ON DIAMONDS, A MAMMAL FOSSIL FROM THE FAROE ISLANDS, AND THE NORTHERNMOST OCCURRENCE OF FOSSIL BEAKED WHALES

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Summary

A rostrum of the fossil beaked whale *Choneziphius planirostris* from the seabed near the Faroe Islands is noted and described. The rostrum represents the first fossil of a large mammal from the Faroe Islands, and it marks the northernmost occurrence of a fossil beaked whale.

Samenvatting

Een rostrum van de fossiele spitssnuitdolfijn *Choneziphius planirostris* van de zeebodem nabij de Faroer Eilanden wordt gemeld en beschreven. Het rostrum is voor de Faroer Eilanden de eerste melding van een groot uitgestorven zoogdier en het markeert de tot nu toe meest noordelijke vondst van een fossiele spitssnuitdolfijn.

In 2007 the vessel Anita was fishing with bottom gillnets in about 400 metre deep water north-west of Mykines - Faroe Islands (c. 62°05'N-09°28'W). One day fisherman Bjarni Jacobsen from Sumba, Faroe Islands, observed a strange object in the nets. At first sight he thought it was a peculiar stone (stones often get entangled in the nets), however he realised that it had to be something different and put the object aside. He later believed it to be a bone or a head of a large animal or reptile and – acknowledging that fossils of large mammals or reptiles are unknown to the Faroe Islands – handed it over to a local museum. Unfortunately nobody was able to identify the strange object. The second author of the present article contacted Dick Mol from Holland in 2013, who presumed the object could be a fragment of a bone of a marine mammal and contacted the first author. Soon the enigmatic object was identified as a rostrum - the anterior-most part of the skull - of the 10-8 Ma old extinct beaked whale *Choneziphius planirostris*. The object which boarded the Anita represents not only the first fossil of a large mammal of the Faroe Islands, but also marks the northernmost occurrence of the fossil beaked whale genus *Choneziphius* and – for the record – of all known fossil beaked whales.
The rostrum is retained in Bjarni Jacobsen's home in Sumba, Faroe Islands.

DESCRIPTION

The rostrum weights 3925 grams and shows the polished and weathered surface which is seen in most of beaked whale fossils from ocean floors.

Dorsally the rostrum measures 445 mm (from apex to the damaged border of the premaxillary sac fossa). At position

