

A new species of *Allopathes* (Cnidaria: Antipatharia) from the eastern Atlantic

D.M. Opresko

Opresko, D.M. A new species of *Allopathes* (Cnidaria: Antipatharia) from the eastern Atlantic. Zool. Verh. Leiden 345, 31.x.2003: 275-280, figs 1-4.— ISSN 0024-1652/ISBN 90-73239-89-3. Dennis M. Opresko. Life Sciences Division, Oak Ridge National Laboratory, 1060 Commerce Park, Oak Ridge, TN 37830, USA (e-mail: dxo@ornl.gov).

Key words: Cnidaria; Anthozoa; Antipatharia; *Allopathes denhartogi* spec. nov.

A new species of antipatharian coral, *Allopathes denhartogi*, is described from the eastern Atlantic. The species is distinguished from the two other species in the genus by spines that are larger, less dense and not arranged in verticils. Furthermore, the colony appears to reach a smaller size and has relatively fewer ramifications compared to the other species.

Introduction

The genus *Allopathes* was established by Opresko & Cairns (1994) for *Cirripathes desbonni* Duchassaing & Michelotti (1864) and *Antipathes robillardi* Bell (1891). Species of the genus have a very unique growth form in that the corallum consists of numerous elongate stems and branches arising from a primary stem or from a short, trunk-like base. An undescribed species of this genus was found in the collections of the Leiden Museum. The species is named in honour of the late Koos den Hartog.

Abbreviations

BMNH = British Museum of Natural History, London, United Kingdom

RMNH = National Museum of Natural History, Leiden, The Netherlands

USNM = National Museum of Natural History, Smithsonian Institution, Washington, DC, USA

Allopathes Opresko & Cairns, 1994, emend.

Allopathes Opresko & Cairns, 1994: 185.

Cirripathes; in part, Duchassaing & Michelotti, 1864: 142.

Antipathes (*Cirripathes*); in part, Pourtalès, 1880: 114.

Stichopathes? Brook, 1889: 92.

Diagnosis.— Corallum consisting of a few to many stems or stem-like branches arising from near the base of one primary stem, or from a bulbous trunk-like base. Stems/branches straight or curved, sometimes coiled at distal end; unbranched or with first- and rarely second-order branching from very close to the base. Spines conical, with acute or rounded apex, and with conical tubercles on surface; arranged in verticils or in a slanting (quincunxial) pattern. Polyps in a single row along the length of the stems and branches.

Remarks.— The original diagnosis of the genus (Opresko & Cairns, 1994:185) states that numerous stems arise from a short trunk-like base. In the specimen of the new species described here, there is a primary stem from which all other ramifications of the corallum arise. However, it cannot be said with certainty that such a primary stem would be distinguishable in larger colonies with many more ramifications. In those cases it is likely that the corallum would have the appearance of being composed of numerous “stems”, which is the characteristic appearance of the two species previously assigned to this genus, *A. desbonni* (Duchassaing & Michelotti, 1864), and *A. robillardi* (Bell, 1891). The original diagnosis of the genus also states that the spines are typically arranged in verticils. Although this is the case for *A. desbonni* and *A. robillardi*, it is not the case for the new species. Therefore, the arrangement of the spines can no longer be considered a distinctive characteristic of the genus, leaving the growth form of the corallum as the primary diagnostic feature.

Allopathes denhartogi spec. nov.
(figs 1-4)

Material.— Holotype, (RMNH Coel. 31293; schizoholotype, USNM 1014577), Cape Verde Id, SW of Fogo, 14°52'N, 24°32'W, 10.vi.1982, Tydeman CANCAP VI Exped., sta 6049, 1100-1300 m.

