Vol. 76, pp. 89–104 2 August 1963

PROCEEDINGS
OF THE
BIOLOGICAL SOCIETY OF WASHINGTON

REVISION OF SOME GENERA OF POLYCHAETE WORMS OF THE FAMILY SPIONIDAE, INCLUDING THE DESCRIPTION OF A NEW SPECIES OF *SCOLELEPIS*

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In reviewing the Spionidae from the New England region, the genera have proved to be particularly difficult. The characters that have been used to distinguish some of them are questionable. The same generic names have sometimes been based on different type species and so used in dissimilar senses. Monographic works on the Spionidae by Mesnil (1896) and Söderström (1920) have added considerably to our knowledge of the group but they are in disagreement on some basic points in regard to generic names. An attempt is made in the present paper to lessen the generic confusion that has prevailed in two groups of spionids: those with branchiae and pointed prostomia, and those with branchiae and distinct frontal horns.

Among the spionid material examined, a new species of *Scolelepis* was found among some polychaetes collected in the Gulf of St. Lawrence and sent to me by E. L. Bousfield of the National Museum of Canada. The holotype, four paratypes and seven additional specimens are deposited in the National Museum of Canada; five paratypes and five additional specimens are deposited in the U. S. National Museum.

This study was carried out for the most part at the U. S. National Museum and aided by grants from the National Science Foundation (NSF G-4833 and GR-136).

The spionid genera with branchiae and with pointed prostomia include *Scolelepis* Blainville (including the subgenus *Nerinides* Mesnil), *Aonides* Claparède, and *Dispio* Hartman. The prostomia are distinctly pointed, without frontal horns,

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and the peristomia surround the prostomia like a hood. The pharynx tends to be eversible as a bulbous proboscis. The eggs usually have thick membranes and membrane vesicles. Development is predominantly pelagic (Hannerz, 1956). The species of this group are characteristically burrowers and form no definite tube. Some of the species have a wide geographic distribution.

KEY TO THE SPIONID GENERA WITH BRANCHIAE AND WITH POINTED PROSTOMIA

1. Branchiae distinct from dorsal lamellae, on anterior region of body only ..... *Aonides* Claparède
1. Branchiae fused basally to dorsal lamellae, continued to near posterior end 2
2. Branchiae beginning on setiger 1. Pygidium a simple collar or with anal cirri ..... *Dispio* Hartman
2. Branchiae beginning on setiger 2. Pygidium with anal disc or bilobed to multilobed appendage ..... (*Scolelepis* Blainville) 3
3. Neuropodial lamellae in middle and posterior regions notched, with smaller lower lobe or "ventral cirrus" ..... Subgenus *Scolelepis* Blainville
3. Neuropodial lamellae not notched, without "ventral cirrus" ..... Subgenus *Nerinides* Mesnil

Genus *Aonides* Claparède, 1864

Aonides Claparède, 1864, p. 505. Type species, by monotypy: *A. auricularis* Claparède, 1864, p. 505 (= *Nerine oxycephala* Sars, 1862).

Paranerine Czerniavsky, 1881, p. 359. Type species, by monotypy: *Nerine oxycephala* Sars, 1862, p. 64.

Diagnosis: Prostomium acutely conical, spindle-shaped, without frontal horns. Peristomium more or less fused with prostomium. Branchiae beginning on setiger 2, confined to anterior region of body, not fused to dorsal lamellae. Hooded hooks in both notopodia and neuropodia in posterior region; hooks bidentate and tridentate. Pygidium with anal cirri. Eggs with thick membranes and membrane vesicles. Development entirely pelagic and lecithotrophic (Hannerz, 1956).

KEY TO THE SPECIES OF THE GENUS *AONIDES*

1. Hooded hooks tridentate. Branchiae 10–11 pairs. Ireland. ..... *A. paucibranchiata* Southern, 1914
1. Hooded hooks bidentate 2
2. Branchiae 20–30 pairs. Norway and Mediterranean. ..... *A. oxycephala* (Sars, 1862)
2. Branchiae 13–14 pairs. West coast of Mexico. ..... *A. californiensis* Rioja, 1947

Aonides diverapoda Hoagland, 1920, from the Philippine Islands, belongs to the Trochochaetidae (= Disomidae), not to the Spionidae. The type specimen (USNM 18961) is in poor condition and the original description is incomplete. It is here referred to the genus *Trochochaeta*. See Pettibone (in press) for revision of the Trochochaetidae.