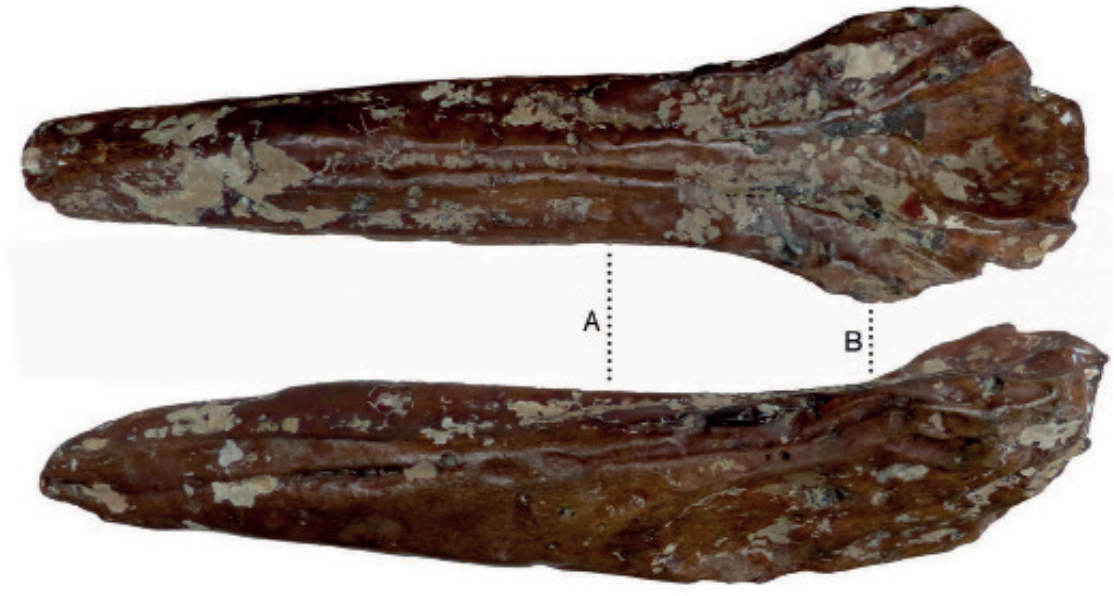

Fig. 1 Dorsal and lateral view of the rostrum of the Faroe Islands.
Dorsaal en lateraal aanzicht van het rostrum van de Faroer Eilanden.

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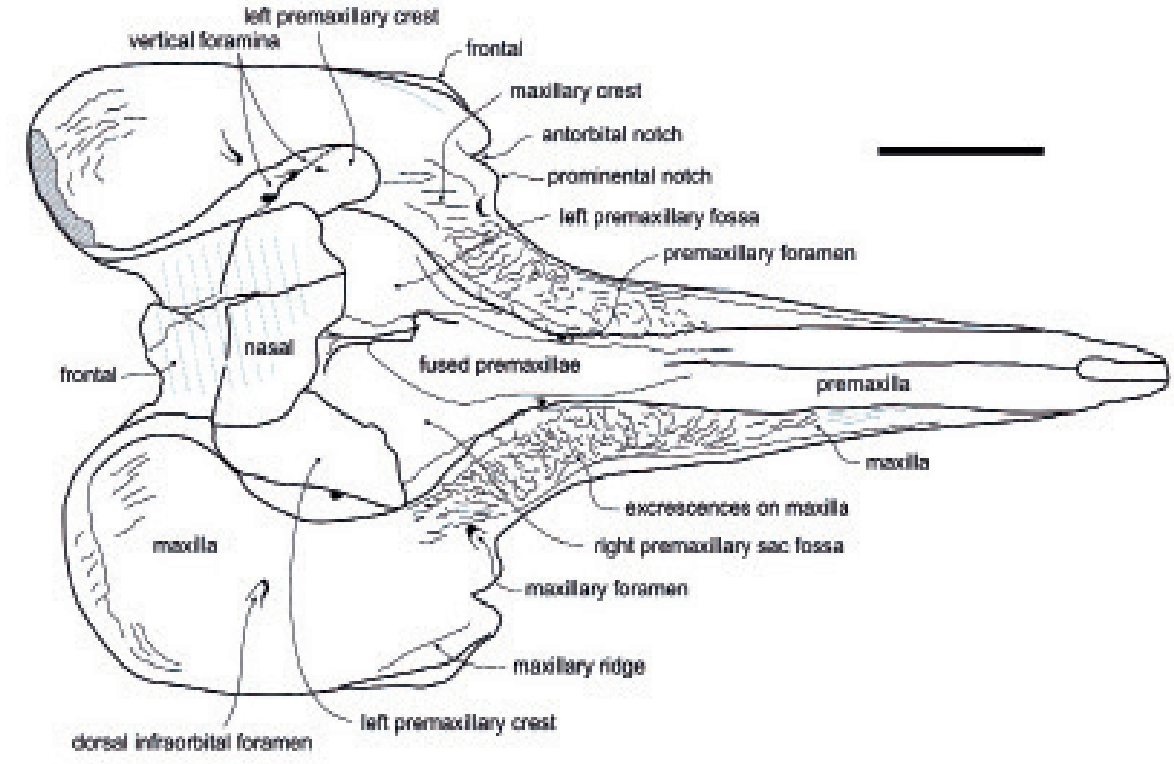
Fig. 2 A rostrum of Choneziphius caught on a scientific expedition on the Scheldt river (The Netherlands).
De ZZ 10 vist een rostrum van Choneziphius uit de Westerschelde tijdens de jaarlijkse expeditie van het Zeeuws Genootschap.



