

This paper not to be cited without prior reference to the author

ICES C.M. 1985/N:9
Marine Mammal Committee

First record of gooseneck barnacles
(Conchoderma auritum) on a minke whale
(Balaenoptera acutorostrata)

by

Ivar Christensen

Institute of Marine Research, Directorate of Fisheries
P.O.Box 1870, N-5011 Nordnes-Bergen, Norway

ABSTRACT

Clusters of a stalked barnacle, readily identified as Conchoderma auritum, were found attached to both damaged and complete baleen plates of a male minke whale caught off the coast of East Greenland on 16 July 1984. No previous record is known of gooseneck barnacles on minke whales.

INTRODUCTION

There is a relatively low number of ectoparasites on whales belonging to the family Balaenopteridae, and with exception of the humpback whales, the infection rate is very low. The term ectoparasites is strictly speaking not correct for some of the species classified as epizootic on whales, as the whale act more like a buoy on which some specialized animals are hitch-hiking (commensalism). Most of these whale hitch-hiking animals belong to the order Crustacea. The geographical distribution of a commensal depends on the host animal's migration. Although the gooseneck or rabbit-eared barnacle (Conchoderma auritum) is recorded regularly in the northern North Atlantic, it does not belong to the endemic fauna of this area.

MATERIAL

During the period 1972-1984 a total of 1317 minke whales have been examined in the North Atlantic by the staff of the Institute of Marine Research in Bergen. In addition to general biological examination and sampling, the occurrence of epizootics was also recorded. The most common crustaceans found on North Atlantic minke whales are Cyamus sp., and less frequently, Penella sp.

During a whaling cruise to East-Greenland in 1984, a minke whale was caught on July 16, at position 70° 24' N, 19° 17' W. When this animal, a 595 cm long male, was hauled on to the flensedeck, the observer discovered that about one third of the baleen plates on the both side of the mouth from the tip backwards were damaged. The demolished plates had probably been destroyed by some kind of rope as suggested by the shape of healed scars near the tip of the snout (Fig. 1). The broken baleen plates were recovering. The whale was relatively thin, with a blubber thickness of only 25 mm, as compared to 30-40 mm in other whales caught on the same trip. Attached to the baleen plates, both to the undamaged and the broken ones, were several stalked barnacles (Fig. 1 and Fig. 2).

Some specimen were conserved in formalin. Length measures of the biggest animal after conservation were as follows:

Total length (capitulum + pedunculus): 74.3 mm
 Length of capitulum : 32.2 mm
 Length of scutum: 9.7 mm

If we include the "ear", the total length is 90.9 mm. All measurements are made with a vernile gauge.

The species was readily identified as Conchoderma auritum by the conspicuous ear-like appendages on the capitulum, and the small triangular scutum (Stephensen, 1933; Brock, 1959).

DISCUSSION

Conchoderma auritum has a wide distribution and is occasionally found in the southern North Sea, the English Channel, at South and West Ireland, in the Faroe-Iceland area and in the Norwegian Sea (Brock, 1959). In temperate and warmer seas the barnacle is found on drifting debris or fixed to ships, but in northern waters it is mostly found attached to Coronula sp. on great whales (Brock, 1959).

Clarke (1966) summarized the occurrence of C. auritum on some whales and gave the following infection rates on baleen whales:

- 97.8% of 500 humpbacks from the Antarctic, S.Africa and the North Pacific
- 0.2% of 3343 blue whales from the Antarctic
- 0.3% of 7794 fin whales from the Antarctic
- 0.2% of 1031 sei whales from the North Pacific

It is assumed that the low infection of C. auritum on blue, fin and sei whales is connected with the low occurrence of Coronula on these whales. There is no previous record of Coronula on minke whales, neither has C. auritum been recorded on this species. The present record which is the only one for 1317 whales examined, gives an infection rate of 0.076% for minke whale in the North Atlantic.

According to Clarke (1966) C. auritum is rarely fastened directly to the baleen plates. This had been reported only once from a blue whale, once from a sei whale and twice from fin whales. The baleen of the infested fin whale, described as a new case of direct infection by Clarke (1966), were much fretted and worn away, apparently diseased.

