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The genus *Novafabricia* Fitzhugh, 1990 (Polychaeta: Sabellidae: Fabriciinae) along the Italian coast (Mediterranean Sea) with a description of *N. posidoniae* n. sp.

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SUMMARY: The new species, *Novafabricia posidoniae* is described for the Mediterranean Sea, and *Novafabricia* sp. cf. *N. infratorquata* (Fitzhugh, 1983) is reported for the eastern Mediterranean basin. The genus *Novafabricia* Fitzhugh, 1990, represented up to now in the Mediterranean only by *N. infratorquata*, is recorded for the first time along the Italian coast. *Novafabricia posidoniae* belongs to the group of *Novafabricia* species with pseudospatulate chaetae present in thoracic chaetigers 3-5. The addition of this new species raises the number of *Novafabricia* species to 10.

Keywords: Fabriciinae, *Novafabricia posidoniae*, Polychaeta, Sabellidae, Mediterranean Sea, *Posidonia* rhizomes.

RESUMEN: THE GENUS *NOVAFABRICIA* FITZHUGH, 1990 (POLYCHAETA: SABELLIDAE: FABRICIINAE) EN LA COSTA ITALIANA (MAR MEDITERRÁNEO) CON LA DESCRIPCIÓN DE *N. POSIDONIAE* N. SP. – El género *Novafabricia* Fitzhugh, 1990, representado en el Mediterráneo únicamente por *N. infratorquata*, se cita por primera vez para las costas italianas. Se describe *Novafabricia posidoniae* como especie nueva en base a ejemplares del Mediterráneo y se cita *Novafabricia* sp. cf. *N. infratorquata* (Fitzhugh, 1983) para el Mediterráneo oriental. *N. posidoniae* pertenece al grupo de especies del género con sedas pseudoespatuladas en los setígeros 3-5. La presente descripción incrementa a 10 el número de especies conocidas de *Novafabricia*.

Palabras clave: Fabriciinae, *Novafabricia posidoniae*, Polychaeta, Sabellidae, Mar Mediterráneo, rizomas *Posidonia*.

INTRODUCTION

The genus *Novafabricia* Fitzhugh, 1990, with the type species *N. chilensis* (Hartmann-Schröder, 1962), originally described as *Fabriciola* Friedrich, 1939, was erected by Fitzhugh (1990) as a result of a review of the fabriciina genera. The genus is considered monophyletic based on the dorsal lips being reduced to low, narrow ridges, although lips are completely absent in some specimens of *N. triangularis*

(Fitzhugh, 1990), the actual presence of ventral lips is questionable. These structures, when present, appear as low, rounded swellings at the base of the proximal-most pinnules of ventral radioles in some species and as incompletely formed pinnules in others (Fitzhugh, 1990). Members of the genus resemble members of the species in *Augeneriella* Banse, 1957, *Pseudoaugeneriella*, Fitzhugh, 1998, *Fabricia* Blainville, 1828, *Brifacia* Fitzhugh, 1998, *Pseudofabricia* Cantone, 1972, and *Parafabricia*

Fitzhugh, 1992 in that they have a ventral, lobe-like process, sometimes reported to as a collar, extending from the anterior margin of the anterior peristomial ring (Fitzhugh, 1990; 1992; 1998). Another feature characterizing the genus is the absence of ventral filamentous appendages, which particularly distinguishes it from *Augeneriella* and *Pseudoaugeneriella* (Fitzhugh, 1998). Within the genus the shape of the abdominal uncini, which show a quite short manubrium and a dentate region with a relatively low number of teeth in profile especially when compared to *Fabricia*, and the distribution pattern of pseudospatulate chaetae are variable. This can be useful in distinguishing *Novafabricia* from *Fabricia*, *Brifacia*, *Pseudofabricia*, and *Parafabricia*.

The genus *Novafabricia* is distributed world wide, with 9 described species (Fitzhugh, 1998). Among these, only *N. infratorquata* (Fitzhugh, 1983), originally described for the Caribbean area, was recently recorded by Bick (2005) in the western Mediterranean Sea. The same author emended the other species previously described for the Mediterranean area, *N. bilobata* Martin and Giangrande 1991, because paratype examination revealed the presence of dorsal lips. Therefore, this species is considered a junior synonym of *Fabricia stellaris* (Müller, 1774).