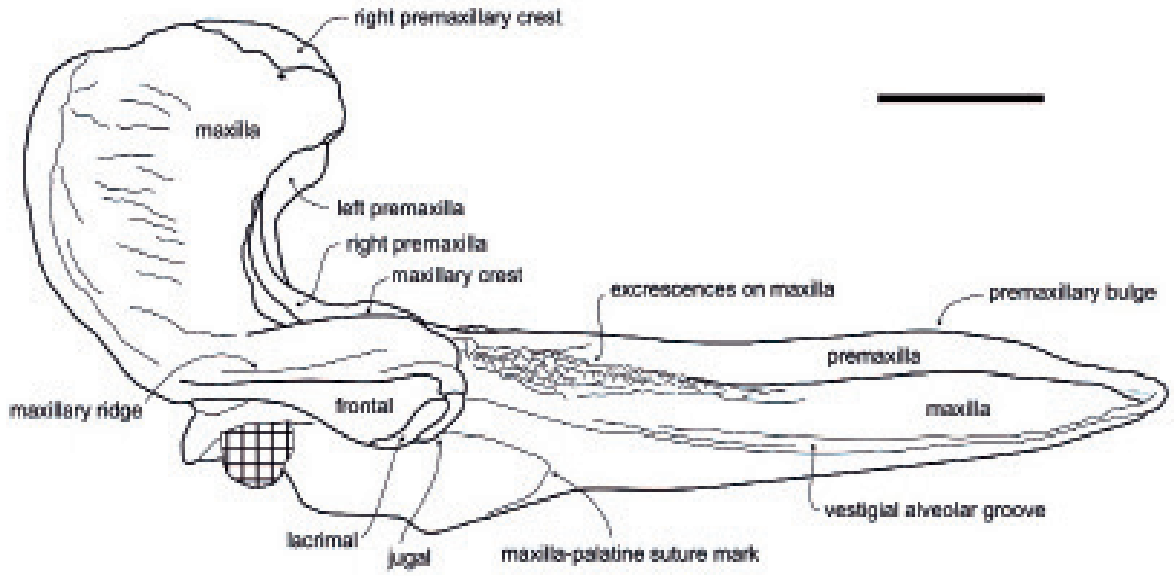


Fig. 3 Line drawing of the skull of Choneziphius leydii.
Lijntekening van de schedel van Choneziphius leydii.
(Bianucci et al. 2013)

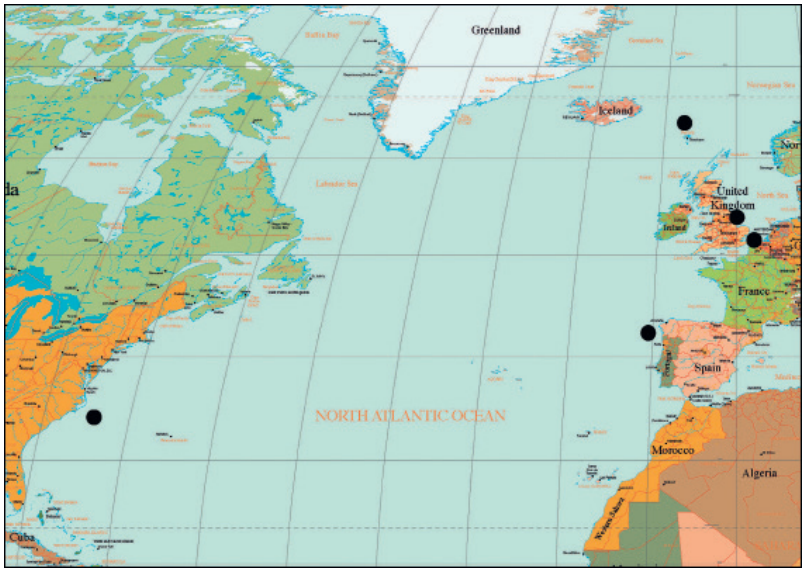


Fig. 4 Distribution of Choneziphius in the Atlantic Ocean.
Verspreiding van Choneziphius in de Atlantische Oceaan.