Diagnosis.— Corallum with primary stem and small number of first order branches arising from close to the base. Second-order branches present and arising near the lower end of the first order branches. Stem and branches flexible and curved. Spines conical, acute, usually 0.25-0.35 mm from midpoint of base to apex, with small, conical tubercles on upper one-third surface near apex. Spines arranged in four or five longitudinal rows (in lateral view), and spaced 0.75 to 0.86 mm apart in each row (as measured from the tips or the middle of the bases of adjacent spines in the same row). Spines in each row offset from those in adjacent rows, forming a quincunxial pattern. Polyps about 2.0 mm in transverse diameter (from proximal side of proximal tentacles to distal side of distal tentacles) and arranged in one row along the stem and branches. Interpolypar space 0.1 to 0.5 mm; with about four to five polyps per centimeter.

Description.— As preserved, the type specimen has the appearance of being about 15 cm high (fig. 1a); however, this is likely an artifact caused by storage in a small container, as a result of which the stem and branches are curved into several coils. When extended, they are several times longer than they appear in the coiled state. The corallum consists of a stem, five first-order branches, and seven second-order branches. The corallum was broken off slightly above the basal plate as indicated by the slight increase in the diameter of the stem at its basal end. The stem is 58 cm long and about 1.1 mm in diameter 2 cm above the basal end. All the branches originate within 2.5 cm of the base of the corallum (fig. 1b), and three first-order branches are so close to the base that they appear to be stems themselves. Depending on their length, the branches are relatively uniform in diameter; one branch 32 cm long is about 0.9 mm in diameter near its base, and one 6 cm long is about 0.6 mm in diameter. The lowermost branches extend vertically from their point of origin to such a degree that they appear to adhere to and be fused with the stem for a short distance. The branches higher up on the corallum are more spreading, with distal branch angles of 30-60°.

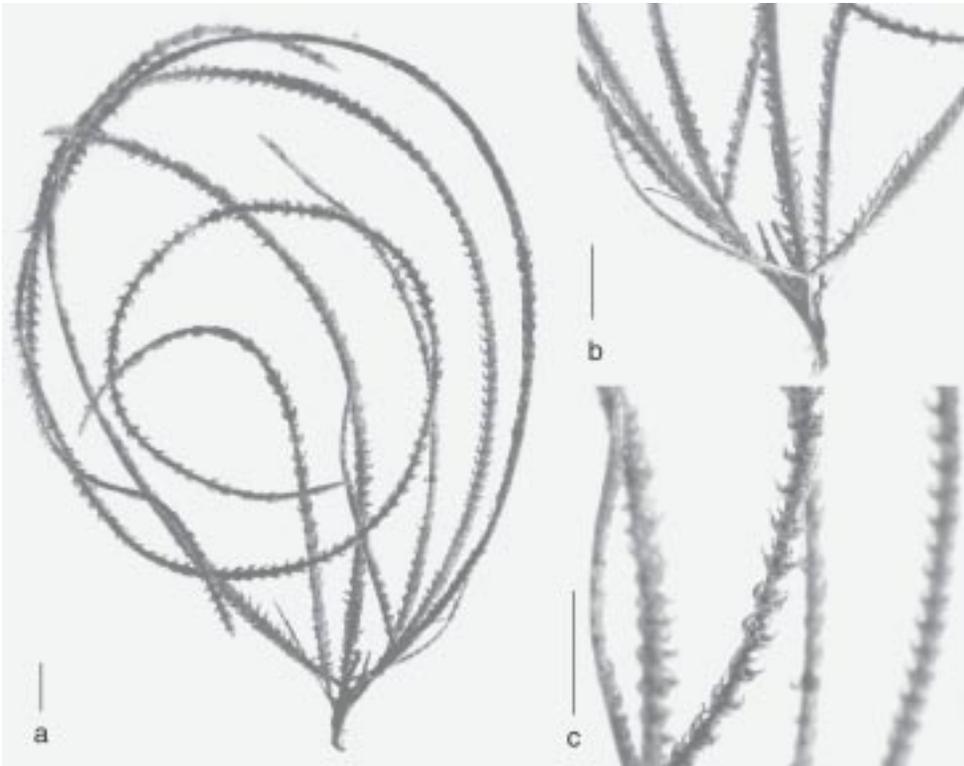


Fig. 1. *Allopathes denhartogi*, holotype (RMNH Coel. 31293): a, entire corallum, height of specimen as shown about 15 cm; b, basal section of corallum; c, polyps. Scale 1 cm.

