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POLYCIRRINAE

Garwood P.R. (1994)

Polychaeta Colloquium

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FAMILY TEREPELLIDAE

SUBFAMILY POLYCIRRINAE

The family Terebellidae is divided into 4 subfamilies, the Artacaminae, Amphitritinae, Thelepodinae and Polycirrinae. In British waters, the Polycirrinae is represented by 4 genera - *Amaeana*, *Hauchiella*, *Lysilla* and *Polycirrus*.

The Polycirrinae all lack gills (as do some genera in the Amphitritinae), and their chaetal complement is reduced to varying degrees. In *Hauchiella* chaetae are entirely absent, in *Lysilla* neurochaetae are absent, whilst in *Polycirrus* and *Amaeana* both neurochaetae and notochaetae are present, although neurochaetae may or may not be present on thoracic segments. The neurochaetae of *Polycirrus* are uncini, whilst those of *Amaeana* are acicular in shape.

Genus *Amaeana*

This is represented by a single species, *Amaeana trilobata* (Sars, 1863). It is characterised by the presence of 10 thoracic segments with notochaetae which barely emerge from the parapodia. The first 5 or 6 abdominal setigers lack the acicular neurochaetae which occur on the remaining abdominal segments.

Genus *Hauchiella*

Again represented by a single species, *Hauchiella tribullata* (McIntosh, 1869). Although chaetae are entirely absent, the thorax bears 5 pairs of structures laterally, in the position where parapodia would be expected, these being thought to be connected to the nephridia. The junction between the thorax and abdomen is distinct, indicated by a change in the appearance of the epidermis.

Genus *Lysilla*

Once more, this genus is represented by a single species, *Lysilla loveni* Malmgren, 1866. It is characterised by the presence of 6 thoracic segments with notochaetae. Segmentation is not obvious, and the abdomen is long and tubular and fragments readily. The thorax is densely reticulate, almost papillate in appearance, whilst the abdomen is essentially smooth.

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Genus *Polycirrus*

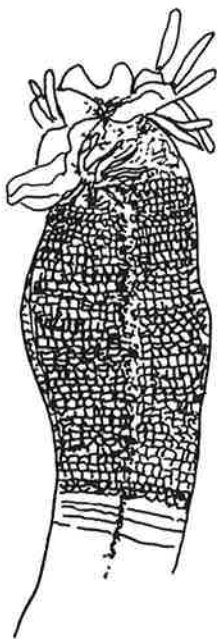
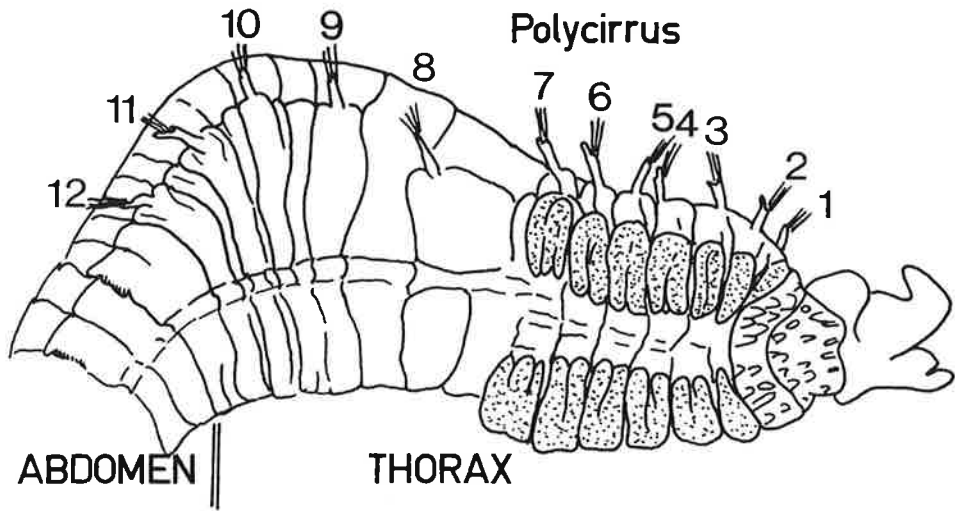
The number of British species in this genus is presently the subject of much confusion. Of the 8 species covered by Holthe, all are likely to be found in British waters, although *P. arcticus* Sars, 1865 is likely only in the northern North Sea. There is also the possibility of further species being found, particularly in southern waters, giving a potential starting list of :

