Common dolphin (*Delphinus delphis*) in Galicia, NW Spain: distribution, abundance, life history and conservation

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Introduction

Galicia (NW Spain) is one of the world's main fishing areas and has a high abundance of marine mammals, the common dolphin *Delphinus delphis* being one of the most commonly sighted, particularly in offshore waters. The present report summarises results from recent studies on common dolphins in Galicia carried out by CEMMA in collaboration with University of Aberdeen, Instituto de Investigaciones Marinas (C.S.I.C) and Instituto Español de Oceanografía.

Distribution: Coastal sightings

Since mid-2003, systematic monthly sightings surveys for cetaceans have been carried out in Galicia (NW Spain) from observation points around the coastline, with the aim of providing baseline data on cetacean distribution and habitat use to underpin future conservation measures. From September 2003 to October 2007, common dolphin was the second most frequently recorded species, seen during 3.7% of observation periods. Common dolphins were most frequently seen around Cabo Ortegal, Laxe and La Guardia. In terms of habitat preferences, common dolphins were seen most frequently where the continental shelf is narrowest (Pierce *et al.*, 2008).

Abundance

Opportunistic sightings data collected by onboard observers from fishing vessels between 1998 and 1999 were used to derive an approximate abundance estimate of around 8100 common dolphins in Galician waters (Lopez *et al.*, 2004). A second survey conducted in 2006-2007 covered both the coastal and littoral waters of Galicia and estimated a mean population abundance of around 7300 common dolphins. However, it must be noted that these estimates did not account for animals not seen by the observer and were based on estimated effective track widths. Therefore, they are at best minimum abundance estimates and further work is required.

Life history

Currently few data exist on mortality and reproductive rates of cetaceans in Galician waters. Life history of the common dolphin in the north-east Atlantic has been documented by Murphy (2004) and Murphy *et al*. (2006) who found common dolphins to become sexually mature at around 11-12 years old. A life-table and survivorship curve (Figure 1) constructed using age-at-death data (N=312 to date, unpublished data) suggest that there is 13% annual mortality in the Galician common dolphin population. This assumes that age data from strandings are representative of the population.

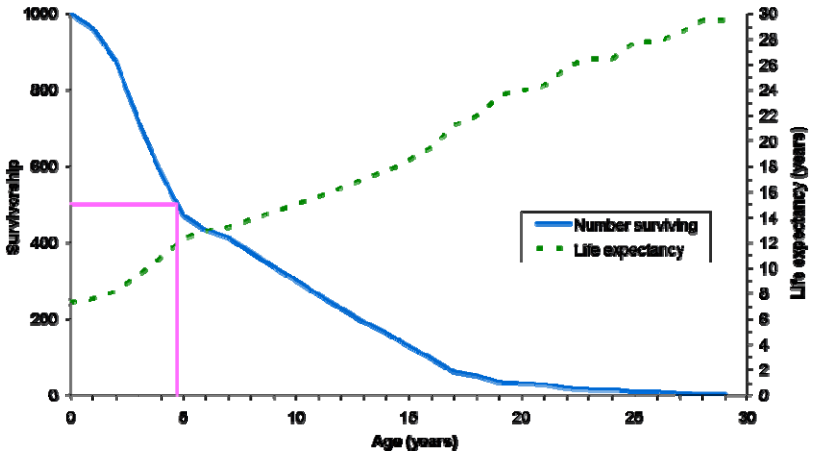

Figure 1 Survivorship and life expectancy curves for common dolphins in Galicia

Information was available on the reproductive status for 55 of the 56 female common dolphins stranded along the Galician coastline between 2001 and 2003 (Learmonth *et al.*, 2005). The sample comprised of one pregnant female (2%), 14 resting mature females (26%), four resting mature and lactating females (7%) and 36 immature animals (66%). There was a clear relationship between body length and reproductive status of female common dolphins (Figure 2). The largest sexually immature individual was 194 cm and the smallest sexually mature female was 170 cm. The youngest sexually mature female was 8 years of age, and the oldest sexually immature female was 8 years (Figure 3). The pregnant female was 195 cm and 17 yrs of age and stranded in the month of February. Both resting mature and lactating females stranded in the months January and April (Figure 4). There are insufficient data presently to estimate pregnancy rate.

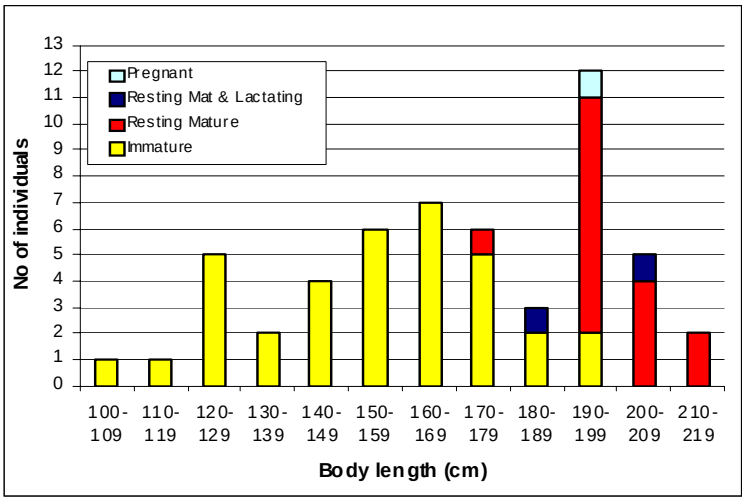

Figure 2: Reproductive status and body length (cm) of female common dolphins (2001-03)