A (see figure 1) it has a width of 74 mm which gradually increases to 126 mm (shortly after the base of the rostrum at position B). First and foremost the suture of the fused premaxillae (forming and covering a mesorostral channel) can be clearly noted from the apex to the base of the rostrum. This condition unites the subfamily Ziphiinae (to which *Choneziphius* belongs) within the family Ziphiidae. In the middle of, and just posterior to, the base of the rostrum evolves the – for the genus *Choneziphius* – typical prominent ridge of the fused premaxillae, which separates both premaxillary sac fossae. The for *Choneziphius* characteristic maxillary excrescences near the base of the rostrum are just barely visible and severely eroded. Laterally the rostrum shows over most of its length the suture of the vestigial alveolar groove. Just below the base of the rostrum the suture of the palatine-maxilla is clearly visible.

CHONEZIPHIUS

The fossil beaked whale *Choneziphius planirostris* is one of the first described fossil whales. Baron de Cuvier himself identified and described in 1823 a heavy mineralised toothless rostrum from the Scheldt river near Antwerp in Belgium as a rostrum of a beaked whale. He realised the differences with the extant (and rarely sighted) beaked whales and coined its scientific name and position. Despite being the first fossil beaked whale ever described, to date only c. 40 fossil rostra and somewhat more complete skulls have been found in the Antwerp area (Belgium), the Scheldt river (The Netherlands) and the North Sea. A complete skull has never been found, nor have associated post crania (vertebrae, limp bones). From outside Holland and Belgium a few rostra of the species have been reported in the 19th century from the crags in Suffolk, UK, and from phosphate beds from the East Coast of the USA. Just recently Bianucci *et al*., 2013 described a new, and much larger, species of the same genus from the deep ocean floor near Spain and Portugal (*Choneziphius leydii*).

WORLDWIDE OCCURRENCE OF BEAKED WHALE FOSSIL ON OCEAN FLOORS

Although rarely observed, the deep diving squid eating beaked whales are after the dolphins (Delphinidae) the most species-rich family of extant cetaceans (with 22 living species). Until a few decades ago only a few fossil species were known, but during the last decade a wealth of fossil species have been described, originating from Belgium, Japan, New Zealand, Peru, Portugal, Spain and South Africa (see Bianucci *et al*., 2013). The variety of fossil beaked whale morphologies is changing our knowledge of these mysterious animals, but even more amazing is the fact that most of these fossils are found on deep ocean floors between abundant outcrops of phosphate nodules. In fact the rostra or partial skulls may be considered as very large nodules by themselves. The fossil of the Anita is a typical example of this phenomenon, which is proof of enormous past upwelling of the oceans and of an incredibly diversified beaked whale explosion!

The first fossil beaked whale known to science (*Choneziphius*) showed a for Miocene toothed whales unusual, but for the extant beaked whales characteristic, edentulous maxilla. The lack of fossil species (at the time) was the reason that this peculiar observation received limited scientific attention. Nowadays the above mentioned descriptions of dozens of Miocene beaked whales underline that already somewhere around the Middle Miocene the family developed its deep diving and suction feeding habit. The very early specialisation of members of this family to deep water feeding on cephalopods is probably the reason why this family is – despite its ancient history – still successful and contains so many extant species.

DIAMONDS AND BEAKED WHALE FOSSILS

The rostrum on the deck of the Anita is not only the first large fossil mammal of the Faroe Islands, and marks not only the northernmost occurrence of a beaked whale, but also represents a clear proof of a (possibly large) exposure of phosphate nodules on the seafloor at the fishing site. Similar exposures caused the South African government in the beginning of the 20th century to finance extensive marine expeditions to measure the viability of harvesting these 'wet resources'. More recently these deep ocean floor exposures worry the 21st-century Namibian fishing industry because the Namibian state is starting to harvest the nodules. But whether this is for fossils or diamonds – which seems to coexist in Namibia with fossil beaked whales – remains to be seen!

ACKNOWLEDGEMENTS

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LITERATURE

Bianucci G., Mijan I., Lambert O., Post K., O. Mateus (2013) Bizarre fossil beaked whales (Odontoceti, Ziphiidae) fished from the Atlantic Ocean floor of the Iberian Peninsula. *Geodiversitas 35 (1)*: 105-153.