PROC. BIOL. SOC. WASH.
94(1), 1981, pp. 163–168

A NEW SPECIES OF *AMASTIGOS* (POLYCHAETA: CAPITELLIDAE) FROM THE CHESAPEAKE BAY AND ATLANTIC COAST OF THE UNITED STATES WITH NOTES ON THE CAPITELLIDAE OF THE CHESAPEAKE BAY

R. Michael Ewing and Daniel M. Dauer

Abstract.—A new species of Capitellidae *Amastigos caperatus* from the lower Chesapeake Bay and Atlantic Ocean off the east coast of the United States is described below. *Capitomastus aciculatus* Hartman 1959 is redescribed. A key to the Capitellidae of the lower Chesapeake Bay is given.

Capitellidae Grube, 1862
Amastigos Piltz, 1977
Amastigos caperatus, new species
Fig. 1, a–e
Mediomastus acutus (in part).—Hartman, 1969:385–386, figs. 1–3.

Material examined.—Holotype (USNM 61107), 10 paratypes (USNM 61108), CHESAPEAKE BAY (37°07′N, 75°59′W), 6.7 m, in clean medium sand, 19 June 1978, D. M. Dauer and staff, collectors. Ten specimens (USNM 61109): Jones Inlet Dumpsite (40°34′N, 73°38′W), 10 m, in clean medium sand, May 1979, Interstate Electronics Corporation, collectors for Taxon, Inc. Other specimens: About 20 specimens from type-locality; 8 animals from Cape Henry, Virginia (36°56′N, 75°55′W), 18.9 m, in clean fine sand, 13 June 1979, Virginia Institute of Marine Science, collectors.

Description.—Length of holotype 18.5 mm, width 0.5 mm, 61 setigerous segments. Lengths of 10 additional complete specimens ranged from 10.5 to 16.0 mm, widths 0.3 to 0.5 mm, setigers 34–51.

Color tan to reddish-brown in alcohol; scattered dark pigment spots along dorsum in some specimens. Surface epithelium nearly smooth except for shallow transverse wrinkles of contraction; intersegmental furrows pronounced in posterior setigers. Thorax and abdomen not clearly separable; however, setigers 9 and 10 appear to be transitional in their length, number of neurosetae per fascicle, and length of notosetae. There are no branchiae or conspicuous parapodial processes; nephridial pores not observed.

Prostomium slightly depressed, triangular, tapering anteriorly to a fine tip (Fig. 1a), with 2 inconspicuous nuchal slits at posteriolateral borders. Achaetous peristomium with 2 subdermal eyespots. Eversible pharynx bulbous, covered with minute papillae.

