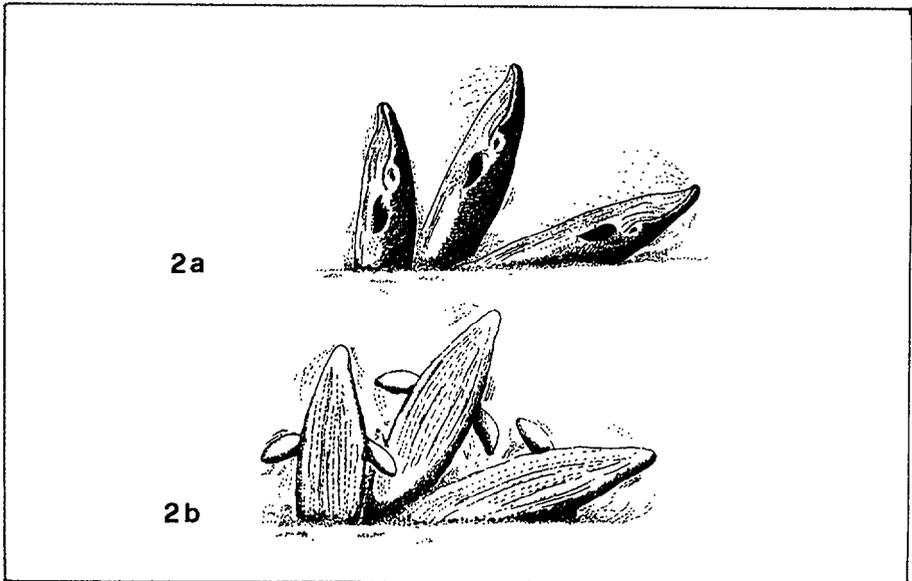


Figure 2. Observed patterns of vertical breaching in fin whales. The whales came up vertically with half of the body, splashing on the back (2a) or on the right flank (2b).

Though many cruises have been conducted recently, especially in the summer months, aerial behavior in fin whales has never been reported for the Mediterranean Sea, nor for the high-density area of the Liguro-Provençal basin.

In the course of the cetacean survey that our group carried out in the Central Tyrrhenian Sea (Fig. 1) from 1989 to 1992 (Marini *et al.* 1992a, 1993) using large ferries as platforms of opportunity, aerial displays of *Balaenoptera physalus* have been recorded on five occasions (4% out of a total of 124 sightings of this species). During research carried out in the Sicily Channel (Fig. 1) in March 1994, breaching behavior of *Balaenoptera physalus* was also observed. Breachings were always performed by large animals (*i.e.*, not calves). When the group was composed of two animals, the breachings were performed by both of them.

The sighting in the Sicily Channel (Lampedusa Island) was recorded during a season in which the density of these animals in the area seemed to be particularly high, perhaps because of prey availability (Marini *et al.* 1995). The group was composed of three close animals that were swimming very fast in the same direction. The breachings (very similar to the 'porpoising' of dolphins) were carried out twice at the same time by the two animals swimming in parallel on each side of the third one.

Breachings were twice observed in rough sea conditions (Obs. 1 and 3, Table 1) and could be related to the need for communicating over long distances, as suggested by Whitehead (1985b). Some breachings (Obs. 2, 3, 5 and 6) were observed in seasons in which the density of fin whales was rela-

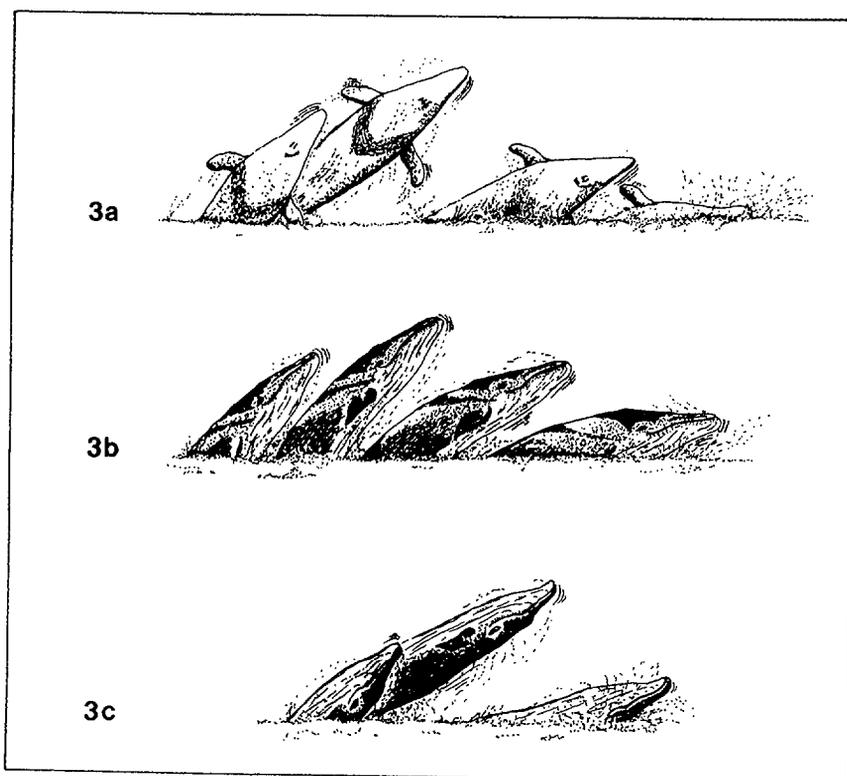


Figure 3. Observed patterns of oblique breaching in fin whales. The whales breached obliquely with their body almost completely out of the water. The breaching and splashing occurred on the flank (always the right one for the sightings in the Tyrrhenian Sea and the left one for the one in the Sicily Channel) (3a), on the belly (3b), or on the back (3c).

tively high, so that they could be interpreted as a spacing mechanism. When there were more than one animal in the area (Obs. 3–6), breachings could be agonistic behavior or sexual display.

The breachings observed from the ferry (Obs. 1–5) could have been caused by the boat itself which could have been considered as an intruder. On two occasions in particular (Obs. 4 and 5), up to four other large boats besides the ferry were quite close to the animals. However, on other occasions during the same study, fin whales let the ferry come very close to them without apparent reaction. On one occasion (Obs. 4) the group of fin whales came very close to the ferry after having breached.

The breachings which were observed from the land-base position in Lampedusa (Obs. 6) seemed to be caused by excitement (location of food, sexual stimulus, or agonistic behavior), and they cannot be related to the presence of any boats in the area. As no calves were observed breaching, playing behavior could probably be excluded in observed cases.

Obviously, the limited number of observations makes it difficult to draw any conclusions, but, as there were no common traits to all the sightings, it seems that no one explanation can be called upon. No connection seems to exist with wind direction.

The observed patterns are reported in Figures 2, 3. They seem to be quite different from the breaching described by Whitehead (1985*b*) for humpback whales (*Megaptera novaeangliae*), which emerge on their sides, rotate, and re-enter the water on their backs. However, Winn and Winn (1985) described synthetically several styles of breaching in humpback whales, which could resemble some of those described here (in particular, the one shown in Figure 2a).

This is one of the few times that this behavior has been described for this species anywhere in the world and the first time for the Mediterranean Sea; moreover, the frequency of occurrence of breaching seems to be relatively high for this species. The possibility that a relatively high frequency of breaching is a peculiar characteristic of the Mediterranean population of fin whales should also be considered.

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