The axial spines (fig. 2) are arranged in longitudinal rows, and the individual spines in each row are offset from those in adjacent rows so that together they form a quincunxial pattern, which is more apparent on the thicker parts of the branches (fig. 2c). Four or five longitudinal rows of spines can be seen viewing one side of the axis and there are six to seven rows around the entire circumference. The spines are spaced 0.75 to 0.86 mm apart in each row, resulting in only two per millimeter.

The spines on the polyp-side of the axis are larger than those on the abpolypar side. Where the axial diameter is about 0.5 mm, the polypar spines measure 0.3-0.35 mm (from midpoint of base to apex), and the abpolypar spines 0.24-0.26 mm. Where the axis is about 0.7 mm, the polypar spines measure about 0.25 mm. Polypar and abpolypar spines are similar in shape; conical with an acute to slightly rounded apex and with small conical tubercles near the apex. The spines on the lowermost portions of the stem and branches (where the axial diameters are 0.9-1.2 mm) measure 0.19-0.22 mm, and those near the base of the primary stem are only about 0.15 mm. The number of rows of spines on the lower part of the stem appears to be similar to that on the upper part of the stem and branches.

The polyps (fig. 1c) are arranged in a single row along the entire length of the stem and branches. They are about 2 mm in transverse diameter (from the distal side of the

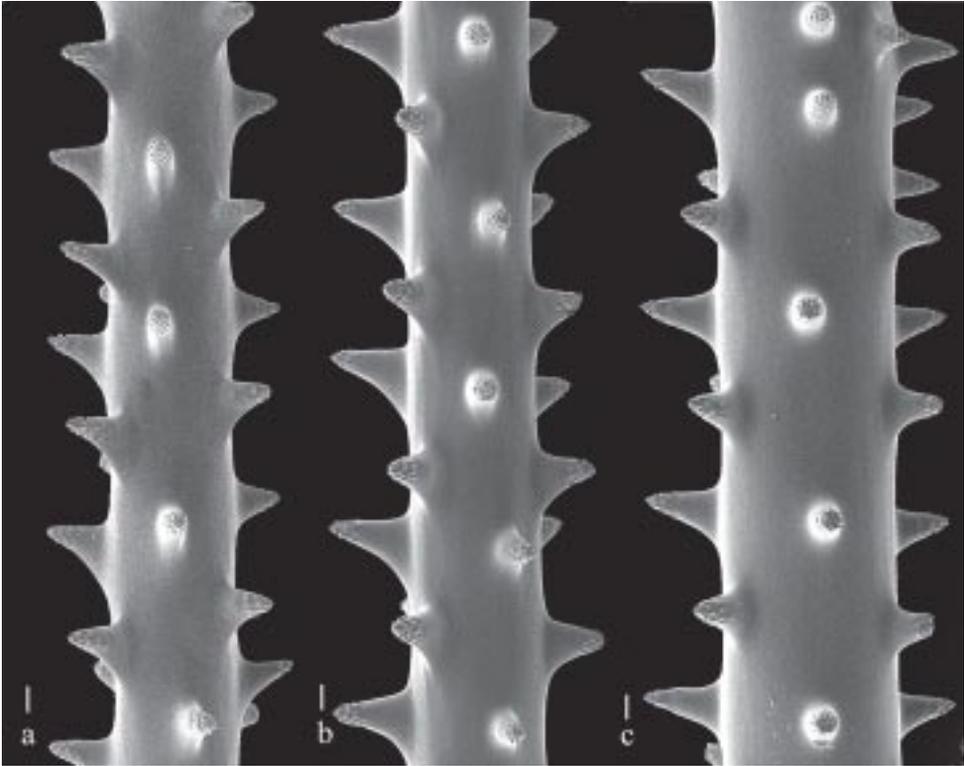


Fig. 2. *Allopathes denhartogi*, schizoholotype (USNM 1014577): a, section of pinnule 0.46 mm in diameter; b, section of pinnule 0.53 mm in diameter; c, section of pinnule 0.66 mm in diameter. Scale 0.1 mm.

distal lateral tentacles to the proximal side of the proximal lateral tentacles), and about 2.5 mm in sagittal diameter, making them appear slightly compressed transversely. The polyps are separated from one another by a space of 0.1 to 0.5 mm, resulting in less than four to about five polyps per centimeter. In a preserved state the sagittal tentacles are about 2.5 mm long and the laterals about 2 mm. The sagittal tentacles are inserted much lower than the laterals, and all the tentacles are curved in a distal direction.