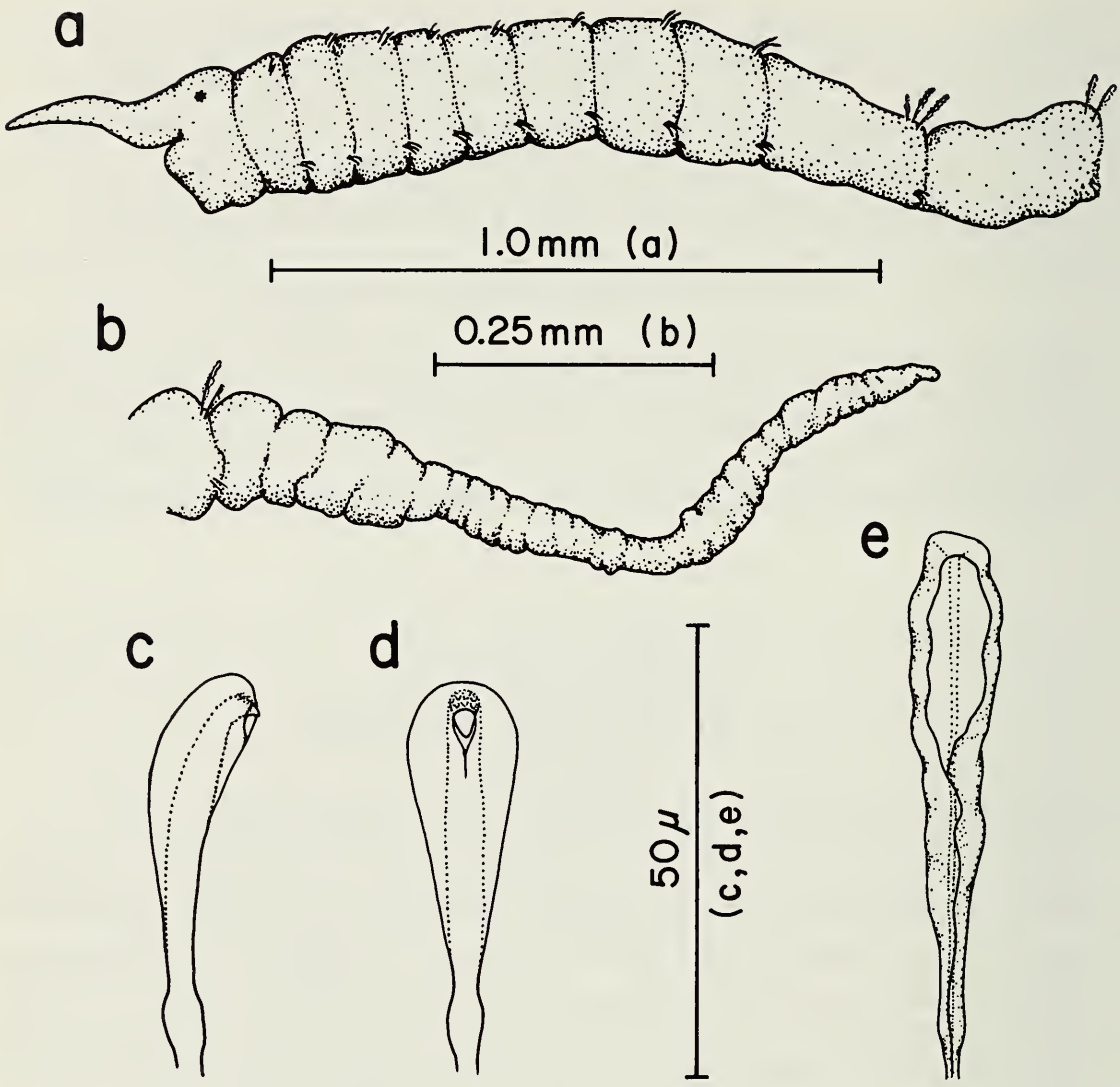

Fig. 1. *Amastigos caperatus:* **a,** Anterior end in lateral view; **b,** Posterior end in lateral view; **c–d,** Lateral and frontal view of neuropodial hooded hook from setiger 4; **e,** Frontal view of notopodal hooded hook from setiger 9.

Anterior 8 setigers approximately 1½–2 times wide as long; ninth setiger distinctly longer and slightly narrower (conspicuous change in segmental length occurring at setigers 10 or 11 in several specimens); thereafter, segments gradually increasing in length until mid-abdominal region where they are 2–3 times as long as wide; posterior setigers becoming shorter and slightly inflated in front of each segmental groove, terminating in a partly annulated pygidium with cylindrical anal cirrus 2–7 times long as preceding segments (Fig. 1b). Anteriormost notopodia dorsolateral, well separated, but approach middorsally by setiger 5–6. Neuropodia ventrolaterally throughout body.

Neuropodia with 2–5 multidentate hooded hooks (Fig. 1c, d) per fasicle through setiger 9; abrupt increase in number of neuropodial hooks to about 10 per fascicle (6–10) in tenth setiger; as many as 16 hooded hooks per fascicle in abdominal neuropodia of several specimens, decreasing in number toward posterior but present in all segments to pygidium. These structures appear to terminate in a beak consisting of a strong, slightly curved fang surmounted by a crest of at least 7 teeth arranged in 2 or more rows.

Notopodia with 2–3 hooded hooks per fascicle in anterior setigers, gradually increasing to as many as 5 per fascicle in middle, then decreasing to 1–2 in far posterior segments. Multidentate hooded hooks of setigers 1–4 short, thick-shafted, similar in structure to neurosetae. Notopodial hooks becoming longer and thinner through setigers 5–8; hood gradually enclosing main fang, becoming compressed from front to back (i.e., perpendicular to fang); margin appearing slightly crenulate. Notosetae from setiger 9 noticeably elongate, approximately twice as long as those of the preceding setiger and greater than 5 times as long as notopodial hooks of setiger 1; margin of hood distinctly wrinkled in most specimens, appearing as a bilimbate seta with scalloped edges; aperture tightly closed around beak; fang and crest nearly invisible in frontal view in ordinary light microscopy, appearing only as a minute button-shaped structure at the distal end of the long and slender shaft (Fig. 1e).

No sexual dimorphism was noted in a comparison of 2 ovigerous females and a single ripe male.

