A CETACEAN SURVEY IN NORTH ADRIATIC SEA: PRELIMINARY RESULTS

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INTRODUCTION The area between Marina di Ravenna and Cesenatico (North Adriatic Sea, Italy) is a marine region highly exposed to anthropogenic activity.
The presence of several gas drilling platforms may pose some threats to its ecosystem, including an increased ship traffic as well as chemical and floating pollution. On the other side, the submerged parts of these constructions offer a valid substrate for the settlement of many marine organisms and provide shelters and nourishment for fishes. As for cetacean species, the presence of dolphins in the zone has occasionally been reported by local fishermen.
In addition, the study area hold a particular importance for the presence of the "Paguro" wreck, a platform sank in 1965 and here located. In 1995 the Italian Government set up this site as a biological reserve since it represents an interesting example of an artificial reef characterised by high biodiversity and complex ecological community (Ponti *et al.*, 1998).
To evaluate the cetaceans distribution in the area and address the potential impact of the human activities on their population, in 2001 Oceanomare Association started a first survey primarily focused on bottlenose dolphin (*Tursiops truncatus*).

MATERIALS AND METHODS This study covered an area of approximately 280 square miles situated in the northern Adriatic sea between Marina di Ravenna and Cesenatico. The maximum distance from the coast was 17 miles and the mean depth was about 20 m. with a maximum of 30 m. The surface water temperature fluctuated between 15 and 30 °C, depending on the season (summer and fall).
Observations were performed from June to October 2001 and 2002 twice a week depending on weather conditions. Sightings of bottlenose dolphins were recorded using local sailing vessels and motorboats that formerly accepted to take part into the project. Animals were photographed and subsequently identified using standard photo-identification techniques by means of a 35mm camera equipped with 35-80 mm lenses. Details of location and environmental conditions were also recorded.

RESULTS *Tursiops truncatus* was the only cetacean species observed in the area during the study period. Individuals were reported within the zone on 36 occasions (n=19 in 2001; n=17 in 2002) (Fig. 1). About 400 animals were encountered during the surveys (n=257 in 2001; n=142 in 2002).
Bottlenose dolphins were constantly found nearby gas drilling platforms in shallow waters at an average depth of 22 m. (s.d.=5.6 m.). All sightings occurred between 2.7 and 15 miles from the nearer coast (mean value=8.5 miles; s.d.=3.0 miles).

During summer 2001 a total number of 19 individuals were photo-identified. The uncomfortable conditions on board did not allowed a better photo-identification work, and no animal were added to the catalogue in 2002.

A significant difference between 2001 and 2002 group size was found (Fig. 2), with a clear decrease of aggregation in the second year of the study (2001: mean group size=14,2; s.d.= 11,8; 2002: mean group size=8,3; s.d.=9,4).

CONCLUSIONS The present census allowed to quantify the bottlenose dolphin's presence and distribution in the study area, suggesting that the ecosystems created around the gas drilling platforms is suitable for invertebrates and fish-biomass as well as for marine mammals. Bottlenose dolphins could be possibly attracted by the favourable environment in the proximity of the platforms, consisting of abundant and clumped living species as potential food resources for individuals. In addition, the area nearby the platforms is relatively calm in terms of boat traffic and fishing activities, allowing dolphins to remain in a safer environment. In fact, both transit and fishing operations are forbidden within five hundred metres around each artificial construction. According to Würsig & Richardson (2002), the droning of drilling platforms appears to be ignored by animals due to habituation or sensory adaptation.
In the summer 2002, the study area was affected by a relevant presence of mucilage filaments. This phenomenon could have played an important role both in dolphins distribution and group size. However, this hypothesis has

to be confirmed through a longitudinal integration with other ecological data and more observation on this topic are needed.
The survey will continue in the 2003 summer, in order to obtain a better knowledge about a) the ecology and behaviour of bottlenose dolphins, and b) the interactions between animals and drilling operations.

