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REDESCRIPTION OF *HELMETOPHORUS RANKINI* HARTMAN, 1978 (POLYCHAETA: HELMETOPHORIDAE) AND ITS TRANSFER TO THE FLABELLIGERIDAE

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Abstract.—The only representative of the Helmetophoridae, *Helmetophorus rankini* Hartman, 1978, is redescribed and transferred to the Flabelligeridae. The species shares in common with the Flabelligeridae a papillated body surface, a buccal region with branchiae and grooved palps that is covered (partially) by a cephalic hood, weakly developed parapodia, and cross-barred capillaries.

The Helmetophoridae is currently represented by a single species, *Helmetophorus rankini* Hartman, 1978, collected from the Weddell Sea, Antarctica in 3111 m. The species has not been recorded since the original description. During a recent study of phylogenetic relationships of nereidoid polychaetes by CJG, it was found that Helmetophoridae was assigned to the order Phyllodocida: superfamily Nereidoidea by George & Hartmann-Schröder (1985:23). The classification of the Helmetophoridae was influenced by Hartman's (1978) opinion that *H. rankini* resembled the Hesionidae in having the first three segments with tentacular cirri, a muscular eversible proboscis, and biramous parapodia. We have examined the type specimens of *H. rankini,* plus an additional specimen from near the type locality, and find that this species should be transferred to the order Flabelligerida: family Flabelligeridae.

Order Flabelligerida
Family Flabelligeridae
Saint-Joseph, 1894
Genus *Helmetophorus* Hartman, 1978

Type species.—*Helmetophorus rankini* Hartman, 1978 by monotypy.

Diagnosis.—Flabelligerids with buccal apparatus (prostomium and peristomium) partially covered by cephalic hood. Oral tube non-retractile, cylindrical and muscular. Branchiae, 5 pairs, of 2 types: 3 pairs clavate-cirriform, arising from reduced branchial membrane; 2 pairs foliaceous, arising posteroventrally to branchial membrane. First parapodia lacking neuropodia (and neurosetae), subsequent ones with both neuropodia and notopodia. All setae cross-barred capillaries. Anterior setae directed forward, but not prolonged and cage-forming.

Remarks.—The most remarkable feature of this genus is the prominent oral tube, which appears not to be retractable. Other flabelligerids having an oral tube include *Buskiella* McIntosh, 1885; *Therochaeta* Chamberlin, 1919; and *Therochaetella* Hartman, 1967. *Helmetophorus* differs in lacking a true cephalic cage, and in having an extremely reduced branchial membrane with few branchial filaments. The genus also shows some resemblance to *Diplocirrus* Haase, 1915, in having branchial filaments of two types; however, *Diplocirrus* has 4 pairs of branchiae (Fauchald 1977:116). The generic groupings within the Flabelligeridae are poorly understood (Chamberlin 1919: 397, Fauchald 1972:213), and it is not possible to further evaluate the relationship of *Helmetophorus* within the family at this time.

Helmetophorus rankini Hartman
Fig. 1a–d

Helmetophorus rankini Hartman, 1978:145, fig. 11a–f.

Material examined.—Holotype: USNM 46748, Antarctic Ocean, Weddell Sea, 73°28.4′S, 30°26.9′W, USCGC *Glacier* Cr. 2, Sta. 22, 3111 m, coll. J. S. Rankin, 13 Mar 1969. Paratypes: 4 (USNM 46749), collection details as for holotype. Non-type: 1 (USNM 97424), Antarctic Ocean, Weddell Sea, 73°52′S, 31°18′W, USCGC *Glacier* Cr. 2, Sta. 21, 2288 m, coll. J. S. Rankin, 13 Mar 1969, det. K. Fauchald.

Description.—Holotype complete with 22 setigers, 6.5 mm long, 0.8 mm wide maximally; left 4th parapodium removed, not 3rd as indicated by Hartman (1978: fig. 11d); moderately-well preserved, many setae damaged.