Remarks.—As noted by Fauchald (1977) the exact number of thoracic segments is often difficult to assess in the capitellids. In most specimens examined the achaetous peristomium was not easily recognized though its presence was confirmed through scanning electron microscopy (SEM). The asetigerous segment (first thoracic) thus should not be regarded as a key taxonomic character in *Amastigos caperatus*.

Recent detailed studies of capitellid setae (i.e., Thomassin and Picard, 1972; Warren, 1976) have shown the microstructure of hooded hooks to be more complex than often assessed using conventional optical microscopy. SEM techniques similar to Warren (1976) were employed in this study with only marginal success, since the sheath surrounding the neuropodial and anterior notopodial hooks in *A. caperatus* was only partly removed.

As noted earlier, the length of the main fang of notopodial hooks decreases in size as the shaft lengthens along posterior thoracic setigers. Our observations with SEM indicate that the decreasing size of the beak and hood and construction of the hood aperture around the fang is accompanied by a reduction in the number of teeth in the crest.

Amastigos caperatus resembles the type-species, *A. acutus* Piltz 1977, in that both lack capillary setae and have the characteristic flattened, modified notopodial hooks from the posterior thoracic region. The 2 species differ in

several respects. In *A. caperatus* anterior setigers are relatively uniform in width, gradually increasing in length posteriorly, with thorax and abdomen separated by 2–3 transitional segments, whereas, in *A. acutus* the first 2 thoracic setigers are distinctly longer and broader than the following segments, with an abrupt transition from thorax to abdomen at setiger 9. In addition, *A. caperatus* is provided with an anal cirrus while the posterior end of *A. acutus* terminates in a short conical pygidium. The external appearance of the modified notosetae of *A. caperatus* is of considerable interest; the unique wrinkled margin of the hood in most notopodial hooks is highly consistent among individuals examined over a wide geographic range and is an easily observed taxonomic character.

Ecology.—*Amastigos caperatus* occurs primarily in subtidal clean, fine to medium sands.

Etymology.—The specific name refers to the wrinkled appearance of the notopodial hoods, particularly in the abdomen.

Distribution.—Lower Chesapeake Bay; Atlantic Ocean, from Charleston, South Carolina to Broad Sound, Massachusetts.

Capitomastus aciculatus Hartman 1959

Hartman (1959) described *Capitomastus aciculatus* from St. Andrews Bay, Florida, with the setal formulae illustrated in Fig. 2 (where A = acicular spine, C = capillary seta, H = hooded hook, G = genital spine, M = mixed fascicle of capillary setae and hooks). Individuals collected from the Chesapeake Bay did not consistently show this pattern.

Variations from the setal arrangement reported by Hartman (1959) were as follows:

Males: 1. Some individuals had acicular spines only in the notopodia of the first 2 setigers or lacked these spines entirely. In each case parapodia without acicular spines had capillary setae only. There was no apparent relationship between the setal arrangement and size although a greater proportion of larger males have the acicular spines.

2. Fascicles of mixed capillary setae and hooks were occasionally found in the neuropodia of setiger 8.

3. Most males examined (24 of 30 specimens) lacked capillary setae in the neuropodia of setiger 9, which according to Hartman should be mixed.

Females: 1. Individuals were also found that lacked acicular spines in the notopodia of the first 2 setigers.

2. Several specimens had capillary setae only in the notopodia of setiger 8.

When the acicular spines are absent *Capitomastus aciculatus* may be confused with *Capitella capitata*. Males of the 2 species differ in the presence of some capillary setae in the eighth neuropodia in *C. aciculatus* where

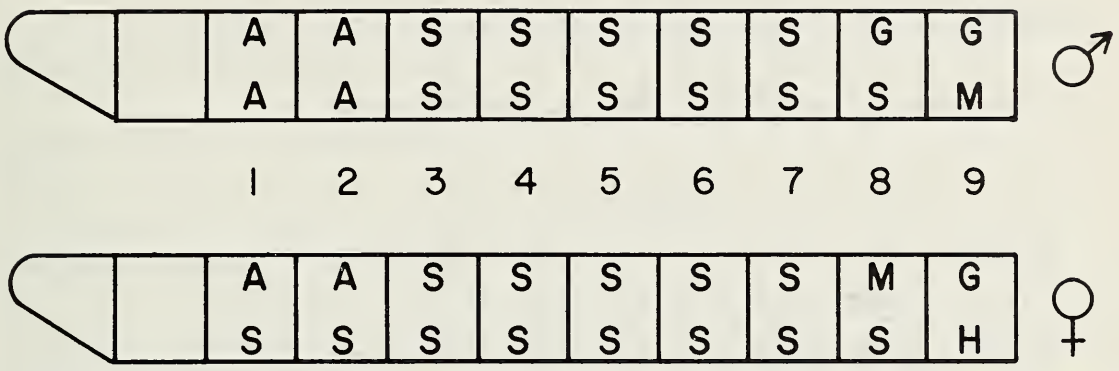

Fig. 2. Thoracic setal arrangement of *Capitomastus aciculatus* as described by Hartman (1959).

