CONTRIBUTIONS IN SCIENCE

ADDITIONS TO THE DESCRIPTION OF THE FANWORM GENUS PSEUDOFABRICIA CANTONE, 1972 (POLYCHAETA: SABELLIDAE: FABRICIINAE)

Kirk Fitzhugh
The scientific publications of the Natural History Museum of Los Angeles County have been issued at irregular intervals in three major series; the issues in each series are numbered individually, and numbers run consecutively, regardless of the subject matter.

- Contributions in Science, a miscellaneous series of technical papers describing original research in the life and earth sciences.
- Science Bulletin, a miscellaneous series of monographs describing original research in the life and earth sciences. This series was discontinued in 1978 with the issue of Numbers 29 and 30; monographs are now published by the Museum in Contributions in Science.
- Science Series, long articles and collections of papers on natural history topics.

Copies of the publications in these series are sold through the Museum Book Shop. A catalog is available on request.

The Museum also publishes Technical Reports, a miscellaneous series containing information relative to scholarly inquiry and collections but not reporting the results of original research. Issue is authorized by the Museum’s Scientific Publications Committee; however, manuscripts do not receive anonymous peer review. Individual Technical Reports may be obtained from the relevant Section of the Museum.

Scientific Publications Committee

James L. Powell, Museum President
Daniel M. Cohen, Committee Chairman
Brian V. Brown
Kenneth E. Campbell
Kirk Fitzhugh
Robin A. Simpson, Managing Editor

Natural History Museum of Los Angeles County
900 Exposition Boulevard
Los Angeles, California 90007

Printed at Allen Press, Inc., Lawrence, Kansas

ISSN 0459-8113
ADDITIONS TO THE DESCRIPTION OF THE FANWORM GENUS PSEUDOFABRICIA CANTONE, 1972 (POLYCHAETA: SABELLIDAE: FABRICIINAE)

KIRK FITZHUGH

ABSTRACT. The monotypic genus Pseudofabricia Cantone, 1972, with type species P. aberrans, was originally described from two specimens, both of which lacked branchial crowns. Neither of these specimens was, however, formally designated as a type. Only one of these specimens is extant. That specimen is redescribed and designated as the lectotype and is compared to some of the complete specimens used by Giangrande and Cantone (1990) in their redescription of the taxon. These latter specimens have nonvascularized ventral filamentous appendages in the branchial crown, which appear to be homologous to those in Fabriciola Friedrich, yet differ in that they are only slightly longer than the dorsal lips. Contrary to what was described by Giangrande and Cantone, the manubria of abdominal uncini in P. aberrans are about the same length as the dentate region. Based on the present redescription, the cladistic relationships of Pseudofabricia to other fabrician taxa are discussed.

INTRODUCTION

The monotypic genus Pseudofabricia Cantone, 1972, with type species P. aberrans, was recently redescribed from complete specimens by Giangrande and Cantone (1990), substantially increasing knowledge of this taxon. Cantone’s (1972) original description was based on two living specimens, both lacking the branchial crown. These specimens were collected near Siracusa, Sicily, from among the rhizomes of the sea grass Posidonia oceanica at a depth of about 2 m. Giangrande and Cantone (1990) based their redescription on specimens collected from similar habitats at two localities: off the island of Ponza, northwest of Naples, and from near the city of Brindisi in the Adriatic Sea. Unfortunately, no direct comparisons were made with the original specimens.

Prior to Giangrande and Cantone’s (1990) redescription, Cantone’s (1972: figs. 1–2, pl. 1) illustrations of setal forms and the anterior end of the body were too limited to fully assess the relationship of the genus to other fabrician taxa (e.g., Fitzhugh, 1989, 1991, 1992). Giangrande and Cantone (1990) established the position of Pseudofabricia in the Fabriciinae (sensus Fitzhugh, 1989, 1991) and suggested that the genus is most closely related to Fabricia Blainville and Novafabricia Fitzhugh. Based on Giangrande and Cantone’s description, I was able to analyze the cladistic relationships of P. aberrans to other fabrician taxa (Fitzhugh, 1993). The result of that analysis supported the continued monophyly of all nonmonotypic genera and allowed for the recognition of Pseudofabricia (Fig. 1) as part of a clade comprising Fabricia, Augeneriella Banse, Parafabricia Fitzhugh, Fabricinuda Fitzhugh, Novafabricia Fitzhugh, and Pseudofabriciola Fitzhugh.

I recently had the opportunity to examine several of the specimens used in Giangrande and Cantone’s (1990) redescription and discovered an attribute that allows for a more precise definition of the genus. As well, I have obtained from Dr. Cantone the only remaining specimen of Pseudofabricia aberrans upon which she based her original description. Unfortunately, Cantone (1972) neither designated nor specifically referred to either of the original specimens as types and made no mention of the final disposition. With the growing awareness over the past several years of the diversity and distribution of fabriciins in the Mediterranean Sea (Giangrande and Castelli, 1986; Martin and Giangrande, 1991; Simboura, 1990; Fitzhugh et al., 1994; Fitzhugh and Simboura, 1995), the need to minimize ambiguity in the identification of small-bodied sabellids from this region has become more acute. I will in the present paper designate Cantone’s original specimen as the lectotype of P. aberrans as well as compare this specimen with some of the nontype material. All specimens examined have been deposited in the Allan Hancock Foundation Polychaete Collection of the Los Angeles County Museum of Natural History (LACM-AHF).

