To Rob, With best wishes
Cecilia

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RADIOSPONGILLA CRATERIFORMIS (PORIFERA, SPONGILLIDAE) IN THE WEST INDIES AND TAXONOMIC NOTES

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ABSTRACT

The habitats of *Radiospongilla crateriformis* (Potts, 1882) in Barbados and Nevis Islands, West Indies, are described. Morphometric data of specimens from the two islands are compared, and drawings and SEM photos of the gemmules and spicules are provided. This is the first time the species is registered for any small island is the Eastern Caribbean basin thus extending its range to the Wets Indies. A brief discussion is offered on the occurence of genus *Radiospongilla* Penney & Raceck, 1968, in the Neartic and Neotropical regions. *Racekiela* nom. nov. with *Racekiela ryderi* (Potts,1882), comb.n. and *Racekiella sheilae* (Volkmer-Ribeiro; De Rosa-Barbosa & Tavares, 1988) comb.n. is proposed for genus *Acanthodiscus* Volkmer-Ribeiro, 1996, which was seen to be preoccupied.

KEYWORDS. West Indies, freshwater sponges, seasonal habitats, *Racekiela* nom. nov.

INTRODUCTION

The freshwater sponge, *Radiospongilla crateriformis* was described by POTTS (1882). The preferred habitat for this species is stagnant, turbid, alkaline waters (HARRISON, 1974). It has been reported previously from the eastern United States as far west as Texas and Wisconsin (FROST, 1991), southeastern Canada (RICCIARDI & REISWIG, 1993), China, Japan, southeast Asia and Australia (FROST, 1991). This report extends the known range of *R. crateriformis* to the West Indies, islands of Barbados and Nevis in the eastern Caribbean basin. This is the only freshwater sponge known from any small island in that region. A new name is provided for *Acanthodiscus* that is preoccupied. Abbreviations used in the text: MCN, Museu de Ciências Naturais da Fundação Zoobotânica do Rio Grande do Sul; UCO, University of Central Oklahoma Invertebrate Collections.

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RESULTS AND DISCUSSION

Barbados habitat description. The specimens of *Radiospongilla crateriformis* were collected on 7 October 1995 from a temporary seasonal pool. Sponges were observed on all subsequent trips to that site, but no additional collections were taken. This temporary pool was located at an elevation of approximately 300m in Welchman Hall Gully. The pool measured about three meters across and less than 0.7m in depth. The bottom substrate was primarily rock covered by decomposing leaf debris, submerged woody debris, and silt. Water temperature at the time of the collection was 26° C. *R. crateriformis* was growing attached to the woody debris protruding into the water column. Based on visual observation, it was estimated as much as 5-10% of the wood debris surface area was covered by sponge. As the rainy season drew to an end, the pool decreased in size, becoming completely dry by mid January. The remains of sponge tissue could be seen on the then exposed wood debris. It is suspected gemmules formed prior to desiccation and the sponge survived periods of drought in this manner.

Nevis habitat description. *R. crateriformis* was collected from an agricultural reservoir in Nevis on 21 May 1996. Specimens were found in Hog Valley Reservoir in the north-central region of the island at an elevation of approximately 600m. The reservoir measured approximately 50m across and several meters deep. Its substrate was primarily mud and decaying vegetation. Some submerged aquatic plants were observed in shallow water along the shore and many woody branches had fallen into this pond. Water temperature at the time of the collection was 32° C. It was reported this reservoir generally contains water, but periodically may become dry (David Robinson, Nevis Historical & Conservation Society, personal communication).

As in Barbados, sponges were growing attached to the woody debris protruding into the water column. *R. crateriformis* appeared to be quite abundant in that reservoir, covering 5-10% of the surface area of almost every piece of submerged woody debris observed. Evidence of renewed growth was seen in those sponges, indicating some type of seasonality, such as wet/dry periods, effect this reservoir. Most likely, new growths may have started from gemmules in the mother body. Another possibility is the new sponges may be from larvae released from the mother or other nearby sponges which used the basal sponge for substrate.

