

RESULTS OF THE AUSTRIAN-INDIAN HYDROBIOLOGICAL MISSION 1976 TO THE ANDAMAN ISLANDS—Part II.

REPORT ON A FRESHWATER SPONGE (PORIFERA : SPONGILLIDAE)
FROM THE ANDAMAN ISLANDS

By

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ABSTRACT

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Umborotula bogorensis (Weber) is the second record of a freshwater sponge from the Andaman Islands. It grows on branches of a plumatellid ectoproct from the Nayachal River. The description of the sponge and of its habitat are supplemented by biometric and physico-chemical data and by scanning electron photomicrographs of gemmules and spicules.

The Austrian Andaman Expedition (leader: Dr. Ferdinand Starmuhlner, I. Zoological Institute, University of Vienna) conducted a limnological study of these rather inaccessible Indian Ocean islands during December 1976. Seven creek and river stations were sampled in the Diglipur region of North Andaman, 16 running water and 3 pond localities were studied in the southeastern parts of South Andaman (Starmuhlner, 1978). The entire survey revealed only one species of sponge from a single station. This find is the second record of Spongillidae from the Andamans.

I am indebted to Dr. Starmuhlner for making this material available to me for study. Mrs. Susann G. Braden operated the scanning electron microscope.

Umborotula bogorensis (Weber)

Ephydatia b. Weber, 1890, p. 32 (Type locality: Java; Holotype: Zoologisch Museum, Amsterdam); Gee, 1930.

E. blembingia Evans (Gee, 1932).

Meyenia bogorensis, Penney, 1960, p. 46.

Umborotula b., Penney and Racek, 1968, p. 122 (with additional synonymy).

Habitat: Between branches of a plumatellid ectoproct, Nayachal River below Dhanikhari-reservoir, South Andaman (Station S-AND 3), 5-10 cm deep, collected 4 December 1976. At this locality the river, 3-8 m wide, had cut a deep gorge with steep wooded slopes. Altitude was 120 m above sea level. The bottom consisted of gravel (20 cm maximum diameter) and sand, current velocity was 0.5-1 m/sec. Temperature at the time of collecting varied from 29.2°C (15.00 h) to 28.8°C (16.30 h), silicon content was measured as 11 mg SiO₂/l at pH 7.2. Other chemical parameters are discussed by Starmuhlner (1977).

Description: Only minute reduced tissue fragments of light grayish tan color (formalin) are attached to the ectoproct stolons, numerous brownish gemmules were trapped in between. Megascleres form a loose network connected by small amounts of spongin. Gemmules (Fig. 1) are spherical to slightly ovoid, 490–600 μm in diameter (Fig. 1a). There is a single short porous tube (Figs. 1b, c) and a pneumatic coat with radially embedded birotulates (Fig. 1c). The thickness of the pneumatic layer equals the length of the birotulates. The distal rotules are exposed at the surface of the gemmules.

There are only two types of spicules. The megascleres are microspined fusiform oxea, slightly bent in the center (Fig. 2a). They measure 240–320 (269 ± 25) μm in length, 11.2–12.5 (10.8 ± 1.2) μm in width. Gemmoscleres are birotulates of one size class only, with equal umbonate rotules (Fig. 2b). The shafts are spiny, the recurved margins of the discs finely serrated. Total length: 75–83 (77.7 ± 2.4) μm ; shaft diameter: 5.0–6.3 (5.2 ± 0.5) μm ; disc diameter: 21.3–22.5 (22.2 ± 0.8) μm (all measurements based on $n=25$).

Distribution: East China, Thailand, Indonesia (Java, Celebes) (Gee, 1930, 1932); Eastern Australia (Racek, 1969).

DISCUSSION

The characteristic gemmules and spiculation and similarity of measurements with previous descriptions leave no doubt about the identity of the present material with *Umborotula bogorensis*. Specimens from other locations were recorded as thin crusts 4–15 mm in diameter on leaves and on branches of weeds in very shallow water (Gee, 1930). The shaft diameter of the birotulates in the present material is thicker than that of the type specimen (3–4 μm ; Penney and Racek, 1968). However thicker shafts (5–8 μm) were also reported from Java, Thailand and East China (Gee, 1932) and from Eastern Australia (Racek, 1969).

The only other freshwater sponge known from the Andaman group (Ross Island) is *Radiospongilla crateriformis* (Potts) (Annandale, 1911, p. 85, footnote; as *Spongilla* c.). Gee (1931) listed this find under the name *Ephydatia crateriformis* var. *insularis* Annandale (1911), although neither the name nor a description of var. *insularis* had been published in Annandale's (1911) paper. *Radiospongilla crateriformis* has a discontinuous distribution: United States, Mexico, China, Japan and Southeast Asia (Penney and Racek, 1968).