- Polycirrus arcticus* Sars, 1865
- Polycirrus arenivorus* Caullery, 1916
- Polycirrus aurantiacus* Grube, 1860
- Polycirrus caliendrum* Claparede, 1868
- Polycirrus denticulatus* Saint-Joseph, 1894
- Polycirrus haematodes* (Claparede, 1864)
- Polycirrus latidens* Eliason, 1962
- Polycirrus medusa* Grube, 1850
- Polycirrus norvegicus* Wollebaek, 1912
- Polycirrus plumosus* (Wollebaek, 1912)
- Polycirrus tenuisetis* Langerhans, 1880

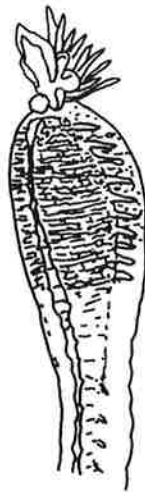
However, it should be emphasised that most of these species are poorly described and there is a strong possibility that some represent synonyms of others. Additional species may also be present. The major problems with *Polycirrus* specimens are that they are fragile, that much emphasis has been placed on the number of thoracic setigers and the first setiger to bear neuropodial uncini, and that few workers even attempt to identify them to species.

A brief study of local *Polycirrus* material, has suggested that there are characters available to separate species, even in species which fragment easily. By placing more emphasis on the appearance of the ventrum of the thorax, concerning the details of the segmental glandular pads (the unpaired ventral cushion and the paired ventral shields of Holthe), I am sure some progress can be made. Similarly the shape of the thoracic notopodia may be important, as can major differences in the chaetae, in the number of thoracic setigers and the first setiger to bear uncini. Other characters mentioned in the literature include the shape of the upper lip and tentacular ridge, to which the feeding tentacles are attached.

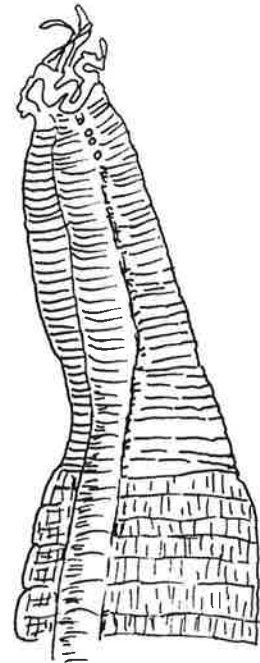
Myles O'Reilly (Clyde River Purification Board) has gathered together information on *Polycirrus* species from the literature, and has kindly allowed me to reproduce it here.



Lysilla



Amaeana



Hauchiella

Summary of British and European Polycirrus species.