Comparisons.— There are two other species in the genus, *A. robillardi* (Bell, 1891) from Mauritius, and *A. desbonni* (Duchassaing & Michelotti, 1864) from the western Atlantic. The type specimen of *A. robillardi* was recently found in the collections of the British Museum. As in the case of *A. desbonni*, the corallum of *A. robillardi* reaches a height of over 1 m and consists of numerous stems and branches that are relatively straight and stiff - at least on the lower half of the corallum. In contrast, the corallum of the type of *A. denhartogi* is much smaller (stem 58 cm in length), and the stem and branches are very flexible over their entire length. It is possible that the type of *A. denhartogi* is a young colony, and that older specimens more closely resemble the other two species; however, additional specimens need to be examined to fully evaluate this possibility. Nevertheless, there are sufficient differences in other skeletal features to adequately differentiate the three species. Differences exist

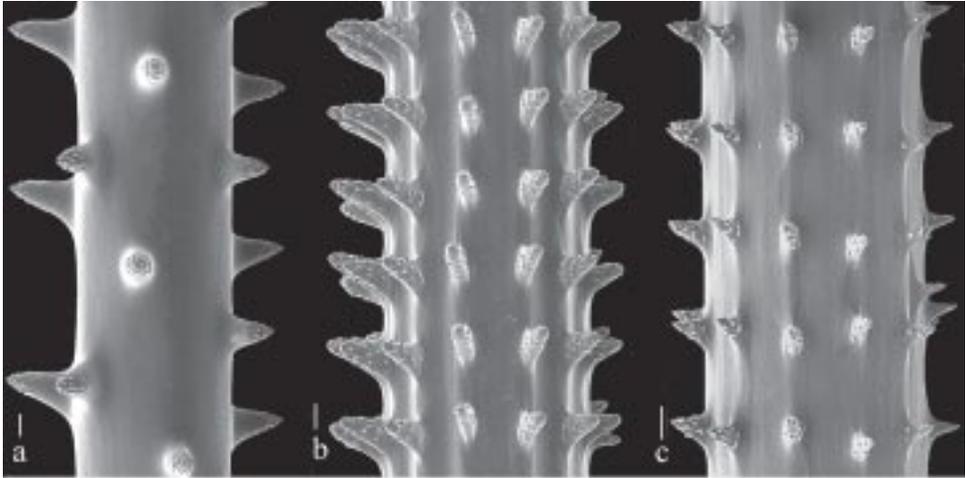


Fig. 3. *Allopathes* spp, spines: a, *A. denhartogi*, schizoholotype (USNM 1014577); b, *A. robillardi*, schizoholotype (USNM 100370); c, *A. desbonni*, neotype (USNM 88327). Scale 0.1 mm