LITERATURE CITED

- Annandale, N. 1911. Freshwater sponges, hydroids, and polyzoa. In: The Fauna of British India, including Ceylon and Burma (A. E. Shipley, editor), pp. 27–126, 241–245. Taylor and Francis: London
- Gee, N. G. 1930. Notes on the fresh-water sponges from the Dutch East Indies. II. Descriptions. *Treubia*, 12: 67–114.
- Gee, N. G. 1931 A contribution toward an alphabetical list of the known fresh-water sponges. *Peking nat. Hist. Bull.* 5: 31–52.
- Gee, N. G. 1932. *Ephydatia bogorensis* Weber and *Ephydatia blembingia* Evans. *Lignan Sci. Journ.* 11: 449–45

- Penney, J. T. 1960 Distribution and bibliography (1892-1957) of the freshwater sponges. *Univ. S. Carolina Pubs.*, 3: 1-97.
- Penney, J. T. and A. A. Racek, 1968. Comprehensive revision of a worldwide collection of freshwater sponges (Porifera : Spongillidae). *Bull. U. S. Nat. Mus.* 272: 1-184
- Racek, A. A. 1969. The freshwater sponges of Australia (Porifera: Spongillidae). *Aust. Journ. Freswat. Res.* 20: 267-310.
- Starmuhlner F., 1977. Results of the Austrian-Indian Hydrobiological mission 1976 to the Andaman Islands: Part I : Preliminary Report. *Aqua. Biol.* Vol. II, 139-172.

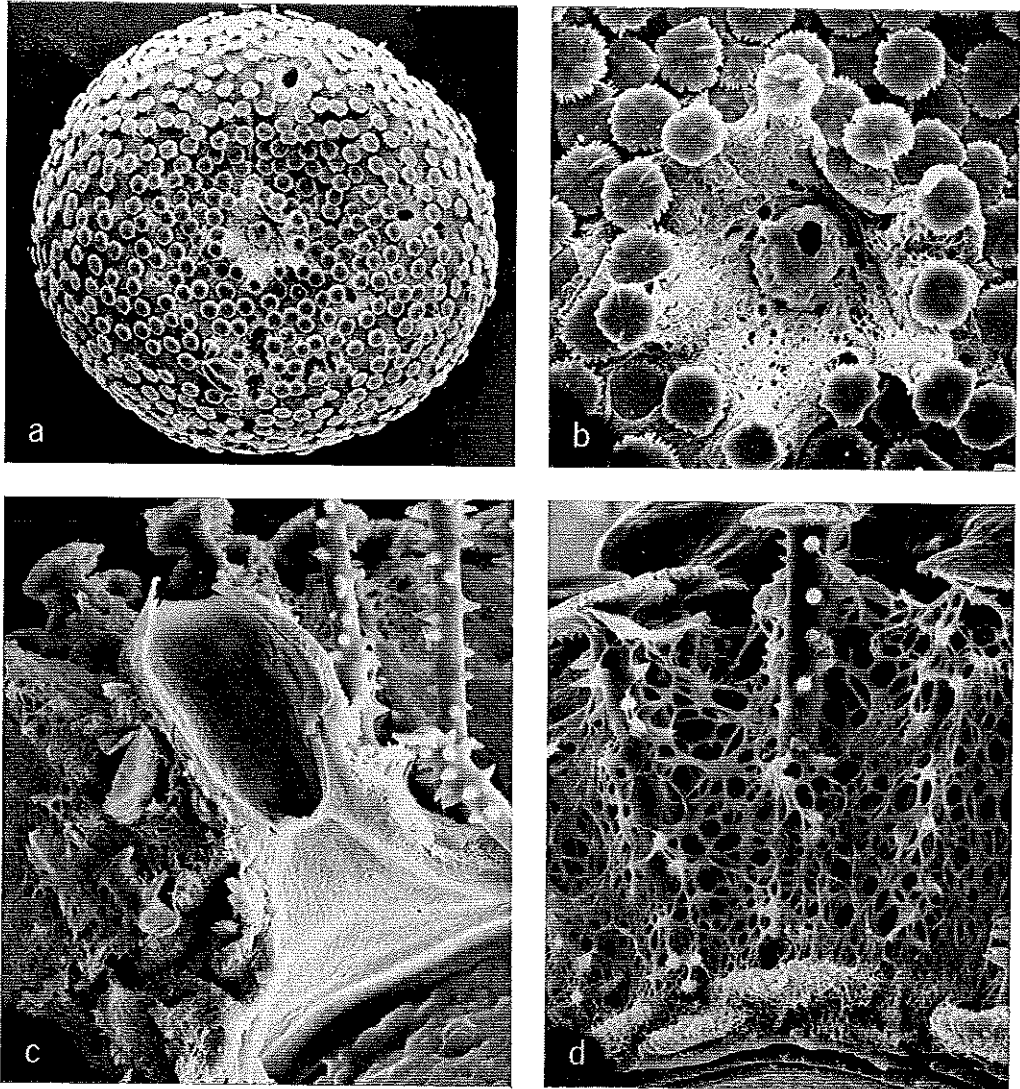


Fig. 1. Gemmules of *Umborotula bogorensis* (Weber). Scanning electron photomicrographs after critical point drying and carbon-gold coating. a. Whole gemmula (120x). b. Detail of foraminal area (500x). c. Partial longitudinal section through foraminal tubule (700x). d. Cross section through pneumatic layer with embedded gemmoscleres (1000x).

