

MINUSCULISQUAMA HUGHESI, A NEW
GENUS AND SPECIES OF SCALE WORM
(POLYCHAETA: POLYNOIDAE) FROM
EASTERN CANADA

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Abstract.—A new polynoid polychaete, *Minusculisquama hughesi* n. gen., n. sp., from Northumberland Strait and Nova Scotia is described. The species is remarkable for its elongate and flattened body with only 15 pairs of minute elytra confined to the anterior region. It shows features characteristic of some polynoids found living commensally in the tubes of other polychaetes.

Some polynoids from Eastern Canada were sent to me for identification from two sources. A single specimen from Northumberland Strait, off Prince Edward Island, collected by J. F. Caddy *et al.* in 1975, was sent to me by Mrs. Leslie E. Linkletter of the Biological Station in St. Andrews, New Brunswick. It was collected at station 95 listed by Caddy *et al.* (1977:9). Nine specimens were collected in St. Margaret's Bay, Nova Scotia, by T. G. Hughes in 1976 and sent to me by Mrs. Patricia Pocklington of the Nova Scotia Museum. They were collected at station 1 reported by Hughes (1979:530). The specimens proved to belong to a new genus and species.

The types are deposited in the Biological Station at St. Andrews, New Brunswick (BSNB), the National Museum of Canada, Ottawa (NMC), the Nova Scotia Museum, Halifax (NSM) and the National Museum of Natural History, Smithsonian Institution, Washington, D.C. (USNM).

Family Polynoidae

Minusculisquama, new genus

Type-species.—*Minusculisquama hughesi*, new species.

Diagnosis.—Body elongate, with numerous segments (about 100). Elytra 15 pairs, minute, on slightly developed elytriphores on segments 2, 4, 5, 7, alternate segments to 23, 26, 29, and 32. Dorsal cirri on non-elytra-bearing segments. Dorsal tubercles indistinct. Prostomium bilobed, with small cephalic peaks, 3 antennae, paired palps and 2 pairs of eyes. Median antenna with distinct ceratophore in anterior notch, lateral antennae with ceratophores inserted ventrally and converging midventrally. Tentaculophores of first or tentacular segment lateral to prostomium, achaetous, with 2 pairs of tentacular cirri; without facial tubercle. Second or buccal segment with first pair of elytra, setigerous parapodia and ventral buccal cirri; without nuchal fold. Parapodia subbiramous, notopodia small, with notoaciculum only, without notosetae (rarely single one present). Neuropodia with rounded anterior acicular and posterior lobes, deeply cut dorsally and ventrally, without projecting acicular lobes. Neurosetae stout, relatively few, with few spines, tapering to slender tips; upper ones stouter, smooth, with blunt tips.

Pygidium with pair of anal cirri. Nephridial papillae small, beginning on segment 6. Pharynx with 9 pairs of papillae and 2 pairs of jaws.

Etymology.—The generic name is derived from the Latin, *minusculus*, small, *squama*, scale, referring to the small scales or elytra. Gender: feminine. The species is named for Dr. Trevor G. Hughes, one of the collectors.

Minusculisquama hughesi, new species

Figs. 1–3

Material examined.—EASTERN CANADA: Northumberland Strait off Prince Edward Island, 46°19'20"N, 62°10'10"W, 34 m, red mud over clay, sta. 95, 23 July 1975, J. F. Caddy *et al.*, collectors—paratype, BSNB 2290. St. Margaret's Bay, Nova Scotia, 44°32'N, 63°59'W, 70 m, silty mud and sand, sta. 1, 28 August 1976, T. G. Hughes, collector—holotype, USNM 72887, 3 paratypes, USNM 72888, 2 paratypes, NSM 976Z351.49 and 3 paratypes, NMC 1982-0885-7.

Measurements.—The holotype from St. Margaret's Bay (USNM 72887) is 98 mm long, 7.5 mm wide, including setae, with 108 segments. The length of 3 paratypes from the same collection (USNM 72888) are 66–89 mm, widths 7–8 mm, with 76–113 segments. The single paratype from Northumberland Strait (BSNB 2290) has a length of 46 mm, a width of 5 mm, including setae, with 58 segments plus a small regenerating posterior end of about 10 segments.

Description.—The body is elongate, flattened, of about equal width along the body, tapering slightly anteriorly and posteriorly, with a rather deep midventral longitudinal groove. The body is dusky dorsally, especially on the posterior half and ventrally along the rather deep midventral longitudinal groove and extending laterally as transverse bands.