1. Invertebrate Zoology Section, Research and Collections Branch, Los Angeles County Museum of Natural History, 900 Exposition Boulevard, Los Angeles, California 90007.

Contributions in Science, Number 456, pp. 1–6
Natural History Museum of Los Angeles County, 1995
SYSTEMATICS

*Pseudofabricia aberrans* Cantone, 1972, emended
Figures 2-4


MATERIALS EXAMINED. Lectotype (LACM-AHF 1708, slide mount), designated herein; Mediterranean Sea, Island of Sicily, near Siracusa, *Posidonia oceanica* grass bed, depth about 2 m. Nine nontype specimens (three complete, six lacking branchial crown, LACM-AHF 1709), Tyrrhenian Sea, Island of Ponza, near Lazio, among rhizomes of *Posidonia oceanica*, depth 1 m, 1989.

DESCRIPTION OF LECTOTYPE. Specimen in

---

Figure 1. Strict consensus cladogram, modified from Fitzhugh (1993: fig. 3), indicating the relationship of *Pseudofabricia* to other Fabriciinae genera.

Figure 2. Lectotype of *Pseudofabricia aberrans* (LACM-AHF 1708), left side, entire specimen (figure split between figures 6 and 7). a, anterior half of body. b, posterior half of body; arrows indicate thorax-abdomen boundary. Abbreviations: apr, anterior peristomial ring; ppr, posterior peristomial ring; vl, ventral lobe of anterior peristomial ring.
poor condition, mounted on slide, somewhat laterally flattened (Fig. 2). Body with 8 thoracic and 3 abdominal setigers, branchial crown absent. Total body length 1.30 mm, maximum width 0.25 mm at setiger 3. Ventral margin of anterior peristomial ring developed as broad lobe, about same length as remainder of ring. Posterior peristomial ring slightly shorter than anterior ring (exclusive of ventral lobe). Annulation between anterior and posterior rings only visible ventrally. Setigers 1–2 each slightly longer than posterior peristomial ring. Ventrum of setiger 3 about same length as setiger 2, dorsum of setiger 3 distinctly inflated, about 2 times longer than ventrum. Setiger 4 about 2.5 times longer than setiger 1. Setigers 5–8 each about same length as setiger 4 or slightly shorter. Anterior and posterior regions of thorax slightly tapered. Abdominal setigers of equal width, only slightly narrower than posterior thoracic region. Setiger 9 slightly shorter than setiger 8, setiger 10 about one-half length of setiger 9, setiger 11 and pygidium each about one-half length of setiger 10. Posterior margin of pygidium rounded. Anterior peristomial ring and pygidium each with pair of dark brown eyes. Superior thoracic notosetae elongate, narrowly hooded; 3–5 per fascicle. Inferior thoracic notosetae in setigers 2–8 short forms of elongate, narrowly hooded form; 1–2 per fascicle. Abdominal neurosetae modified, elongate, narrowly hooded; 1–3 per fascicle. Thoracic uncini acicular, in single row of 4–7 per fascicle; large tooth above main fang followed by series of smaller teeth. Abdominal uncini with 10–11 rows of teeth, 3–5 teeth per row; manubrium about same length as denticate region; uncini not viewed in profile. Body pigmentation absent.

REMARKS ON LECTOTYPE. In comparison with Cantone’s (1972: fig. 1, pl. 1; Fig. 3) illustrations of this species while still alive, the lectotype is considerably contracted, the slide preparation probably causing additional distortion by lateral compression. The poorly preserved and incomplete condition of the lectotype makes comparisons difficult with specimens described by Giangrande and Cantone (1990). Comparing the lectotype and Ponza specimens, the latter being described below, with Cantone’s (1972) original description points to a misinterpretation of the anterior end. For instance, Cantone’s (1972: fig. 1; Fig. 3) illustrations of the whole animal, which were made from the two original specimens while they were still alive, show the anterior end with the ventral lobe of the anterior peristomial ring distinctly demarcated by a very deep gap from a large dorsal lobe (Fig. 3b). This dorsal lobe probably represents at least a portion of the narrow, median ridge situated just above the mouth, which is present in most fabricins (e.g., Fig. 4a). In all specimens examined, this ridge is not nearly as pronounced as indicated by Cantone, and the deep gap between the ridge and the ventral lobe is an artifact. It is not uncommon to find the ventral lobe curved over the anterior end when the branchial crown is missing (e.g., Cantone, 1972: figs. 1–2, pl. 1; Giangrande and Cantone, 1990: fig. 1B), which at first sight can give the impression that the peristomial margin is incised just above the lobe. This interpretation of the anterior peristomial ring is also seen in the illustrations of Giangrande and Cantone (1990: figs. 1B, 2B–D), discussed below.

