

Two New Species of *Astreopora* (Cnidaria, Anthozoa, Scleractinia) from the Mid-Pacific¹

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THE GENUS *Astreopora* de Blainville 1830, an encrusting reef coral, is found throughout the Indo-Pacific, east to the Tuamotus, and is represented in all major coral collections from the Indo-Pacific (Wells 1954). In shallow water it is often inconspicuous and never predominates. At times it may form heads 2 m or more across, and in deeper waters it may be very common. About eight species can be readily identified and to these two previously unreported species are herein described. Type specimens have been deposited in the Bernice P. Bishop Museum, Honolulu.

SPECIES DESCRIPTION

Astreopora cucullata species novum

Figures 1–4

The original specimen was chiseled from the edge of a 30-cm low, rounded colony embedded on the reef slope in 3 m clear water at the end of the Aua line in Pago Pago harbor, Tutuila, American Samoa, 27 July 1973 (Dahl and Lamberts 1977). Rock substrate with 25 percent coral cover was amid strong currents. Coenosarc rusty brown in situ. Holotype measures $13\frac{1}{2} \times 8 \times 4$ cm; weight 142.7 g; volume 132.1 cm^3 .

Corallites rather evenly spaced, round or distorted ovals with an average diameter of 1.5 mm. At times two or three openings are separated by a single thecal wall. Never more than 5 mm between adjacent calix centers and about 6.2 corallites per square centimeter. Colony formation is by extratentacular budding, with new calices appearing as tiny pits in any expanse of coenosteum.

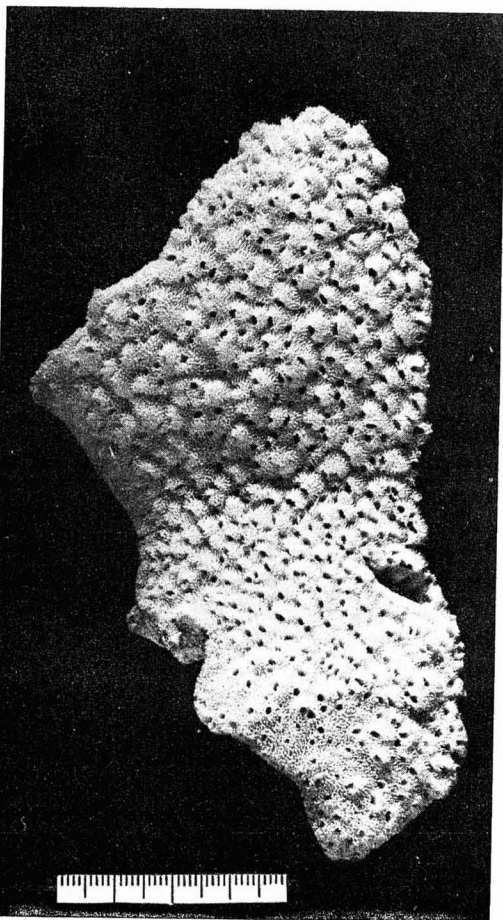


FIGURE 1. *Astreopora cucullata* species novum: holotype, $\frac{4}{5}$ natural size.

Similar studies show the more common *Astreopora myriophthalma* Lamarck to have an average calix diameter of 1.6 mm and the same corallite density.

Six primary septa, poorly developed, thin and narrow at the free margin, descending unevenly, are often warped or distorted and without regular dentations. Septa flare at

