

CUVIER'S BEAKED WHALE *ZIPHIUS CAVIROSTRIS* IN THE NORTH SEA, WITH A FIRST RECORD FOR THE NETHERLANDS (SCHELDT ESTUARY)

by

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ABSTRACT

In July 1995, a skeleton of *Ziphius cavirostris* G. Cuvier, 1823 was found during digging operations in the town of Assenede, Belgium, situated at about 12 km south of the Scheldt estuary. It represents an adult male of about 7 m long. The skeleton shows various signs of having been handled before burying. After searching in archives it turned out that the animal had been stranded alive in the Scheldt estuary, the Netherlands, on 14 July 1914. The whale, reported to be 6.90 m long, had been taken by fishermen but escaped. Some days later the animal, which had died in the meantime, was found again and towed ashore where its skeleton was sold to an inhabitant of Assenede, who intended to have it mounted as an attraction. Upon the outbreak of the First World War in August 1914 the owner probably buried the skeleton on the spot where it was unearthed more than 80 years later. It is now in the museum of Boekhoute, Belgium. This stranding represents the first, and so far the only, record of *Z. cavirostris* for the Netherlands. Only four other reliable strandings of this oceanic species have been reported for the North Sea.

Key words: *Ziphius cavirostris*, Cuvier's beaked whale, the Netherlands, North Sea

1. Introduction

Stranding and sighting records indicate that Cuvier's beaked whale (also called goose-beaked whale) *Ziphius cavirostris* G. Cuvier, 1823 is the most cosmopolitan of the beaked whales (family Ziphiidae). Indeed, the species occurs in all oceans and most seas except in arctic and antarctic waters (Moore, 1963; Mitchell, 1975a). Its habitat is typically pelagic, which explains why it is rarely seen in continental seas and near the coast, except in areas with a narrow continental shelf (Reeves, 1990).

In the Northeast Atlantic Cuvier's beaked whale is reported from the eastern Mediterranean Sea, the Iberian Peninsula, the Bay of Biscay (Van Beneden, 1888; Duguy & Robineau, 1982; Duguy, 1983), Ireland (Millais, 1906; Harmer, 1915; Cabot, 1965) and the west coast of Great Britain, i.e. from Devon and Cornwall (Harmer, 1915, 1927; Fraser, 1974, 1976; Evans, 1991; Sheldrick, 1989; Sheldrick et al., 1994) to the Orkney

and Shetland Islands (Turner, 1872; Williamson, 1952; Fraser, 1974; Evans, 1991). The northernmost records are two strandings from southern Iceland (unpublished data, Museum of Natural History, Reykjavík; skulls seen by CS), the most southern one is a sighting of five individuals near the Cape Verde Islands (Haase, 1987).

Schultz (1970) listed six records of Cuvier's beaked whale for the North Sea (including Orkney and Shetland) and Duguy & Robineau (1982) classified it as rare in this shallow basin. So far, the species is unknown from the coasts of Belgium, the Netherlands, Germany and Denmark, and has not been reported from the Kattegat and the Baltic Sea. Two strandings mentioned for the Baltic (Japha, 1908) actually occurred in the Skagerrak (Lepiksaar, 1966).

As for many other ziphiids, confirmed sightings are few and accounts are primarily based on strandings. An 8.5 m (28 feet) long '*Ziphius*' from Sandness, Shetland Islands (Stephen, 1932), was listed as Cuvier's beaked whale (Fraser, 1934; Schultz, 1970) until it was re-identified as a northern bottlenose whale *Hyperoodon ampullatus* (see Moore, 1968; Heyning, 1989). This, and the fact that ziphiids are often misidentified (Dalebout et al., 1997), underscore the need for a comprehensive review of all Northeast Atlantic records with verification of specimens, an exercise beyond the scope of this note. Here we discuss the origin of a unique skeletal specimen of *Z. cavirostris* recently found in northern Belgium.

2. Material

M. De Zutter and G. Willems of the Assenede Historical Society (Belgium) recovered the incomplete skeleton of an estimated 7 m long cetacean from beneath about 0.5-1 m of soil during digging operations for construction in the town of Assenede (51°14' N 03°45' E), northern Belgium, in late July 1995. While landlocked, Assenede is situated a mere 12 km south of the Scheldt estuary. The specimen, now deposited in the Boekhout Museum near Assenede, consists of a largely intact calvaria (fig. 1), broken mandibles, most vertebrae and several smaller, unidentifiable bony fragments. Despite careful sifting of the soil surrounding the site of the excavation, not a single rib was found.