There are 15 pairs of minute nipple-like elytra on segments 2, 4, 5, 7, alternate segments to 23, 26, 29 and 32. They are not the usual polynoid type and are easily overlooked (Figs. 1A, C, D, 2B). They are somewhat flattened, disc-like, attached to rather indistinct, slightly bulbous elytophores. They lack tubercles; some micropapillae are present on the surface (Fig. 2B). Dorsal cirri are present on the rest of the segments (Figs. 1A, C, F, 2A, D, E, 3A, B, D). Dorsal tubercles on the cirrigerous segments are indistinct.

The prostomium is bilobed with small cephalic peaks (Fig. 1A–C). The median antenna has a large ceratophore in the anterior notch, with a style of about the same length as the prostomium, with a tapered tip. The lateral antennae have small ceratophores inserted ventrally and converge midventrally (Fig. 1B); the styles are subulate and about a third as long as the median antenna. The palps are stout, tapered, slightly longer than the median antenna. The 2 pairs of eyes are rather small, the anterior pair in the region of greatest prostomial width is slightly larger than the posterior pair. The tentaculophores of the achaetous first or tentacular segment are lateral to the prostomium, with 2 pairs of tentacular cirri similar to the median antenna; the dorsal tentacular cirri are about equal in length to the median antenna, the ventral ones slightly shorter. There is no facial tubercle. Segment 2 bears the first pair of small elytra, subbiramous parapodia and ventral buccal cirri that are slightly longer than the following ventral cirri (Fig. 1A–D). Notosetae are lacking. The neurosetae are similar to the following

