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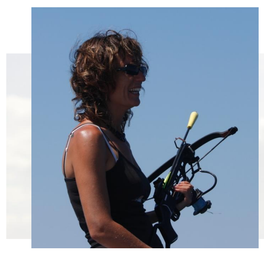

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IMPORTANCE OF ORIENTAL CANARY ISLANDS AS BREEDING GROUND FOR BEAKED WHALES, BASED ON SIGHTING AND STRANDING DATA

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Z. cavirostris© SECAC


M. densirostris© SECAC


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M. europaeus© SECAC

INTRODUCTION

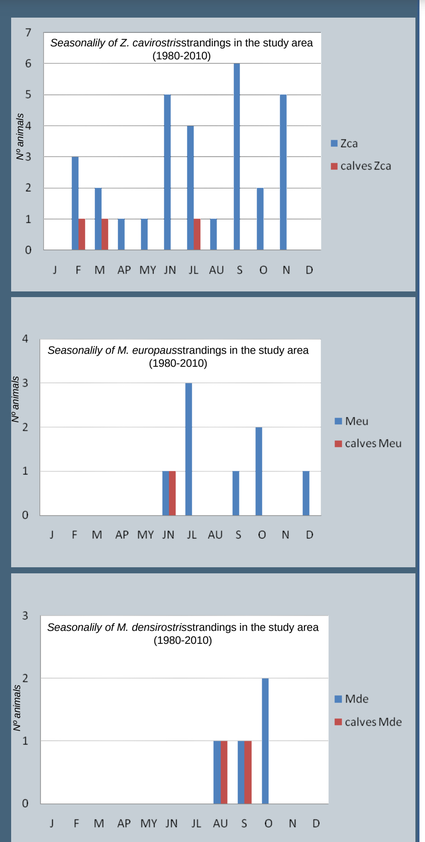
The combination of extended dive capacities, cryptic behavior and the apparent low abundance of the majority of the 21 recognized species (Barlow et al., 2006; Dalebout et al., 2002), make the deep-diving toothed-whales of the Ziphiidae Family, among the least known of marine mammals. Most of our information about beaked whales has come from strandings. At least 50 cases of atypical beaked whale mass strandings have been recorded around the world, some of which appear to have been coincident geographically and temporally with naval sonar exercises and seismic surveys (e.g., Frantzis, 1998; Balcomb & Claridge, 2001; Cox et al., 2006). 5 of the 8 events that have involved several beaked whale species simultaneously, have occurred on the eastern coast of Lanzarote and Fuerteventura between 1985 and 2004 (Jepson et al., 2003; Fernández et al., 2004, 2005; Martín et al., 2004; Santos et al. 2007; Martín & Tejedor, 2009; D´Amico et al. 2009). This fact has increased the concern about the effects and impacts of anthropogenic noise on this group. There are growing evidences that the beaked whales are extremely sensitive to high-intensity and mid-frequency naval sonar (Faerber & Baird, 2010). Nevertheless, the exact mechanism that often causes the strandings of these animals in the vicinity of such sounds remains still unknown, in part due to the limited knowledge of the biology and behavior of these species (Cox et al., 2006). The Cuvier's beaked whale is the most prevalent in atypical mass strandings cases worldwide (D'Amico et al. 2009) which could be related to physiology and diving behavior of the species (Hooker et al. 2009). To date, six species of beaked whales have been recorded from the Canary Islands (Martín & Tejedor, 2009): Cuvier´s beaked whale *Ziphius cavirostris*, Gervais` beaked whale *Mesoplodon europaeus*, Blainville´s beaked whale *M. densirostris,* True´s beaked whale *M. mirus*, Sowerby's beaked whale *M. bidens* and northern bottlenose whale *Hyperoodon ampullatus*, the last three registered only from strandings.

METHODS

Study area. The volcanic origin of the Canary archipelago explains the almost absent continental shelf, reaching depths up to 2.000m between the main islands and 1.500m depth forward the neighboring African coast from the oriental islands, Lanzarote and Fuerteventura. The oceanographic parameters, conditioned by both the Cold Canary Current and the up-welling of cold waters from the continent, result distinctive characteristics like the warm-temperate conditions with surface temperatures that vary between 17-18ºC in winter and 22-24ºC in summer.

Field work.

Surveys. In order to assess the importance of the area as a breeding ground for beaked whales, from October 2007 to October 2010 we conducted 137 days of visual-acoustic census and zig-zag random transects from the coastline to 37km offshore on the oriental coast of Lanzarote and Fuerteventura islands. The study area, encompassing 9848.43Km^2, was surveyed with a 17m motor yacht, covering 7572.06km and 624.62h “on effort”.
Strandings. Since the early 80’s, SECAC carries out a long-term cetacean stranding program in the Canary Islands, since 1999 in collaboration with the IUSA (ULPGC) and logistically coordinated by the Canary Government.