The cetacean was identified as Cuvier's beaked whale *Ziphius cavirostris* based on the following skull characters (see True, 1910; Fraser, 1942; Omura, 1972; Heyning, 1989): relatively short, toothless and broad-based rostrum; greatly expanded pterygoids lacking lateral laminae; an extremely high vertex with enlarged nasals which protrude anteriorly to overhang the external bony nares; and the presence of a prenasal basin. The latter, and a densely ossified mesorostral canal (see fig. 1), both sexually dimorphic features, indicate that the specimen is an adult male. Its physically mature status is further supported by the estimated minimum body length (some 7 m by lining up vertebrae and skull), the large condylobasal length (94.0 cm) and the advanced fusion of cranial bones and vertebral epiphyses.

Surprisingly, a perfectly centred, circular hole had been bored axially through one corpus vertebrae, reminiscent of a common curatorial practice of piercing vertebrae for the purpose of mounting whale skeletons in museums. This artefact, the complete absence of ribs and the unaltered texture of the bony tissue shows that the specimen had been butchered, handled and buried by humans in fairly recent times.

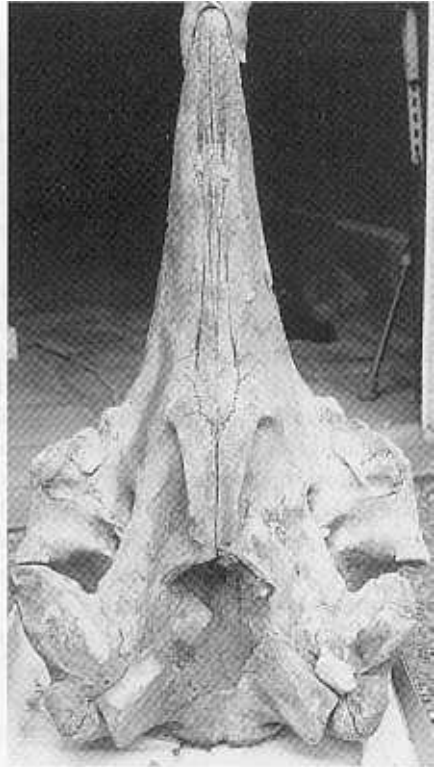
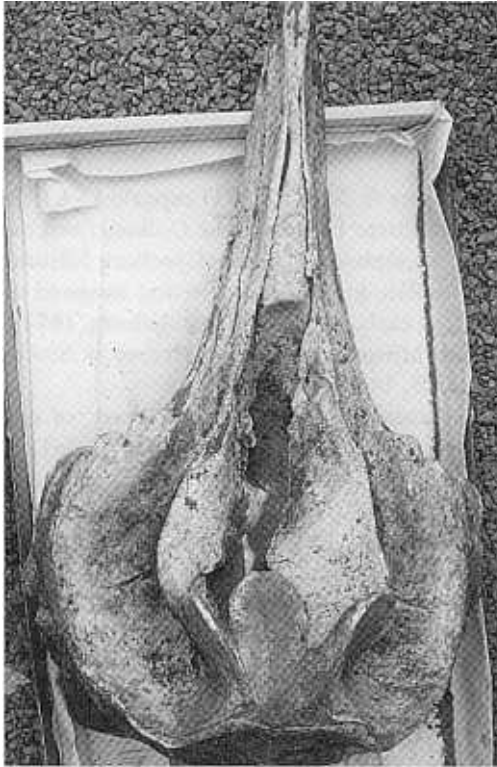


Fig. 1. Skull of *Ziphius cavirostris*, physically mature male, Scheldt estuary, 14 July 1914. Above: lateral view; below: dorsal view (left) and ventral view (right).

Thanks to cetacean stranding data in the archives of the National Museum of Natural History in Leiden, the Netherlands, and documents of the Assenede Historical Society (Belgium) revealed by R. Duyndam, C. Dierickx and G. Willems, the specimen was traced back to the live-stranding and subsequent capture of a small whale in the Scheldt estuary in 1914. One newspaper document (Anonymus, 1914) relates that on 14 July 1914 a whale with a length of 6.90 m was stranded alive and captured, but lost again, by fishermen from Terneuzen on the Kaloot¹, a shallow near Borssele¹ (51°25' N 03°44' E), Zuid-Beveland, the Netherlands. On 13 July 1914, a 'big fish' - a typical description for a cetacean - had been seen near Knokke (51°12' N 03°17' E) off the Belgian coast (Anonymus, 1914). Shortly afterwards, but on an unknown date, another fisherman found the floating carcass and towed it to Boekhoute, a small Belgian fishing harbour on the south bank of the estuary. Mr. M.J. Van Hoorebeke, a resident and brewer of the nearby town of Assenede, bought the whale skeleton and transported it to his home village (Anonymus, 1914), presumably to have it mounted as an attraction. With the onset of World War I in August 1914 the owner most likely abandoned his plans and the skeleton was buried in the village, where it was unearthed 80 years later. Further details of historical interest are presented by De Smet (1996).