ADDITIONS TO DESCRIPTION BASED ON PONZA SPECIMENS. Inner margin of each branchial lobe with a low, triangular dorsal lip (Fig. 3a, b). One pair of nonvascularized ventral filamentous appendages present just ventral to each dorsal lip; appendages slightly longer than dorsal lips to up to 1.5 times longer than lips; surface of appendages ranges from smooth (Fig. 4a) to wrinkled (Fig. 4b); width relatively uniform except for slight widening at base; distal end rounded. Ventral margin of anterior peristomial ring as broad, flattened lobe; proximal margin distinctly continuous with remainder of anterior ring (Fig. 4a). Anterior peristo-
mial ring about one-half length of posterior ring. Annulation between anterior and posterior rings distinct dorsolaterally and ventrally. Abdominal unci

![Figure 4. *Pseudofabricia aberrans* from Ponza Island, Italy (LACM-AHF 1709). a, anterior end, right side (right half of branchial crown removed, distal end of dorsal lip is folded over). b, inner margin of right half of branchial crown. c, abdominal uncinus from setiger 9. Abbreviations: apr, anterior peristomial ring; bh, branchial heart; dl, dorsal lip; mdr, middorsal ridge; ppr, posterior peristomial ring; vfa, ventral filamentous appendage; vl, ventral lobe of anterior peristomial ring.](image)

...
most instances, the manubrium is about the same length as the dentate region (Fig. 4c), though I have seen some uncini with a slightly longer manubrium. In no instance have I found manubria twice as long as the dentate region.

I commented earlier (Fitzhugh, 1993: 10) on the fact that Pseudofabricia is characterized by pleisomorphic characters. While this does not technically affect the integrity of the genus at this time, as it is monotypic, the presence of very short, nonvascularized ventral filamentous appendages easily suffices as a synapomorphy in the event additional Pseudofabricia species are described.

**DISCUSSION**

Relative to other fabricin sabellids, Pseudofabricia aberrans possesses an unusual combination of character states, certainly pointing to the need for a reassessment of the relationship of this taxon to other fabricin genera. My earlier inclusion of Pseudofabricia in a cladistic analysis of fabricin genera and species (Fitzhugh, 1993) placed the genus in a clade including Pseudofabriciola, Parafabrica, Fabricia, Novafabricia, Augeneriella, and Fabriciana (Fig. 1), this clade being defined by the presence of a large tooth above the main fang in thoracic uncini. There was certainly nothing remarkable about the placement of Pseudofabricia, especially given the dentition pattern in thoracic uncini, coupled with the presence of the ventral lobe on the anterior peristomial ring, both of which are common to most of these genera. In a subsequent series of unpublished cladistic analyses I have performed with fabricin genera and species, in which nonvascularized ventral filamentous appendages are coded as present in Pseudofabricia (homologous to Fabriciola appendages), a substantially greater number of tree topologies exist and far greater instability occurs with regard to relationships among genera. While some topologies are consistent with those obtained in previous analyses (e.g., Fig. 5a), I have observed two notable topological arrangements that have not been observed previously: (1) Fabriciola, Novafabricia, and Augeneriella are capable of being paraphyletic (e.g., Fig. 5b–d), and (2) Pseudofabricia can be the sister group to Fabriciola by the presence of nonvascularized filamentous appendages in both genera (e.g., Fig. 5b, c, e).
The marked effects on tree topology and monophyly due to the inclusion of filamentous appendages in *Pseudofabricia* readily preclude a straightforward reassessment of relationships among genera at this time. The extreme sensitivity of tree topologies to even minor modifications in character data is a clear indication of the lack of sufficient data relative to the ever increasing number of taxa being described. The very small body sizes of fabricin sabellids present distinct limits on the availability of gross morphological characters typically used in sabellid systematics. This increasing disparity between the number of characters and taxa simply heightens the level of homoplasy, the principal result being the more tenuous recognition of genera. A suite of very promising characters is being developed by Rouse (e.g., 1992, 1993, 1995; Rouse and Fitzhugh, 1994), centering on reproductive and developmental features. Indeed, based on his survey of reproductive characters in *Fabriciola*, Rouse (1993: 250) suggested that, once these characters are taken into consideration cladistically, *Fabriciola* might be paraphyletic. Such a view is supported by some of the topologies presented here (Fig. 5b–d). The further integration of Rouse's reproductive data with characters currently available will likely afford greater resolution to relationships among fabricin taxa.

ACKNOWLEDGMENTS

Sincere thanks are extended to Drs. Grazia Cantone (Università di Catania, Italy) and Adriana Giangrande (Università Degli Studi di Lecce, Italy) for their answers to my numerous questions and their willingness to make specimens available for study. An earlier version of the manuscript was greatly improved by comments from Thomas H. Perkins and Jerry D. Kudenov.

LITERATURE CITED


Received 6 July 1994; accepted 10 January 1995.