only hooded hooks are present in *C. capitata*. Although Warren (1976) noted that capillary setae rarely appear in the neuropodia of setiger 8 in *C. capitata*, this situation was not encountered in 124 *C. capitata* specimens examined from Chesapeake Bay. All possible setal combinations were observed in the eighth neuropodia of *C. aciculatus* males; capillary setae may be absent in one, but never in both, neuropodial fascicles. *C. aciculatus* females have genital spines only in the notopodia of the ninth setiger and are easily recognized since *C. capitata* females have only hooded hooks.

Key to the Capitellidae of the lower Chesapeake Bay*

1. Capillary setae present 2
– Capillary setae absent ..... *Amastigos caperatus*
2. No more than 4 anterior setigers with capillary setae only 3
– At least 5 anterior setigers with capillary setae only 5
3. First 3 setigers with capillary setae only ..... *Capitella jonesi*
– First 4 setigers with capillary setae only (*Mediomastus*) 4
4. Notopodia of posterior abdominal segments with both hooks and capillary setae or with capillary setae only ..... *M. ambiseta*
– Abdominal notopodia with hooks only ..... *M. californiensis*
5. First 5 setigers with capillary setae only .... *Heteromastus filiformis*
– More than 5 thoracic setigers with capillary setae 6
6. Genital spines present 7
– Genital spines absent 9
7. Genital spines present in setigers 8 and 9 8

* Setal characters may vary with age (Warren, 1976). This key is based upon setal characters of adults.

– Genital spines present only in ninth setiger .....
..... *Capitomastus aciculatus* (female)
8. Neuropodia of setiger 8 with some capillary setae .....
..... *Capitomastus aciculatus* (male)
– Neuropodia of setiger 8 with hooks only ... *Capitella capitata* (male)
9. First 7 setigers with capillary setae or mixed capillary setae and hooks ..... *Capitella capitata* (female)
– First 11 setigers with capillary setae only (*Notomastus*) 10
10. Setiger 1 with capillary setae in both noto- and neuropodia .....
..... *N. latericeus*
– First setiger without neurosetae ..... *N. hemipodous*

Acknowledgments

We would like to thank Brown and Root, Inc. of Houston, Texas for supporting in part this research. Specimens were supplied to us by Rod Burtelsen of the Virginia Institute of Marine Science and by Joseph Benedict of Taxon, Inc.

The authors are especially grateful to Dr. Kristian Fauchald of the Smithsonian Institution for examining several of our specimens and for critically reviewing the manuscript. We also thank Linda Lutz for preparing the figures for press.

This research was supported in part by NOAA grant NA79AA-D-00026.

Literature Cited

Fauchald, K. 1977. The polychaete worms. Definitions and keys to the orders, families, and genera.—Nat. Hist. Mus. Los Angeles County. Science Series 28:1–190.

Grube, A. E. 1862. Noch ein Wort über die Capitellen and ihre Stellung im Systeme der Anneliden.—Arch. Naturgesch. Berlin 28:366–378.

Hartman, O. 1959. Capitellidae and Nereidae (Marine Annelids) from the Gulf side of Florida, with a review of freshwater Nereidae.—Bull. Mar. Sci. Gulf and Caribbean 9(2):153–168.

Hartman, O. 1969. Atlas of sedentariate polychaetous annelids from California.—Allan Hancock Found., Univ. of Southern California, Los Angeles, 812 pp.

Piltz, F. M. 1977. A new genus and species of polychaete (Family Capitellidae) from southern California.—Bull. So. Calif. Acad. Sci. 76(1):57–60.

Thomassin, B., and C. Picard. 1972. Étude de la microstructure des soies de polychètes Capitellidae et Oweniidae au microscope électronique à balayage: un critère systématique précis.—Mar. Biol. 12:229–236.

Warren, L. M. 1976. A review of the genus *Capitella* (Polychaeta: Capitellidae).—J. Zool., Lond. 180:195–209.

Department of Biological Sciences, Old Dominion University, Norfolk, Virginia 23508. RME present address: Barry A. Vittor & Associates, Inc., 8100 Cottage Hill Road, Mobile, Alabama 36609.