Considering that the Cuvier's beaked whale was taken in Dutch waters, it represents the first record of this ziphiid for the Netherlands.

3. Other records from the North Sea

To assess the frequency of occurrence of *Z. cavirostris* in the North Sea, we briefly review the published cases for this area, including the Skagerrak and the English Channel east of the Cotentin Peninsula, Normandy.

Two cases have been mentioned from the Skagerrak. Malm (1871) reported a 6.6 m long female stranded on Sweden's Bohuslän coast near Holma in the Gullmarfjord on 22 April 1867. According to Lepiksaar (1966), its skeleton is in the Göteborg Natural History Museum. A second specimen from Bohuslän, longer than 6 m and assigned to '*Ziphius gervaisii*', was stranded near Marstrand, in early August 1872 (Lilljeborg, 1874). The nearly complete skeleton is in the Swedish Museum of Natural History in Stockholm under nr. A55.8396 (J. Englund in litt. to CS, 14 March 1996).

Thompson (1849) reported a female 'Two-toothed Whale (*Physeter bidens*)' of unknown length which 'was stranded close by Hull, in the Humber, a few years ago'. This description clearly matches a ziphiid. Significantly, the author added: 'the two teeth, instead of being one on each side of the lower jaw, are both of them in the front extremity of it'. Most likely the animal was either *Z. cavirostris* or *Hyperoodon ampullatus*, though a True's beaked whale *Mesoplodon mirus* cannot be excluded.

A carcass was stranded at Holcombe beach, near Wells (Norfolk) on 4 August 1989. Sheldrick et al. (1994: 282) record this specimen as an unidentified cetacean, but it has since been identified with *Z. cavirostris*. The skull is now in the Natural History Museum, London (P.G.H. Evans, pers. comm.).

¹In older literature and maps also spelled *Calloot*, *Caloot*, *Kalloot* and *Borssele*, respectively

A 605 cm long female Cuvier's beaked whale was seen alive near the east pier of the French port of Dunkerque in the southern North Sea, somewhat east of the English Channel, on 25 March 1980 (Duguy, 1981). Although it was towed into deeper water by firefighters in the hope it would swim away, the animal was found dead at nearby Mar-dyck the next day. Part of the mandible (M.1176) and photographs, clearly showing the white head, have been deposited at the Centre de Recherche sur les Mammifères Marins, formerly Musée Océanographique, at La Rochelle, France. R. Duguy (in litt. to KVV, 30 September 1994) indicated that his report of '2 fois en Manche' (Duguy, 1983) was erroneous. Duguy & Robineau (1982) indeed stated that *Z. cavirostris* had not been found in the English Channel.

The paucity of specimens from the area, despite an increasing search effort for both sightings and strandings over the past decades, confirms that this ziphiid only exceptionally strays into the shallow North Sea (Duguy & Robineau, 1982). Why, and by which route, some individuals do occasionally enter the North Sea is open to speculation. From the distribution of records it appears that both the English Channel and the southern Norwegian Sea are possible access routes. In this respect, it seems significant that the stranding site of the two Swedish animals is situated near the end of the Norwegian Channel/Skagerrak, which is over 500 m deep. With a depth decreasing from about 200 m in the north to less than 30 m in the Southern Bight, the greater part of the North Sea must be an hostile environment to Cuvier's beaked whale. Indeed, off Japan whaling records indicate that the species is most commonly found in waters deeper than 1000 m (Nishiwaki & Oguro, 1972). The same pattern is reported for California (Orr & Helm, 1989).

Cuvier's beaked whale in the Northeast Atlantic has been reported to feed on several species of pelagic squid belonging to the families Histioteuthidae, Enoploteuthidae, Gonatidae, Octopoteuthidae, Brachioteuthidae, and Chiroteuthidae (Desportes, 1985). The most abundant prey items found in stomachs from Japan, New Zealand, Peru and other areas are oceanic, mesopelagic or deep-water benthic fishes and squid (Mitchell, 1975a; Fordyce et al., 1979; Clarke, 1986; Peruvian Center for Cetacean Research, unpublished data). The deep-water habitat of such prey supports the notion that *Z. cavirostris* is a truly offshore species which normally avoids neritic waters.