Body inflated anteriorly, widest at setiger 9, tapering greatly after setiger 12 to well defined tail; color in alcohol white, setae clear; body papillae minute (18–24 μm long), clavate, sparsely covering dorsum and ventrum, more abundant on parapodia with additional 2–3 larger papillae (0.1–0.4 mm long) on presetal and/or postsetal lips (Fig. 1c, d); mucous coat or encrusted sand grains absent.

Prostomium rounded dorsally, ill-defined anteriorly merging into oral tube; eye-spots absent (Fig. 1a). Oral tube cylindrical, muscular with pair of inner dorsal lips arranged in sagittal plane, separated by deep medial groove (Fig. 1b). Palpal scars anterolateral to prostomium (Fig. 1a, b). Cephalic hood helmet-like dorsally, low and collar-like ventrally, extending anteriorly to branchial membrane (Fig. 1a). Branchial membrane ridge-like, convoluted laterally, extending across dorsum behind prostomium posteriorly (Fig. 1a, b). Branchiae, 5 pairs, arranged as follows (B4 and B5 absent in holotype, arrangement inferred by scars): B1 arising laterally from anterior end of branchial membrane; B2 arising dorsolaterally from dorsal crest in branchial membrane; B3 arising posterior to B2 from branchial membrane between ventral loop and middorsal region; B4 arising laterally just below ventral loop of branchial membrane; and B5 arising just dorsolaterally to B4 (Fig. 1a, b).

Parapodia low, first pair with notopodia only, remaining pairs with both noto- and neuropodia; anterior parapodia directed anterolaterally (Fig. 1a), posterior parapodia directed posterolaterally. Notopodia and neuropodia with small retractile conical lobes and small bundles of setae; distance between noto- and neuropodia similar throughout (Fig. 1c, d). True aciculae absent, although 6 or so fine, short internal spines present ventral to neurosetae (Fig. 1c, d).

All setae cross-barred capillaries, posterior ones appearing to have tips with weaker bars (Fig. 1c, d); setae of parapodia in midbody generally slightly longer than those of anterior and posterior parapodia. Notosetae and neurosetae similar within parapodium, with 3–7 capillaries in each bundle, varying in basal width (3.5–8.8 μm) and length (about 0.5 to almost 2 times body width).

Anus terminal; no indication of anal cirri.

Variation.—Paratypes approximately same size and numbers of setigers as holotype, generally poorly preserved. Body widest over setigers 6–9. Head region more extended (i.e., cephalic hood retracted) than in holotype, exposing smooth posterior buccal region. B1–B3 usually absent or damaged; B4, B5 absent, branchial scars difficult to discern. Non-type specimen with B4 present, foliaceous, similar in length to clavate-cirriform type; one palp present, weakly grooved, extending just beyond oral tube.

Remarks.—Since Hartman (1978) considered this species to resemble Hesionidae, her terminology and interpretation of certain head-end characters reflected that opinion. For example, she considered the first four segments to be achaetous, with segments 1–3 each having a pair of tentacular