Genus *Dispio* Hartman, 1951, emended

Dispio Hartman, 1951, p. 86. Type species, by monotypy: *D. uncinata* Hartman, 1951, p. 87.

Diagnosis: Prostomium fusiform, without frontal horns, with nuchal ridge extending posteriorly. Peristomium enclosing prostomium like a hood. Branchiae beginning on first setiger, not confined to anterior region of body, fused basally to dorsal lamellae. With (in type) or without digitiform accessory branchiae on posterior part of notopodia in middle and posterior regions. With neuropodial hooks. Without notopodial hooks. Hooks hooded, entire. Pygidium a simple collar or with anal cirri.

The following four species are here referred to the genus *Dispio*:

D. uncinata Hartman, 1951. Gulf of Mexico.
D. remanei Friedrich, 1956. Central America.
D. schusterae Friedrich, 1956. Central America.
D. magna (Day, 1955). South Africa.

D. remanei and *D. schusterae* are incompletely described. Day's species was originally described as *Spio magnus*. It is similar to *D. uncinata*. No mention is made of the accessory branchiae characteristic of that species, but those structures are transparent and easily overlooked.

Genus *Scolelepis* Blainville, 1828, emended

Scolelepis Blainville, 1828, p. 492. Type species, by monotypy: *Lumbricus squamatus* Müller, 1806, p. 39 (cited erroneously as *Scolelepis squamosa*).

Aonis Audouin and Milne-Edwards, 1833, p. 400. Type species, by monotypy: *A. foliosa* Audouin and Milne-Edwards, 1833, p. 402. Invalid junior homonym of *Aonis* Savigny, 1820, p. 45.

Nerine Johnston, 1838, p. 68. Type species, selected by Quatrefages, 1843, p. 9: *N. coniocephala* Johnston, 1838, p. 70 (= *Aonis foliosa* Audouin and Milne-Edwards, 1833). See remarks on page 98.

Pseudomalacoceros Czerniavsky, 1881, p. 361. Type species, by monotypy: *Malacoceros longirostris* Quatrefages, 1843, p. 13 (= *Lumbricus squamatus* Müller, 1806).

Nerinides Mesnil, 1896, p. 152. Type species, by original designation: *Nerine longirostris* Saint-Joseph, 1894, p. 74 (= *Nerinides cantabra* Rioja, 1918). Invalid junior homonym of *Malacoceros longirostris* Quatrefages, 1843, p. 13.

Scolecolepis Michaelsen, 1897, p. 45. Erroneous spelling of *Scolelepis* Blainville, 1828, p. 492. Not Malmgren, 1867, p. 90.

Pseudonerine Augener, 1926, p. 159. Type, by monotypy: *P. antipoda* Augener, 1926, p. 159. Invalid junior homonym of *Pseudonerine* Czerniavsky, 1881, p. 361.

Diagnosis: Prostomium pointed anteriorly, without frontal horns, with cephalic ridge and pointed tip posteriorly. Peristomium enlarged, surrounding prostomium like a hood. Proboscis massive. Branchiae beginning on setiger 2, continued to near posterior end, more or less completely fused to notopodial lamellae, at least in anterior region. Ventral lamellae deeply cleft in posterior part, with distinct upper and lower lobes, with hooks and setae between, the lower lobe appearing as a "ventral cirrus" (in subgenus *Scolelepis*) or ventral lamellae without distinct notch (in subgenus *Nerinides*). With neuropodial hooks; without notopodial hooks or with few notopodial hooks in far posterior region. Hooks hooded, entire, bidentate to quadridentate. Pygidium with oval disc or multilobed membranous appendage, without anal cirri. Eggs with thick reticulated shells and membrane vesicles. Development entirely pelagic and predominantly planktotrophic (Hannerz, 1956). Burrowing species, forming vertical burrows, without definite tubes.

