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Brief report

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Ophryotrocha sp., the first report of a jawed polychaete from the Cretaceous of Skåne, Sweden

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An incomplete jaw apparatus of a Cretaceous polychaete congeneric with the Recent *Ophryotrocha*, was recovered in a palynological sample from Skåne, southern Sweden. This is the first record of a jawed polychaete from the Cretaceous of Sweden.

Relatively few jaws (scolecodonts) and jaw apparatuses of Mesozoic polychaete species have been described so far (e.g., Corradini & Serpagli 1968; Szaniawski 1974; Szaniawski & Imajima 1996; Courtinat *et al.* 1991, and references therein). Hence, the knowledge of jawed polychaetes of this age is unsatisfactory and represents a gap in our understanding of the Phanerozoic record of the Polychaeta. Nonetheless, many post-Palaeozoic scolecodonts are very similar to those of Recent polychaetes and can be assigned to extant families and genera, and thereby provide information about the phylogeny and evolutionary development of these worms (Szaniawski & Imajima 1996).

Polychaete jaws have been discovered during an ongoing palynological study of cuttings from a series of shallow wells from the southwestern part of the Vomb Trough in Skåne (Scania), southern Sweden. The boreholes, which penetrated Cretaceous and Jurassic strata, were drilled between the years 1965–90, and sampled by the Geological Survey of Sweden (SGU). Material from these borings are housed at the Geological Survey Well Archive in Lund. One of the samples, tentatively dated as Coniacian–Santonian in age based on its dinoflagellate content, yielded an incomplete polychaete jaw apparatus, which strongly resembles previously described Mesozoic forms and is considered to be congeneric with the Recent *Ophryotrocha*. The specimen is deposited at the Department of Geology, Lund University, Sweden.

Systematic palaeontology

Scolecodont terminology follows Kielan-Jaworowska (1966) and Jansonius & Craig (1971). The term pulp cavity is preferred to myocoele opening, to be consistent with the terminology used for previously described fossil *Ophryotrocha* specimens (cf. Szaniawski 1974).

Family Dorvilleidae Chamberlin, emend. Eibye-Jacobsen & Kristensen, 1994

Genus *Ophryotrocha* Claparède & Metschnikow, 1869

Type species: *Ophryotrocha puerilis* Claparède & Metschnikow, 1869.

Remarks. — For discussions of the taxonomic status of genus and family, see Szaniawski & Wrona (1987), Orensanz (1990), Eibye-Jacobsen & Kristensen (1994), and Fauchald & Rouse (1997).