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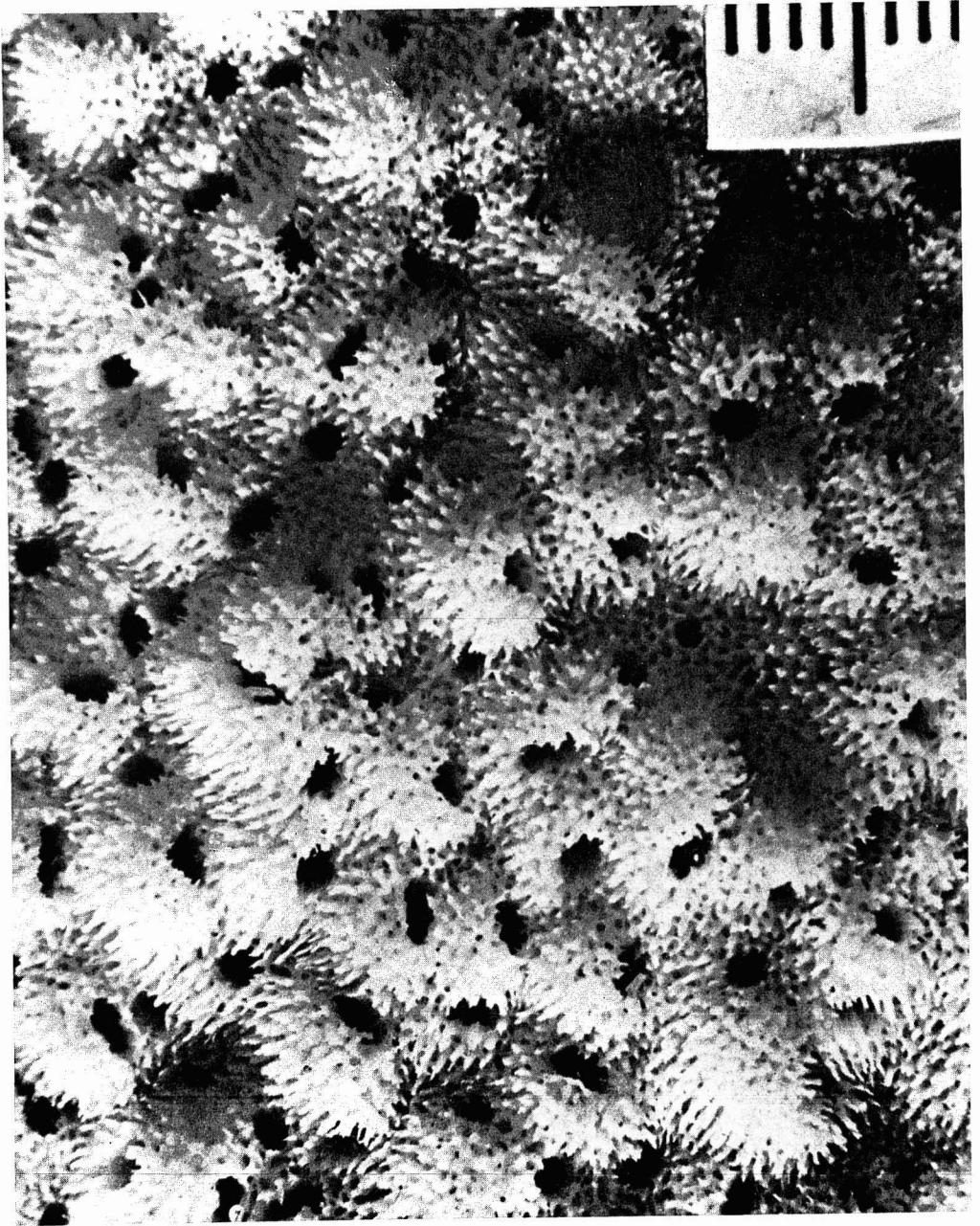


FIGURE 2. *Astreopora cucullata* species novum: holotype $\times 4.5$.