According to the revision herein, the following are referred to *Scolelepis* (*Scolelepis*):

1. S. *squamata* (Müller, 1806). Denmark, as *Lumbricus squamatus;* Mediterranean, as *Lumbricus cirratulus* Delle Chiaje, 1822; France, as *Malacoceros longirostris* Quatrefages, 1843; New Jersey, as *Nerine agilis* Verrill, 1873; Virginia, as *Nerine heteropoda* Webster, 1879; California, as *Spio acuta* Treadwell, 1914; South Africa, as *Nerine capensis* McIntosh, 1925; Texas, Gulf of Mexico, as *Nerine minuta* Treadwell, 1939; Jamaica, West Indies, as *Nerinides goodbodyi* Jones, 1962.
2. S. *foliosa* (Audouin and Milne-Edwards, 1833). France, as *Aonis foliosa*; England, as *Nerine coniocephala* Johnston, 1838; locality?, as *Aonis vittata* Grube, 1855; Italy, as *Nerine sarsiana* Claparède, 1869; California, as *Nerine foliosa occidentalis* Hartman, 1961.
3. S. *bonnieri* (Mesnil, 1896). France, as *Nerine Bonnieri.* Perhaps young of S. *foliosa.*
4. S. *perrieri* (Fauvel, 1902). Senegal, West Africa, as *Nerine Perrieri.*
5. S. *lefebvrei* (Gravier, 1905). Red Sea, as *Nerine Lefebvrei.*
6. S. *alaskensis* (Treadwell, 1914). Alaska, as *Scolecolepis alaskensis.* Incomplete description, perhaps S. *foliosa* (Audouin and Milne-Edwards, 1833).
7. S. *antipoda* (Augener, 1926). New Zealand, as *Pseudonerine antipoda.* Incomplete description.
8. S. *squamata saipanensis* (Hartman, 1954). Saipan, Marianas, as *Nerine cirratulus saipanensis.*
9. S. *oligobranchia* (Chlebovitsch, 1959). Kurile Islands, as *Nerine oligobranchia.* Similar to S. *foliosa* (Audouin and Milne-Edwards, 1833)?

10. S. *williami* (De Silva, 1961). Ceylon, as *Nerinides Williami.* Near S. *squamata* (Müller, 1806).
11. S. *kinghtjonesi* (De Silva, 1961). Ceylon, as *Nerinides Knight-Jonesi.*

According to the revision herein, the following are referred to *Scolelepis* (*Nerinides*):

1. S. *tridentata* (Southern, 1914). Ireland, as *Nerinides tridentata.*
2. S. *cantabra* (Rioja, 1918). Spain, as *Nerinides cantabra*; France, as *Nerine longirostris* Saint-Joseph, 1894; France, as *Nerinides st. josephi* Jones, 1962.
3. S. *papillosa* (Okuda, 1937). Korea, as *Nerinides papillosus.*
4. S. *yamaguchii* (Imajima, 1959). Japan, as *Nerinides yamaguchii.*
5. S. *arenicola* (Hartmann-Schröder, 1959). Central America, as *Nerinides arenicola.* Incomplete description.
6. S. *gilchristi* (Day, 1961). South Africa, as *Nerinides gilchristi.*
7. S. *bousfieldi* (see below). Gulf of St. Lawrence.

The following species is indeterminable:

1. *Nerine auriseta* Claparède, 1869. Italy.

Key to Selected Species of *Scolelepis*

1. Neuropodial lamellae bilobed posteriorly, with neurosetae and hooks between the lobes, the lower lobe ("ventral cirrus") smaller ..... (Subgenus *Scolelepis*) 2
   Neuropodial lamellae not notched, without distinct lower lobe ("ventral cirrus") ..... (Subgenus *Nerinides*) 8
2. Hooded hooks unidentate 3
   Hooded hooks bidentate 6
3. Prostomium with distinct occipital antenna. Branchiae completely united to dorsal lamellae in anterior region, absent in extreme posterior region. Neuropodial hooks beginning on setiger 58–60, up to 16–20 per lobe. Notopodial hooks beginning on setiger 60–65, about 10 per lobe ..... S. (S.) *foliosa*
   Prostomium without occipital antenna. Branchiae and dorsal lamellae distinct distally 4
4. Neuropodial hooks beginning about setiger 31. Notopodial hooks beginning about setiger 55 ..... S. (S.) *bonnieri*
   Neuropodial hooks beginning after setiger 35. Notopodial hooks absent, or apparently so 5
5. Neuropodial hooks beginning about setiger 38. Without notopodial hooks ..... S. (S.) *lefebvrei*
   Neuropodial hooks beginning about setiger 43. Without notopodial hooks? (posterior end missing) ..... S. (S.) *knightjonesi*
6. First setiger with notosetae ..... S. (S.) *squamata*
   First setiger without notosetae 7
7. With notopodial hooks in posterior region. Branchiae without papillae ..... S. (S.) *perrieri*
   Without notopodial hooks. Some anterior branchiae terminating in