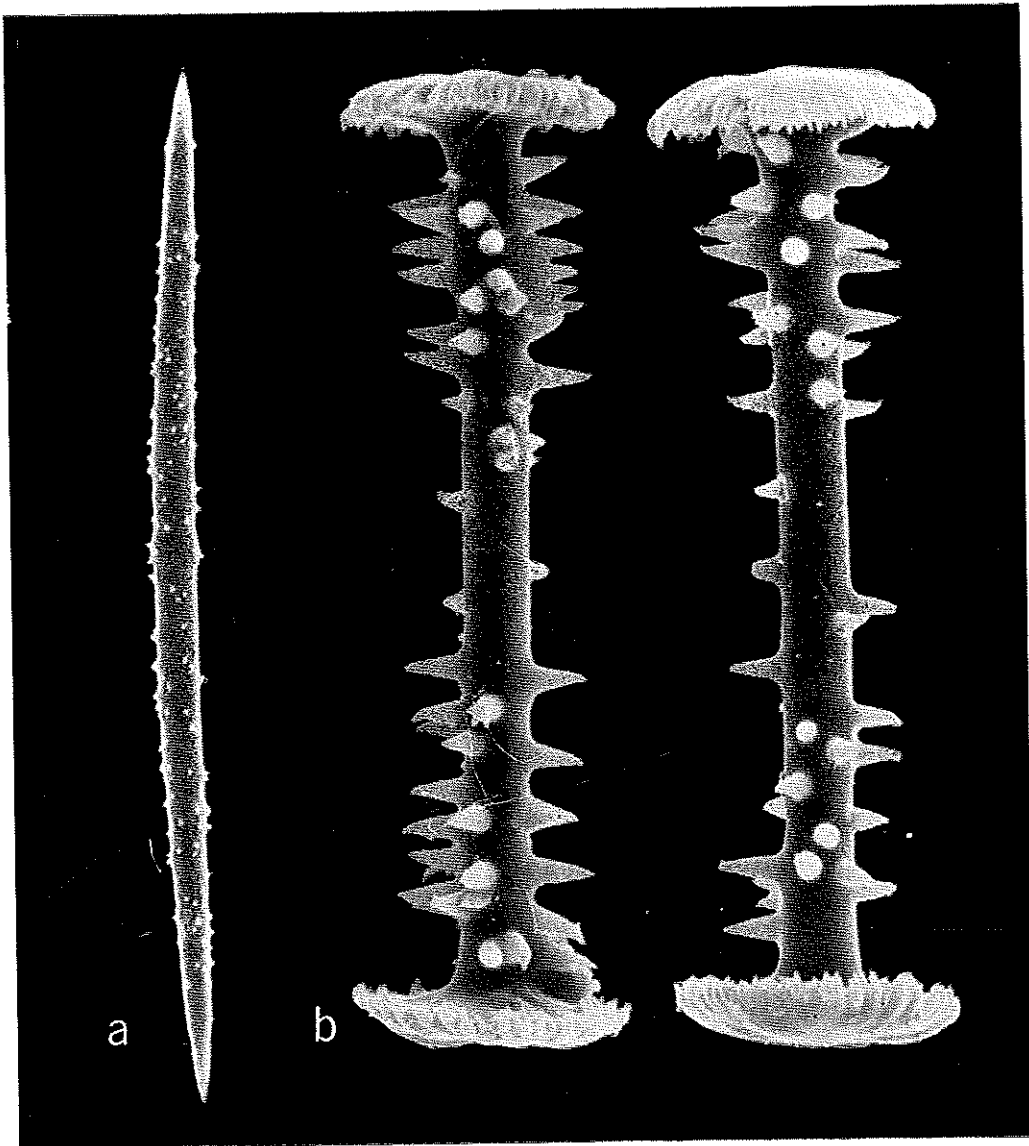


Fig. 2. Spicules of *Umborotula bogorensis* (Weber). Scanning electron photomicrographs after carbon-gold coating. a. Microspined oxeon of the main skeleton (400x). b. Gemmoscleres (birotulates (1200x).