Redescription of *Tetilla radiata* Selenka from the Southwestern Atlantic (Porifera, Spirophorida, Tetillidae) and designation of its neotype

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ABSTRACT. The first redescription of *T. radiata* Selenka, 1879 based on study of a live population and material other than the type is presented. A neotype is proposed for the species, from a locality some 400 km to the southwest as it has not been found in its original type locality, Guanabara Bay (Rio de Janeiro, Rio de Janeiro State).

KEY WORDS. Brazil, Guanabara Bay, São Sebastião Channel, taxonomy.

RESULTS

*Tetilla* Schmidt, 1868

Diagnosis. Tetillidae without porocalices, without cortical specialization, without auxiliary megascleres (Van Soest & Rützler 2002). Type species: *Tetilla euplocamos* Schmidt, 1868.

*Tetilla radiata* Selenka, 1879

Figs 3, 4, 5, 6a-c, 7a-c, 8; Tab. I

Remarks. The whereabouts of *T. radiata*’s type material has been searched for extensively, but unsuccessfully. Curators of sponge collections in Berlin, Erlangen, Frankfurt, Göttingen, Hamburg and Munich (all in Germany) were contacted but none of these hold any extant material. The Porifera Mailbase, with over 250 subscribers, has also been contacted, but no response was obtained. It is assumed accordingly that its type material has been lost and it was decided to designate a neotype, which is necessary in view of the brief description provided originally, with no data on spicule dimensions.

Neotype. **Brazil,** São Paulo State: São Sebastião (off Praia Grande, 23°49'S, 45°25'W, São Sebastião Channel, 10 m depth), 17/V/1997, MNRJ 7106, F.L. Silveira leg.

Additional material. **Brazil,** São Paulo State: Ilhabela (50 m to the SW of Ilha da Prainha, 23°51.232'S, 45°25.247'W, São Sebastião Channel, 6.5 m depth), 16/VI/1997, MNRJ 524, 525, 576, E. Hajdu leg.; (idem, 6 m depth), 05/I/2000, MNRJ 2994, E. Hajdu & M. Custódio leg.; (idem, 4 m depth), 28/XI/2001, MNRJ 5116, M. Custódio & U. Pinheiro leg. São Sebastião: (off Praia Grande, 23°49.000'S, 45°25.000'W, São Sebastião Channel,
small size, less than 2 cm in height.

Description of the neotype. Olive-shape. Surface hispid, velvety. Specimen 22 mm height. A single apical oscule, simple, circular, 1 mm in diameter. Consistency firm but compressible. Live colour red-wine to pinkish, with a light yellowish-gray base. Grayish brown in ethanol.

Description. Olive-shape. Surface hispid, velvety. A single apical oscule, simple, circular, 1-5 mm in diameter. Consistency firm but compressible. Live colour red-wine to pinkish, with a light yellowish-gray base (Fig. 3). Grayish brown in ethanol (Fig. 4).

Anatomy. Perfectly radial (Figs 5, 6a), without a discernible cortex. Bundles of oxeas originate from a central point and run all the way to the surface, ramifying here and there but mostly not anastomosing. Protriaenes are intermingled with the oxeas and pierce the surface (Fig. 6b). Anatriaenes from the root bundles where they are disposed upside-down acting as hooks in the soft substrate (Fig. 6c). Transverse sections revealed (nearly) abundant longitudinal canals (150-300 µm thick) close to the oscule. These are not seen near the basal parts of the sponges.

Spicules. Megascleres are straight oxeas with sharp points (446-1,038.3-2,231/4-7.6-15 µm, length/width, Fig. 7a, 8); protriaenes with slender cladi, long rhabdomes with sharp points (rhabdome: > 3,500 µm, which was broken, cladi: 49-39.2-50 µm and cladome: 29-40.5-50 µm; Fig. 7b); and uniform anatriaenes with slender cladi, long rhabdomes with sharp points (rhabdome: > 5,600 µm, which was broken, cladi: 29-39.2-50 µm and cladome: 29-40.5-50 µm; Fig. 7c). Without microscleres.

Ecology. Found in soft substrates (fine-grained muddy-sand), hooked through their spicular tuft of anatriaenes. The species attained densities of up to a hundred specimens per square meter, being the only sponge found in this biotope. Some specimens had nudibranch egg-masses attached on them (e.g. MNRJ 524).

Distribution: from 23°31’S to 23°51’S, in southeastern Brazil.

