

A new species of *Nicella* (Anthozoa: Octocorallia) from the western Atlantic

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Abstract.—A new species of *Nicella*, *N. toeplitzae*, is described from specimens collected from the western Atlantic Ocean, including the northern and eastern Gulf of Mexico. It is distinguished from other closely related species of this genus in having prominent, conical tubercles on the double head sclerites that measure up to 17 μm in height. Among the species having rotund body wall rods, it is distinguished by having double heads with a relatively thick waist.

The calcaxonian genus *Nicella* (family Ellisellidae) is circumtropical in moderate depths (mostly below 50 m). The genus is characterized by having flabellate colonies, usually branching that is sympodial (though occasionally lateral, and mostly free), and with branches that rarely anastomose (Bayer 1961; Bayer & Grasshoff 1994). Colonies are planar, though commonly made irregular by out-of-place lateral branches (Fabricius & Alderslade 2001). The branches are mostly circular in cross section and rarely somewhat flattened (Deichmann 1936). Calyces are arranged along the branches irregularly or in biserial rows (Grasshoff 1999). Sclerites consist of a surface layer of very small, blunt double heads that is clearly distinct from a thick inner layer with large flat tuberculate sclerites (Grasshoff & Bargibant 2001). The tubercles on the flat sclerites are different from those usually present in gorgonian sclerites, being smoothly rounded elevations instead of the more common high elevations on a narrower waist (Grasshoff

1999). The axis is heavily calcified in a radial pattern, and the core is calcified and not chambered (Bayer 1961). The clear differentiation of the large, flat inner layer sclerites from the predominant surface layer of double heads, along with planar flabellate colony morphology, distinguishes *Nicella* from other ellisellid genera (Bayer & Grasshoff 1994). Western Atlantic species of *Nicella*, along with the closely related ellisellid genus *Rüsea*, have been recently revised by Cairns (in press). Several specimens of *Nicella* were collected from the northern Gulf of Mexico at depths of 60–110 m during a characterization study of biological communities associated with the “Pinnacle Trend” area on the Mississippi/Alabama continental shelf (Continental Shelf Associates, Inc. & Texas A&M University, Geochemical and Environmental Research Group 2001). These included the common *Nicella guadalupensis* and a type slightly smaller in colony size and branch diameter, and of a slightly darker orange color than *N. guadalupensis*. Colonies of both were photographed in situ and collected during the program’s surveys

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using a remotely operated vehicle (ROV). A careful examination of the latter type revealed differences in body wall sclerites from its congener, *N. guadalupensis*.

Materials and Methods

This study is based on an examination of material collected from 15 deep-water stations. These specimens are now deposited at the National Museum of Natural History, Smithsonian Institution (USNM). The terminology used in the description follows Bayer, Grasshoff, & Verseveldt (1983). Scanning electron microscopical (SEM) photomicrographs were taken by S. D. Cairns and Frederick M. Bayer. SEM stub numbers prefaced with a B pertain to the numbered series of F. M. Bayer.

The following abbreviations are used: Vessels: *Alb*-U.S. Fish Commission Steamer *Albatross*; *G-R/V Gerda*; *JSL-I Johnson Sea-Link I*; MAPTEMP-Mississippi/Alabama Pinnacle Trend Ecosystem Monitoring Program (a U.S. Minerals Management Service [MMS]/U.S. Geological Survey [USGS] program); *O-M/V*, *R/V Oregon* and *R/V Oregon II*; *P-R/V Pillsbury*; SOFLA-Southwest Florida Shelf Ecosystem Study (a Bureau of Land Management [BLM]/MMS program). Other abbreviations: DH-double head; L:W-ratio of maximum length to maximum width of a sclerite (used as a basic measure of sclerite shape); SEM-scanning electron microscope stub number; USNM-National Museum of Natural History, Smithsonian Institution.

Systematic Description

Subclass Octocorallia
Order Gorgonacea
Suborder Calcaxonia
Family Ellisellidae Gray, 1860
Genus *Nicella* Gray, 1870

Nicella toepflitzae, new species

Figs. 1, 2

Nicella goreau Bayer, 1973:290 (in part: USNM 53109).