2–6 clavate papillae ..... *S. (S.) williami*

8. Without notosetae on first setiger 9
   With notosetae on first setiger. Neuropodial hooded hooks tridentate and quadridentate. Prostomium with erect occipital antenna 11
9. Hooded neuropodial hooks tridentate, beginning on setiger 15–16. Prostomium with erect occipital antenna, with 4 eyes in transverse row ..... *S. (N.) tridentata*
   Hooded neuropodial hooks bidentate 10
10. Prostomium with erect occipital antenna, without eyes. Neuropodial hooks beginning on setiger 16. Basal portion of tentacular palps with papillated membranous sheath ..... *S. (N.) papillosa*
    Prostomium without erect occipital antenna, with 4 eyes arranged in a square. Neuropodial hooks beginning on setiger 33–45. Basal portion of tentacular palps without papillated membranous sheath ..... *S. (N.) cantabra*
11. Neuropodial hooks beginning anterior to setiger 19 12
    Neuropodial hooks beginning posterior to setiger 19 13
12. Neuropodial hooks beginning on setiger 13–15 ..... *S. (N.) bousfieldi*
    Neuropodial hooks beginning on setiger 17–18 ..... *S. (N.) gilchristi*
13. Neuropodial hooks beginning on setiger 20–21 ..... *S. (N.) yamaguchii*
    Neuropodial hooks beginning on setiger 25 ..... *S. (N.) arenicola*

Scolelepis (Nerinides) bousfieldi, new species

(Figs. 1, 2)

Nerinides sp. Sanders, 1958, pp. 247, 249, 250.

Materials: Southwestern part of Gulf of St. Lawrence, E. L. Bousfield, National Museum of Canada (NMC), 1960—PRINCE EDWARD ISLAND: New London Bay, mud, muddy sand, detritus, 1.7–2.5 fathoms, 16 July (2, USNM); Bideford Estuary, fine mud, shells, dead eelgrass, 2 fathoms, 21 July (3, USNM; 3, NMC; Malpeque Bay, off Bideford Estuary, mud, dead eelgrass, 4 fathoms, 22 July (1, NMC); Conway Narrows Reserve, mouth of Cascumpeque Bay, sand, eelgrass, shallow flats, 28 July (1, NMC). NEW BRUNSWICK: Richibucto Harbor, below NW arm, sand, stones, shells, 5 fathoms, 2 August (1, NMC), St. Simon, Inlet North Channel, sand, sandy mud, shells, 1.7–4 fathoms, 5 August (1, NMC), Shediac Island, Channel, sand, shells, 2 fathoms, 14 August (holotype, NMC 1103; 5, USNM; 4, NMC).

MASSACHUSETTS: Buzzards Bay, silty clay, 7–10 fathoms, 1955, H. L. Sanders, Woods Hole Oceanographic Institution (40, USNM; 10, WHOI).

Description: Length up to 12 mm, width up to 1.5 mm, segments up to 42. Body widest anteriorly, flattened dorsoventrally, with short segments; posterior region narrower, subcylindrical, with segments longer, moniliform. Prostomium (Fig. 1, A, B) spindle-shaped, tapering anteriorly

