

SUBFOSSIL FINDS OF WALRUS FROM DENMARK

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All subfossil finds of walrus, *Odobenus rosmarus* (L.) from Denmark are mentioned. In connection with the finds from north Jylland, extracts are cited from the most important literature on their geological affiliation. A C-14 analysis indicated an age of 460 ± 100 years before 1950. On the basis of this dating the occurrence of this specimen is re-interpreted with the help of historical sources. Another Jylland find (Salling), according to C-14 dating, dates from the Neolithic Age. None of the finds is late glacial.

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Since the beginning of the 19th century, and notably after 1860, fourteen subfossil finds of teeth and skull fragments of walrus, *Odobenus rosmarus*, have been made in Denmark. These finds mainly derive from the west coast of Jylland, and especially from the beach near Rubjerg Knude (fig. 1), where at least seven detached canine teeth have been found in a very restricted area. It is almost exclusively these teeth from Rubjerg Knude (in which late-glacial marine deposits occur) that are mentioned in the literature.

During the present century there has been increasing acceptance of an interpretation of these teeth as of geological age, placing them within the earliest part of the melting period of the Weichel Ice so that, according to the common zoogeological concept, they are generally regarded as belonging to one of the faunal elements which characterize the population of arctic animals of that time. Of this late-glacial fauna, finds have also been made in north Jylland of bones of Greenland whale, *Balaena mysticetus*; white whale, *Delphinapterus leucas*; ringed seal, *Phoca hispida*; arctic bear, *Thalarcctos maritimus* and long-tailed duck, *Clangula hyemalis*. These, as well as the occurrence of several arctic molluscs, have encouraged the belief that the walrus was a quite natural element of animal life during the melting period.

The literary-historical sequence leading to the geological dating of these teeth is very interesting and is worth citing here in brief extracts before reporting the C-14 dating results. The following quotations are all translated from Danish.

