

# *Amphimedon denhartogi* spec. nov. (Porifera: Haplosclerida) from deep reef habitats in Indonesia

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Voogd, N.J. de. *Amphimedon denhartogi* spec. nov. (Porifera: Haplosclerida) from deep reef habitats in Indonesia.

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A new sponge species *Amphimedon denhartogi* spec. nov., belonging to the family Niphatidae of the order Haplosclerida, is described from 3 localities in Indonesia: Tulamben (NE Bali), Siladen Island (NE Sulawesi) and Kambing Island (SW Sulawesi). *Amphimedon denhartogi* spec. nov. is characterised by its growth form of thinly flabellate branches, the occurrence of star-shaped oscules over one side of the sponge body, and by its small strongyles, and can hardly be confused with another species. All specimens were found in similar habitats, at around 40-45 m of depth on steep sandy slopes.

## Introduction

The Indonesian reefs are thought to be the richest in the world. Many locations in the Indonesian Archipelago are yet to be explored and many invertebrate species await description. In a status report on the Indonesian sponge fauna (Van Soest, 1989) it was estimated that this fauna, with about 830 nominal species, is the richest of the world's sponge faunas and this was later reviewed and confirmed (Hooper et al., 2000). The published knowledge of Indonesian sponges remains scattered and incomplete. An ongoing series of genus by genus revisions of Indonesian sponges has recently been started (Hofman & Van Soest, 1985; Van Soest, 1998; De Voogd & Van Soest, 2002) to eventually give a better accessibility to this large and diverse invertebrate group. This is a time consuming project, and describing a single species can only be justified when that particular species has unusual characteristics (De Weerd & Van Soest, 2001). In this paper I present such a characteristic species, *Amphimedon denhartogi* belonging to the family Niphatidae, has an unusual habit, and can hardly be confused with another species. The family Niphatidae was erected in 1980 to receive the chalinid sponges with multispicular skeletal fibres or tracts; over 75 nominal species of this group occur in the Indo-West Pacific. It is expected that many *Amphimedon* species were formerly described in the genera *Haliclona*, *Reniera*, *Chalina* and *Pachychalina*. The species is compared with Indo-West Pacific and Caribbean *Amphimedon* species with a similar morphology.

## Material and methods

The material was collected by SCUBA diving by B.W. Hoeksema in 1998 for the "SYMBIOSPONGE" programme, by the author during the NNM-LIPI-WWF-Bali Lombok Expedition in 2001, and for the WOTRO project (W84-474) in 2002. The mate-

rial is preserved in 70% ethylalcohol and deposited in the collection of the Zoological Museum Amsterdam (ZMA) and the National Museum of Natural History, Leiden (RMNH). Examination of the specimens included study of external morphology, skeletal architecture, and size and shape of the spicules. For study of the skeletal architecture hand-cut tangential sections of the ectosome, and perpendicular sections of the choanosome were made. Spicule size data are based on 25 measurements.

### Systematics

Phylum Porifera  
 Class Demospongiae  
 Order Haplosclerida Topsent  
 Suborder Haplosclerina Topsent, 1928  
 Family Niphatidae van Soest, 1980  
 Genus *Amphimedon* Duchassaing & Michelotti, 1864

*Amphimedon denhartogi* spec. nov.  
 (figs 1A-B, 2A-C)

Material.— Holotype: ZMA POR. 17243., Indonesia, Bali, SE-end Tulamben beach; 08°16'40''S 115°35'45''E; 40 m., 13.iv.2001, coll. N.J. de Voogd, #NV/Bal.22/130401/179-1.

Paratypes: ZMA POR. 17244, Indonesia, Bali, SE-end Tulamben beach; 08°16'40''S 115°35'45''E; 40 m., 13.iv.2001, coll. N.J. de Voogd, #NV/Bal.22/130401/179-2, 4, 5; RMNH por. 1364, Indonesia, Bali, SE-