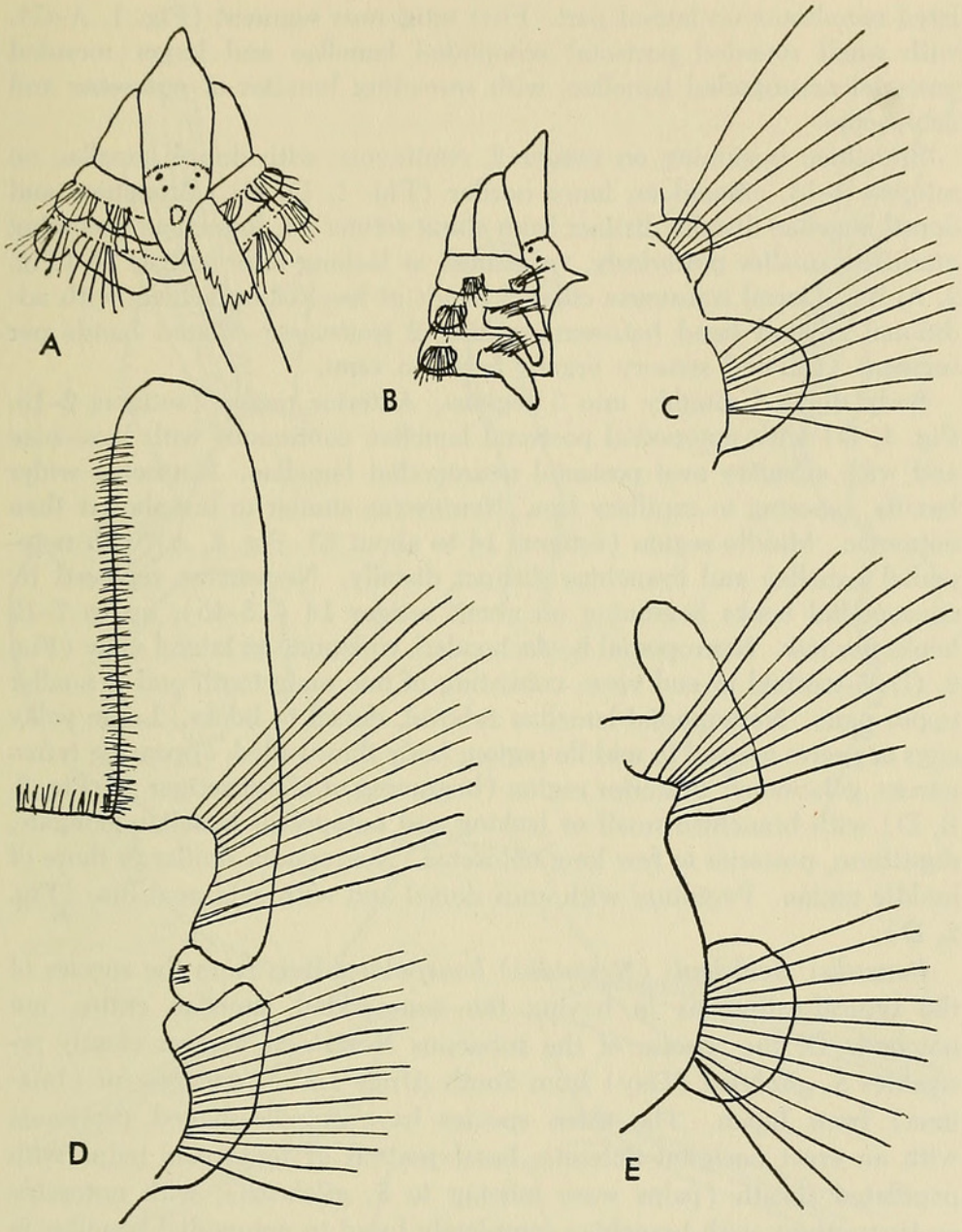

FIG. 1. *Scolelepis* (*Nerinides*) *bousfieldi*, new species. A—Dorsal view anterior end, base of right tentacular palp only shown. B—Lateral view anterior end, tentacular palps missing. C—Left parapodium from setiger 1, anterior view. D—Same, from setiger 2. E—Same, from setiger 6.

to a pointed tip, with cephalic crest on posterior part extending to setiger 2; with erect occipital antenna in middle and 4 eyes on anterior part of cephalic crest (or without eyes; eyes not observed on specimens from Buzzards Bay). Peristomial segment achaetous, enlarged, lateral and ventral to prostomium, surrounding prostomium like a hood. Tentacular palps extending posteriorly as far as setiger 13, thicker at base, with papil-

lated membrane on lateral part. First setigerous segment (Fig. 1, A–C), with small rounded postsetal notopodial lamellae and larger rounded postsetal neuropodial lamellae, with spreading bundles of notosetae and neurosetae.