Nicella sp. A Cairns, 2007:11, figs. 1G, 13, Tables 1, 2.

Material examined.—Holotype: *P*-424, 9°37'N, 78°51.5'W, 110–119 m, 19 Jul 1966, colony and SEM scan stub B51, USNM 53042. Paratypes: *Alb*-2354, 20°59'30"N, 86°23'45"W, depth 238 m, 22 Jan 1885, dry branches, USNM 43025, alcohol branches, USNM 75113; *Calypso* 1805, 20°48'S, 37°36'W, depth 300 m, date unknown, 1 colony, SEM scan stub B5, USNM 53109; *G*-692, 26°34'N, 78°25'W, 329–421 m, 21 Jul 1965, 1 colony, USNM 53044; *JSL-I*-2582, 27°55.29'N, 91°29.04'W, 188 m, 4 Sep 1989, 1 colony, USNM 89389; *O*-3608, 12°28'N, 82°28'W, 210 m, 2 Jun 1962, 1 colony and SEM scan stub B11, USNM 53043; *O*-3795, 28°05.5'N, 92°38'W, 88–98 m, 14 Sep 1962, 1 colony, SEM scan stub B15, USNM 53027; *O*-5641, 11°38'N, 69°27'W, 55 m, 1 Oct 1965, 1 colony, USNM 53078; *P*-424, 9°37'N, 78°51.5'W, 110–119 m, 19 Jul 1966, 5 colonies, USNM 1086749; *P*-736, 10°57'N, 65°52'W, 70–86 m, 22 Jul 1968, 1 colony and scan stub B21, USNM 53041; *P*-854, 12°02'N, 61°36'W, 66–84 m, 3 Jul 1969, 2 dry colonies, USNM 53507; SOFLA 35, 25°44'N, 84°21'W, 159 m, 7 Feb 1982, 2 colonies, USNM 74841 and 74842. Non-types: *P*-745, 11°58'N, 66°50'W, 65 m, 24 Jul 1968, 1 colony, USNM 53233; MAPTEMP, Site 1, 29°26'19.131"N, 87°34'27.273"W, 66 m, 24 Aug 1998, 1 colony, USNM 1096689; MAPTEMP, Site 8, 29°23'13.55.5"N, 88°19'4.7"W, 93 m, 4 Aug 1999, 1 colony, USNM 1096690; MAPTEMP, Site 9, 29°14'19.499"N, 88°19'36.859"W, 92 m, 6 Aug 1999, 1 colony, USNM 1096691.

Type locality.—*P*-424: 9°37'N, 78°51.5'W (Gulf of San Blas, Panama), 110–119 m.