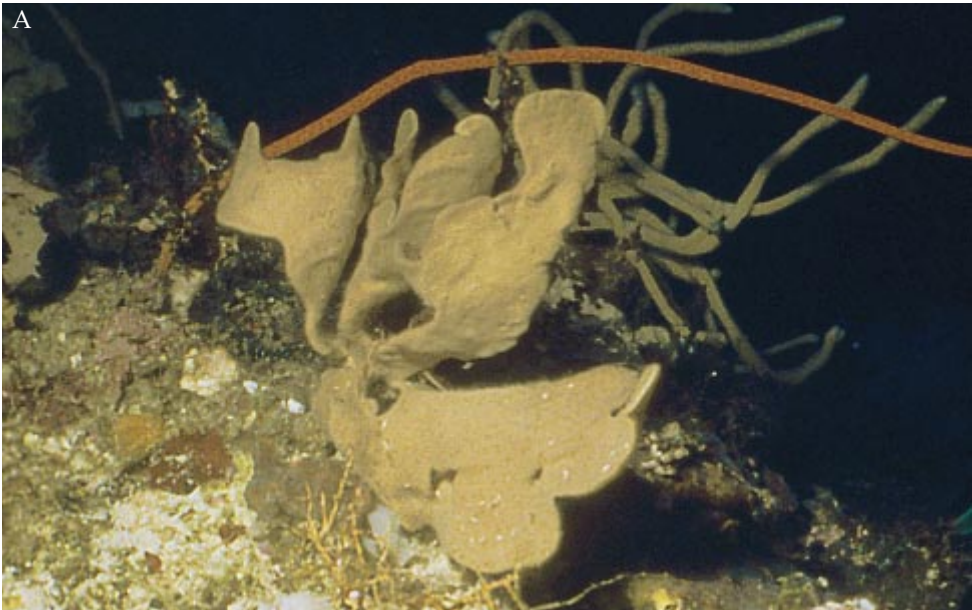


Fig. 1A. *Amphimedon denhartogi* spec. nov., In situ photograph of paratype (ZMA POR. 17246): Photo: N.J. de Voogd.

end Tulamben beach; 08°16'40''S 115°35'45''E; 40 m., 13.iv.2001, coll. N.J. de Voogd, #NV/Bal.22/130401/179-3; ZMA POR. 17245, Indonesia, NE Sulawesi, Bunaken Park, ESE Siladen Island, 124°48''E 01°37''30''N, 40 m., 7. v. 1998, coll. B.W. Hoeksema, #98/NS/May07/BH/082; ZMA POR. 17246, Indonesia, SW Sulawesi, off Bira, Pulau Kambing, S 05° 40.584' E 120° 28.853', 45 m., 16.iii. 2002, coll. N.J. de Voogd, #NV/BR/160302/290-1, 2, 4, 5; RMNH Por. 1365, Indonesia, SW Sulawesi, off Bira Pulau Kambing, 45 m., 16.iii. 2002, coll. N.J. de Voogd, #NV/BR/160302/290- 3.

Shape and size.— Erect, thinly, flabellate branches. Star-shaped oscules, 3-5 mm in diameter, scattered over one side of the sponge. Holotype consists of 3 separate flattened branches, of a maximum of 17 cm in length and 5 cm in width.

Colour.— Dark green/ brown, maintained in alcohol

Surface.— Optically smooth, velvety.

Consistency.— Very soft, fragile, easily torn.

Skeleton.— Ectosomal skeleton an incomplete tangential reticulation (fig. 2A). Choanosomal skeleton is a plumose, regular anisotropic reticulation with ascending fibres and interconnecting tracts. Primary fibres cored by approximately 3-5 spicules



Fig. 1B. *Amphimedon denhartogi* spec. nov., Preserved specimen: Photo: N.J. de Voogd (scale bar = 4 cm).