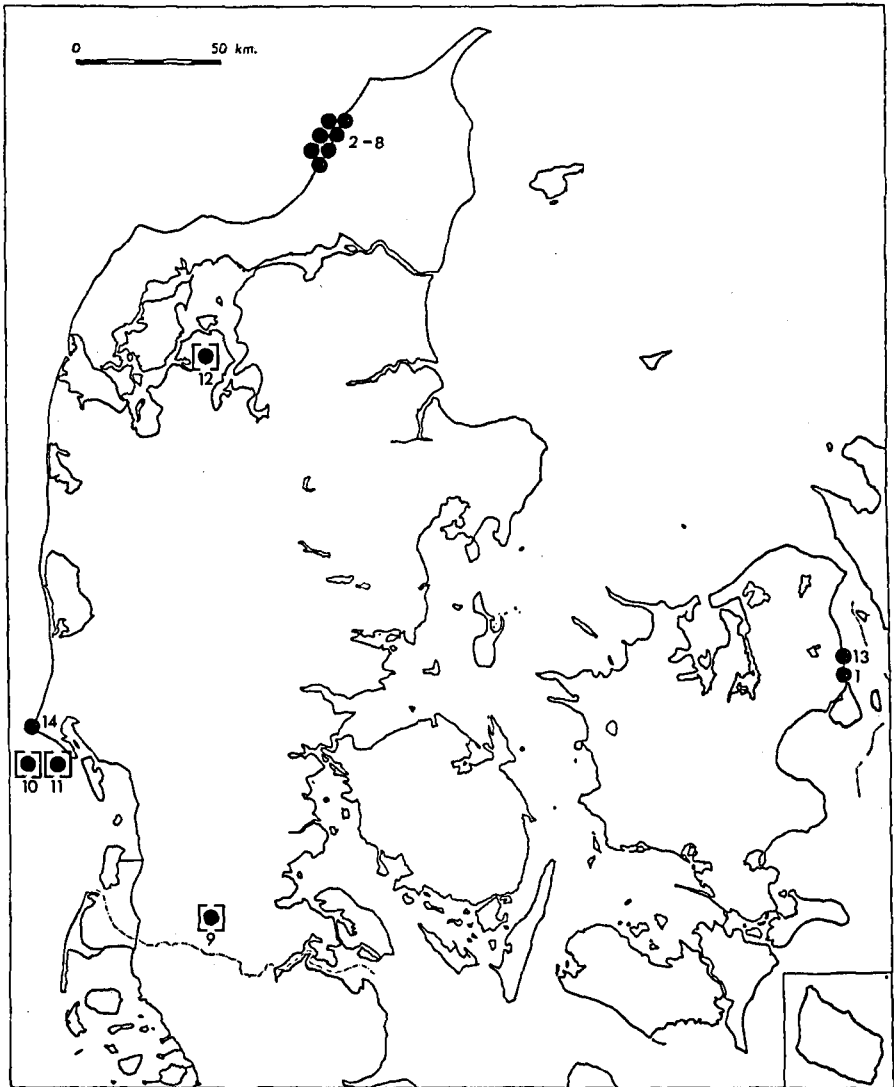


Fig. 1. Localities in Denmark where walrus has been found. 1. Svanemøllen, north of Copenhagen. In gravelly sandy layer, c. 4.5 m deep. Fragment of skull with well preserved canine. Found before 1835; later disappeared. 2. Rubjerg Knude. Beach find. Canine, male, length 49 cm. A. G. Juel 1863 (kept at the Zoological Museum, Copenhagen). 3. Rubjerg Knude. Beach find. Canine, male, length 48 cm. Consul Nielsen 1908 (kept at the Zoological Museum). C-14 dated at 460 ± 100 before 1950. 4. Rubjerg Knude. Beach find. Canine, male, length 43 cm. C. Høyer 1867 (kept at the Zoological Museum). 5. Rubjerg Knude. Beach find. Canine, female, length 37.5 cm. Christian Jensen 1873 (kept at the Zoological Museum). 6. Rubjerg Knude. Beach find (among stones off Rubjerg Knude). Canine male, length 40.5 cm. C. Høyer 1874 (kept at the Zoological Museum). 7. North of Lønstrup. Beach find.

In a geological survey of parts of north Jylland (Johnstrup, 1882), Jap. Steenstrup wrote a zoological chapter in which he stated the following about the walrus tusks from Rubjerg Knude (Lønstrup Klint): "Of mammals hardly more than one unquestionable specimen exists, a vertebra of a seal. The walrus tusks, occurring at different times at the foot of the clayey hills near Lønstrup, would add strong evidence of arctic climate if they really were washed out of the clayey hill, but this is more than doubtful."

Steenstrup (1889, p. 97): "The occurrence of the walrus tusks just in this place, therefore, in my opinion is explained in a very natural way assuming that, among the numberless wrecked ships, in the course of centuries one returned from the Arctic Sea or the Greenland Sea with a larger or smaller number of heavy and precious tusks of these animals".

Winge (1889, p. 300): "... but whether the tusks were washed out of the earth layers of the Ice Age on the spot, which is perhaps most probable, or whether they may derive from some stranded ship in the old days loaded with walrus tusks, could not be decided".

Jessen (1899, p. 237): "... found on the beach, possibly washed out on the spot by the Ice Age Formations".

Nordmann (1905, p. 38): "The explanation that they could derive from a stranded ship... now seems to be rather far fetched, after teeth of the young ones have also been found... they were most probably washed out of some of the numerous layers in the cliff. However, we must imagine that the walrus belongs among the inhabitants of the cold sea occurring round Denmark".

Jessen (1936, p. 99): "It is natural, therefore, to refer the walrus tusks to the late-glacial, marine layers and - due to their well preserved appearance - rather to the Yoldia clay".

Nordmann (1944): "There can be no doubt that these teeth were washed out of the Arctic Sea clay by the breaking down of the cliff by the sea".

Iversen (1967, p. 375): "Also these (the tusks) must have been washed out of the late-glacial Yoldia clay".

