

Lagenorhynchus albirostris (Gray, 1846)

English: White-beaked dolphin
German: Weißschnauzendelphin
Spanish: Delfín de pico blanco
French: Dauphin à bec blanc

Family Delphinidae

1. Description

The white-beaked dolphin has a robust appearance. The dorsal fin is in the middle of the back, erect and strongly curved. Adults grow between to 2.4 and 2.1m long and may weigh between 180 and 350 kg. Males usually grow larger than females. The coloration is typically black on the back, with a white saddle behind the dorsal fin and whitish bands on the flanks that vary in intensity from a shining white to ashy grey. Belly and beak are normally white, but the beak may be ashy grey or even darker; it may appear that a white beak is missing. The beak is only 5-8 cm long (Kinze, 2009).

Populations in the eastern and western North Atlantic are separable on the basis of skull characters (Mikkelsen and Lund, 1994) as well as on the basis of the control region of the mtDNA and microsatellites (Banguera-Hinestroza et al., 2009 submitted). Based on these and other data, four distinct management units have recently been suggested: western North Atlantic, Iceland, Northern Norway and British Isles and North Sea (Evans and Teilmann, 2009).

2. Distribution

<http://www.iucnredlist.org/apps/redlist/details/11142/0/rangemap>

Distribution of Lagenorhynchus albirostris: cool temperate and subarctic waters of the North Atlantic (Hammond et al. 2008; © IUCN).

This is the most northerly member of the genus *Lagenorhynchus* and has a wide distribution. Animals in the northernmost part of the range occur right up to the edge of the pack-ice (Carwardine, 1995). The species is found in the immediate offshore waters of the North Atlantic, off the American coast from Cape Chidley, Labrador, to Cape Cod, Massachusetts; the Southwest coast of Greenland north to Godthab; off the European coast from Nordkapp in Norway south through the North Sea to the British Isles, Belgium, the Netherlands and Denmark. *L. albirostris* is vagrant to France, the north coast of Spain, the Strait of Gibraltar, and the Mediterranean Sea (Rice, 1998). It is only seen occasionally in inner Danish waters (Reeves et al. 1999) and the Baltic proper (Kinze, 2002).

Kinze (2009) identified four principal centers of high densities: the Labrador Shelf including south-western Greenland, Icelandic waters, the small stretch along the Norwegian coast extending north into the white Sea, and the waters around Scotland including the northern Irish Sea and the North Sea.

The main concentrations around the British Isles are off northern Scotland (including the Outer and Inner Hebrides, Orkney and Shetland islands) and along portions of the Atlantic

coast of Ireland. It is common in the northern and central North Sea and in the Kattegat and Skagerrak between Jutland (Denmark), Norway and Sweden. It is the most common delphinid stranded and sighted in Dutch waters and is common around the Faroe Islands. (Reeves et al. 1999; Kinze et al. 1997).

3. Population size

In portions of the north-western Atlantic published estimates indicate a population of at least several thousand white-beaked dolphins shoreward of the 200m contour between St. Anthony, Newfoundland, and Nain, Labrador (Alling and Whitehead, 1987) and in coastal and offshore waters east of Newfoundland and south-east of Labrador. In the Gulf of St. Lawrence for instance, 2,500 white-beaked dolphins (in 1995 and 1996) were counted solely in the Strait of Belle Isle and the extreme north-eastern Gulf (Kingsley and Reeves, 1998).

It seems that at least a few thousand white-beaked dolphins inhabit Icelandic waters and up to 100,000 the northeastern Atlantic including the Barents Sea, the eastern part of the Norwegian Sea and the North Sea north of 56°N. The total number of white-beaked dolphins throughout the North Atlantic thus may be in the high tens or low hundreds of thousands (Reeves et al. 1999 and refs. therein).

The most recent total abundance estimate for European Atlantic continental shelf waters was 22,665 (CV = 0.42) in 2005 (Hammond and Macleod 2006). The highest densities occurred in the waters of western Scotland. Numbers in the North Sea and adjacent waters, with a population of 10,562 (CV=0.29) and no statistical difference from previous estimates of 7,856 (CV = 0.30) obtained in the 1994 SCANS survey (Hammond et al. 2002).

However, when evaluating genetic variation in the species using a fragment of the control region of the mtDNA, Banguera-Hinestroza *et al.* (2009, submitted) found that it was extremely low ($\pi = 0.0056 \pm 0.0004$), comparable only to values reported in cetacean populations with historically small population sizes or which had been strongly affected by human activities. Among the populations that were analysed, the highest variability was found in the population from the western North Atlantic (Canada) and the lowest in eastern North Atlantic populations.

4. Biology and Behaviour

Habitat: This species is found mostly in continental shelf waters of depths between 50 m and 100m and rarely out to the 200-m isobath (Northridge *et al.* 1997). Distribution has been linked to sea-surface temperature, local primary productivity and prey abundance (Weir et al., 2007). Along the Aberdeenshire (UK) coast, most sightings were over depths of 20-30 m (Canning et al. 2005).

Behaviour: *L. albirostris* may bow-ride, especially in front of large, fast-moving vessels, but usually it loses interest quickly. Sometimes they are acrobatic (especially when feeding) and when breaching they normally falls onto the side or back. They are typically fast, powerful swimmers (Carwardine, 1995).