The present paper deals with this genus found along the Italian coast with the description of a new species.

MATERIAL AND METHODS

Examined material comes from ecological studies conducted along the Italian coast since 1980. In addition to optical microscopy, scanning electron microscopy (SEM) was used to examine fine structures such as chaetae. Holotypes and paratypes were deposited at the MNCN (Museo Nacional de Ciencias Naturales, Madrid, Spain). The abbreviation PCZL refers to Giangrande's private Polychaete Collection at the Zoological Laboratory of Lecce University.

TAXONOMIC ACCOUNTS

Family SABELLIDAE Latreille, 1825
Subfamily FABRICIINAE Rioja, 1923
Genus *Novafabricia* Fitzhugh, 1990

Novafabricia posidoniae n. sp. (Figs. 1-3)

Material examined. 121 specimens from Ponza Island, *Posidonia* bed (5 m depth), 1980, leg. Somaschini, Tyrrhenian Sea. Holotype: MNCN 16.01/10324. Paratypes: 15 specimens MNCN, 16.01/10323; 105 specimens PCZL.

Description. Holotype complete with 8 thoracic and 3 abdominal chaetigers; 3 mm total length and 0.2 wide, of which 1.2 mm is branchial crown (Fig. 1b). Three pairs of radioles. Eight pairs of pinnules per radiole terminating at same height, branchial hearts present (Fig. 1a). Ventral filamentous appendages absent. Dorsal lips low, narrow, indistinct ridges. Ventral lips digitiform, at bases of proximal pinnule of ventral radioles, slightly longer than wide (Fig. 3d). Body cylindrical, tapering slightly anterior and posterior. Peristomial and pygidial eyes black, round. Anterior margin of anterior peristomial ring as low dorsal ridge, very low laterally, and ventrally as a triangular, distally pointed lobe (Fig. 1b). Conical process above mouth broadly triangular in lateral view (Fig. 1c). Anterior chaetigers wider than long and shorter than posterior chaetigers, becoming as long as wide. Pygidium rounded. Anterior and posterior peristomial ring very dark, especially on ventral lobe (Fig. 1b). Pigmentation diminishing in following chaetigers with chaetiger 6 cream coloured. Superior thoracic notochaetae elongate, narrowly hooded, 4-6 per fascicle (Fig. 1f). Inferior thoracic notochaetae shorter and narrowly hooded in chaetigers 2 and 6-8, 1-2 per fascicle. Pseudospatulate chaetae in chaetigers 3-5, 1-2 per fascicle (Figs. 1f, 2a). Thoracic uncini acicular with large tooth above main fang (Figs. 1d, 2b), 12 per fascicle in double rows. Abdominal neurochaetae modified, elongated, narrowly hooded, 2-3 per fascicle. 24 abdominal uncini in the first chaetiger, 19 in the second, and 14 in the last one. Dentate region with 5 teeth in profile, and from 2 to 3 teeth per row and single large basal tooth, manubrium slightly longer than dentate region (Fig. 1e).

Paratype total length between 1 and 3 mm, ratio between crown and total length 0.4 ± 0.03 and the ratio between crown and body length is 0.69 ± 0.08 . Number of thoracic uncini varies from 8 to 12, correlated to total body length ($r^2 = 0.8$; $n = 22$), and number of abdominal uncini ranges from 14 to 25, positively correlated to total length ($r^2 = 0.7$; $n = 22$).

Etymology. The species is named after its habitat: *Posidonia* beds typical of the Mediterranean Sea.