In our case the minke whale did not suffer from sickness. The breakdown of the baleen has probably been caused by an accident. The demolition of some of the baleen plates may have made it possible for the larvae of C. auritum to settle. The cases reported by Clarke (1966) and our finding indicate that if some of the baleen plates are destroyed, C. auritum find a suitable substratum for attachment. When some barnacle have settled, other larvae will settle in the vicinity of their own species. This settlement "in waves" is shown by Il'in, Kuznetsova and Yegorikhin (1980). The same phenomenon is demonstrated by the present case where smaller and bigger barnacles are attached close to each other (Fig. 1).

The time for the settlement of C. auritum is difficult to estimate, but the healing of wounds and recovery of baleen plates put the accident somewhat back in time. It is probable that the infection occurred in warmer waters, because no larva of this species is found in Greenland waters. The growth rate of the capitulum of C. auritum has been measured to 0.7 mm/day during the first month, but this high growth rate probably slows down after sexual maturity, at a scutum length of 7mm (Rasmussen 1980). The

largest individual reported by Rasmussen (1980) had an age of 150 days and a capitulum length of 33.6 mm. The largest present specimen has a scutum length of 9.7 mm, and therefore was sexual mature. The capitulum length of 32.2 mm should indicate an age of up to 150 days. Rasmussen's (1980) measurement of growth rates were from animals living at water temperature between 16⁰ - 19⁰C. The growth rate probably slows down in colder waters, implying that the present animal could be older depending on how long the minke whale had stayed in Greenland waters. Clarke (1966) showed that C. auritum survived Antarctic waters, therefore the present animals could be more than one year old.

REFERENCES

- Broch, J. 1959. Cirripedia Thoracica, Family: Lepadidae. Cons. int. Explor. Mer. Fiches d'Identification du Zooplankton, Sheet 83, 4 pp.
- Clarke, R. 1966. The stalked barnacle Conchoderma, ectoparasitic on whales. Norsk Hvalfangsttid., 55(8): 153-168.
- Il'in, I.N., Kuznetsova, I.A. and Yegorikhin, V.D. 1980. Hydrological causation of the fouling of moorings of an oceanographic study area in the Equatorial Atlantic. Oceanol. Acad. Sci. USSR. 20(4): 453-456.
- Rasmussen, T. 1980. Notes on the biology of the shipfouling gooseneck barnacle. "Conchoderma auritum" Linnaeus, 1776 (Cirripedia: Lepadomorpha), pp. 37 - 44- In Garsi (ed.) Proceedings of the 5th International Congress on Marine Corrosion and Fouling Marine Biology, Madrid.
- Stephensen, K. 1933. Dannmark Fauna, 38. Havedderkopper (Pycnogonidae) og Rankefødder (Cirripedia). G.E.C. Gads Forlag, København, 158 pp.