Reproduction: Females reach sexual maturity at 8.7 years. The mating season is in July and August, and the gestation period lasts about 11 months. Maximum recorded age was 37 years (Kinze, 2009).

Food: In all areas where stomach contents have been examined, clupeids (e.g. herring), gadids, e.g. Atlantic cod (*Gadus morhua*), haddock (*Melanogrammus aeglefinus*), poor-cod (*Trisopterus minutus*, *T. luscus*), whiting (*Merlangius merlangus*), capelin (*Mallotus villosus*) and hake (*Merluccius merluccius*) have been found to be the principal prey of white-beaked dolphins. Others consumed include *Scomber*, *Pleuronectes*, *Limanda*, *Eleginus* and *Hyperoplus* as well as squid, octopus and benthic crustaceans (Reeves et al. 1999 and refs. therein).

Schooling: Along the Aberdeenshire (UK) coast, average group size was 4.6, rising to 5.9 when calves were present (Caning et al. 2005). Generally, groups of less than 50 are most common, but herds of many hundreds have been seen. While feeding they sometimes associate with large whales such as fin and humpback whales but also with herds of pilot whales, sei whales, killer whales, bottlenose dolphins, white-sided dolphins and common dolphins (Jefferson et al. 1993; Reeves et al. 1999 and refs. therein). In contrast to the Atlantic white-sided dolphin, which sometimes mass strands, the white-beaked dolphin usually strands singly or in small groups. Co-operative feeding has been described. Dolphins herd the fish into a tight cluster and trap them against the surface (Reeves et al. 1999 and refs. therein).

5. Migration

Sightings of white-beaked dolphins are common around Newfoundland during the winter and spring, and fishermen along the Labrador coast claim that they approach the coast in late June and remain until October (Ailing and Whitehead, 1987). Densities on the Southeast Shoal of the Grand Banks decreased from mid June to mid July (Reeves et al. 1999 and refs. therein).

Northridge et al. (1997) concluded that white-beaked dolphins around the British Isles have a fairly consistent distribution throughout the year, although during spring they appear to aggregate around two areas of concentration to the north of Scotland and off the Yorkshire coast. At a coastal North Sea study area in Aberdeenshire, Scotland, a peak in occurrence was found during August (Weir et al. 2007).

Migration over longer distances are poorly known. However, photo-ID pilot studies conducted in the Skagerrak and Northern North Sea established matches between these areas and the Scottish coast (Kinze, 2009).

6. Threats

Direct catch: There is a history of hunting for white-beaked dolphins in Norway, the Faeroe Islands, Greenland, and Labrador. During the early 1980s an estimated 366 white-beaked dolphins were taken annually by the residents of 12 Labrador harbours (Ailing and Whitehead, 1987). Hunting in some areas continued in recent years e.g. in southwest Greenland (Kinze, 2002). There is no evidence of any major threat to this species in zones under Canadian jurisdiction. However, careful monitoring of hunting activities in Labrador is recommended and fisheries by-catches should be carefully monitored (Lien et al. 2001).

Incidental catch: White-beaked dolphins have been taken in fishing gear in many areas, and at least the Newfoundland/Labrador by-catch is substantially under-reported in published accounts (Reeves et al. 1999). However, incidental catches are not thought to be high enough to represent a threat to this species (Jefferson et al. 1993). De Haan et al. (1998) outlined possible mitigation measures for the pelagic trawl fishery.

Pollution: Like other North Atlantic marine mammals, white-beaked dolphins are contaminated by organochlorines, other anthropogenic compounds and heavy metals (Reeves et al. 1999 and refs. therein). Siebert et al. (1999) reported concentrations of total mercury and methylmercury in muscle, kidney and liver samples of three white-beaked dolphins, stranded or by-caught from the German waters of the North and Baltic Seas.

Noise pollution: Nachtigall et al. (2008) showed that high frequency hearing in white-beaked dolphins is the most sensitive of any known dolphin and as sensitive as in the harbor porpoise. Stone and Tasker (2006) demonstrated that cetaceans can be disturbed by airguns used in seismic exploration. Small odontocetes showed the strongest lateral spatial avoidance (extending at least as far as the limit of visual observation) in response to active airguns. Responses to active airguns were greater during those seismic surveys with large volume airgun arrays than those with smaller volumes of airguns.

7. Remarks

Range states (Hammond et al. 2008):

Belgium; Canada; Denmark; Faroe Islands; France; Germany; Greenland; Iceland; Ireland; Netherlands; Norway; Russian Federation; Sweden; United Kingdom; United States of America.

The North and Baltic Sea populations are listed in Appendix II of CMS. However, white-beaked dolphin abundance seems also to vary throughout the year off north-eastern North America, suggesting possible seasonal migrations. Therefore this stock (Range states US and Canada) should also be included in CMS App. II. IUCN Status: "Least Concern" (Hammond et al. 2008). The species is listed in Appendix II of CITES.

According to JNCC (2007) the species is expected to survive and prosper. However, studies of genetic variability of white-beaked dolphins show that its populations are highly vulnerable; the extremely low nucleotide diversity is probably due to a reduction in population sizes in the past, combined with the restricted habitat of this species to coastal areas highly affected by human activities (for example pollution and/or fisheries). It should be a priority to study and protect populations of *L. albirostris* on both sides of the North Atlantic (Evans and Teilmann, 2009).

8. Sources

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