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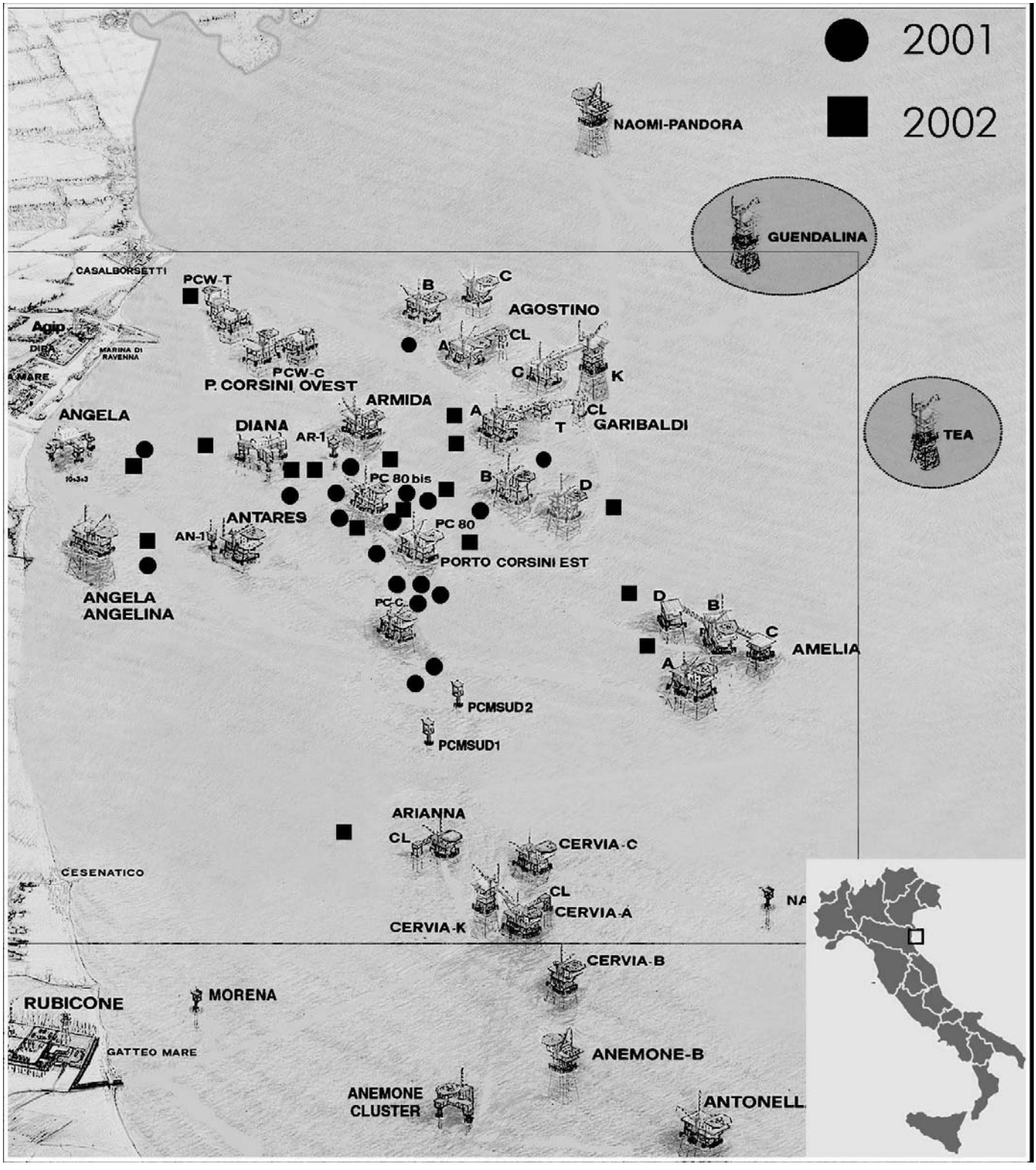

Fig. 1. THE SIGHTINGS IN THE STUDY AREA

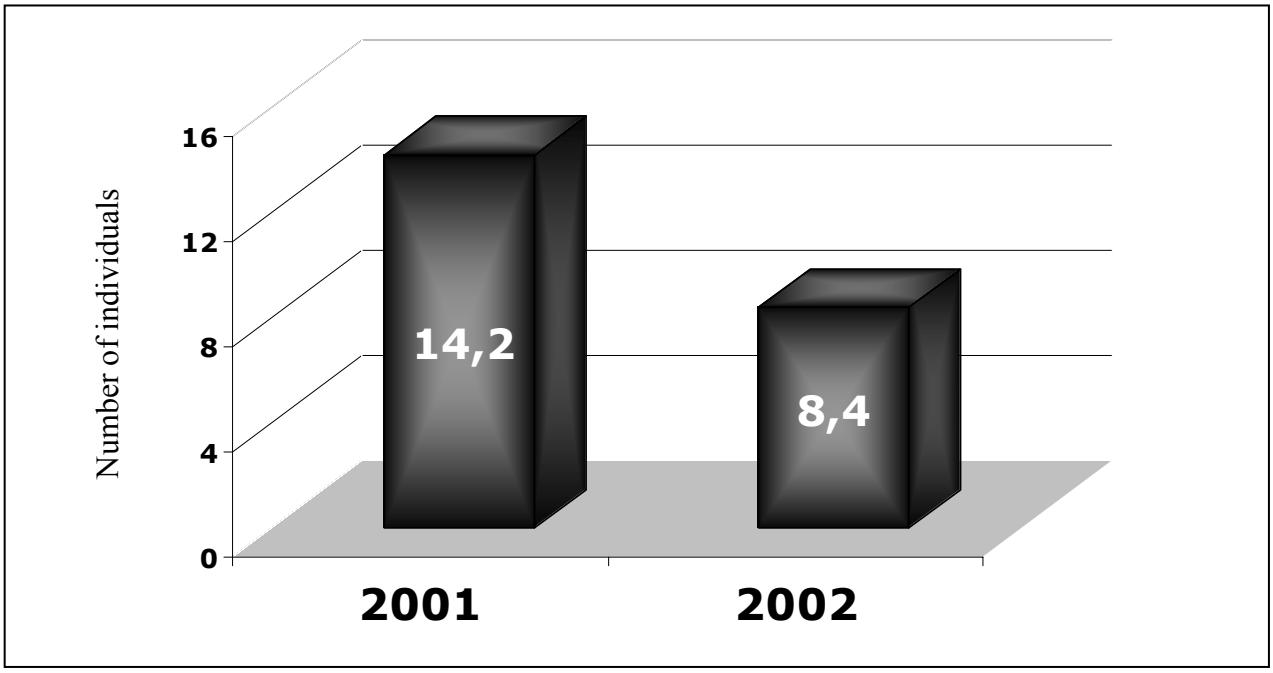

Fig. 2. MEAN GROUP SIZE IN 2001 AND 2002