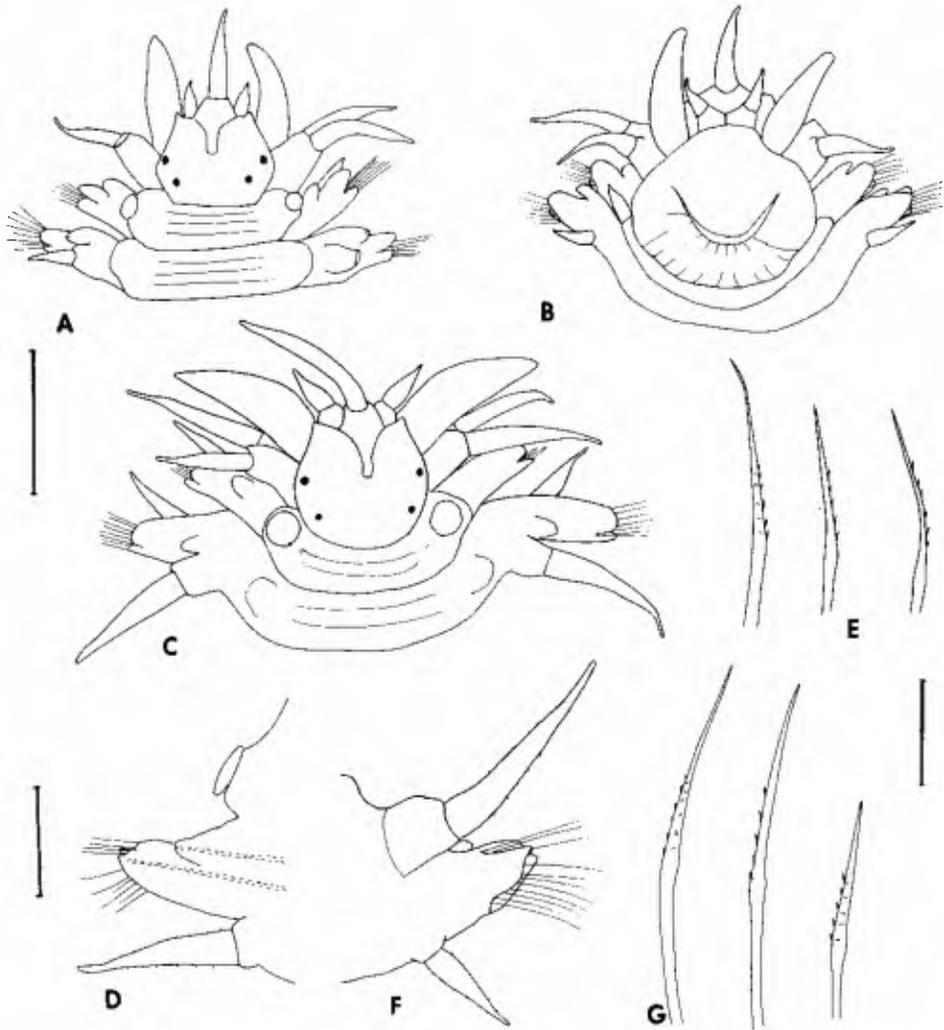


Fig. 1. *Minusculisquama hughesi*. A, B, paratype, BSNB 2290; C–G, holotype, USNM 72887: A, Anterior end, dorsal view, styles of left dorsal tentacular cirrus and right dorsal cirrus from segment 3 missing; B, Anterior end, ventral view, pharynx partially extended; C, Anterior end, dorsal view, left dorsal tentacular cirrus shorter, regenerating; D, Right elytrigerous parapodium from segment 2, anterior view, acicula dotted; E, Upper, middle and lower neurosetae from same; F, Right cirriferous parapodium from segment 3, posterior view; G, Upper, middle and lower neurosetae from same. Scales: = 1.0 mm for A–C; 0.5 mm for D, F; 0.1 mm for E, G.

ones except that they are more slender (Fig. 1E). The ventral mouth is enclosed in the anterior 3 segments (Fig. 1B).

The parapodia are subbiramous and similar along the length of the long body (Figs. 1A–D, F, 2A, B, D, E, 3A, B, D). The notopodia are small, subconical, located on the anterodorsal bases of the neuropodia, each with a notoaciculum only. Notoetae are lacking. However, a single notoseta was found on segment