Canine male, length 38 cm. A. Jessen 1897 (kept at Danmarks geologiske Undersøgelser). 8. Lønstrup Klint (slightly north of Rubjerg Knude). Beach find. Canine (juv.), length 12.5 cm. Hjørring Museum 1891. (Kept at Danmarks geologiske Undersøgelser). 9. North Slesvig. "Under a church". Skull fragment (snout) with remains of tooth alveolae of canines and molars. The fragment carries different working marks (e. g. saw marks). Mr. Schmidt, Veterinary surgeon (presumably from the end of the 17th century). (Kept at the Zoological Museum). 10. The North Sea, off Esbjerg, taken from the sea bottom. Skull fragment (snout) female. Fragment of canine and molars in situ in right side. Mr. R. Winfeld 1911 (kept at the Zoological Museum). 11. Esbjerg. According to the appearance, fished on the sea bottom. Skull fragment (snout), male. Molars in situ, canines missing. J. P. Jensen 1938 (kept at the Zoological Museum). 12. Salling. Bog find? Lower jaw except posterior part of right half of jaw. 1938 (without further data) (kept at the Zoological Museum). C-14 dated: 3930 ± 100 before 1950. 13. Skovshoved, north of Copenhagen. Found when digging hole for fencing post. A lower jaw without teeth and lower parts of the two upper canines. A. Falkenberg Andersen 1957 (in private possession). A pollen-analytic dating showed that this find derives from the present time. 14. Blåvand. Beach find. Canine. Length 40 cm. Civil engineer Poul Svarrer 1971 (in finder's possession). All measurements are greatest length in straight line.

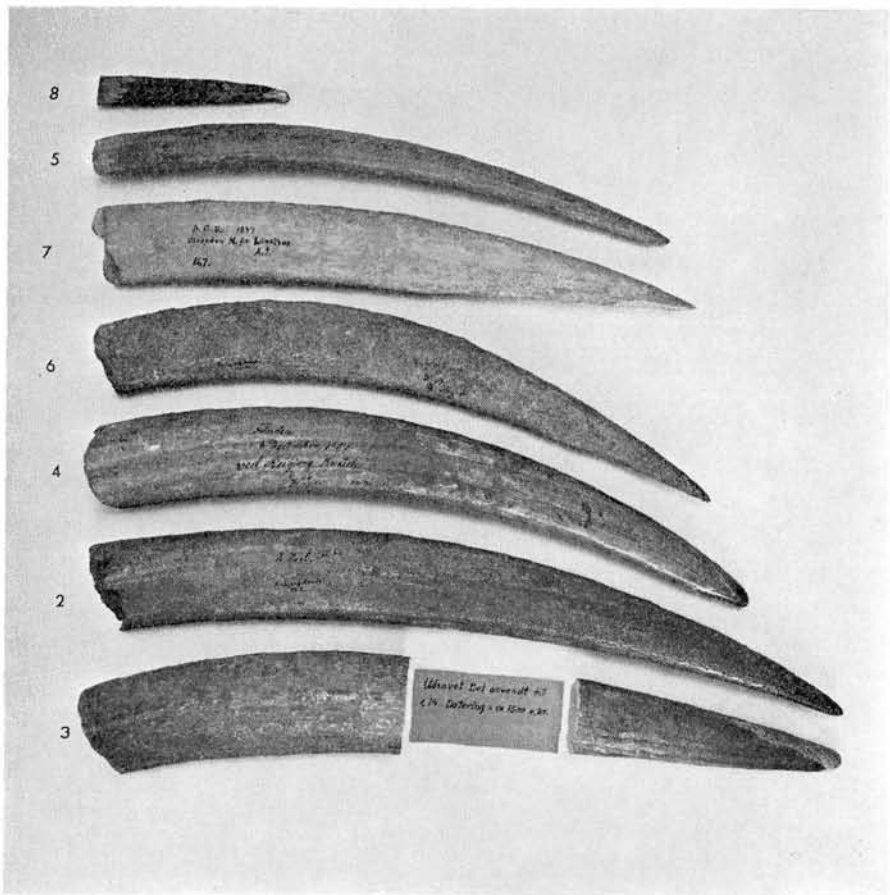


Fig. 2. Walrus tusks from Rubjerg Knude. Numbers refer to fig. 1.

In addition, these finds are mentioned in several other papers (both zoological and archaeological), in which the walrus, with or without reservation, is accepted as a faunal element during the melting period in north Jylland.

Since a safer dating has now been made possible by the carbon 14 method, a fragment of one of the tusks (fig. 2, no. 3) from Rubjerg Knude was used for this purpose. The analysis (K 1934) showed an age of 460 ± 100 years before 1950, or 1490 ± 100 A.D.