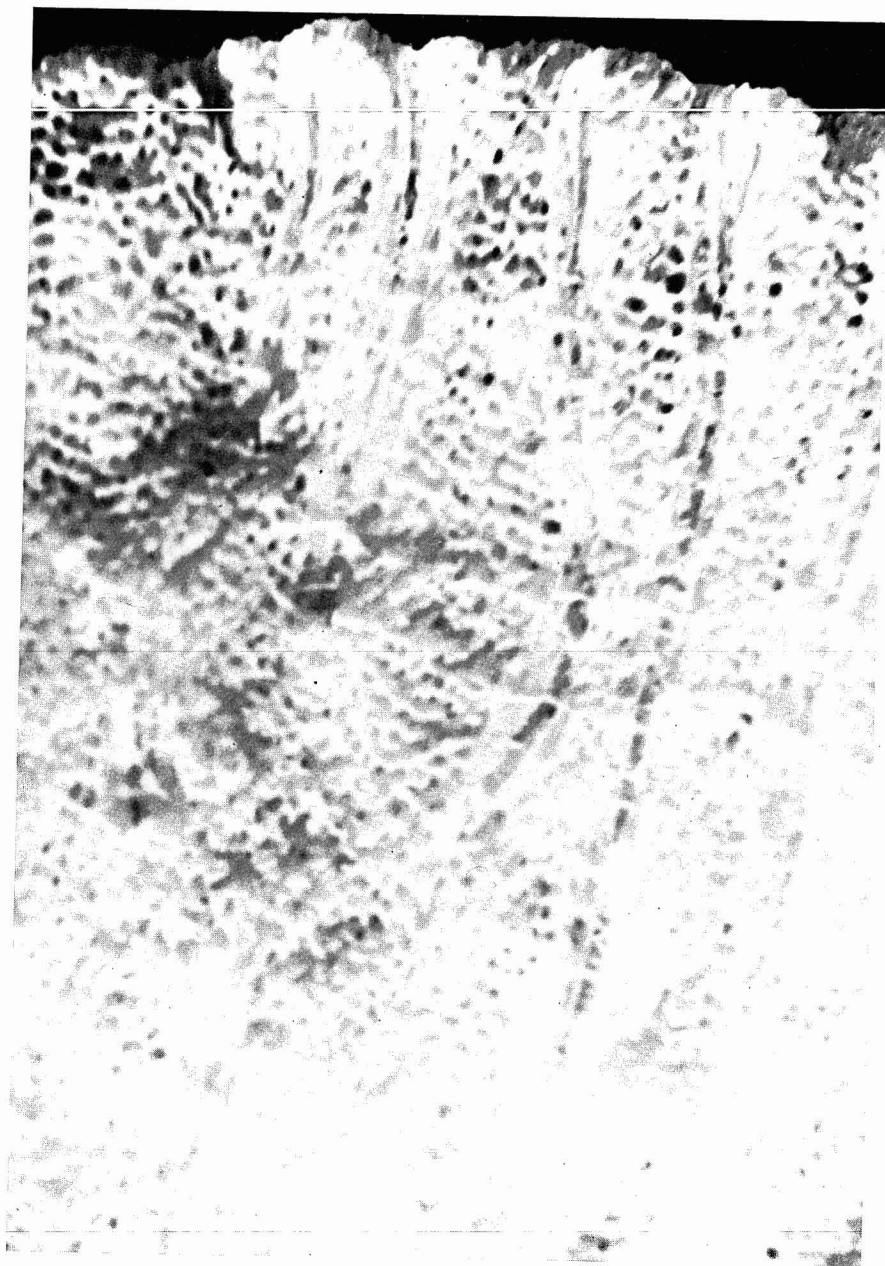


FIGURE 3. *Astreopora cucullata* species novum: fractured surface $\times 4.5$.