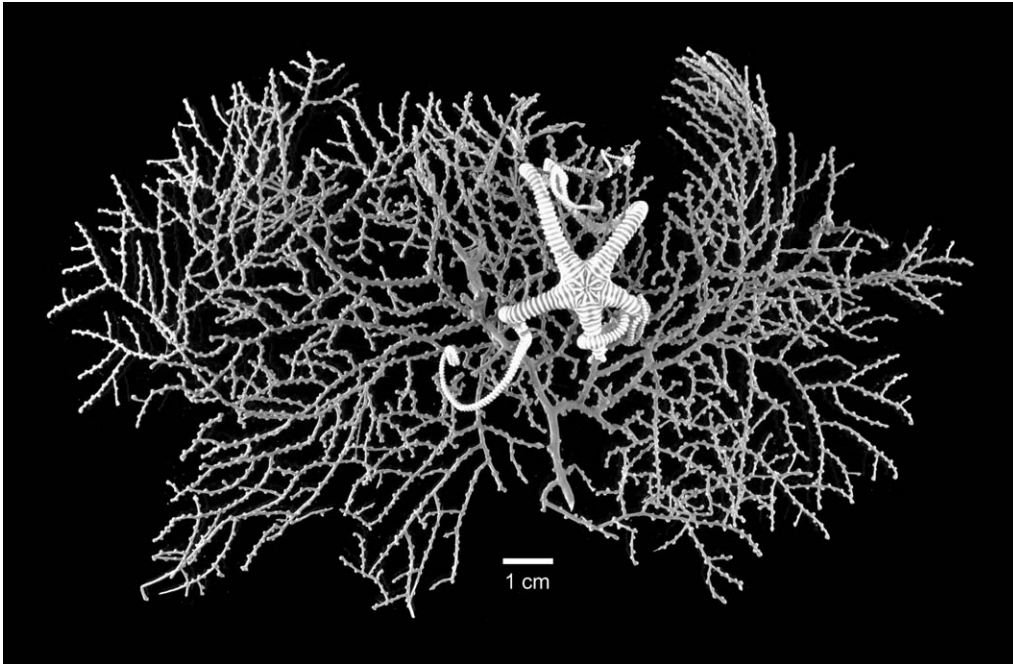


Fig. 1. Paratype (USNM 1096691) of *Nicella toeplitzae* with ophiuroid *Astroporpa annulata*, collected from the northcentral Gulf of Mexico (MAPTEMP, Site 9). Scale bar = 1 cm.

Description.—Colonies are uniplanar, the holotype, 19 cm in height and 12 cm broad, with a broken basal stem 2.2 mm in diameter. A representative paratype (MAPTEMP 8) is shown in Fig. 1. Only one colony retained its attachment (*O*-3608), which consisted of a white calcareous holdfast. Colonies are primarily light orange (amber) to light red, the sclerites of the coenenchyme and lower third of each calyx containing colored sclerites, the sclerites of the distal two-thirds of each calyx being clear resulting in a white calyx. Longitudinal solenial canals are not apparent exteriorly as on other species of *Nicella* with white colonies (e.g., *Nicella obesa*).

Calyces occur in opposite, alternating fashion on both edges of every branch. They are mound-shaped or cylindrical, depending on preservation history, any rarely more than 0.7 mm in diameter.

The calyx body wall consists predominantly (65–75%) of girdled spindles 0.16–0.26 mm in length and have a L:W of 5.0–

7.4 (Fig. 2A). They are sparsely covered with low tubercles about 8 μ m in diameter and only about 5 μ m in height. Double heads also occur in the calyx wall, composing 20–30% of the sclerites and measuring 65–100 μ m in length, with a L:W of 1.4–1.9 (Fig. 2F). Their waists are thick (50% of sclerite thickness) and 0–9 μ m in length, the short-waisted ones resembling double stars. Regardless, all double heads have quite tall, conical, sometimes bifid tubercles 13–17 μ m in height. About 5% of the calyx wall sclerites are girdled clubs ranging from 0.13–0.18 mm in length (Fig. 2B). The rachis of each tentacle is composed of short, blunt, girdled rods 78–115 μ m in length and has a L:W of 3.7–3.8 (Fig. 2E). They are very sparsely covered with small tubercles about 5 μ m in diameter and 3 μ m in height. The pinnular sclerites are typical for the genus: small, elongate, laterally tuberculate plates 45–54 μ m in length (Fig. 2C). Pharyngeal sclerites are also typical in shape for the genus (spiny