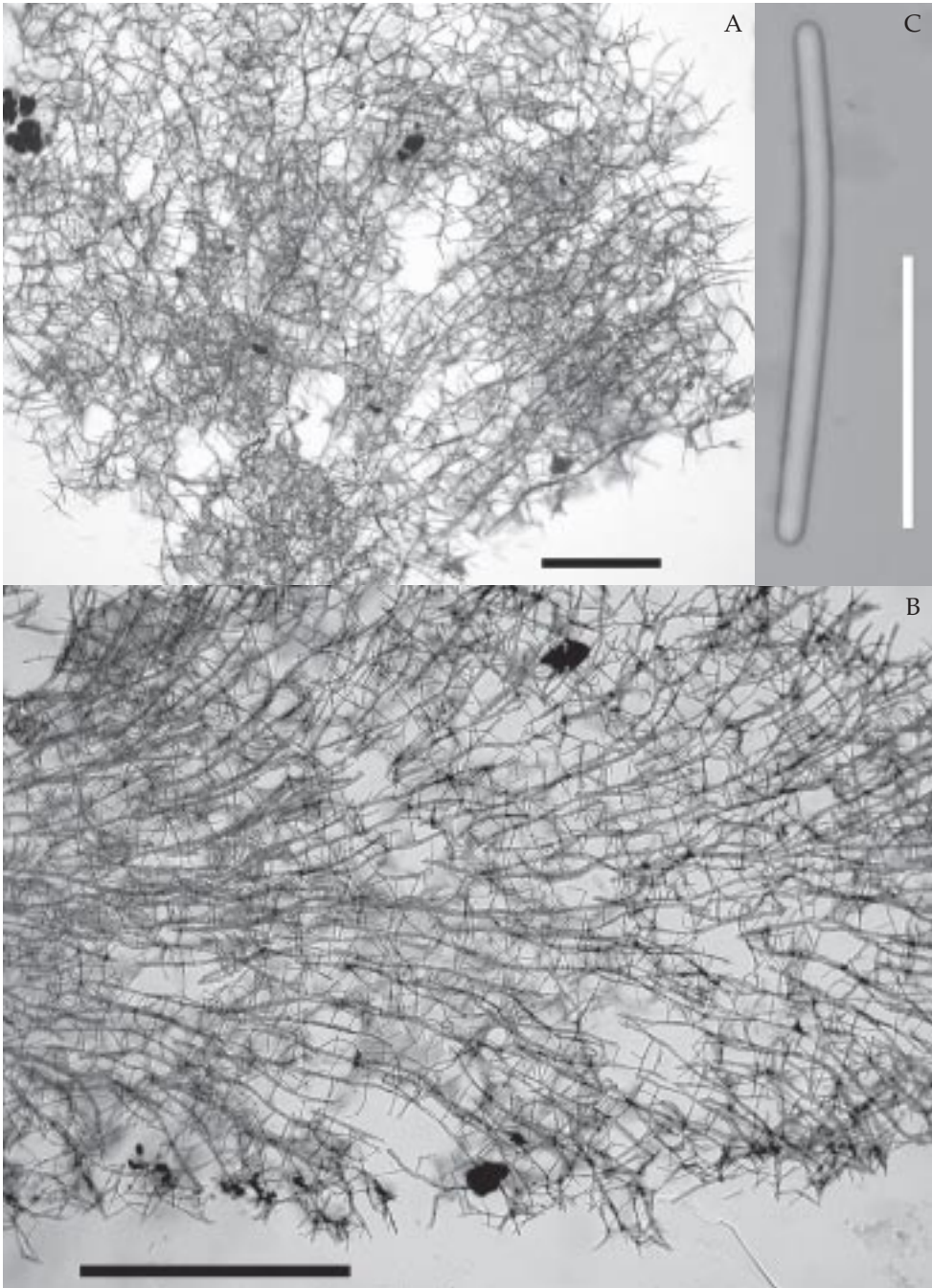


Fig. 2. *Amphimedon denhartogi* spec. nov. (ZMA POR. 17243) holotype. A, tangential view of ectosomal skeleton. B, cross section of choanosomal skeleton. C, strongyle (scale bars A= 500  $\mu\text{m}$ , B= 600  $\mu\text{m}$ , C= 40  $\mu\text{m}$ ).

(fig. 2B). Amount of spongin in fibres is variable between specimens.

Spicules.— Straight, relatively robust strongyles (fig 2C). Dimensions 70 – 76 – 87 × 2.5 – 2.8 – 5 µm, (#NV/Bal.22/130401/179-1); 60 – 70 – 78 × 2 – 2.8 – 3.8 µm (#NV/BR/160302/290-1).

Ecology.— At sandy patches of steep walls, 40-45 m.

Distribution.— Bali, Sulawesi (Indonesia).

Etymology.— Named in honour of our colleague Koos den Hartog who contributed greatly in marine (in)vertebrate zoology.

### Discussion

*Amphimedon denhartogi* spec. nov. is characterised by its growth form of thinly flabellate branches, the occurrence of star-shaped oscules over one side of the sponge body, and its small strongyles. All specimens were found in similar habitats, at around 40-45m of depth on sandy patches of steep walls.

Only few *Amphimedon* species have been described from the Indo-Pacific region, and only three have a somewhat similar morphology.

Dendy (1905) describes *Pachychalina brevispiculifera* from the Gulf of Manaar, Ceylon. This is a compressed, digitate to flabellate branching and anastomosing specimen. Numerous clear large oscules occur on one side of the flattened sides of the frond. The colour in dry state is brown, and the consistency is compressible, fragile, and resilient. The main difference with the new species is the larger real oxeas (100 × 5.5 µm).

*Amphimedon lamellata* Fromont (1993) from Lizard Island (The Great Barrier Reef) is an undulating spreading fan or erect lamellate sponge. It differs from *A. denhartogi* in colour, consistency and morphology of the spicules. It is pale pink or mauve, slightly compressible and has thin curved oxeas of a dimension of 111-156 µm.

*Amphimedon rudis* Pulitzer-Finali (1996) is a laminated sponge from the Bismarck Sea. Special oscules are not described, the sponge is apparently harsh to touch, and the choanosomal and ectosomal skeleton differs from the present new species. The oxeas of *A. rudis* are much larger in size 360-420 µm, and by these characters it is an atypical *Amphimedon*.

The type species of *Amphimedon*, *A. compressa* Duchassaing & Michelotti (1864) from Saint Thomas, Virgin Islands, West Indies, is a ramose or exceptionally flabelliform pinkish to bright red sponge. The colour - though clearly different - persists in alcohol, like in *A. denhartogi*, however the spicules are proper oxeas, though occasionally strongylote, clearly larger in size: 116-174 µm (van Soest, 1980).

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