M. densirostris© SECAC

RESULTS

We analyzed 42 stranded beaked whales between 1980-2010: 30 *Z. cavirostris*, 8 *M. europaeus* and 4 *M. densirostris*. In nautical surveys, a total of 117 beaked whales sightings were realized. 15 (36.6%) of the 41 Cuvier´s beaked whale groups had calves present, with only one calf in the 73.3% of the groups and two calves in the 26.7%. The mean group size with calves was significantly greater (mean= 3, SD= 1,069, *n*= 15) than groups without calves (mean=2,3, SD= 0,92, *n*= 26) (t-test for independent samples of groups with calves vs. without calves, P< 0.05). A total of 4 calves (23,5% of the overall calves observed) were neonates with visible foetal folds or small size. All calves were observed between March and October, although the smallest were recorded during April (*n*=1), June (*n*=2) and October (*n*=3). Cuvier´s beaked whale sightings and stranding data showed a reproduction period extended throughout the year, with a possible peak for births during the first half of the year. We observed calves in 5 (16,7%) of the 30 sightings of Gervais` beaked whale and in 3 (20%) of the 15 Blainville´s beaked whale sightings, one of them with a few weeks of life. Both data Gervais´s beaked whale and Blainville´s beaked whale show a birth period between the end of spring and the beginning of autumn.

CONCLUSIONS

- The results of our study show that the three species of beaked whales are resident in the area for several years.
- These data reflect a high fidelity to the study area and a pattern of small movements in one part of the population.
- The beaked whale sighting rates are exceptionally high, exceeding that of many studies published to date for other regions.
- The sightings and the strandings in the areas showed the importance of the area as breeding ground for three beaked whale species.
- To apply the precautionary principle, it would be necessary the creation of a marine protected area, thereby avoiding use of naval exercises with active anti-submarine sonar, underwater explosions, seismic surveys and other potentially dangerous to marine mammals.

Fig.1

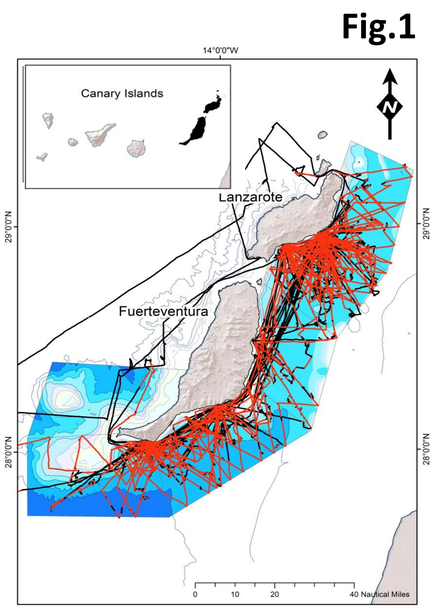


Fig.2

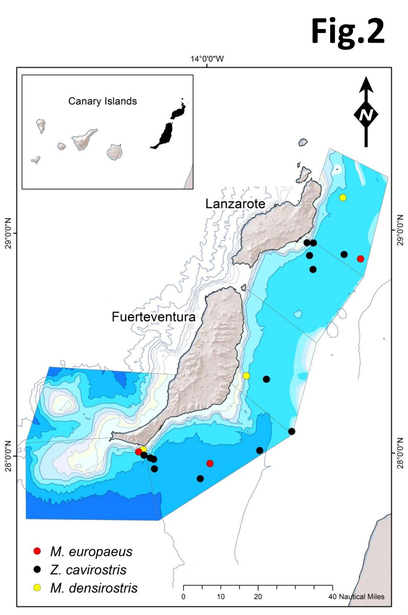


Fig.3

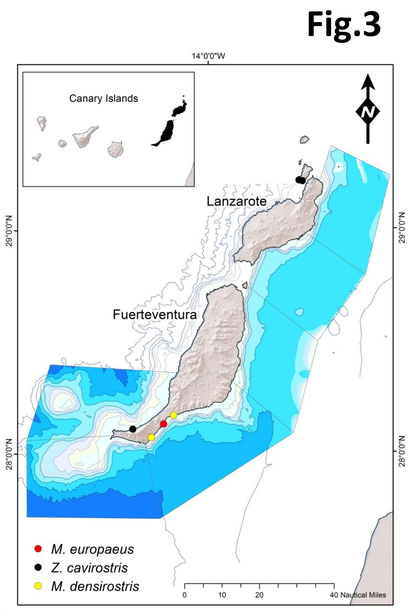


Figure 1. Track lines in effort.

Figure 2. Sightings of beaked whales groups with calves.

Figure 3. Beaked whale calves stranded in the area.


Z. cavirostris © SECAC

INDEMARES

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