

## New records of *Arenicolides ecaudata* (Johnston, 1865) (Polychaeta, Arenicolidae) from Norwegian waters

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### SARSIA



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The polychaete species *Arenicolides ecaudata* (Johnston, 1865) is recorded from Hordaland county, Norway. Previous records of the species from the Norwegian coast date back to before 1900 but are considered uncertain. The present specimens were found in a variety of locations, comparable with respect to patches of cobble substrate, but dissimilar in terms of ocean exposure and freshwater impact.

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### INTRODUCTION

During August-September 1998, sampling of benthic macrofauna was undertaken at shallow sand and cobble substrate habitats in Hordaland county, western Norway. The samples were taken in association with a survey of juvenile European lobster *Homarus gammarus* (L.). Several specimens of *Arenicolides ecaudata* (Johnston, 1865) were recorded in the samples.

There are only a few previous records of *A. ecaudata* from Norwegian waters. These date back to before 1900, and are from Trondheimsfjorden (63°30'N), and from Bergen and Kvitøy on the west coast of Norway (59-60°N) (Rathke 1843; Sars 1856; Storm 1881; Bidentkap 1894). These records are somewhat uncertain, and were not included in a recent catalogue of marine benthic macro-organisms in Norway (Holthe & Brattegard 1997).

The genus *Arenicolides* belongs to the sandworm family Arenicolidae Johnston. *Arenicolides* is characterised by having the body divided into two regions, a pre-branchial and a branchial region, and by having numerous branched gills (Wells 1959; Fauchald 1977; Hartmann-Schröder 1996). *Arenicolides ecaudata* superficially resembles the common and more well-known lugworm *Arenicola marina* (Linné, 1758), but may be distinguished by the absence of an achaetous caudal region. The genus includes two species, *A. ecaudata* and *A. branchialis* (Audouin & Milne-Edwards, 1833),

both of which are found in European waters. The two species are separated by the relative position of the gills and the number of nephridia (Fauvel 1927).

### OBSERVATIONS AND DISCUSSION

Altogether 22 specimens of *A. ecaudata* were collected, using a light-weight diver-operated airlift suction sampler. The suction sampler has been particularly constructed to sample crustacean fauna from cobble substrates. Considerable variation in size and in the number of segments was found. The largest complete specimen measured 20 cm in length for 41 segments, while the maximum number of segments (59) was recorded for a specimen of 10.5 cm in length. In most specimens the gills started on chaetiger 16, but occasionally gills were found from chaetiger 14 or 15. The specimens agree with the descriptions given by Fauvel (1927) and Hartmann-Schröder (1996), except that the gills are stated to begin at chaetiger 16 or 17, instead of the present 14-16. Fig. 1 illustrates a typical specimen compared with the lugworm *Arenicola marina*. The specimens are deposited at the Institute of Marine Research, Austevoll Aquaculture Research Station, Storebø, Norway, but will later (year 2005) be transferred to the Zoological Museum in Bergen, Norway.

The specimens were found in six samples from 3 localities (Fig. 2). Location A (60°06'N, 5°05'E) was in a

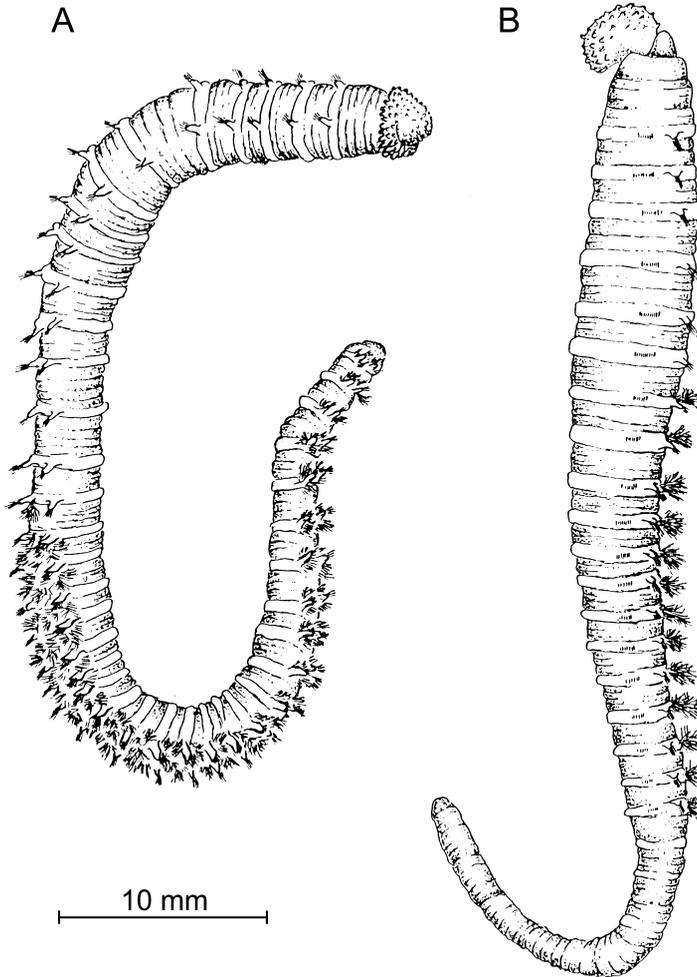


Fig. 1. A: *Arenicolides ecaudata* (Johnston), dorsolateral view. Specimen from Turtelsvik, Lysefjorden (Location C), 3 m depth, collected 14 August 1998 (original). B: *Arenicola marina* (L.) (modified from Fauchald 1977).

north-facing bay on Horgo island, Austevoll archipelago, in a narrow sound, protected from direct wave action, but exposed to ground swells. Salinity was stable between 31 and 33 psu at 5 m depth from March to October 1998, while the temperature measured in the same period ranged from 5.5 to 14.5 °C. Sediments in the area were dominated by coarse boulders with patches of cobble ground and calcareous sand with shell fragments. Sixteen specimens were found at 5-10 m depth, after random suction sampling of eight 0.5 m<sup>2</sup> squares of the bottom. This gives a mean density of 4 specimens per m<sup>2</sup>.