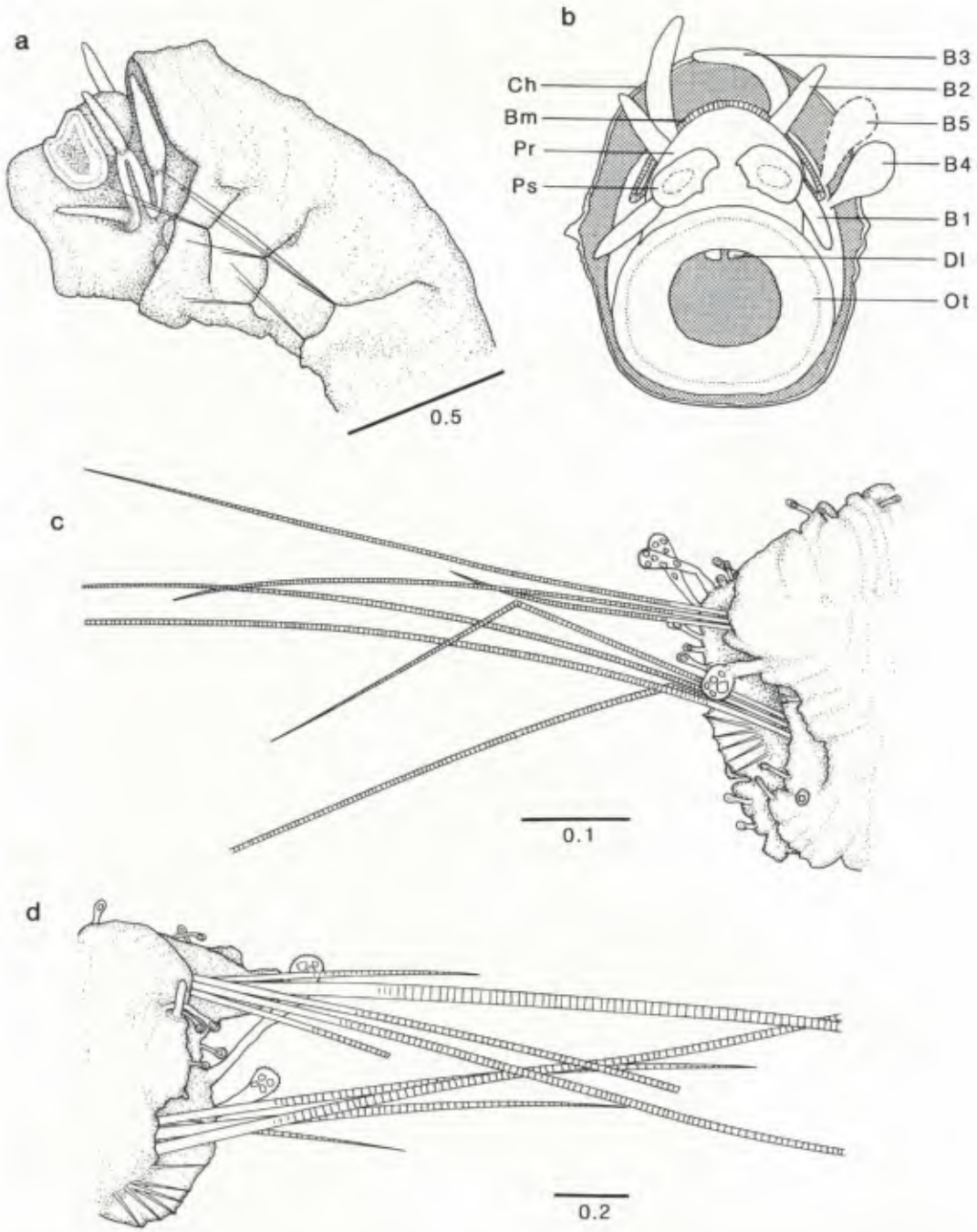

Fig. 1. *Helmetophorus rankini:* a, Holotype, head-end, lateral view (B1, B2 illustrated from other material; B4, B5 absent, scars only visible); b, Diagrammatic representation of head-end, frontal view (B4, B5 of left-side not shown); c, Paratype, left parapodium 6, posterior view; d, Paratype, left parapodium 15, anterior view. Abbreviations: B1–B5 = branchiae; Bm = branchial membrane; Ch = cephalic hood; Dl = dorsal lip; Ot = oral tube; Pr = prostomium; Ps = palpal scar. All scale bars in mm.

cirri and segment 4 being long and necklike. These so-called segments are here considered to be a part of the buccal apparatus (i.e., pre-segmental), and her tentacular cirri are interpreted as branchiae. Hartman overlooked the branchial scars of the posterior 2 pairs of branchiae (B4, B5).

There remain some questions concerning the origin and function of the branchial appendages in this species. Branchiae 4 and 5 may not be homologous with B1–B3 because the latter arise from the branchial membrane and are clavate-cirriform in shape, whereas B4 and B5 arise posterior to the branchial membrane and B4, at least, is foliaceous. None of the material had B5 present and the shape of this structure is unknown. However, as flabelligerids may have 2 different types of branchial appendages (e.g., *Diplocirrus* species), for the present all 5 pairs are tentatively considered to be branchiae. A phylogenetic revision of the family may serve to clarify this point.

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