

**SOCIO-ECOLOGY OF BOTTLENOSE DOLPHINS,  
*TURSIOPS TRUNCATUS*, ALONG THE NORTH-EASTERN COAST  
OF SARDINIA (ITALY): PRELIMINARY RESULTS**

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Since 1991, throughout all the seasons, a study has been carried out on the ecology and the behaviour of bottlenose dolphins *Tursiops truncatus* along the north-eastern coast of Sardinia (Fig. 1). Sightings have been recorded from land-based vantage points, from inflatable vessels, and from trawlers. The research area is approximately 150 square km wide and contains a large range of habitats and depths including extensive Gulfs and relatively sheltered lagoons. Human activities in the area are very intense, especially during the tourist season.

During more than 1,200 hours of observation, 99 systematic sightings were recorded, in addition to some opportunistic ones. School size was observed to be quite small (mean = 2.58, SD = 1.88, SE  $\times$  1.96 =  $\pm$  0.37, range = 1-10) (Fig. 2), and the use of different habitats and diurnal rhythms appeared to be somewhat complex. A possible model could imply that the dolphins come close to the coast (up to a few metres from the shore) in the evening and stay there until dawn. When this occurred, the dolphins tended to be either alone or in very small groups, feeding around gillnets and on benthic prey. During daylight hours, the dolphins tended to remain offshore, often following trawlers in waters up to 100 metres deep. The school sizes remained small except during social interactions which appeared to be more frequent during spring and autumn. The dolphins were never observed participating in co-operative hunting activities. The scattered structure of the benthic prey seemed to support small schools, but females with calves were sighted swimming alone. Predators such as sharks and killer whales are absent from the area, so there is no need for dolphins to exist in large schools for defence purposes.

The dolphins were usually very cautious of humans and vessels, and were therefore difficult to approach. As a result, photo-ID techniques were very difficult to carry out. In addition, very few animals carry clear scars or notches. However, a particular individual has been identified in a photograph dated 1986 and was also photographed again in 1993. The home range and the dimension of the population remain unknown.

Feeding around gillnets can greatly reduce the search and hunting effort for these animals as the nets are often operating in the same places and the fishes are easier to catch in the vicinity of these nets. In the Black Sea, Bel'kovich (1991) observed bottlenose dolphins pushing prey against a net, using it as a "wall" to reduce movement of the prey. This could be the first step in the evolution of a new feeding strategy. This behaviour seems to be widespread throughout the Mediterranean Sea (Turkey, Greece, Italy, Spain, Corsica and North African coasts). It should be noted that the nets employed in the basin are quite different from those used in other part of the world.

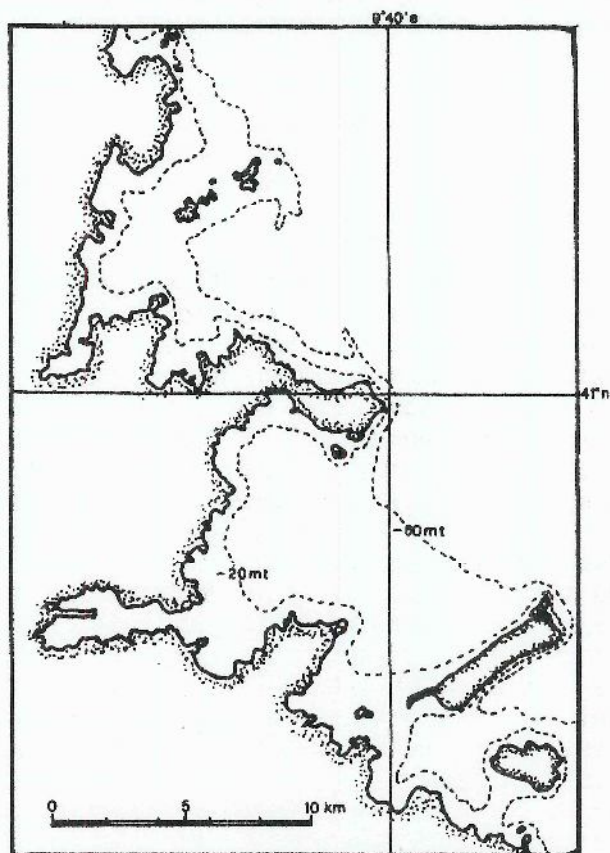
Trawlers' crews claim the "thieving" of cephalopods by the dolphins. Bottlenose dolphins were often observed following the trawlers and diving for 3-5 minutes over the net. They swim away as soon as the nets are recovered and they have never been seen