Location B (60°11'N, 5°28'E) was situated at Osøyro in the Bjørnafjord, in a shallow south-facing bay on the east side of a long breakwater. The location is close to

the river Os and protected from the freshwater outlet only by the breakwater. Large seasonal salinity variations occurred in the surface layer, with salinities down to 16 psu. From March to October the salinity fluctuated from 27.5 to 31 psu in the upper 5 m, while the temperature ranged from 4.5 to 15 °C. The bottom consisted of coarse calcareous sand with shell fragments interspersed with cobble ground. Four specimens were found at 3-7 m depth, after random suction sampling of eight 0.5 m<sup>2</sup> squares of the bottom. The average density was 1 specimen per m<sup>2</sup>.

Location C (60°13'N, 5°19'E) was situated in the inner part of Turtelsvik in the Lysefjord, inside the Korsfjord, in a narrow, south-facing bay protected from ground swells. Salinity in the upper 5 m was intermedi-

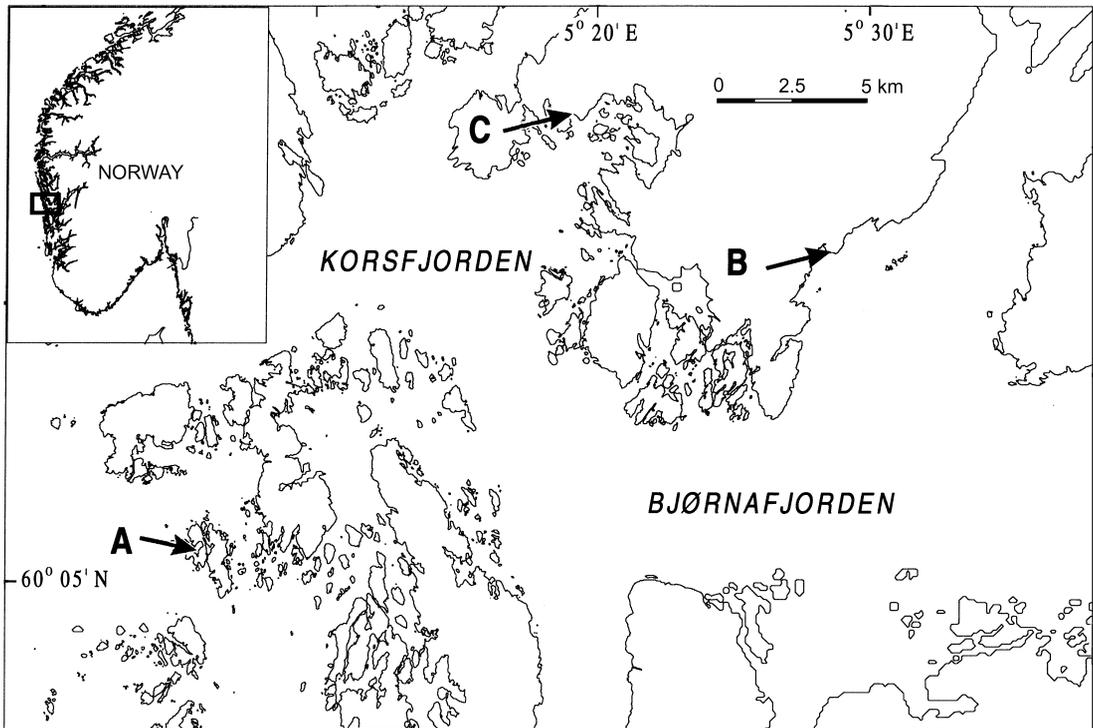


Fig. 2. Locations A, B, and C of present records of *Arenicolides ecaudata* in Hordaland county, Norway.

ate compared to Location A and B and fluctuated between 30 to 32 psu at a depth of 5 m from March to October 1998, while the temperature was the same as at Location B. The bottom was dominated by sandy sediments interspersed with patches of cobble. The sediments consisted of a 15–20 cm thick layer of fine sand and mud overlaying firm sand. The location was protected against strong currents and wave action. Two specimens were found at 2–8 m depth, after random suction sampling of nineteen 0.5 m<sup>2</sup> squares of the bottom. The average density was not more than 0.2 individuals per m<sup>2</sup>.

The geographic distribution of *A. ecaudata* is reported to range from the Mediterranean to the North Sea (Hartmann-Schröder 1996). It has been found in the Danish sector of Skagerrak (Kirkegaard 1996) and in Bohuslän in Sweden (Hansson 1994). The species is mostly found on bottoms with sand and stones (Fauvel 1927). In the present study, the highest density was found at the most exposed location under rather stable hydrographic conditions, near the North Sea. The species was present in lower densities inside the fjord systems at localities influenced from freshwater input.

The coast of Hordaland county has been extensively investigated by marine zoologists. This is demonstrated

by the number of macrobenthic invertebrates reported from the area (about 2200), which by far outnumbers any other region in Norway (Brattegard & Holthe 1997). The present finds of *A. ecaudata* suggest that the species may previously have been overlooked, with the possible exception of the old unverified records, or is found in habitats which have not been sampled adequately with traditional methods. It is possible that the present finds may be attributed to the use of the suction sampler. This device is expected to be a useful tool for sampling benthic cryptofauna on cobble grounds. We hope that the present study will provide an increased awareness of the taxon and contribute to clarification of its occurrence in faunal assemblages along the Norwegian coast.

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