Certainly one of the most interesting questions to ponder is how *R. crateriformis* colonized these small oceanic islands. Although it is only speculation, there are several possibilities to consider. One possible explanation involves colonization of these islands by atmospheric phenomena. Tropical storms, which frequent this area, might carry branches and leaves of macrophytes and other submmerged vegetation to these islands. Another possibility may involve biological means of dispersal. Birds that live or feed in aquatic environments might inadvertently pick up gemmules in mud that adheres to their feathers and feet, and transport these gemmules to distant places. Based on the known distribution of *R. crateriformis*, it seems the source of colonization is probably the southeastern United States. While these explanations are reasonable, it is difficult to determine with much degree of certainty which, if any, might be correct.

It appears the distribution of *R. crateriformis* in the Caribbean region is very sporadic. Data from other freshwater investigations have been reviewed and D. Bass has made collections of freshwater invertebrates from more than 160 sites over ten eastern

Caribbean islands, and only encountered spongillids at these two sites. It is possible other spongillids exist elsewhere, but they have yet to be discovered.

Examined material. WEST INDIES. **Barbados**: Welchman Hall Gully, 7.X.1995, (MCN 3104); 7.X.1995, (UCO). **Nevis**: Hog Valley Reservoir, 21.V.1996, (MCN 3530); 21.V.1996, (UCO). All collected by David Bass.

Taxonomic characteristics and remarks. The studied specimens display all the characteristics (figs. 1-5) already registered by PENNEY & Racek (1968) for *R. crateriformis*. The measures as well as the spicular drawings (fig. 1) for materials from the two islands show that the specimens from Barbados attained larger proportions (megascleres lenght 292-397, width 12-16; gemoscleres lenght 69-148, width 5-8, micrometers) and more regular shapes than the ones from Nevis (megascleres lenght 206-364, width 10-18; gemoscleres lenght 64-90, width 4-7, micrometers) and that both materials show the largest spicular measures up to now registered for this species. The gemmoscleres of the specimens from Nevis (fig. 1) displayed remarkable shape variations. Genus *Radiospongilla* occurs with only two species in the Americas: *R. crateriformis* in the Neartic Region and *R. amazonensis* described by VOLKMER-RIBEIRO & MACIEL (1983) in the Neotropical Region. Both regions display also a similar distribution of species in genus *Anheteromeyenia* Schröder, 1927 as restricted by VOLKMER-RIBEIRO (1996) with *A. argyrosperma*, 1996 in the Neartic Region and *A. ornata* (Bonetto & Ezcurra de Drago, 1970) in the Neotropical Region. The two genera have several characteristics in common as pointed out by VOLKMER-RIBEIRO (1996). The reticulate fibers in the gemmule pneumatic coat could again be perceived for genus *Radiospongilla* (fig. 2) as well as a same lenght of gemmoscleres (fig.3).

VOLKMER-RIBEIRO (1996) proposed the genus *Acanthodiscus* with *Acanthodiscus ryderi* (Potts, 1882) type species and *A. sheilae* (VOLKMER-RIBEIRO, De ROSA-BARBOSA & TAVARES, 1988) both removed from *Anheteromeyenia*. As the name *Acanthodiscus* was already preoccupied a new name is now proposed.

Racekiela nom. nov.

Acanthodiscus VOLKMER-RIBEIRO 1996: 35, figs. 7-9;(**non** *Acanthodiscus* Uhlig, 1905, Mollusca, **nec** *Acanthodiscus* MacCallum, 1918, Trematoda), after NEAVE, 1939.

The generic name is dedicated to the memory of Albrecht A. Racek deceased in 1997 and to his extensive contribution to the systematics of freshwater sponges. Gender feminine.

Racekiela ryderi (Potts, 1882) comb.n.