Branchiae beginning on setiger 2, continuous with dorsal lamellae on setigers 2–13, ciliated on inner border (Fig. 1, D, E). Branchiae and dorsal lamellae distally distinct from about setiger 14; branchiae becoming gradually smaller posteriorly, very small or lacking after setiger 26 (Fig. 2, A, B). Dorsal transverse ciliated bands at level of branchiae, with additional ciliated band between, making 2 transverse ciliated bands per segment. Ciliated sensory organs between rami.

Body divided roughly into 3 regions. Anterior region (setigers 2–13, Fig. 1, D) with notopodial postsetal lamellae continuous with branchiae and with elongate oval postsetal neuropodial lamellae. Notosetae wider basally, tapering to capillary tips. Neurosetae similar to but shorter than notosetae. Middle region (setigers 14 to about 25, Fig. 2, A) with notopodial lamellae and branchiae distinct distally. Neurosetae replaced by neuropodial hooks beginning on about setiger 14 (13–15), up to 7–15 hooks per row. Neuropodial hooks hooded, tridentate in lateral view (Fig. 2, C), 5-toothed in end view, consisting of one main tooth and 2 smaller upper pairs. Neuropodial lamellae suboval, dorsal to hooks. Large yolky eggs or sperm massed in middle region; body thin-walled, appearing transparent, gelatinous. Posterior region (beginning at about setiger 26, Fig. 2, B, D) with branchiae small or lacking and notopodial lamellae elongate, digitiform, posterior to few long notosetae. Neuropodia similar to those of middle region. Pygidium with anus dorsal and with oval anal disc (Fig. 2, D).

Remarks: *Scolelepis* (*Nerinides*) *bousfieldi* differs from the species of the typical subgenus in having the neuropodial lamellae entire, not notched. Of the species of the subgenus *Nerinides*, it most closely resembles *S. gilchristi* (Day) from South Africa and *S. yamaguchii* (Imajima) from Japan. The three species have spindle-shaped prostomia with an erect occipital antenna, basal portion of tentacular palps with papillated sheath (palps were missing in *S. gilchristi*), with notosetae on first setiger, with branchiae completely fused to notopodial lamellae in anterior region, without notopodial hooks. The hooded hooks are tridentate in lateral view in *S. bousfieldi* and *S. yamaguchii*, quadridentate in *S. gilchristi*. Pygidium with oval anal disc in *S. bousfieldi*, with flattened expansion more or less bilobed in *S. yamaguchii* (posterior end missing in *S. gilchristi*). The neuropodial hooks in *S. bousfieldi* begin on setiger 13–15, up to 7–15 per row; in *S. gilchristi*, they begin on setiger 17–18, up to 10–12 per row; in *S. yamaguchii* they begin on setiger 20–21, up to 20–30 per row. The posterior notopodia of *S. bousfieldi*, with elongate cylindrical notopodial lamellae and branchiae lacking, are characteristic. The very large yolky eggs of *S. bousfieldi* and the gelatinous thin-walled egg-bearing segments of the middle region of the body suggest the possi-