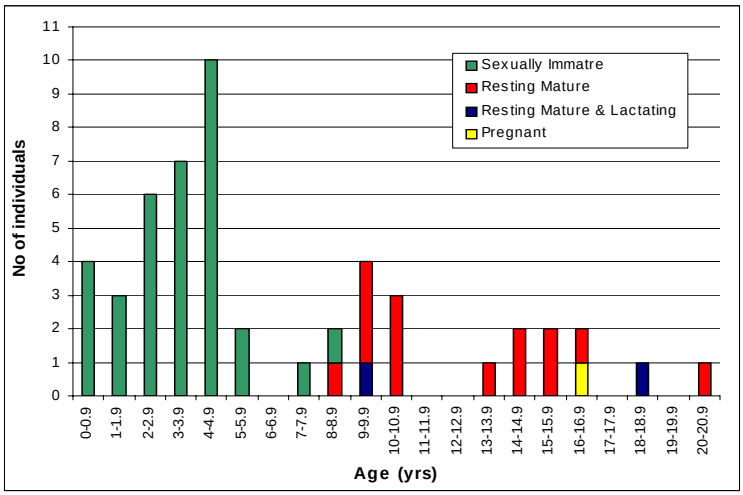

Figure 3: Reproductive status and age (years) of female common dolphins (2001-03)

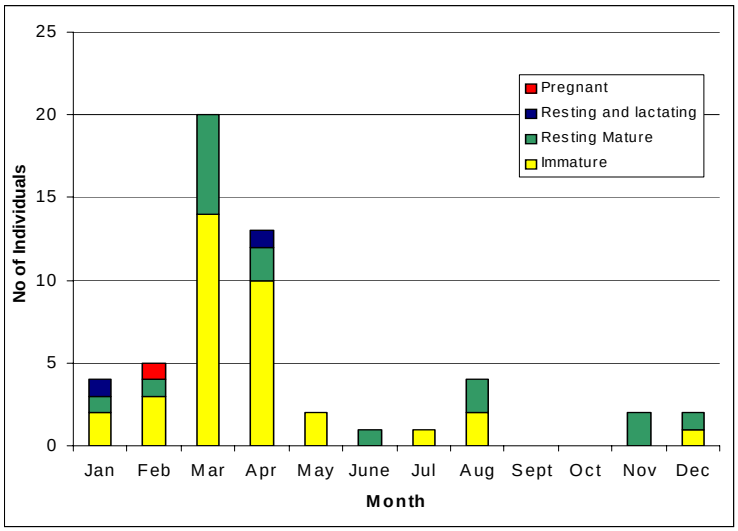

Figure 4: Reproductive status and month found for female common dolphins (2001-03)

Diet

Stomach contents were analysed from 414 stranded animals during 1991-2003 to quantify seasonal, size- and sex-related variation in diet and to test whether interannual variation in the diet was related to changes in abundance of the main prey species. The most important prey species were blue whiting (*Micromesistius poutassou*), sardine (*Sardina pilchardus*) and scad (*Trachurus* sp.), all of high commercial importance in Galician waters, and (in the first quarter of the year), sand smelt *Atherina* sp. Interannual trends in the importance of sardine in the diet of common dolphins appear to track trends in sardine spawning stock biomass (Santos *et al.*, 2004).

Threats

The main threat to the Galician common dolphin is fisheries interactions. Carcases of 80 known by-catches (37 females and 43 males) were recovered from fishing boats collaborating in a recovery scheme, mainly since 2006.

Galicia has an average of 250 marine mammal strandings per year of which common dolphins are the most frequently recorded species and make up 47% of the strandings. Between 1990 and 2007, 1747 common dolphins stranded along the Galician coastline of which 606 were considered to be 'fresh' enough (state of autolysis 1-3) to see evidence of fisheries interactions. Of these, 146 animals (i.e. 40.6%, 93 females and 153 males) showed evidence of fisheries interactions (CEMMA, unpublished data).

More juvenile than adults, and more males than females, show evidence of fisheries interactions suggesting both age- and sex-related segregation in Galician common dolphins. The rate of recorded fishery interactions in stranded common dolphins has increased over time from 16% in 1996 (González, 1999) to 23% in 1990-1999 (López *et al*., 2002) and is estimated to be currently around 41%. However, it should be noted that

not all by-caught animals arrive to shore as strandings, some by-caught animals may not show evidence of fisheries interactions and by-catch diagnosis is not possible for heavily decomposed animals, so these results are most likely underestimates.

Nevertheless, applying the 41% by-catch rate to the life table estimate of 13% annual mortality, this gives an annual rate of by-catch mortality of approximately 5.3% (unpublished data).

Conclusion

Common dolphin and fisheries interactions in Galicia appear to greatly exceed the maximum allowable limits recommended by ASCOBANS and the IWC and are most probably unsustainable. However, gaps in our knowledge of this population such as the absence of pregnancy rate data and the need for more robust abundance and distribution data, limit our knowledge of the impact of by-catch on common dolphins in the area.

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