Nothing is known about seasonal migration of *Z. cavirostris*. Off Japan, Hawaii and New Zealand the species is sighted all year round (Omura et al., 1955; Heyning, 1989). It is also present much of the year in Sri Lankan waters (Leatherwood & Reeves, 1989). Mitchell (1968) did not find a clear indication of seasonality in strandings in the Northeast Pacific. Records in the North Sea have occurred in spring and summer, but information is insufficient to conclude anything about seasonality in the appearance of this species.

The absence of neonates and small juveniles in the North Atlantic records suggests that the nearest breeding area is situated some distance from the North Sea and its immediate contiguous waters. A future analysis of the size distribution of stranded carcasses in the Northeast Atlantic may yield some clues. Mitchell (1968) found that in the Northeast Pacific, animals under about 18 ft (549 cm) have not usually stranded north of 42° N.

Unlike northern bottlenose whales, which were hunted from four whaling stations in the Shetland Islands in 1908-1914 (Klinowska, 1990), Cuvier's beaked whale has no histo-

ry of whaling in the Northeast Atlantic (Mitchell, 1975b; Northridge, 1984). No distinct stocks or subspecies of *Z. cavirostris* are currently recognized. Relatively small numbers are killed accidentally in fishing gear, especially in the Mediterranean (Di Natale & Notarbartolo-di-Sciara, 1994), off Sri Lanka (Leatherwood & Reeves, 1989) and off California (J. Barlow, in Reeves & Leatherwood, 1994), but the species' status in the Northeast Atlantic and elsewhere is unknown. The Assenede specimen is the only individual in the study area known to have been taken directly, after having been stranded alive.

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REFERENCES

- ANONYMUS, 1914. Een zeemonster. - Terneuzensche Courant. Nieuws- en Advertentieblad voor Zeeuwsch-Vlaanderen, 21 Juli 1914: 1.
- CABOT, D., 1965. Cuvier's whale *Ziphius cavirostris*, on Achill Island, Co. Mayo. - The Irish Naturalists' Journal, 15: 72-73.
- CLARKE, M.R., 1986. Cephalopods in the diet of odontocetes: 281-321. In: M.M. BRYDEN & R. HARRISON (eds). Research on dolphins. Clarendon Press, Oxford.
- DALEBOUT, M.L., A. VAN HELDEN, K. VAN WAEREBEEK, C. KEMPER & C.S. BAKER, 1997. Molecular genetic identification of southern ocean beaked whales (Ziphiidae). - Conference of the Conservation Biology Society, June 1997, Victoria, British Columbia (Abstract).
- DE SMET, W.M.A., 1996. Het 'walvisgeraamte' van Assenede. - Marswin, 17: 110-126.
- DESPORTES, G., 1985. La nutrition des odontocètes en Atlantique Nord-Est: 1-190, annexes. Thèse docteur de 3ème cycle, Université de Poitiers.
- DI NATALE, A. & G. NOTARBARTOLO-DI-SCLARA, 1994. A review of the passive fishing nets and trap fisheries in the Mediterranean Sea and of the cetacean bycatch. - Report of the International Whaling Commission, Special Issue 15: 189-202.
- DUGUY, R., 1981. Rapport annuel sur les cétacés et pinnipèdes trouvés sur les côtes de France. X - Année 1980. - Annales de la Société des Sciences Naturelles de la Charente-Maritime, 6: 803-817.
- DUGUY, R., 1983. Les cétacés des côtes de France. - Annales de la Société des Sciences Naturelles de la Charente-Maritime, Supplément, mars 1983: 1-112.
- DUGUY, R. & D. ROBINEAU, 1982. Guide des mammifères marins d'Europe: 1-200. Delachaux & Niestlé, Neuchâtel.
- EVANS, P.G.H., 1991. Whales, dolphins and porpoises: Order Cetacea: 299-350. In: G.B. CORBET & S. HARRIS (eds). The handbook of British mammals. Third edition. Blackwell Scientific Publications, Oxford.
- FORDYCE, R.E., R.H. MATTLIN & G.J. WILSON, 1979. Stranding of a Cuvier's beaked whale *Ziphius cavirostris* Cuvier, 1823, at New Brighton, New Zealand. - Mauri Ora, 7: 73-82.
- FRASER, F.C., 1934. Report on Cetacea stranded on the British coasts from 1927 to 1932. No. 11: 1-41, maps 1-6. British Museum (Natural History), London.
- FRASER, F.C., 1942. The mesorostral ossification of *Ziphius cavirostris*. - Proceedings of the Zoological Society of London, 112, Series B: 21-30, pls I-III.
- FRASER, F.C., 1974. Report on Cetacea stranded on the British coasts from 1948 to 1966. No. 14: 1-65, maps 1-9. British Museum (Natural History), London.
- FRASER, F.C., 1976. British whales, dolphins and porpoises: 1-34. British Museum (Natural History), London.
- HAASE, B.J.M., 1987. A group of goose-beaked whales *Ziphius cavirostris* G. Cuvier, 1823 near the Cape Verde Islands. - Lutra, 30: 107-108.