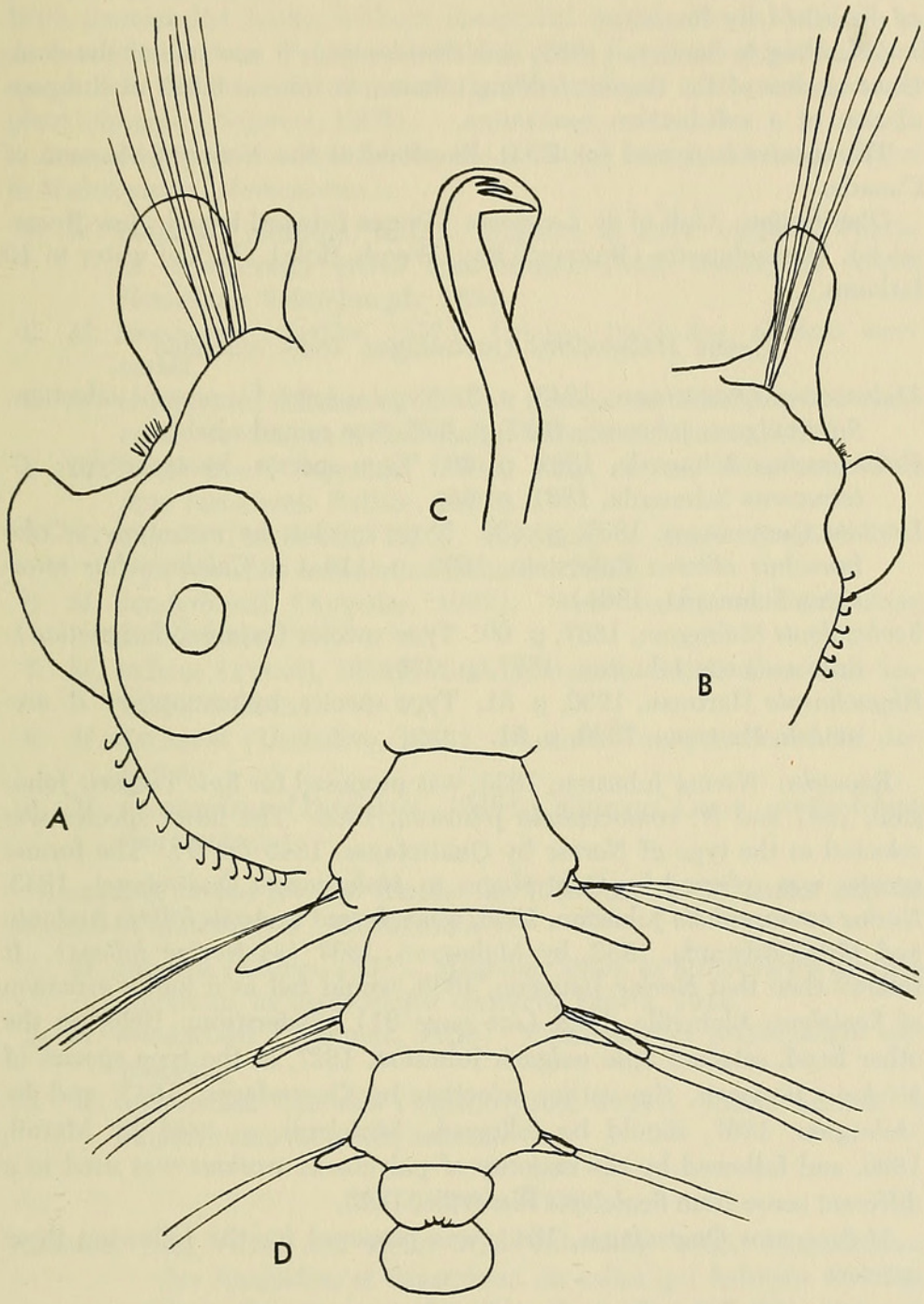

FIG. 2. *Scolelepis (Nerinides) bousfieldi*, new species. A—Right parapodium from middle region (setiger 25), anterior view (one of large yolky eggs in body shown). B—Left parapodium from posterior region (setiger 32), anterior view. C—Hooded neuropodial hook, lateral view. D—Dorsal view posterior end.

bility of a development similar to that of *S. yamaguchii*, in which there is formed a gelatinous spawn-mass where early development takes place, as described by Imajima.

According to Sanders (1958, as *Nerinides* sp.), it was one of the dominant species of the deposit-feeding infauna; it formed 6.85% of the population of a soft-bottom association.

The species is named for E. L. Bousfield of the National Museum of Canada.

Distribution: Gulf of St. Lawrence (Prince Edward Island, New Brunswick), Massachusetts (Buzzards Bay, Woods Hole). In low water to 10 fathoms.

Genus *Malacoceros* Quatrefages, 1843, emended

Malacoceros Quatrefages, 1843, p. 8. Type species, by present selection: *Spio vulgaris* Johnston, 1827, p. 335. See remarks below.

Colobranchus Schmarda, 1861, p. 66. Type species, by monotypy: *C. tetracerus* Schmarda, 1861, p. 66.

