

# First stranding report of a Cuvier's beaked whale (*Ziphius cavirostris*) in the Moray Firth in north-east Scotland

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*On 25 March 2008, a stranded Cuvier's beaked whale was discovered on the southern coast of the Moray Firth in north-east Scotland. Whilst strandings of the species are not uncommon in Scotland, the vast majority occur along the Atlantic coasts to the west of Scotland and Ireland. By comparison, records from the North Sea coast are notably absent, and this event is believed to be the first documented stranding of a Ziphius cavirostris from this mainland coastal region until now. Due to the severe state of decomposition of the specimen, no necropsy was made and therefore the cause of death could not be determined. However, this event may have been linked to a number of other beaked whale strandings in Scotland at this time. Whilst the North Sea region is considered to be an entrapment area for several species of oceanic whale, the Cuvier's beaked whale is rarely thought to travel far enough north to enter this trap. However, the phenology of these and other recent Cuvier's beaked whale strandings would suggest a possible northern range expansion for this species in UK waters, which may explain the increasing number of incidental events now being observed.*

**Keywords:** Cuvier's beaked whale, incidental stranding, Moray Firth, North Sea, range expansion

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The Cuvier's beaked whale (*Ziphius cavirostris* Cuvier, 1823) is the most widely distributed member of the 21 currently recognized species of the family Ziphiidae. Like other members of this family, these toothed whales are typically found in deep pelagic waters, often associated with steep canyons and escarpments along the edge of the continental shelf (Heyning, 1989; Jefferson *et al.*, 2008). Records suggest the species has a cosmopolitan distribution in warm temperate to tropical deep oceans, and in Europe it has been recorded from the west coast of Ireland to the Mediterranean Sea (MacLeod, 2000; Macleod *et al.*, 2006). It appears to be more common in warmer waters and, while there are frequent sightings of *Z. cavirostris* in the deep waters of the Bay of Biscay, there have only been six confirmed sightings in UK and Irish waters in recent years (Reid *et al.*, 2003). However, strandings of the species are not uncommon around the UK, but these may represent animals that have strayed beyond their usual warm water habitat, or been carried northwards by prevailing currents once dead (MacLeod *et al.*, 2004). The distribution of strandings is also not equal along all UK and Irish coasts, with the vast majority occurring along the Atlantic coasts to the west of Scotland and Ireland (Klinowska, 1985; Berrow & Rogan, 1997; MacLeod *et al.*, 2004). Strandings along the North Sea coasts are noticeably rare by comparison, and none have previously been recorded along the north-east coast of mainland Scotland (MacLeod

*et al.*, 2004; Figure 1) although other beaked whale species strand regularly here (MacLeod *et al.*, 2004; Figure 1).

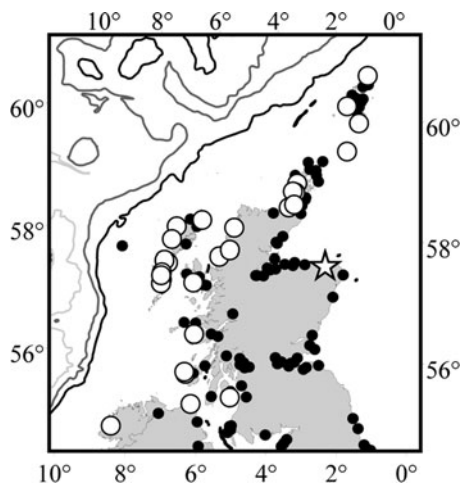
On 25 March 2008, a member of the public reported a large, dead whale along the southern coastline of the outer Moray Firth, on the west beach in Gardenstown, near Banff (57°40.175'N 002°20.823'W). On arrival at the scene, a decomposing carcass of a stranded beaked whale was discovered, whereupon an external examination was carried out *in situ* and photographs were taken. The extensive decomposition of the animal suggested it might have died one to two months prior to stranding. Consequently, an accurate measurement of the body girth could not be made in this condition, but the length was measured from the tip of the rostrum to the coccyx (in the absence of any tail flukes) at 7.23 m. No necropsy was performed due to the severity of autolysis. However, the lower jaw was removed for examination at the University of Aberdeen to confirm the species identification of this specimen.

Based on the characteristic features and profile of the animal's head, including a smoothly-sloping forehead, stubby, poorly-defined beak, and a mouth-line that was curved along most of its length with an upturn at the rear (Figure 2) (Heyning, 1989; Jefferson *et al.*, 2008), the stranded whale was preliminarily identified as *Z. cavirostris*. This identification was subsequently confirmed by the position and shape of a single pair of teeth located at the tip of the excised lower jaw. Whilst the maximum length for this species is generally accepted to be just under seven metres (Heyning, 1989; MacLeod, 2006), which is less than that measured in the present specimen, it is likely that the severely decomposed carcass had been 'stretched' or distorted by the

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**Fig. 1.** Strandings of beaked whales in northern UK and Irish waters between 1913 and 2003 (adapted from MacLeod *et al.*, 2004). Large white circles denote Cuvier's beaked whale strandings and the smaller black circles strandings of all other beaked whale species. The white star shows the location of the present stranding in the outer Moray Firth, on the east coast of mainland Scotland. Contour lines shown are 200 m (black), 1000 m (dark grey) and 2000 m (light grey).

stranding process. Even so, in view of the large body size and absence of erupted teeth in the lower jaw, this animal was confirmed as a fully-grown adult female.

As no necropsy was possible, the cause of death could not be determined. However, this stranding may have been linked to a number of other beaked whale strandings in Scotland a few weeks earlier (Dolman *et al.*, 2008), when at least four other Cuvier's beaked whales were discovered along the Hebridean west coast. This additional record of a stranding from the Moray Firth, shortly after these strandings, may help to illuminate the causes behind these strandings. In particular, the Moray Firth animal could have been carried by prevailing winds and currents from the west coast or even further afield. If this were the case, however, one would expect that the UK strandings data presented by MacLeod



**Fig. 2.** Photograph of the stranded Cuvier's beaked whale showing the characteristic sloping forehead with short, stubby beak and characteristic curved or 'S'-shaped jaw-line.

*et al.* (2004) for the species would reflect other such incidents along the North Sea coastline, but this does not appear to be the case. Whilst the North Sea is considered an entrapment area for several oceanic whale species (e.g. Smeenk, 1997), Cuvier's beaked whales are thought to rarely travel north far enough to enter this 'trap' (MacLeod *et al.*, 2004), which would explain the previous absence of strandings in this region. However, the phenology of this and other recent Cuvier's beaked whale strandings would suggest a probable northern range expansion for the species in our UK waters, perhaps as a result of increasing water temperatures along the Atlantic frontier, which may explain the escalating number of incidental stranding events now being observed. The present whale may have become incapacitated, through old age or some other reason, whilst in the northern extreme of this expanding geographical range. Once picked up by the northern currents here, the carcass would have eventually been circulated southwards into the Moray Firth where it was finally deposited along the southern shoreline.

Whatever the case, the present stranding evidently represents an atypical stranding's event for this species. To date, at least 16 species of cetacean have been recorded in the Moray Firth (Robinson *et al.*, 2007), including two species of beaked whale—the northern bottlenose whale (*Hyperoodon ampullatus*) and the Sowerby's beaked whale (*Mesoplodon bidens*), both of which are well represented in historical strandings data for this region (MacLeod *et al.*, 2004). The present stranding, however, provides the very first record of a Cuvier's beaked whale stranding in this North Sea area of mainland Scotland, and an additional species that can now be added to an already extensive list of coastal and pelagic cetaceans currently documented for this important geographical region.

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