- HARMER, S.F., 1915. On specimens of Cuvier's whale (*Ziphius cavirostris*) from the Irish coast. - Proceedings of the Zoological Society of London, 1915: 559-566.
- HARMER, S.F., 1927. Report on Cetacea stranded on the British coasts from 1913 to 1926: 1-91, maps 1-7. British Museum (Natural History), London.
- HEYNING, J.E., 1989. Cuvier's beaked whale *Ziphius cavirostris* G. Cuvier, 1823: 289-308. In: S.H. RIDGWAY & R. HARRISON (eds). Handbook of marine mammals. Volume 4. River dolphins and the larger toothed whales. Academic Press, London/San Diego.
- JAPHA, A., 1908. Zusammenstellung der in der Ostsee bisher beobachteten Wale. - Schriften der Physikalisch-ökonomischen Gesellschaft Königsberg, 49 (2): 119-189.
- KLINOWSKA, M., 1990. Original records of whales landed at Scottish whaling stations. - International Whaling Commission, Document SC/42/O23: 1-2.
- LEATHERWOOD, S. & R.R. REEVES (eds), 1989. Marine mammal research and conservation in Sri Lanka, 1985-1986: 1-138. Marine Mammal Technical Report Number 1, United Nations Environment Programme, Nairobi.
- LEPIKSAAR, J., 1966. Zahnwalfunde in Schweden. - Bijdragen tot de Dierkunde, 36: 3-16.
- LILLJEBORG, W., 1874. Sveriges och Norges ryggradsdjur. I. Däggdjuren, jemte inledning till ryggradsdjuren: i-xii, 1-1088. W. Schultz, Upsala.
- MALM, A.W., 1871. Hvaldjur i Sveriges museer, år 1869. Kongelige Svenska Vetenskaps-Akademiens Handlingar, 9 (2): 1-104, taf. I-VI.
- MILLAIS, J.C., 1906. The mammals of Great Britain and Ireland. Vol. III: i-xii, 1-384, pls. Longmans, Green and Co., London.
- MITCHELL, E., 1968. Northeast Pacific stranding distribution and seasonality of Cuvier's beaked whale, *Ziphius cavirostris*. - Canadian Journal of Zoology, 46: 265-279.
- MITCHELL, E., 1975a. Report of the meeting on smaller cetaceans Montreal, April 1-11, 1974: 889-983. In: E. MITCHELL (ed.). Review of biology and fisheries for smaller cetaceans. - Journal of the Fisheries Research Board of Canada, 32.
- MITCHELL, E., 1975b. Porpoise, dolphin and small whale fisheries of the world. Status and problems: 1-129. IUCN Monograph No. 3, International Union for the Conservation of Nature and Natural Resources, Morges.
- MOORE, J.C., 1963. The goose-beaked whale, where in the world? - Chicago Natural History Museum Bulletin, 34 (2/3): 8.
- MOORE, J.C., 1968. Relationships among the living genera of beaked whales with classification, diagnoses and keys. - Fieldiana: Zoology, 53: i-iv, 209-298.
- NISHIWAKI, N. & N. OGURO, 1972. Catch of the Cuvier's beaked whales off Japan in recent years. - Scientific Reports of the Whales Research Institute, 24: 35-41.
- NORTHRIDGE, S.P., 1984. World review of interactions between marine mammals and fisheries. - FAO Fisheries Technical Paper, 251: 1-190.
- OMURA, H., 1972. An osteological study of the Cuvier's beaked whale, *Ziphius cavirostris*, in the Northwest Pacific. - Scientific Reports of the Whales Research Institute, 24: 1-34, pls I-VII.
- OMURA, H., K. FUJINO & S. KIMURA, 1955. Beaked whale *Berardius bairdi* of Japan, with notes on *Ziphius cavirostris*. - Scientific Reports of the Whales Research Institute, 10: 89-132.
- ORR, R.T. & R.C. HELM, 1989. Marine mammals of California: 1-93. University of California Press, Berkeley.
- REEVES, R.R., 1990. Cuvier's beaked whale *Ziphius cavirostris*: 105. In: A.R. MARTIN (ed.). Whales and dolphins. Salamander Books, London.
- REEVES, R.R. & S. LEATHERWOOD, 1994. Dolphins, porpoises and whales. 1994-1998 Action Plan for the Conservation of Cetaceans: i-viii, 1-91. International Union for the Conservation of Nature and Natural Resources, Gland.
- SCHULTZ, W., 1970. Über das Vorkommen von Walen in der Nord- und Ostsee (Ord. Cetacea). - Zoologischer Anzeiger, 185: 172-264.
- SHELDRIK, M.C., 1989. Stranded whale records for the entire British coastline, 1967-1986. - Investigations on Cetacea, 22: 298-329.
- SHELDRIK, M.C., P.J. CHIMONIDES, A.I. MUIR, J.D. GEORGE, R.J. REID, T. KUIKEN, C. ISKJAER-ACKLEY & A. KITCHENER, 1994. Stranded cetacean records for England, Scotland and Wales, 1987-1992. - Investigations on Cetacea, 25: 259-283.
- STEPHEN, A.C., 1932. Notes on some whales recently stranded on the Scottish coast. - The Scottish Naturalist, 198: 163-167.
- THOMPSON, T., 1849. Occurrence of the two-toothed whale (*Physeter bidens*) at Hull. - The Zoologist, 7: 2409.
- TRUE, F.W., 1910. An account of the beaked whales of the family Ziphiidae in the collection of the United States