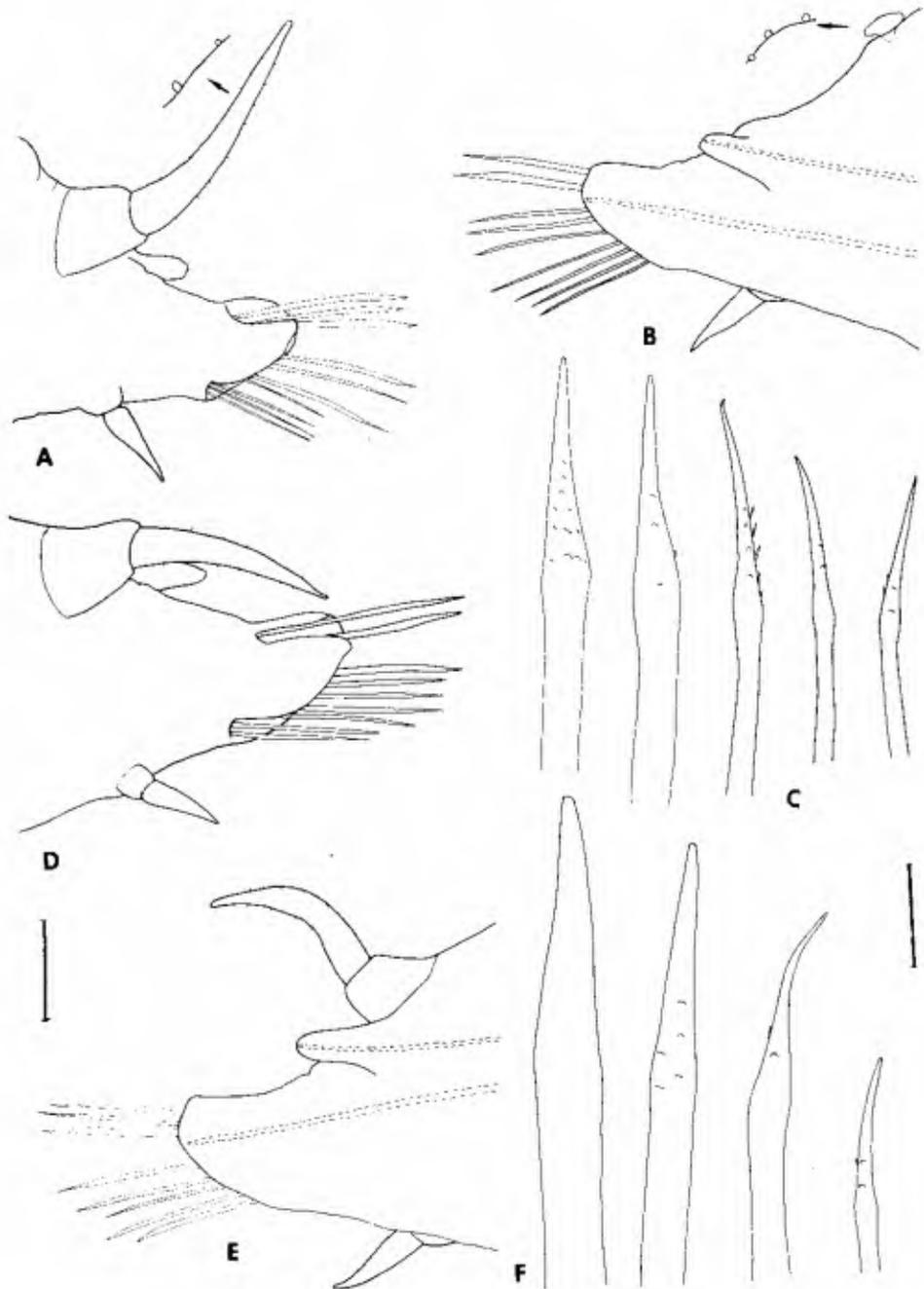


Fig. 2. *Minusculisquama hughesi*, holotype, USNM 72887: A, Right cirriferous parapodium from segment 12, posterior view, micropapillae shown separately; B, Right elytrigerous parapodium from segment 13, anterior view, elytral micropapillae shown separately, acicula dotted; C, Upper, middle and lower neurosetae from same; D, Right middle parapodium (about segment 64), posterior view; E, Same, anterior view; F, Upper, middle and lower neurosetae from same. Scales: = 0.5 mm for A, B, D, E; 0.1 mm for C, F.

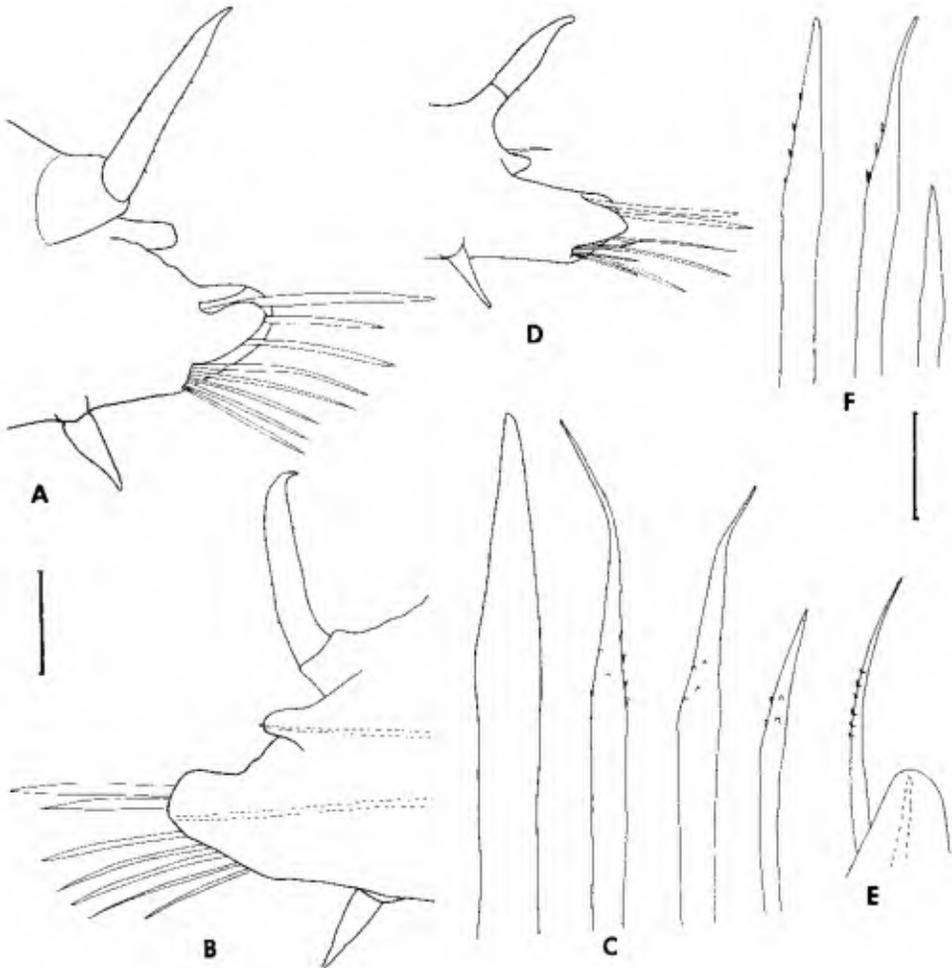


Fig. 3. *Minusculisquama hughesi*, A–C, holotype, USNM 72887; D–F, paratype, USNM 72888; A, Right parapodium from posterior region (about segment 84), posterior view; B, Same, anterior view; C, Upper, middle and lower neurosetae from same; D, Right parapodium from segment 85, posterior view; E, Notoseta and distal tip of notopodium from same; F, Upper, middle and lower neurosetae from same. Scales: = 0.5 mm for A, B, D; 0.1 mm for C, E, F.