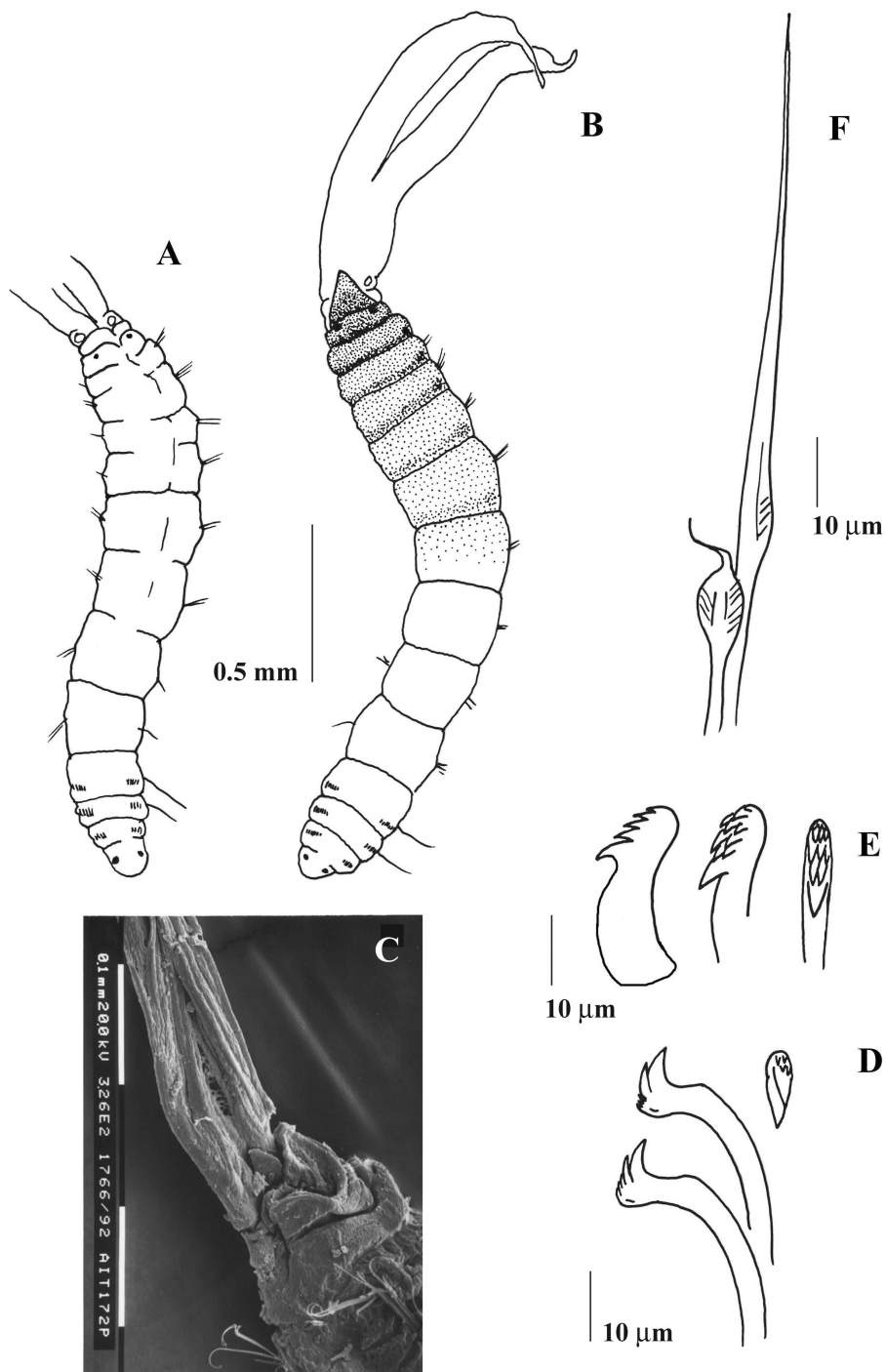


FIG. 1. – *Novafabricia posidoniae* n. sp. Drawing and photograph from holotype: A, entire worm, dorsal view; B, entire worm, ventral view; C, inner margin of branchial crown (SEM); D, thoracic uncini from chaetiger 3; E, abdominal uncini from chaetiger 9; F, superior thoracic notochaeta and inferior thoracic pseudospatulate chaeta from chaetiger 3.

Remarks. *Novafabricia posidoniae* n.sp., belongs to the group of species within the genus with pseudospatulate chaetae in chaetigers 3-5. The new species differs from *N. exigua* Fitzhugh, 1998 and *N. infratorquata*, by having a higher number of both thoracic and abdominal uncini.

Moreover *N. infratorquata*, which is the other *Novafabricia* present in the Mediterranean, is also distinguished by being smaller in size and by having a different collar shape and a shorter manubrium in the abdominal uncini (Fitzhugh, 1983; Bick, 2005).