Species	Ventral cushion	Paired Shields	Paired Nephridia	No. of notosetae	Notosetae begin	Notosetae type	Uncinigers begin	Length (mm)
<u>P. arcticus</u> Sars, 1865	indistinct	indistinct	27	15-22	seg. II	smooth	set. 13-14	60
Distribution - Greenland, Iceland, Faroes, near Shetland, Norway, Canadian Arctic.								
<u>P. arenivorus</u> Caulley, 1916	?	10-16	6	28-30	seg. II	smooth	set. 13	60-80
Distribution - French Channel Coast								
<u>P. aurantiacus</u> Grube, 1860	narrow	8-11	3	30-40	seg. II	smooth + pectinate	set. 8-12	100
Distribution - Shetland, Suffolk, Clyde, Spain, Mediterranean, Angola								
<u>P. caliendrum</u> Claparede, 1868	?	8-11	6	30-70	seg. III	smooth	set. 9-12	100
Distribution - Outer Hebrides, Norfolk, Plymouth, W. Ireland, Irish Sea, Black Sea, Mediterranean, Pacific								
<u>P. denticulatus</u> Saint-Joseph, 1894	?	8-10	6	13-18	seg. II	smooth + pectinate	set. 9-12	8-20
Distribution - French Channel coast, W. Ireland, Mediterranean								
<u>P. haematodes</u> (Claparede, 1864)	?	8-10	6	14-22 (27?)	seg. II	smooth	set. 13	30
Distribution - E. & W. Scotland, W. Ireland, Channel, Spain, Madeira, Mediterranean, S. Africa								
<u>P. latidens</u> Eliason, 1962	broad	4	6	12	seg. II	smooth?	set. 13	53+
Distribution - Skagerrak, Kosterfjord								
<u>P. medusa</u> Grube, 1850	broad	6	6(??)	10-13	seg. III	pectinate?	set. 13-14	70
Distribution - Circumpolar, N. Sea, Irish Sea, W. Ireland, Biscay, Mediterranean								
<u>P. norvegicus</u> Wollebaek, 1912	narrow	8-9	6(??)	14-20 (up to 36?)	seg. III	smooth	set. 8-13 (up to 19?)	36 (up to 50)
? Syn. <u>P. elizabethae</u> McIntosh (1915)								
Distribution - Greenland, Norway, North Sea, Clyde and Argyll								
<u>P. pallidus</u>	?	?	6	11-19	?	smooth?	set. 7	50
Distribution - Mediterranean, Madeira								
<u>P. plumosus</u> (Wollebaek, 1912)	indistinct	indistinct	6(7)	17-19	seg. II	smooth + plumose	set. 18-20?	36
Distribution - N. Sea, Irish Sea, Clyde, Argyll, Faroes, Norway, S. Africa.								
<u>P. tenuisetis</u> Langerhans, 1880	?	?	3	12-19	?	smooth	set. 7-10	16
Distribution - Channel, Madeira, S. Africa								

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Most of the material seen at the workshop came from the North Sea, with quite a number of species represented. Specimens of *Hauchiella tribullata* (McItosh, 1869) were seen, corresponding very well to the available illustrations. Similarly *Lysilla loveni* Malmgren, 1866 and *Amaeana trilobata* (Sars, 1863) turned up, both of which were generally represented by anterior fragments (thorax plus anterior abdomen).

Amongst the species of the genus *Polycirrus*, the following species were recognised:

- Polycirrus arcticus* Sars, 1865
- Polycirrus latidens* Eliason, 1962
- Polycirrus norvegicus* Wollebaek, 1912
- Polycirrus medusa* Grube, 1850
- Polycirrus plumosus* (Wollebaek, 1912)

Number of thoracic setigers and the first segment with uncini

In species with a relatively small number of thoracic setigers, such as *P. medusa*, then that number is relatively consistent. In the others, it is clear that the number of thoracic setigers is dependent on the size of the individual animal. Consequently this feature is of limited value unless reasonable numbers of specimens of a reasonable size range are available. The first segment to bear uncini may be the first abdominal setiger, but uncini are present on some thoracic segments in many species. The precise setiger which bears the first uncini may be extremely difficult to establish in these species.

Ventral cushion and ventral shields

The ventral cushion is a structure at the extreme anterior end ventrally, forming the lower lip. Its size, shape and ornamentation appears to be species specific. The ventral shields are paired structures, situated ventro-laterally on anterior thoracic segments, and appear to be glandular in function. The glands they contain are sometimes seen to have released their contents on fixation.