actually feeding on organisms that have been discarded by the fishermen. We suspect that the cephalopods become more visible to the dolphins when they are alarmed by the nets passing along the seabed, and in an attempt to escape, project upward from the bottom. If this is the case, the dolphins are not only exploiting pelagic prey but those resources in deep waters too. Gillnet fishermen use small petards to scare the dolphins but, usually, they have very short term results. Sometimes dolphins become entangled in the nets and are killed by the fishermen. Trawlers are occasionally reported to shoot the dolphins though, in realistic terms, killing rates are probably low. However, they could still represent an important percentage of the total mortality of the population which we think is quite small.

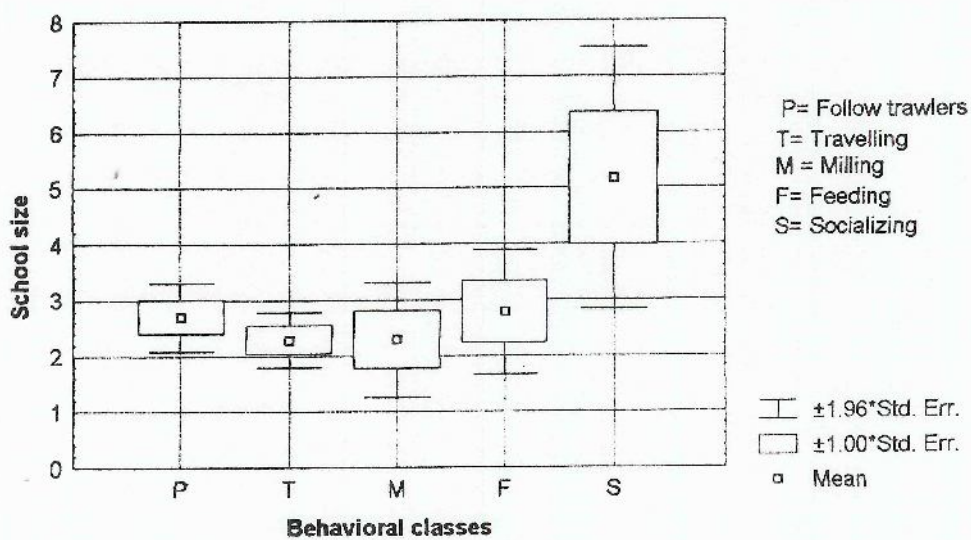
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#### REFERENCE

Bel'kovich, V. M. 1991. Herd structure, hunting, and play bottlenose dolphins in the Black Sea. Pp. 17-77. In: *Dolphin societies*, (Eds. K. Pryor and K. Norris), Univ. of Calif. Press, .



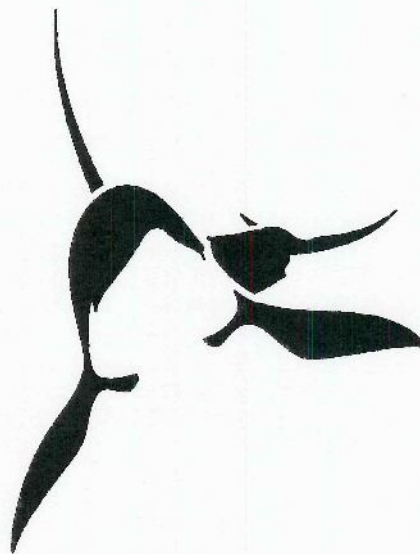
**Fig. 1** Map of Study Area - North-east Sardinia



**Fig. 2** School sizes of bottlenose dolphins in relation to different behaviours

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