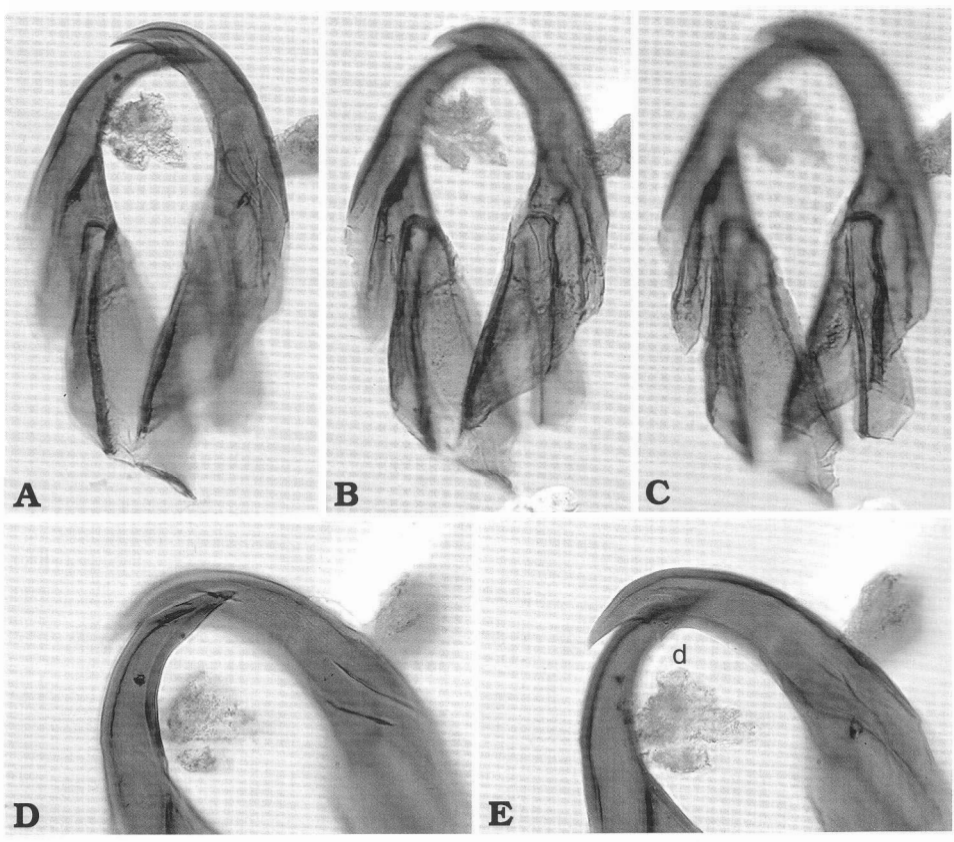

Fig. 1. *Ophryotrocha* sp., LO 8123 (deposited at the Department of Geology, Lund University, Sweden), sample 20804, slide 1, England Finder coordinates U33/3. All in dorsal view. **A–C**. Focus on uppermost surface and successively lower; × 390. **D, E**. Anterior region, hooks; × 550. **D**. Focus on upper surface of left MI. Note terminations of pulp cavities. **E**. Focus on hook of right MI showing the accessory denticle (d).

Ophryotrocha sp.

Figs. 1, 2.

Material. — One incomplete jaw apparatus consisting of fused left and right first maxillae (MI), LO 8123. Palynological strew slide; specimen mounted in epoxy on a slide with a cover glass.

Locality. — SE Vomb Trough, Skåne, southern Sweden; Borehole no. 94, Map sheet Tomelilla 2DSV, Swedish National Gridcoordinates 6153059 1367708, sample 20804:1, interval 70–75 m, Coniacian–Santonian, lithology: claystone.

Description. — The apparatus is very small, measuring 0.16 mm in total length, and 0.09 mm in total width. The length/width of the right MI is 0.14/0.05 mm and that of the left MI is 0.15/0.06 mm. The jaw walls are extremely thin and appear fragile, particularly posteriorly, and both jaws are somewhat compressed which has resulted in folds and ridges. The hollow jaws are almost symmetrical and taper strongly anteriorly, ending in medially bent, pointed hooks, which are indistinctly separated from the basal parts (Figs. 1A–C, 2A). The hook of the left MI is placed above that of the corresponding right jaw in the apparatus (Fig. 1D).

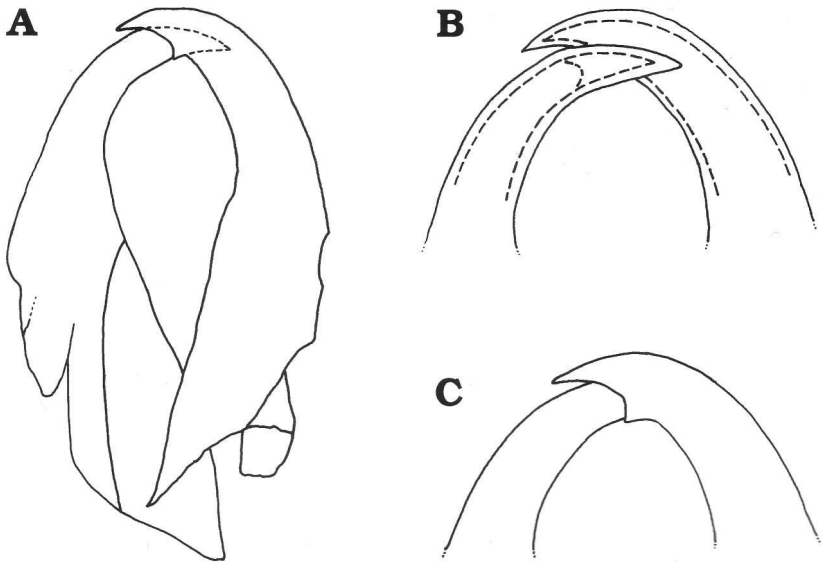

Fig. 2. Drawings of LO 8123. **A**. The entire specimen. **B**. The anterior hooks, stippled lines show the outlines of the internal anterior terminations of the pulp cavities. **C**. The anterior hooks showing the accessory denticle in right MI.

The jaws are loosely fused in the posteriormost region. The lateral inner surfaces are flat, tapering anteriorly and terminating in an angular tip from where the inner margin continues anteriorly. The convex outer margins are smoothly curved. The inner margins are sub--parallel to the outer margins and diverge almost evenly posteriorly.