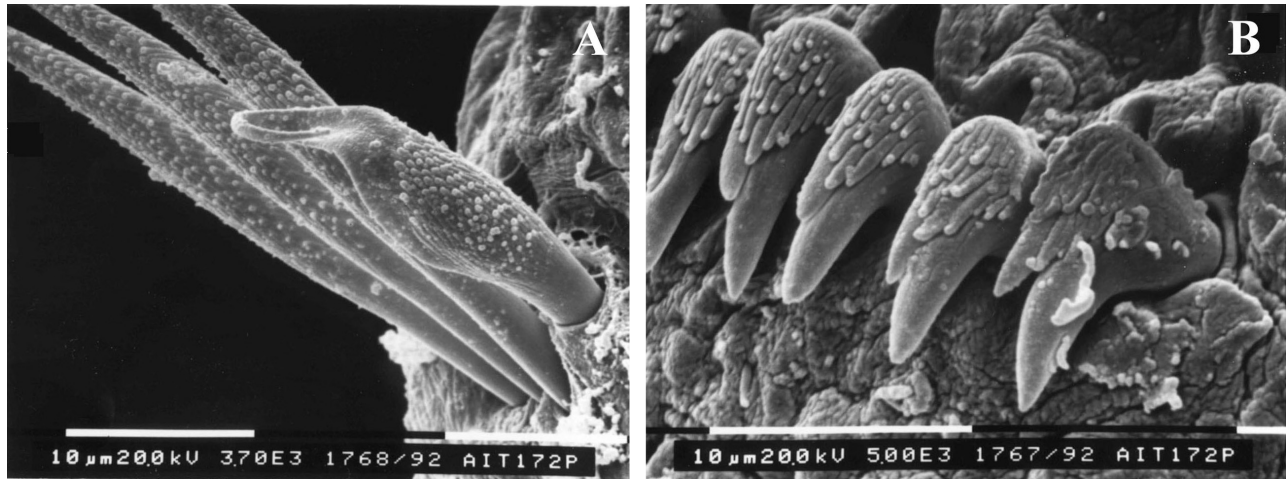


FIG. 2. – *Novafabricia posidoniae* n. sp.: A, pseudospatulate chaeta from chaetiger 3; B, thoracic uncini from chaetiger 3.

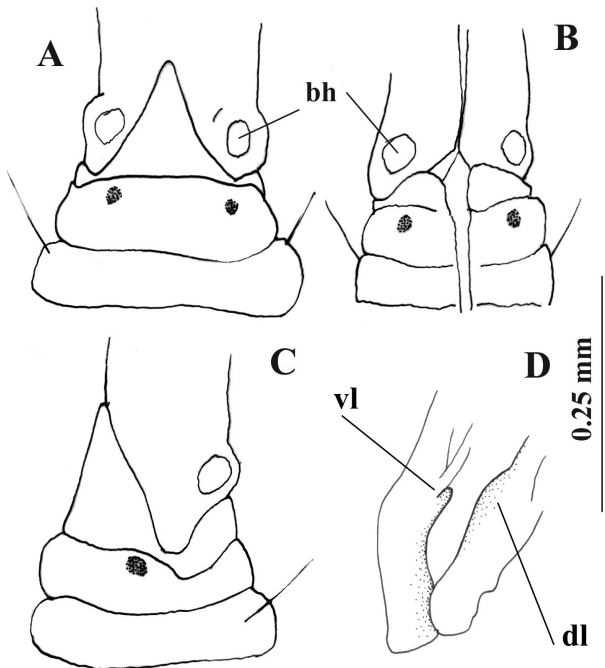


FIG. 3. – *Novafabricia posidoniae* n. sp. Anterior peristomial ring: A, ventral view from a paratype; B, dorsal view from same paratype; C, lateral view from same paratype; D, right-half of branchial crown, inner margin. bh= branchial heart; vl= ventral lip; dl= dorsal lip.

The species most resembling *N. posidoniae* is *N. triangularis* described from the California coast. The feature that best distinguishes the two species is the more developed ventral lips in *N. posidoniae*. In this feature the new species resembles *N. labrus* Fitzhugh, 1998, *N. chilensis*, *N. brunnea* (Hartman, 1969) and *N. gerdi* (Hartmann-Schröder, 1974). However, *N. posidoniae* differs from *N. brunnea* because this last species has an anterior peristomial ring ventral lobe that is shaped like a tongue, and a

larger number of thoracic uncini. It differs from *N. gerdi* especially in the dentition pattern of abdominal uncini. *N. posidoniae* can also be distinguished from *N. triangularis* by the shape of the anterior peristomial ring, which is more pointed ventrally and lower laterally in the former species (Figs. 3a-d) (see Fitzhugh, 1990, Figs 11 and 12 for comparison), by the ratio between crown and total length which is 0.4 in *N. posidoniae* and 0.3 in *N. triangularis* (Fitzhugh, 1990a), by the number of abdominal uncini that are lower in *N. triangularis*, and by the body pigmentation pattern. The pigmentation of *N. posidoniae*, absent on the dorsum, appears very dark, with some specimens having the triangular lobe of the peristomial ring quite black.