Thus we must accede to Steenstrup's primary assumption from 1889 that all these tusks derive from a stranded ship. A supposition which, as shown, has been forgotten in the course of years or has been replaced by other views which, by more recent finds of several late-glacial species from north

Jylland, have added to the reliability of the view that the walrus was a quite natural faunal element off the Jylland arctic sea coasts in the past.

Dating of one of the Rubjerg Knude tusks to about 1500 A.D. has here been accepted as a time indicator for the remaining finds from this locality (fig. 2) which must now be seen in historical light and should not be interpreted geologically.

Walrus tusks as a commodity, during several centuries, were shipped to the south along the dangerous west coast of Jylland. Ottar's journey to the White Sea at the end of the year 800 is mentioned as the primary historical source in this respect. After this journey he sailed to England (about 890), and gave King Alfred a verbal account of his observations and brought with him walrus tusks.

Later, in the 14th century, the Northmen in Greenland paid tithes to the pope in the form of walrus tusks, which were sailed from Greenland via Iceland to Bergen in Norway, and from there farther south to Flanders, where the tusks were converted into "hard cash", which finally reached the pope and contributed to cover the expenses in connection with crusades and the building of St. Peter's.

Later again, when connection with the Northmen had been lost, Portuguese, Dutchmen and Englishmen continued to bring home the precious "ivory" from the White Sea, Bjørnø and other northern coasts, where walruses might be met with in great numbers.

Of the remaining Danish finds, three (fig. 1, nos. 10, 11 & 14) are placed rather close together, west of Esbjerg, where dangerous grounds also extend far out from the coast near Blåvands Huk. Two of these finds were hauled from the bottom off Esbjerg. These are skull fragments (the anterior, tusk-bearing part), while the third (no. 14) is a detached canine tooth washed ashore on the beach near Blåvands Huk. These finds have not been dated but they are believed to derive from a shipwreck. It is highly unlikely that they are a natural occurrence because the southern part of the North Sea, from north Jylland to the Dogger Bank and England, was dry land during part of the melting period.

Of the remaining finds, two are from Sjælland (nos 1 & 13). No. 1 has long since disappeared (before 1904), and no. 13 has proved to be recent (by pollen analysis). No. 9 from north Schleswig, found under a church, carries distinct saw and cutting marks, for which reason it should be regarded as a "historical" piece.

No. 12 represents the last possibility to retain the walrus as a primary faunal element, a lower jaw from Salling, apparently found in a bog or similar place. This jaw (fig. 3) is coloured dark brown throughout and showed an age by C-14 dating of 3930 ± 100 years before 1950, or 1980 ± 100 B.C. This

rather surprising "intermediate" age does not immediately reveal the origin of the jaw, which for different reasons cannot be considered "natural", i. e., to form a natural faunal element from the later part of Subboreal time (final phase of the neolithic).

As a possible explanation one might consider the widespread trade in the Stone Age in Danish flint implements which, as semifinished preforms, were sailed to Norway and Sweden whence other products were brought home. Thus the possibility cannot be excluded that the Salling jaw originally derived from north Norway, where a population of walruses persisted in the White Sea into historical times.

Conclusions

This revision of Danish subfossil walrus finds shows that the many tusks (nos 2-8) from Rubjerg Knude, which have been regarded more recently as of late-glacial age, in fact derive from the 15th century. This (among other evidence) would suggest that finds from other west coast localities (10, 11 & 14) are also subrecent. Specimen no. 9 is historical and no. 13 recent, while no. 12 derives from the neolithic period, but cannot be considered to represent a faunal element. Thus, on the basis of the present material, the walrus cannot be reckoned to belong to the late-glacial Danish fauna.

Note: this article was written as a summary to a more detailed account with more figures, which will be published, in Danish, by Historisk Samfund for Hjørring Amt.

Dansk sammendrag

Samtlige subfossile fund af hvalros, *Odobenus rosmarus*, fra Danmark er omtalt. Med specielt henblik på de nørrejske fund er uddrag af den vigtigste danske litteratur angående deres geologiske tilhørsforhold citeret. En C-14 datering har vist en alder af 460 ± 100 før 1950. Med denne datering som baggrund belyses forekomsten ud fra historiske kilder. I konklusionen formodes, at ingen af de hidtidige fund er sen-glaciale.

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Fig. 3. Walrus jaw from Salling, see fig. 1, no. 12.

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