It appears as if there are three separate cavities in each jaw (tripartite cavities). This is most obvious in the left MI. The posteriormost aperture is the largest one and appears sub--rectangular in shape. Successively the apertures become smaller anteriorly.The anteriormost apertural edges of the pulp cavities terminate anteriorly at 0.55 of length in the right MI and at 0.62 of length in the left MI. Inside of the hooks, the anterior terminations of the pulp cavities are visible. Two pulp cavities appear to terminate inside the hook of the left MI, one which is sharply pointed very close to the tip of the hook and the other, less distinct, which is rounded and more posteriorly placed. (Figs. 1D, 2B). Only a sharply pointed termination is visible inside the hook of the right MI (Figs. 1E, 2B).

The left MI is smooth and has no accessory denticles whereas the right MI has a bifid right hook; a small denticle on the inner margin, posterior of the tip of the hook (Figs. 1E, 2C). Posterior of this denticle, the inner margin appears somewhat jagged. This may be the evidence of minute-sized denticles or, more probably, a result of taphonomy. Microstructurally, the outer surfaces of the jaws are finely striated, particularly anteriorly, whereas the inner walls of the pulp cavities are micro-granulated.

Remarks.— No anterior maxillae or carriers were preserved. However, the characteristic overall morphology and size of the first maxillae, coupled with the similarities to previously known taxa, strongly suggest that it belongs to genus *Ophryotrocha*.

The jaw apparatuses of *Ophryotrocha* undergo dramatic ontogenetic transformations and thus the juveniles ('P-type') differ markedly from the adults ('K-type') (e.g., Szaniawski & Wrona 1987; Orensanz 1990). However, a few species (the *gracilis* group) retain their juve-

nile 'P-type' jaw apparatus throughout life (B. Åkesson personal communication 2000, Göteborg).The present specimen represents an adult ('K-type') jaw apparatus with typical large forceps-like first maxillae (cf. Szaniawski & Wrona 1987: p. 110, figs. 2, 3).

Fossil specimens assigned to the genus *Ophryotrocha* have been described and/or depicted by Corradini & Serpagli (1968: pl. 1: 1), Szaniawski (1974), Szaniawski & Wrona (1987), and Courtinat *et al.* (1991: pl. 2: 1, 2). The overall morphology of all these are similar (for differing characters see, Szaniawski & Wrona 1987: p. 111) and closely resemble the present specimen. *Ophryotrocha* sp. resembles *O. antarctica* Szaniawski & Wrona, 1987, from the Lower Miocene of Antarctica, in having an accessory denticle adjacent to the tip of the hook in the right MI, i.e. a bifid right hook (Szaniawski & Wrona 1987: pl. 25: 8, pl. 26: 2a), whereas the left MI of both species lack a corresponding feature. However, the accessory denticle in *Ophryotrocha* sp. (Fig. 1E) is smaller than that in *O. antarctica* which Szaniawski & Wrona (1987) described as if the point of the hook (or falx) is split in two fully grown individuals. The Jurassic species *O. lukowensis* Szaniawski, 1974, differs from *O. antarctica* and *Ophryotrocha* sp. in having MI with bipartite and not tripartite pulp cavities and a hook which is much more distinctly separated from the basal part.

Ophryotrocha sp. is closely similar to the Recent species *O. labronica* La Greca & Bacci, 1962, in having a small accessory denticle on the right MI (see La Greca & Bacci 1962: fig. 9.12, 11, 12; Szaniawski 1974: fig. 1b). This feature is characteristic of a large group of extant gonochoristic species within the genus, namely the *labronica* group, and Pleijel & Eide (1996) list a dozen species with a bifid right hook. Thus, jaws of *Ophryotrocha* with a bifid right hook, appeared already in the Mesozoic. In comparison, in *O. puerilis* both sides end with single pointed hooks whereas *O. maculata* Åkesson, 1973, and *O. hartmanni* Parenti, 1961, have bifid hooks on both sides.

The largest extant *Ophryotrocha* species described so far, *O. geryonicola* (Wesenberg-Lund 1938) also has the longest 'K-type' forceps reported, about 0.4 mm. Interestingly, the jaw apparatus of *Ophryotrocha* sp. is rather small (0.16 mm) in comparison to the corresponding structures in extant species (about 0.24 mm) (cf. La Greca & Bacci 1962; Pfannenstiel 1972). According to B. Åkesson (personal communication 2000) the worm carrying the described jaws was merely two to three millimetres long. As this 'K-type' apparatus is an adult structure that is only found in sexually mature individuals, the size of the present specimen indicates that Cretaceous *Ophryotrocha* species could be very small.

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