Uncinia Quatrefages, 1865, p. 439. Type species, by monotypy: *Colobranchus ciliatus* Keferstein, 1862, p. 118 (= *Colobranchus tetracerus* Schmarda, 1861).

Scolecolepis Malmgren, 1867, p. 90. Type species (original designation): *Spio vulgaris* Johnston, 1827, p. 335.

Rhynchospio Hartman, 1936, p. 51. Type species, by monotypy: *R. arenincola* Hartman, 1936, p. 51.

Remarks: *Nerine* Johnston, 1838, was proposed for *Spio vulgaris* Johnston, 1827 and *N. coniocephala* Johnston, 1838. The latter species was selected as the type of *Nerine* by Quatrefages, 1843 (p. 9). The former species was referred by Quatrefages to *Malacoceros* Quatrefages, 1843. *Nerine coniocephala* Johnston, 1838, was referred to *Aonis foliosa* Audouin and Milne-Edwards, 1833, by Malmgren, 1867 (as *Nerine foliosa*). It follows then that *Nerine* Johnston, 1838, would fall as a junior synonym of *Scolelepis* Blainville, 1828 (see page 91). Söderström, 1920, on the other hand, selected *Spio vulgaris* Johnston, 1827, as the type species of *Nerine*. However, the earlier selection by Quatrefages, 1843, and by Malmgren, 1867, should be followed. *Scolelepis*, as used by Mesnil, 1896, and followed by the majority of polychaete workers was used in a different sense from *Scolelepis* Blainville, 1828.

Malacoceros Quatrefages, 1843, was proposed for the following three species:

Spio vulgaris Johnston, 1827.

M. giardi Quatrefages, 1843 (= *Spio vulgaris* Johnston, 1827).

M. longirostris Quatrefages, 1843 (= *Lumbricus squamatus* Müller, 1806).

Diagnosis: Prostomium with distinct frontal horns, with a slightly projecting crest posteriorly. Branchiae beginning on setiger 1 (subgenus

Malacoceros) or setiger 2 (subgenus *Rhynchospio*), continuing posteriorly to last few segments; branchiae more or less free from notopodial lamellae. With neuropodial hooks; without notopodial hooks. Hooks hooded, bidentate or tridentate. Pygidium with anal cirri. Eggs with thick shells and membrane vesicles. Development largely pelagic and predominantly planktotrophic (Hannerz, 1956).

According to the revision herein, the following nine species are referred to *Malacoceros* (*Malacoceros*):

1. *M. vulgaris* (Johnston, 1827). England, as *Spio? vulgaris;* France, as *Malacoceros giardi* Quatrefages, 1843; France, as *Nerine floroeensis* Saint-Joseph, 1894.
2. *M. laevicornis* (Rathke, 1837). Crimea, Black Sea, as *Spio laevicornis.*
3. *M. tetracerus* (Schmarda, 1861). France, as *Colobranchus tetracerus;* France, as *Colobranchus ciliatus* Keferstein, 1862.
4. *M. fuliginosus* (Claparède, 1869). Italy, as *Spio fuliginosus* (? = *Spio laevicornis* Rathke, 1837).
5. *M. gravieri* (McIntosh, 1915). England, as *Euspio gravieri* (? = *Colobranchus tetracerus* Schmarda, 1861).
6. *M. vanderhorsti* (Augener, 1927). West Indies, as *Scolecolepis vanderhorsti.*
7. *M. indicus* (Fauvel, 1928). Gulf of Manaar, Indian Ocean, as *Scolelepis indica.*
8. *M. derjugini* (Uschakov, 1948). Murman Coast, as *Scolelepis derjugini.*
9. *M. murmanicus* (Uschakov, 1948). Murman Coast, as *Scolelepis murmanica.*

According to the revision herein, the following three species may be referred to *Malacoceros* (*Rhynchospio*):

1. *M. glutaeus* (Ehlers, 1897). Magellan Strait, as *Scolecolepis glutaea;* Antarctic, as *Scolecolepis cornifera* Ehlers, 1913.
2. *M. arenincolus* (Hartman, 1936). California, as *Rhynchospio arenincola.*
3. *M. arenincolus asiaticus* (Chlebovitsch, 1959). Kurile Islands, as *Rhynchospio arenicola asiatica.*

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