85 on one of the paratypes (USNM 72888). It is slender, with 6 spinous rows, and tapers to a slender tip (Fig. 3D, E). The neuropodia are elongate, deeply cut dorsally and ventrally. The presetal acicular lobes are larger, diagonally truncate on the lower half, truncate on the upper half; the postsetal lobes are smaller, subconical and rounded, the upper part straight forming a deep notch with the anterior lobe. The neurosetae are rather stout and relatively few in number (6–13). They are wider subdistally and taper to pointed tips, not hooked (Figs. 1E, G, 2C, F, 3C, F). They are variable in size, the upper ones (1–3) are stouter, darker and smooth, with blunt tips (perhaps worn). The middle and lower neurosetae have a few spines on the wider part (2–4 pairs). The spines may be broken off with only their bases evident. The lower posterior group of neurosetae (4–5)

are shorter and more slender. The dorsal cirri have cylindrical cirrophores attached posterodorsally on the notopodia; the styles are short, tapering and extend to about the tips of the neuropodia or beyond. The styles have scattered micropapillae (Fig. 2A). The ventral cirri, attached on the middle of the neuropodia, are short, thick and subulate, smooth or with scattered micropapillae.

The muscular pharynx has the usual 9 pairs of papillae and 2 pairs of jaws. The nephridial papillae begin on segment 6; they are short, cylindrical, extending posterolaterally. The pygidium is small, rounded, with a pair of anal cirri, longer than the dorsal cirri.

Biology.—*Minusculisquama hughesi* was collected in silty mud and sand in 70 meters in St. Margaret's Bay and in red clay over mud in 34 meters in Northumberland Strait. Although there is no data with the specimens to confirm it, their structure suggests that they were probably living commensally in the tubes of other polychaetes, such as malidanids. In his report on the collections from St. Margaret's Bay, Hughes (1979:531) indicated that "the top 20 cm of sediment were permeated by numerous tubes made by various species of malidanid polychaetes. Some of the tubes protruded above the surface of the sediment." I suggest that the host of *M. hughesi* may very well have been a malidanid. Commensalism is suggested by the following features of *M. hughesi*: the elongate flattened body of about equal width, the small prostomial eyes, the minute elytra confined to the anterior region, the reduced notopodia and missing notosetae, the enlarged upper neurosetae, such as are found in *Lepidametria commensalis*.

Minusculisquama agrees with *Arctonoe* Chamberlin, 1920, and *Adyte* Saint-Joseph, 1899, in that all three have elongated bodies with numerous segments, similar type of prostomia with the lateral antennae having distinct ceratophores inserted terminoventrally, and subbiramous parapodia with the neuropodia deeply cut dorsally and ventrally forming rounded presetal acicular and postsetal lobes. In *Arctonoe*, the elytra are large, more numerous, continuing to the posterior end of the long body, and with a different arrangement; also the neurosetae are strongly hooked, rather than tapered (see Pettibone 1953:56–66). *Minusculisquama* agrees further with *Adyte* in having 15 pairs of elytra confined to the anterior region of the long body and in similar arrangement. In *Adyte*, notosetae are present rather than absent, the elytra are large and attached to prominent elytriphores rather than minute with indistinct elytriphores, and the neurosetae have basal semilunar pockets and the upper neurosetae are not larger, as they are in *Minusculisquama* (see Pettibone 1969:5–8).

Minusculisquama hughesi resembles *Lepidasthenia accolus* Estcourt, 1967, commensal in the burrow of an arenicolid polychaete, in having very small elytra, an elongated body, similar prostomia and neuropodia and in lacking notosetae. In *L. accolus*, the elytra are more numerous and arranged on segments 2, 4, 5, 7, continuing on alternate segments to the end of the long body; the presetal acicular lobes of the neuropodia are notched distally and the dorsum is finely papillated (see Estcourt 1967:68–69).

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