National Museum, with remarks on some specimens in other American museums. - United States National Museum Bulletin, 73: 1-89, pls 1-42.

TURNER, W., 1872. On the occurrence of *Ziphius cavirostris* in the Shetland Seas. - Transactions of the Royal Society of Edinburgh, 26: 759.

VAN BENEDEN, P.-J., 1888. Les ziphioides des mers d'Europe. - Mémoires couronnées et autres Mémoires de l'Académie royale de Belgique, 41: 79-93.

WILLIAMSON, K., 1952. Cuvier's whale at Fair Isle. - The Scottish Naturalist, 64: 123.

SAMENVATTING

De dolfijn van Cuvier *Ziphius cavirostris* in de Noordzee, met de eerste vondst voor Nederland (Schelde)

In juli 1995 werd het skelet van een dolfijn van Cuvier *Ziphius cavirostris* G. Cuvier, 1823 gevonden tijdens graafwerkzaamheden in Assenede, België, 12 km ten zuiden van de Westerschelde. Het betreft een volwassen mannetje dat ongeveer 7 m lang moet zijn geweest. Het skelet vertoont enkele tekenen van bewerking door mensen. Na enig zoekwerk in archieven bleek dat het hier ging om een dier dat levend gestrand was op de zandbank de Kaloot in de Westerschelde, op 14 juli 1914. De walvis, volgens krantenberichten uit die tijd 6.90 m lang, was meegenomen door vissers, maar ontsnapt. Enkele dagen later werd het inmiddels dode dier door andere vissers drijvend aangetroffen in de Schelde en naar Boekhoute gesleept, waar het skelet werd verkocht aan een bierbrouwer uit Assenede, die het als een attractie voor zijn nering wilde opstellen. In augustus 1914 brak de Eerste Wereldoorlog uit; de eigenaar moet het skelet toen hebben begraven op de plek waar het ruim 80 jaar later weer werd gevonden. Het staat thans opgesteld in het museum van Boekhoute, België.

Deze stranding betreft de eerste vondst van *Z. cavirostris* voor Nederland. De dolfijn van Cuvier leeft in diep water over vrijwel de gehele wereld; zijn voedsel bestaat vooral uit inktvissen. De soort is een uitgesproken dwaalgast in de Noordzee. Er zijn slechts vier andere strandingen voor de Noordzee gedocumenteerd: twee in Zweden, in april 1867 en augustus 1872, één in Engeland in augustus 1989, en één in Frankrijk in maart 1980.

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