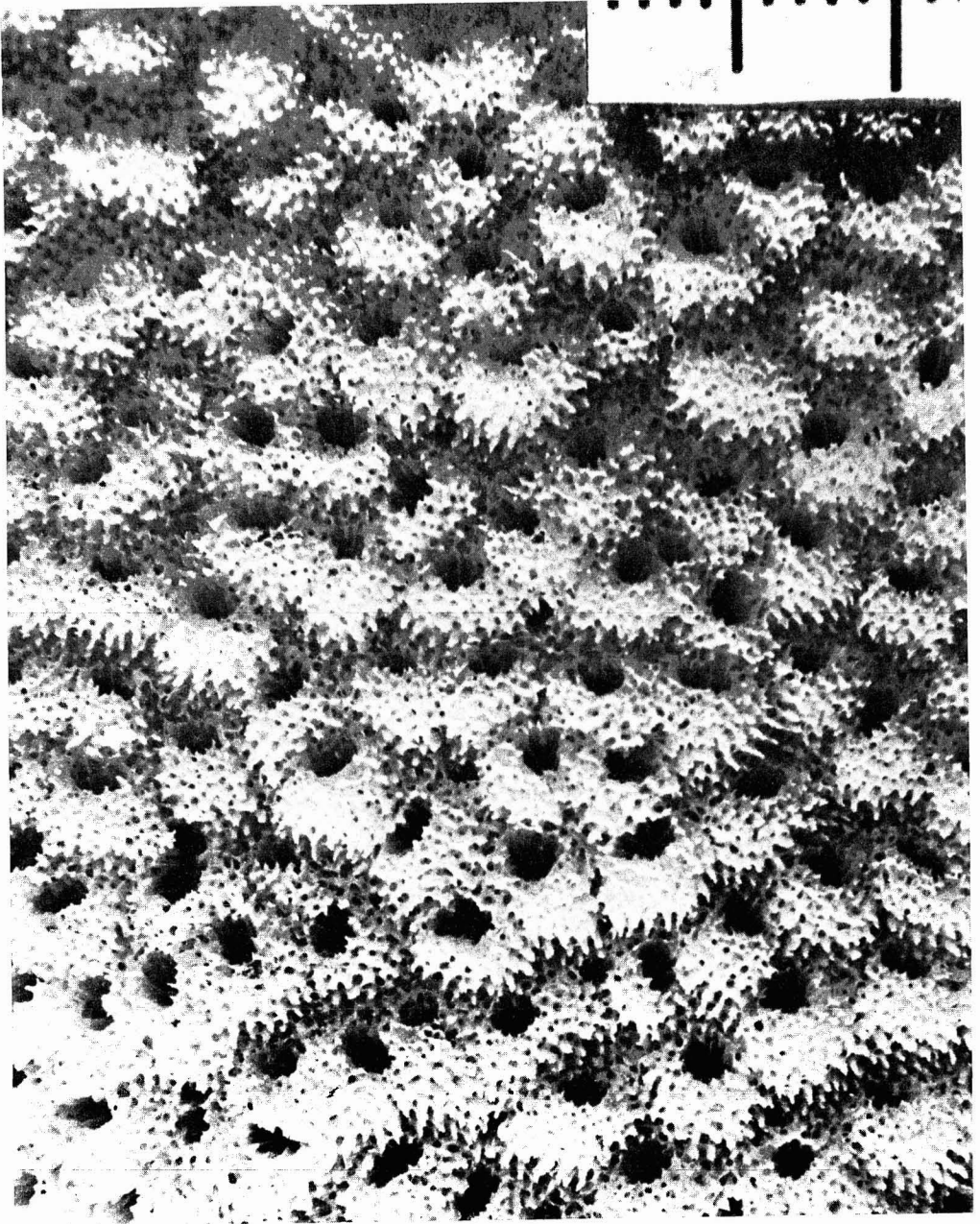


FIGURE 4. *Astreopora cucullata* species novum: syntype $\times 4.5$.

depth of 3–4 mm, where two or more may meet axially and fuse. There is no columella. Secondary septa when present are small, irregular, and often consist of a line of small flakes on the corallite wall. Dissepiments in the perforated corallite cylinder are tabular and first appear at a depth of 7–8 mm, which is the extent of the coenosarc in live specimens. These are thin, blisterlike, and spaced about 1 mm apart.

Coenosteal surface is reticular and porous. Densely covered with fluted chisel-like or blade-shaped echinulations, which may be upward to 1 mm long. Crinkled or serrated ends. Coenosteum piles up in characteristic and distinctive hoods that virtually obscure the openings in over half the corallites. Others are often smaller and have less well-developed hoods or are immersed. The echinulations on the hoods are unusually numerous but evenly spaced. The openings of the hoods generally face downhill toward the edge of any colony.

In vertical fracture, coenosteum shows a reticulum formed by extensive horizontal extensions of the dissepiments supported by tiers of vertical trabecular rods that come off the corallite theca as rings of branches. These angle outward at about 30°, and as upward growth continues they often curve to lie parallel to the corallite cylinder from which they sprung. As they pass upward through many sheets of dissepimental flooring, they may fuse with other rods they happen to intersect and eventually emerge as surface echinulations. This latticelike coenosteum varies considerably in density among specimens of the same species, but in general form it is characteristic for the genus.

Polyps extend nocturnally. Each has a short column surmounted by 24 tentacles. Uppermost are two overlapping tiers of six each bulky flat petals over a bottom tier of similar but smaller tentacles. These and the peristome are tan.