Acanthodiscus ryderi; VOLKMER-RIBEIRO, 1996:37, figs. 7,8 and synonymy.

Racekiela sheilae (Volkmer-Ribeiro; De Rosa-Barbosa & Tavares, 1988) comb.n.

Acanthodiscus sheilae VOLKMER-RIBEIRO; De ROSA-BARBOSA & TAVARES, 1988: 39, figs.7,9 and synonymy.

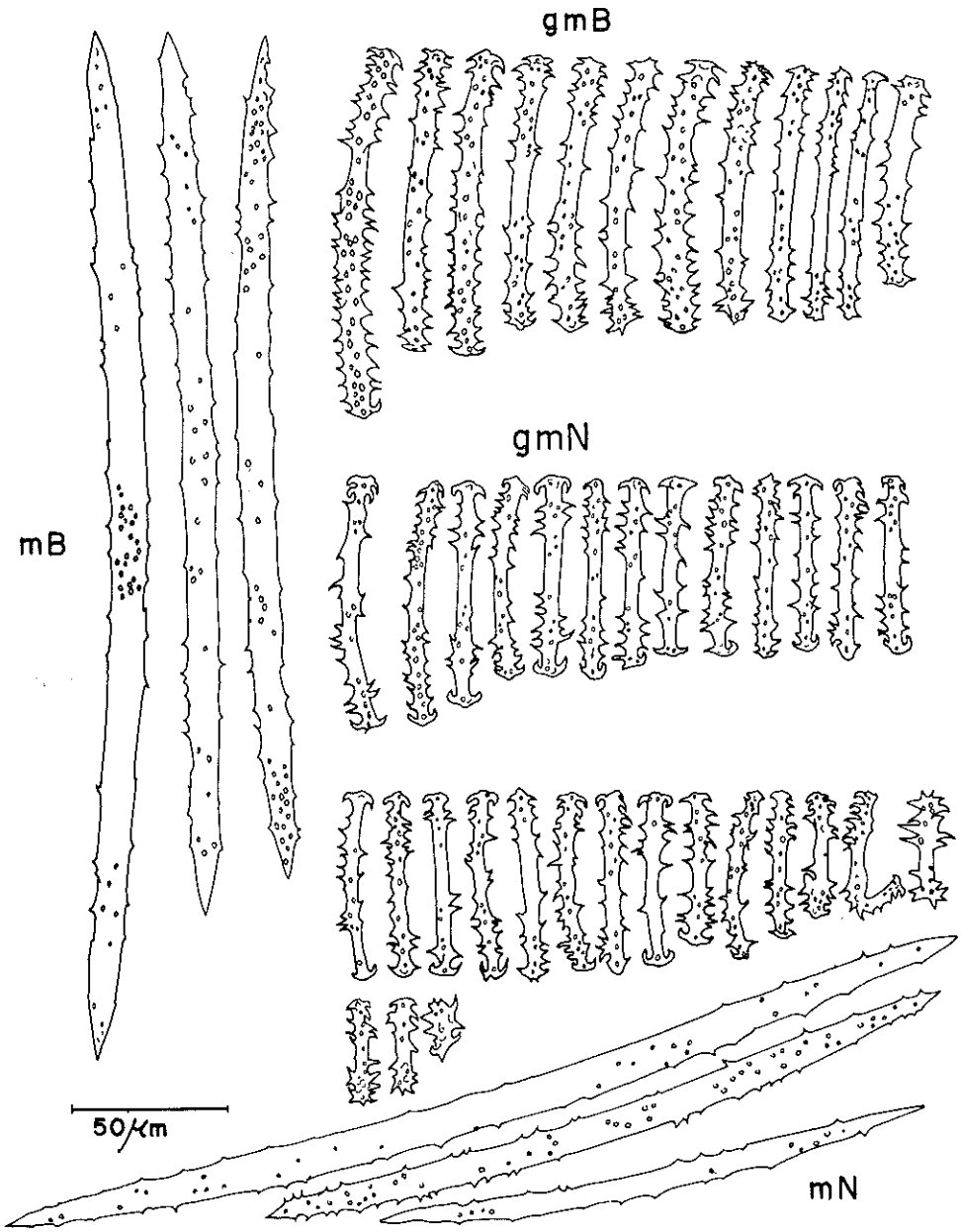
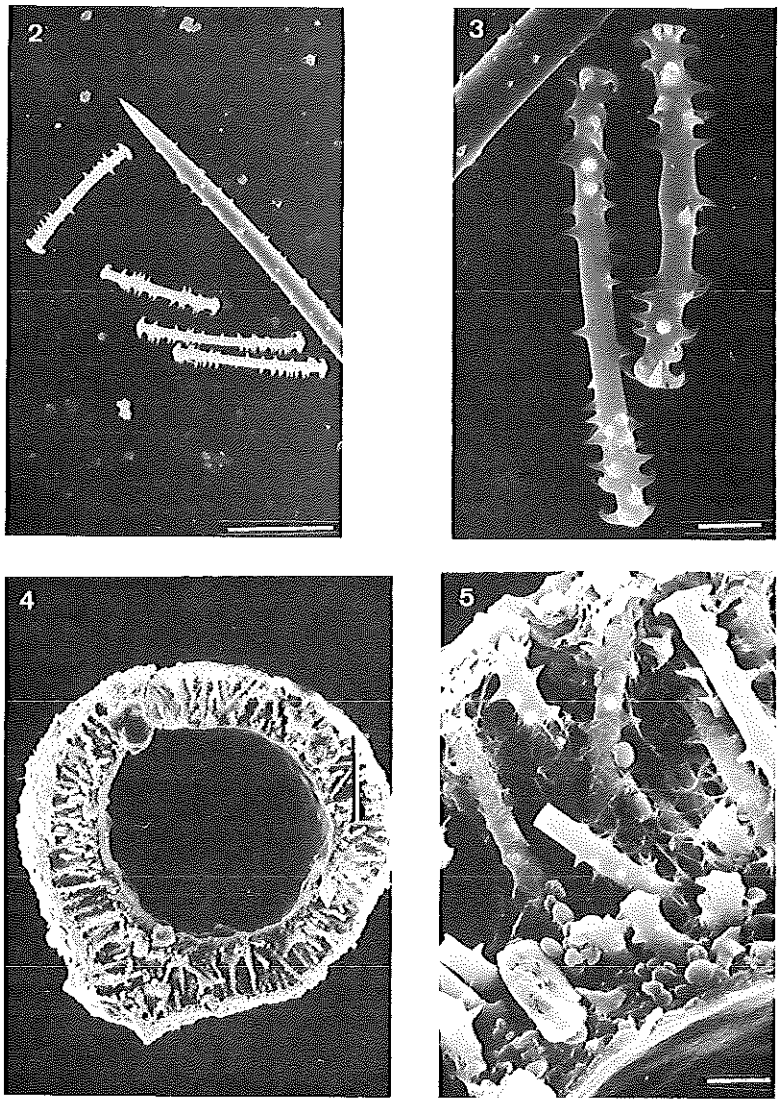


Fig. 1. *Radiospongilla crateriformis*: Megascleres (mB) and gemmoscleres (gmB) of specimes from Barbados and (mN) and (gmN) from Nevis.



Figs. 2 - 5. *Radiospongilla crateriformis*: Spicules from Nevis (MCN 3530); 2, megascleres and gemmoscleres; 3, two gemmoscleres; 4, gemmular coat depicting the radial arrangement of the gemmoscleres; 5, gemmular coat depicting the reticulate structure of the pneumatic coat, the outer and inner coat are also conspicuous. Bar: 50μm, fig. 2; 10μm, fig. 3,5; 100μm, fig.4.

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