Type locality. Ponza Island, Tyrrhenian Sea, Italy

Novafabricia sp. cf. *N. infratorquata*
(Fitzhugh, 1983) (Fig. 4)

Material examined. 2 specimens from Otranto, South Adriatic Sea, 5 m depth, on photophilic algae, July 2000. PCZL.

Description of eastern Mediterranean material. Complete specimens with 8 thoracic and 3 abdominal chaetigers, 1.5 mm total length and 0.2 wide, of which 0.5 mm is branchial crown (Fig. 4a). Three pairs of radioles per lobe with 5-6 pairs of pinnules per radiole, terminating at same height. Branchial hearts present (Fig. 4a, b). Ventral filament appendages absent. Dorsal lips very low, fused to proximal-most pinnules of dorsal radioles for most of length (Fig. 4c). Ventral lips absent. Body cylindrical with slightly inflated median region (Fig. 4a). Peristomial and pygidial eyes black, ellipsoid (Fig.

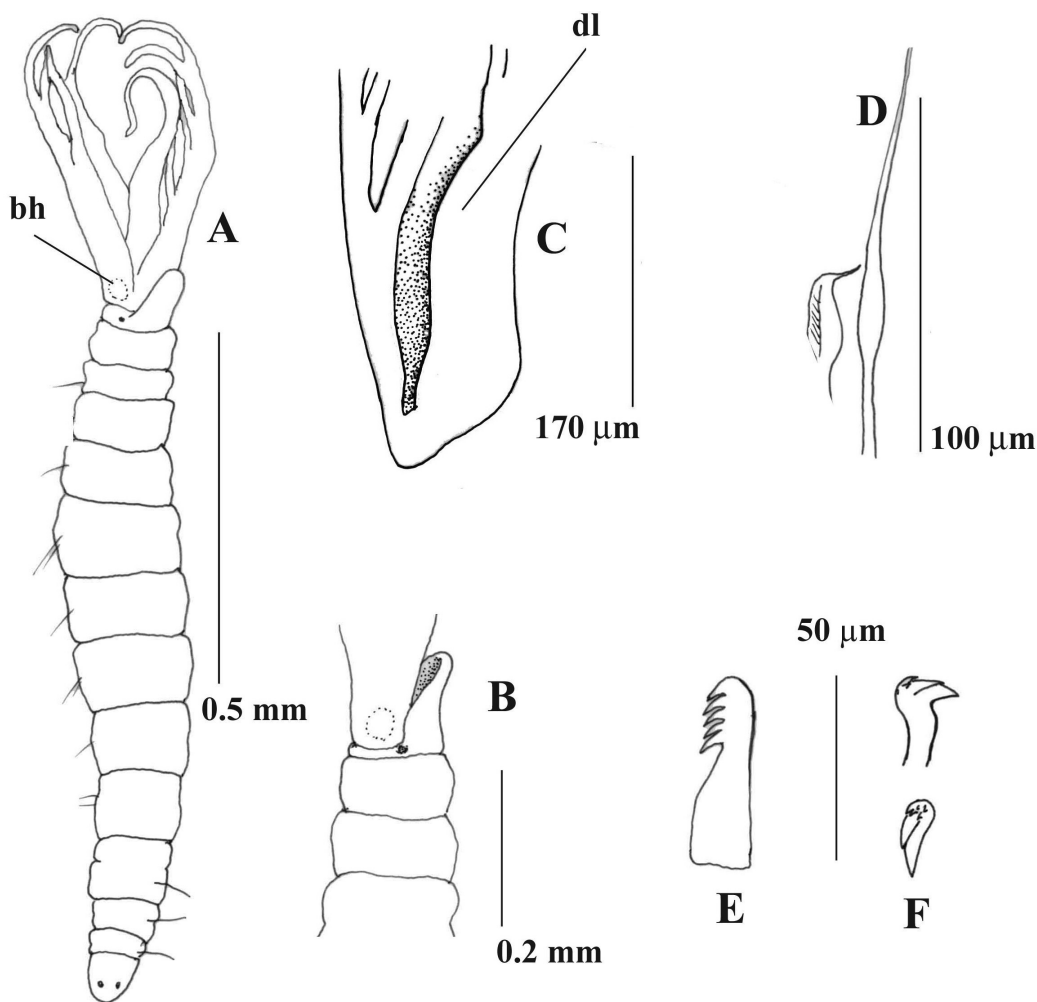


FIG. 4. – *Novafabricia* sp. cf. *N. infratorquata*: A, entire worm, ventro-lateral view; B, detail of the lateral view of the anterior end showing the ventral lobe; C, section of branchial crown; D, superior thoracic notochaeta and inferior thoracic pseudospatulate chaeta; E, abdominal uncini; F, thoracic uncini. bh= branchial heart; dl= dorsal lip.

4a, b). Anterior margin of anterior peristomial ring as low ridge dorsally and laterally, as broad tongue-like lobe ventrally (Fig. 4a, b). Pigmentation absent. Superior thoracic notochaetae elongated, narrowly hooded, 3-4 per fascicle (Fig. 4d). Inferior thoracic notochaetae shorter and narrowly hooded in chaetigers 2 and 6-8, 1 per fascicle. Pseudospatulate chaetae (Fig. 4d) in chaetigers 3-5, 1 per fascicle. Thoracic uncini acicular with a large tooth above main fang (Fig. 4f), 5-6 per fascicle in single or irregular double rows. Abdominal neurochaetae modified elongated, narrowly hooded, 2-3 per fascicle. Abdominal uncini 10 per fascicle, dentate region with 5-6 teeth in profile and 3-4 teeth per row (Fig. 4e). Manubrium slightly longer than dentate region.

Remarks. *Novafabricia infratorquata* was first found along Belize and then reported by Bick (2005) for the Gulf of Mexico and for the western