Among the *Astreopora* the species characteristics include the size, shape, and frequency of the calices as well as the orientation of the opening to the surface. The

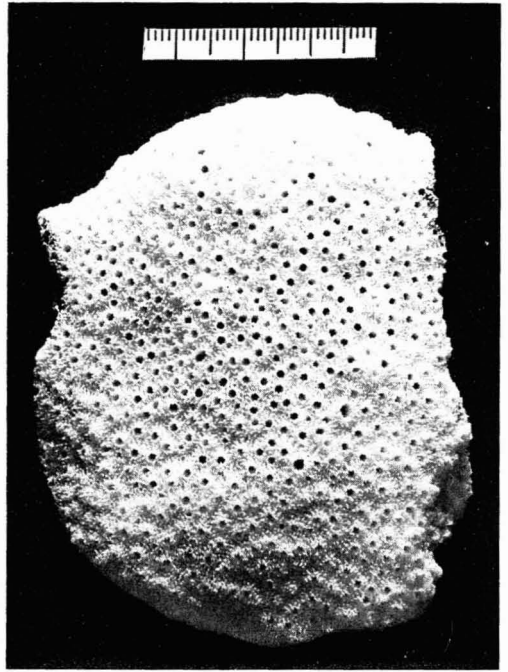


FIGURE 5. *Astreopora randalli* species novum: holotype, $\frac{9}{10}$ natural size.

coenosteal growth around individual calices differs among the species as does the mass and contour of the septa. *Astreopora cucullata* has been found only in deep waters at reef edges. The downhill orientation of the calicular openings is also found in *A. gracilis* Bernard 1896 in which much longer sections of the calicular tubes are superficial. Both species have been found in proximity of *A. myriophthalma* (Lamarck), *A. listeri* Bernard 1896, or both. The significance of this orientation is as yet unknown.

MATERIAL: Holotype: BPBM SC682. Seven additional specimens from Pago Pago Bay and Faga'itua Bay, Tutuila, American Samoa, and one specimen from Enewetak, Marshall Islands. All were tan or rust colored in situ and all were on reef slopes. Some colonies formed rounded heads a meter across. This species can usually be identified in situ by the characteristic hoods for which it is named.