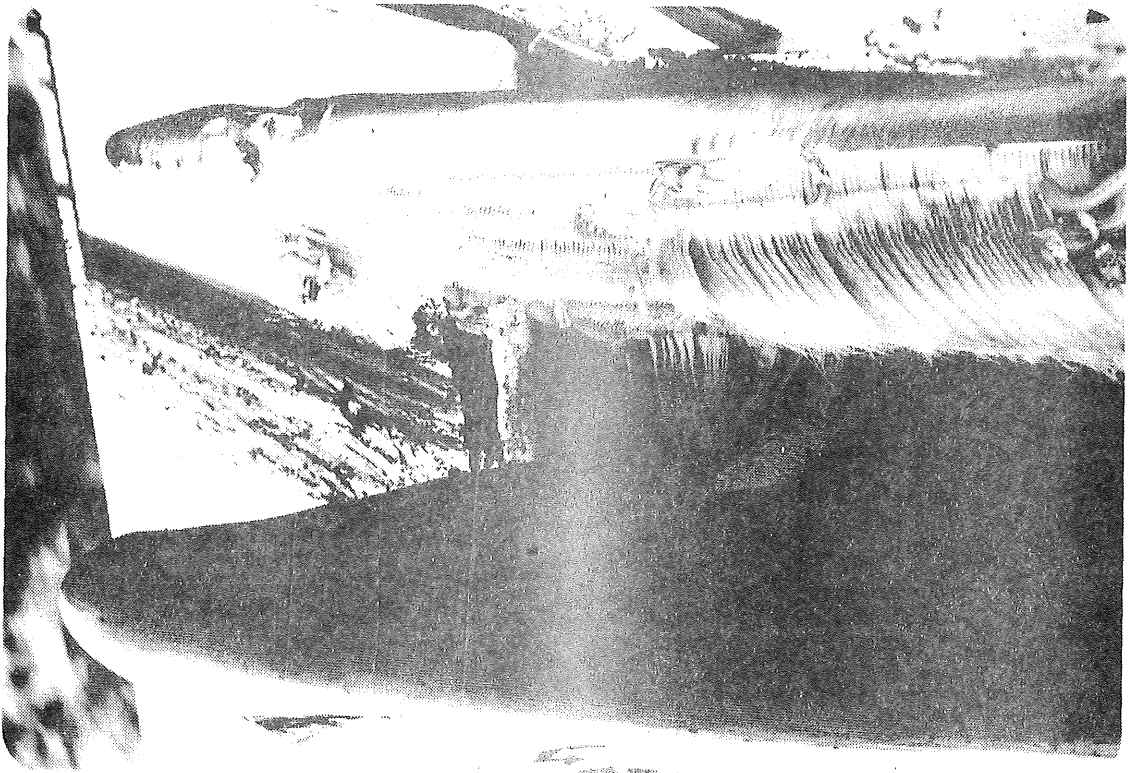


Figure 1. Photo showing the demolished baleen plates and the attachments of some of the gooseneck barnacles. (Photo Aa. Nilsen.)

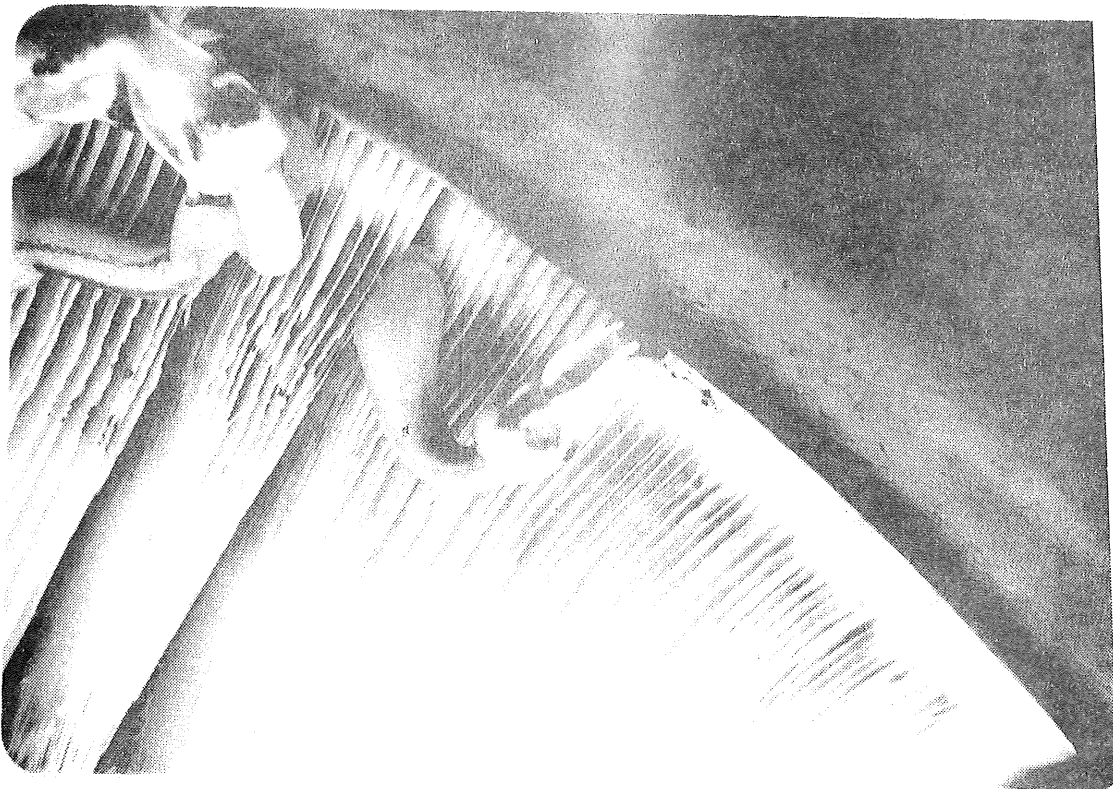


Figure 2. Photo showing the attachments of the gooseneck barnacles to the baleen plates.