Polycirrus medusa

This is without doubt the most widely recorded member of the genus, although not necessarily correctly identified. It is characterised by a relatively small number of thoracic setigers (10-13), with uncini beginning on the first abdominal segment. The ventral cushion, forming the lower lip, is very wide, divided into anterior and posterior portions, and has a characteristic ornamentation. Problems remain however, in that there are populations which have 12 thoracic setigers consistently, whilst others consistently have 13.

Polycirrus norvegicus

Whilst this species is described as having a minimum of 14 thoracic setigers, it generally has many more, up to 30 at least. The number does appear to be related to body size, as one would expect. Neuropodial uncini are certainly present on some posterior thoracic segments, but the segment where they first appear is generally very difficult to ascertain. The ventral cushion is relatively narrow, with characteristic

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longitudinal striations, and there are distinct paired ventral shields. On setiger 1, the ventral shields are thin and rather insignificant, whilst on setigers 2-8 they are obvious occupying the whole of the each side of the ventrum of these segments, with only a small mid-ventral gap. On subsequent segments the ventral shields occupy only part of the segment length, getting progressively smaller, and less distinct until they ultimately disappear. This species usually breaks into an anterior fragment of 9, 10 or 11 setigers, and the remainder of the animal, although smaller specimens appear less prone to fragmentation. The thoracic notopodia have obvious post-chaetal flaps.

Polycirrus plumosus

This species has 17-19 thoracic setigers, with uncini beginning on the first abdominal segment (?). The ventral cushion is narrow, and the thoracic ventrum is covered by a reticulate almost papillate glandular region, except for a small mid-ventral gap. Within this reticulate structure, setiger 1 is relatively distinct, whilst the segmental boundaries are not recognisable ventrally over setigers 2-8. They then re-appear between setigers 8 and 9, and are visible between subsequent segments. This species also fragments readily, usually into an anterior fragment of about 10 setigers and several other pieces. The tube-like region of the gut which occurs in the anterior abdomen may be found on its own. The thoracic notopodia have obvious post-chaetal flaps.

Polycirrus arcticus

This species is described as having 15-22 thoracic setigers, with uncini beginning on setiger 13 or 14. The thorax is characteristically narrow, and whilst the ventral shields are described as being indistinct, they are visible.

Polycirrus latidens

This species has 12 thoracic setigers, with uncini beginning on the first abdominal segment. It is readily recognisable by the fact that the glandular ventral shields of the thoracic ventrum are very limited in their extent. They occur only on the first 6 thoracic setigers, following the large ventral cushion which has signs of a line along its mid-line. In the material I have seen, the details of the ventral shields are difficult to see, as the glands of which they are composed have expanded and released some of their secretions. Posterior to setiger 6, the ventral body wall is very thin, and the internal organs are visible through it. The uncinigerous tori are very distinct, in contrast to most other *Polycirrus* species. The thoracic notopodia have rather bulbous tips.

One further species was seen, which appears to represent a second species of the genus *Lysilla* in that it has no neurochaetae at all. The thorax consists of 8 setigers, with rather small notochaetal lobes, and the glandular areas of the thoracic ventrum are not really distinct. This species was recognised by Sue Hill of ERT, and is currently under investigation.

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There is clearly a need for a great deal more work on the British Polycirrinae, and it is not suggested that the species discussed above are the only ones likely to be encountered. For example, *Polycirrus aurantiacus* Grube, 1860, *P. caliendrum* Claparede, 1868 and *P. haematodes* (Claparede, 1864) have all been recorded, but the available descriptions are poor. No material which has been assigned to any of these species has yet been seen. The taxonomy of the genus *Polycirrus* in particular remains very confused, and it is not yet clear how many species are represented in the British fauna.

As a first step, I hope to produce drawings of ventral views of the thoraces of the material available to me, together with more detailed descriptions. Whilst I shall begin by using the species names as outlined above, there may well be need for changes in the future. Any further material would be very gratefully received, especially anything which appears not to belong to the species considered here.