

***Vaneyothuria zacae* (Deichmann) formae *typica*, *azacae*,  
n. f., and *iota*, n. f.  
Pl. 5, figs. 1-12**

*Holothuria zacae* Deichmann, 1937, p. 168, text-fig. 1, nos. 21-28.

*Diagnosis:* As for the genus, but with two rows of dark spots on the back, in forma *iota* reduced to a dark area around some of the dorsal papillae. Tables fragile, mostly with marginal teeth; in the typical form, sometimes with larger tables near the appendages, with a partly reduced spire ending in four blunt rods. Inner layer narrow buttons, often twisted, incomplete, with a tendency to become smaller and more regular with advancing age—lacking in forma *azacae*, which in addition is unusually pale except for the dark spots and the dark tipped appendages.

*Types:* The typical form is in the Museum of Comparative Zoology; forma *azacae* and forma *iota* are in the Allan Hancock Foundation.

*Type localities:* The typical form was taken in Santa Inés Bay, Gulf of California; forma *azacae* came from the Galapagos Islands and forma *iota* from off Cedros Island, west coast of Lower California.

*Distribution:* The typical form is common in the Gulf of California; one record from Ecuador(?); and none between these two localities; forma *azacae* appears to be restricted to the Galapagos Islands; while forma *iota* is known from off Cedros and Guadalupe Islands.

*Depth:* Most records are from about 50 fathoms down to 120 fathoms; the few specimens of the typical form, from 10 fathoms and "shore," look definitely beach worn.

*Specimens examined:* The type and 20 specimens of the typical form; 15 of forma *azacae* and four of forma *iota*.

*Remarks:* All the material consists of large individuals, mostly about 20 cm in length, with a few measuring only 15 cm. As the material of forma *iota* is much stouter and strongly contracted, it probably

measured 30 to 35 cm when fully expanded. From the large number of specimens taken in the Gulf of California, the species must be fairly common there; and it is remarkable that not one single small individual has been captured. Possibly the younger individuals live at greater depth or are better concealed.

Except for the presence of the rows of dark spots on the back, the species appears to be closely related to *Vaneyothuria integra* and *V. neozelanica*. This is particularly true of *V. z. forma iota*, in which the black spots are reduced to small areas around some of the dorsal papillae—a character which may possibly have been overlooked in these two older species. In the larger individuals of the typical form, as well as in *V. z. forma iota* (of which only colossal individuals are known), there is an increase in the number of small regular buttons, making the inner layer of buttons similar to that of *V. minax* (Théel) from the Japanese waters. The latter seems to be a less specialized form from shallower water, and still retains the stouter tables of a shore form.

The name *azacae* seems most appropriate for the Galapagos form in which the inner layer of buttons is completely lacking. The name *iota* was selected for the West coast form because some one working with the material had recognized that it differed from that secured in the Gulf of California, and had marked it with the letter "J."

## PLATE 5

- Figs. 1-5. *Vaneyothuria zaca* (Deichmann), forma *typica*, from the Gulf of California. Tables and buttons.
- Figs. 6-12. *Vaneyothuria zaca* (Deichmann), forma *azaca*, from the Galapagos Islands. Fragile tables and a rare button and supporting rods.

(Magnification: Each division is 1/100 mm)