Mediterranean Sea. The same author stressed the extreme variability existing within this species. For instance, the preserved material described from the eastern Mediterranean has no pigmentation; however, material from the western Mediterranean is reported with pigmentation (Bick, 2005). *Novafabricia* sp. cf. *N. infratorquata* could represent the first finding of the species in the western Mediterranean basin. However, even if most of the features of the present material are within the range of variability of the species, a different shape of the anterior peristomial ring ventral lobe is observed. Therefore, at first we considered it as a different species, but after examining the figures of *N. infratorquata* from Bick's (2005) Mediterranean material, together with the limited available material that does not allow a good comparison, we currently consider our specimens as probably belonging to this species.

DISCUSSION

With the addition of this new species collected in the Mediterranean, there are now 10 *Novafabricia* species, of which 2 are recorded in the Mediterranean Sea. The phylogeny of *Novafabricia* (as for most of the fabriciini sabellids) has been widely studied (Fitzhugh, 1998). As stated above the genus is monophyletic based on the reduced dorsal lips. The possible states in the fabriciini genera range from a well-developed triangular lobe to completely absent, with some intermediate states that probably are difficult to separate. As mentioned above, within *Novafabricia* dorsal lips can be present but poorly developed with the dorsal margin fused with the proximalmost pinnule, or even completely absent (Fitzhugh, 1990, 1993).

A plesiomorphic condition in the genus was considered by Fitzhugh (1998) as the presence of pseudospatulate chaetae in thoracic chaetigers 3-7; however, the emendation of *N. bilobata* leads us to consider the presence of pseudospatulate chaetae in chaetigers 3-6 as plesiomorphic. The former condition is present in the genus *Fabricia*, and the emendation of *N. bilobata* leads to a better definition of *Novafabricia*. The new species described for the Mediterranean is distinct in having well developed ventral lips as occurs in the two species which have a 3-6 distribution of pseudospatulate chaetae, and in *N. gerdi* and *N. brunnea* among the species with 3-5 distributions. According to the topology of the *Novafabricia* analysis (Fitzhugh, 1998) *N. posidoniae* shows some apomorphic features such as pseudospatulate distribution and length of the manubrium of the abdominal uncini. However, the development of the ventral lips seems to be a plesiomorphic condition.

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