Table I. Spicular micrometric data for specimens of Tetilla radiata Selenka, 1879. Oxeas measurements are given as smallest length – mean length – largest length/smallest width – mean width – largest width, in micrometers (N = 100). Triaenes’ measures are given as rhabdome/clad/cladome smallest length – rhabdome/clad/cladome mean length – rhabdome/clad/cladome largest length (N = 10). Rhabdomes were often broken and largest attainable lengths are likely larger than those measured here.

| Specimens | Oxeas | Protriaenes | Anatriaenes |
|-----------|-------|------------|-------------|
| MNRJ 7106 Neotype | 800-1,122/1,800-2,79-10 | 2,750/80/50 | 3,053/100/50 |
| MNRJ 524 | 446-1,077.8/1,824-5-8-15 | 892/49/39 | 1,097/99.9/48.5/1,358/146/58 |
| MNRJ 525 | 582-1,086.5-1,601/4-7.7-15 | 1,581/38/29 | 1,943.8/85.4/37.8-2,483/97/39 |
| MNRJ563 | 485-984.3-1,746/5-7.7-10 | 834/78/29 | 1,297.9/106.7/38.8-1,785/194/49 |
| MNRJ 576 | 485-1,008.1-1,649/5-7.9-15 | 1,310/78/39 | 1,455/107.7/51.4-1,795/149/78 |
| MNRJ 1731 | 776-1,010-3-1,455/5-8.1-10 | – | – |
| MNRJ 2994 | 786-1,103/2-2,31/5-8.7-15 | 922/78/39 | 1,201.8/91.2/38.8-1,698/97/49 |
| MNRJ 5116 | 776-907.5-1,116/5-4.9-5 | 873/78/39 | 970/75.6/47.5-1,067/97/49 |

Figure 1. Map showing South America, a section of the southeastern Brazilian coastline; and, in detail, the São Sebastião Island and the Channel, with the collecting localities for Tetilla radiata indicated. (a) Off Praia Grande (23°49’S, 45°25’W); (b) 50 m to the SW of Ilha da Prainha (23°51.232’S, 45°25.247’W). Scale bar = 5 km.

10 m depth), 17/V/1997, MNRJ 563, F.I. Silveira leg. Ubatuba: Andorinha Rock (23°31’S, 45°06’W, Flamengo cove, 3 m depth), 20/I/1963, MNRJ 1731, L. Forneris leg.

Diagnosis. Tetilla radiata is set apart from other Brazilian species of Tetilla by its red-wine to pinkish colour alive, and
DISCUSSION

The large conspicuous longitudinal aquiferous canals encountered by Selenka (1879) in specimens split in two hemispheric halves was not found. From preliminary observations made in aquaria and in situ, it is apparent that specimens undergo marked contraction upon collection and handling, which might account for this observed difference. Figure 8 shows the frequency distribution of size-classes for the oxeas. Despite the fact that some bar graphs suggest the existence of length gaps (e.g. MNRJ 524, 525, 1731), these were considered unimportant. The obtention of confident length measurements for the oxeas is hampered by the fact that the exceedingly thin triaenes...
Figures 4-7. *Tetilla radiata*. (4) Specimen (MNRJ 2994) in its current state of preservation, after fixation in ethanol. Scale bar = 1 cm; (5) transversal section at the level of the oscule, scale bar = 100 µm; (6a) longitudinal section of the radial skeleton, scale bar = 100 µm; (6b) protoriaenes piercing the surface, scale bar = 100 µm; (6c) a tuft of anatriaenes, scale bar = 100 µm; (7) megascleres: (a) oxea, (b) protoriaenes, (c) anatriaenes, scale bar = 10 µm.

are often broken, and their fragments are hard to tell apart from the thinner oxeas under light microscopy alone.

Schmidt (1868) reported *Tetilla euplocamos* for Desterro (nowadays, Florianópolis, Santa Catarina State), from material collected by Fritz Müller. The same species was lately found by Seelenka (1879) at Guanabara Bay, and reported to be olive-green to yellowish-brown. Continued dedication to the study of marine sponge biodiversity in the coasts of Rio de Janeiro and São Paulo States by Hajdu and collaborators (e.g. Hajdu et al. 1999), and of Santa Catarina State by Lerner and collaborators (Mothes & Lerner 1994, Lerner 1996) in the last decades failed to find the species again. The available descriptions for
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Revista Brasileira de Zoologia 20 (4): 637–642, dezembro 2003

T. euplocamos (Schmidt 1868, Selenka 1879, Sollas 1888, van Soest & Rützler 2002), do not allow its recognition. Van Soest & Rützler (2002) redescribed T. euplocamos type material, but the species remains unrecognizable, as these authors were unable to state confidently which categories of triaenes are present and how much they measure in micrometers. Even though Tetilla can be made out from the descriptions available for its type species, confidence on the taxonomic status of additional species assigned to the genus is compromised by uncertainties regarding the characterization of T. euplocamos.

ACKNOWLEDGEMENTS

The authors are thankful to M. Custódio, U.S. Pinheiro and F.L. Silveira for the collection of additional material, kindly donated to us. Further, we are thankful to Prof. Dr. Otto von Helversen (Erlangen University), Dr. Carsten Lueter (Museum für Naturkunde, Berlin), Dr. Dorte Janussen (Institut und Museum für Geologie und Paläontologie, Universität Göttingen) and Stefan Friedrich (Zoologische Staatssammlung München) for their efforts in searching for Selenka’s material.

ACKNOWLEDGEMENTS

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Received in 06.V.2003; accepted in 22.X.2003.