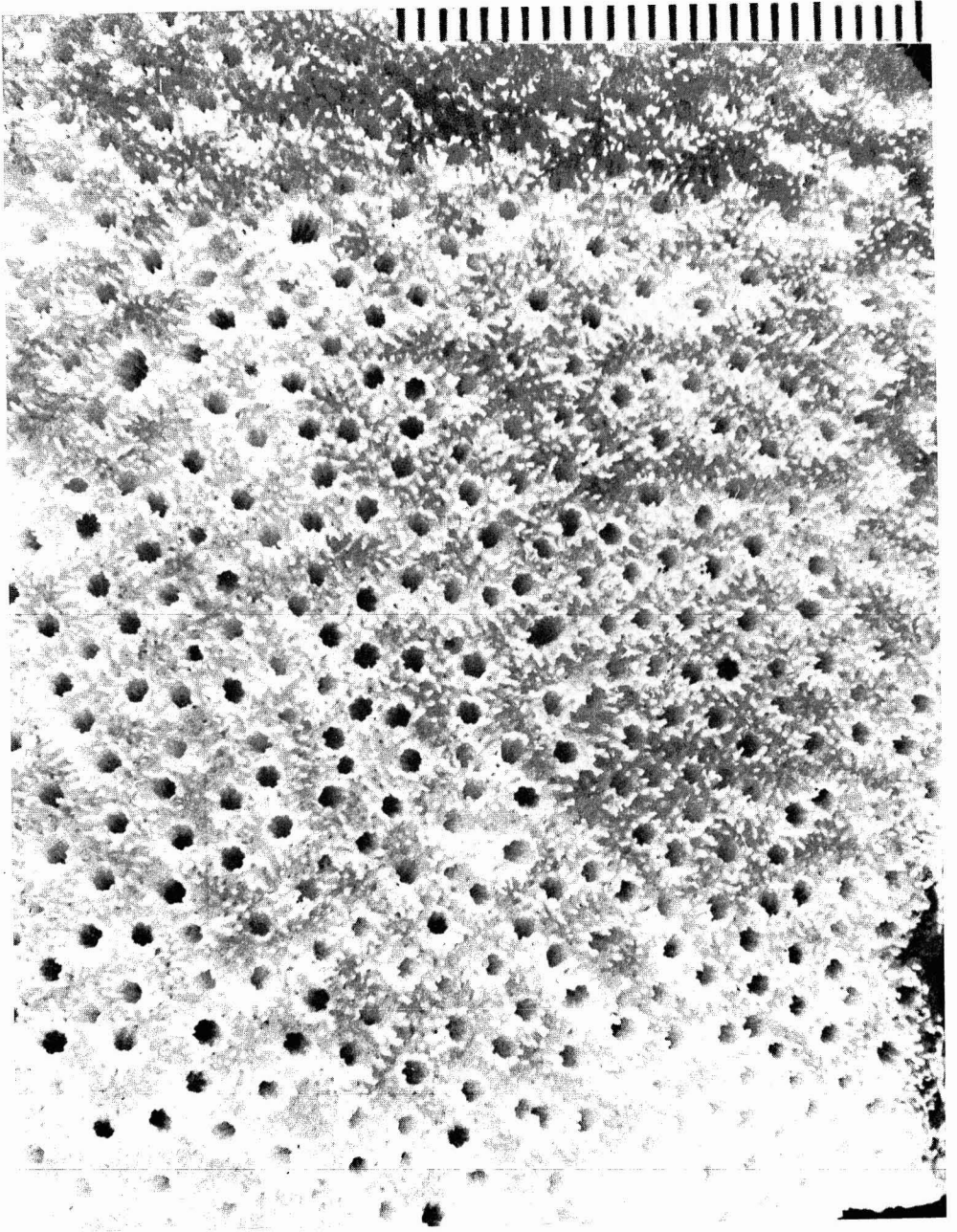


FIGURE 6. *Astreopora randalli* species novum: holotype $\times 3$.

Astreopora randalli species novum

Figures 5 and 6

Original specimen collected from rocky bottom of Rizal reef terrace, Guam, in 3 m clear, moving water on 30 November 1978. The circular encrusting corallum measures $8\frac{1}{2} \times 6\frac{1}{2} \times 4$ cm; weight 116 g; volume 86 cm³. It has a thick center expanding to a thin edge. Bottom view and fracture show a succession of laminae, each about 3 mm thick overgrowing each other. Free margin has a wrinkled epitheca.

Corallite openings are round and not elevated above the coenosteal surface. Average diameter 1.1 mm, evenly spaced, and never more than 4 mm between adjacent centers; average 13 openings per square centimeter. Six primary septa barely discernible with the naked eye, thin and narrow at the opening of the perforated cylindrical theca, which projects very slightly upward as a crown of flattened pseudocostae surrounding the calix rim. Septa descend in a regular pattern to flare at a depth of 2–3 mm. Axial fusion is rare, and there is no columella. Secondary septa are underdeveloped or absent.

Coenosteal surface is an open reticulum sparsely adorned with small, heavy, pencil-shaped echinulations. Fracture surface shows a reticular pattern similar to the previously described species and characteristic for the genus only.

Colonies had a velvety smooth appearance and were bright jade green in situ, mauve when viewed in a seawater table. This species was one of four species of *Astreopora* growing among a mixed assemblage of scleractinian corals and the third most common

genus in that location after *Porites* and *Montipora*. Polyps extend nocturnally. They are small, with short mauve tentacles and a peristome of the same color.

MATERIAL: Holotype: BPBM SC683. Two other colonies were found nearby, including one that had partially overgrown an *Astreopora myriophthalma* from which it was separated by an epitheca that the nether colony did not possess.

In situ it is likely to be confused with *Montipora*. The shape of the corallites resembles *Astreopora listeri*, although the calices are much smaller. *Astreopora listeri* openings average 1.7 mm in diameter with about 5.5 calices per square centimeter. This latter species has surface echinulations in the form of thin chisels or blades that serve to separate it from *A. randalli*. All specimens found in Guam were green in situ. One specimen of this species was found in Aitutaki, Cook Islands.

Named for Richard Randall, University of Guam, who secured the first specimen.

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