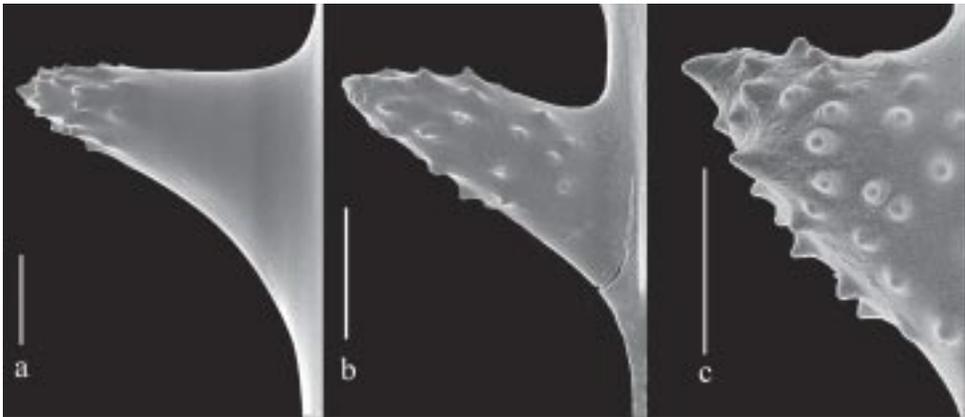


Fig. 4. *Allopathes* spp, individual spines: a, *A. denhartogi*, schizoholotype (USNM 1014577); b, *A. robillardi*, schizoholotype (USNM 100370); c, *A. desbonni*, neotype (USNM 88327). Scale: 0.1 mm

among the species in the size, shape and density of the spines. In *A. denhartogi* the spines are 0.25-0.35 mm tall on an axis of 0.5 mm in diameter. In comparison, the spines in *A. desbonni* are usually 0.10-0.14 mm tall (rarely up to 0.2 mm), and those in *A. robillardi* are 0.20-0.24 mm tall. In both the latter species the spines are quite crowded (0.24-0.40 mm apart in each row in *A. desbonni* and 0.3 mm apart in *A. robillardi*; as measured between the tips or the middle of the bases of adjacent spines in the same row) and arranged in verticils of varying regularity, whereas those in *A. denhartogi* are 0.75 to 0.85 mm apart and arranged in a quincunxial pattern. Furthermore, in *A. desbonni* there are six or seven rows of spines visible in lateral view and in *A. robillardi* there are seven to eight rows, but in *A. denhartogi* there are only four

or five rows visible. The spines of all three species, on axes of comparable thickness, are showed in fig. 3.

The surface features of the spines are also different (fig. 4). In *A. denhartogi* the tubercles are confined to the upper one-third of the surface, whereas in both *A. robillardi* and *A. desbonni*, they occur over much of the surface.

The polyps of *A. robillardi* are unknown; those of *A. desbonni* are 1.0-1.2 mm in transverse diameter, and they are arranged in a single row with five to seven polyps per centimeter. The polyps of *A. denhartogi* are about 2 mm in transverse diameter, and they are arranged in a single row with four to five polyps per centimeter.

Etyymology.— This species is named in honour of Koos den Hartog.

Acknowledgements

For their hospitality and assistance during visits to their respective museums, the author wishes to thank L.P. van Ofwegen, B.W. Hoeksema and M. Slierings of the RMNH, S. Halsey of the British Museum, and S. Cairns of the USNM. Thanks also to T. Molodtsova for reviewing the manuscript, and to S. Braden and S. Whittaker of the SEM Laboratory (USNM) for helping with the scanning electron microscopy. Special thanks to Rosemarie Baron-Szabo for her continuing support and encouragement.

This work was supported in part by the National Museum of Natural History, Leiden; the National Museum of Natural History of the Smithsonian Institution, Washington, DC; and by Oak Ridge National Laboratory, Oak Ridge, TN.

References

- Bell, F.J., 1891. Contributions to our knowledge of the Antipatharian corals.— Trans. Zool. Soc., London, 13(2): 87-92, 2 pls.
- Brook, G., 1889. Report on the Antipatharia.— Rep. Sci. Res. Voy. H.M.S. Challenger, Zool. 32 (80): 1-222, pls 1-15.
- Duchassaing, P. & Michelotti, J., 1864. Supplément au mémoire sur les coralliaires des Antilles.— Mem. R. Accad. Sci. Torino, (2) 23: 97-206, 10 pls.
- Opresko, D.M. & Cairns, S.D., 1994. Description of the new genus *Allopathes* (Cnidaria: Antipatharia) and its type species *Cirripathes desbonni*.— Proc. Biol. Soc. Wash. 107: 185-192.
- Pourtalès, L.F. de, 1880. Zoological results of the "Blake" expedition to the Caribbean Sea.— Bull. Mus. Comp. Zool. Harv. 6(4): 113-118, pl. 1.