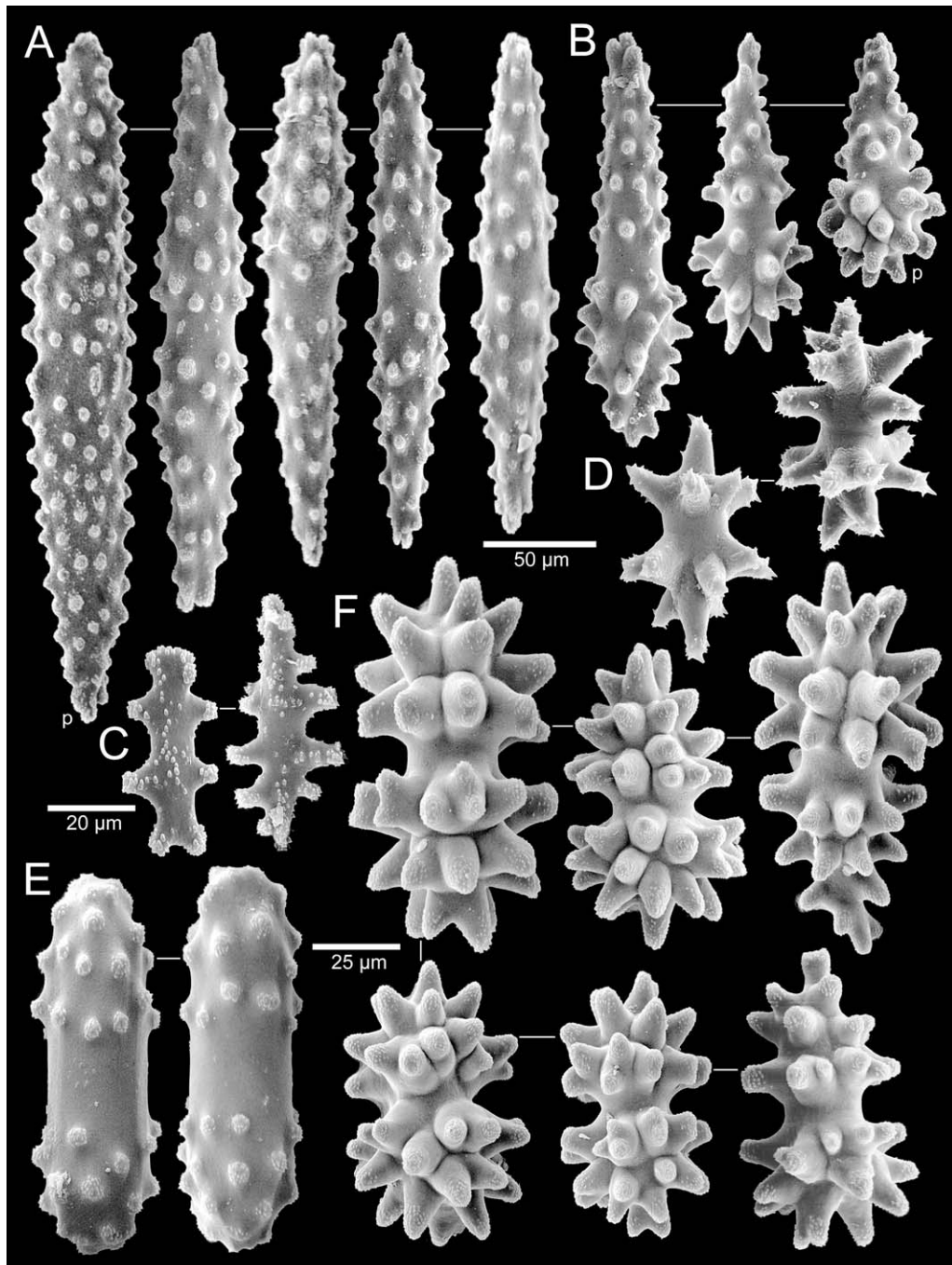


Fig. 2. A–F, Sclerites of *Nicella toeplitzae* (all but two sclerites are from the holotype; those labelled with a p are from *O*-3608): A, five spindles; B, three clubs; C, two pinnular plates; D, two pharyngeal sclerites; E, two tentacular rods; F, six double heads. Scale bars: A, B = 50 μ m; C, D = 20 μ m; E, F = 25 μ m.

double stars) and are 49–56 μm in length (Fig. 2D). The sclerites of the coenenchyme, all of which are colored, consist of 60–80% double heads, 20–40% girdled spindles, and about 5% girdled clubs, all of the same dimensions as described for the calyx wall.

Comparisons.—*Nicella toeplitzae* is distinctive in having prominent, conical tubercles on its double heads measuring up to 17 μm in height. Among the species having rotund body wall rods, it is characterized by having double heads with a relatively thick waist [see Cairns (2007), Table 2].

Etymology.—This species is named in honor of Charlotte Toeplitz, the most exhaustive monographer of this genus to date (Toeplitz 1929).

Distribution.—Perimeter of Caribbean from Nicaragua to Dominican Republic, Bahamas; northern and eastern Gulf of Mexico [Cairns (2007), fig. 13]; and one disjunct record off Vitória Seamount, off Espírito Santo, Brazil from *Calypso* 1805; 55–329 m.

Acknowledgments

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