

ALGAL GROWTH OVER THE EPIDERMIS OF SEA URCHIN SPINES¹

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SUMMARY

Fosliella farinosa (Lamouroux) Howe, a coralline red alga, was found growing over the epidermis of the spines of the sea urchin, *Heterocentrotus trigonarius* (Lamarck). This is apparently the first report of the ability of an alga to overcome the resistance to invasion of the external epidermis of a sea urchin.

The most recent classification of the sea urchins (1) divides the class Echinoidea into 2 subclasses, the Perischoechnoidea and the Euechinoidea. The Perischoechnoidea has 1 living order, the Cidaroida. One characteristic of this group is that the large primary spines have a cortex layer but no external epidermis (1,2). These primary spines are often covered with algae (2,3).

The majority of the post-Paleozoic sea urchins are in the second subclass, the Euechinoidea (1). The primary spines of this group are covered with an external epidermis (2). There apparently has been no report of the capability of algae to invade this epidermis.

During the summer of 1968, a tropical Euechinoid sea urchin, *Heterocentrotus trigonarius* (Lamarck), was collected on Eniwetok Atoll, Marshall Islands. A number of the primary spines of the individual were covered with the red coralline alga, *Fosliella farinosa* (Lamouroux) Howe, order Cryptonemiales (Fig. 1). The algal disks measured up to 2-3 mm in diameter. Cystocarpic conceptacles were present. *Fosliella farinosa* is relatively common in the region and has been reported from nearby Bikini Atoll (4).

The urchin was collected alive from its burrow in the algal ridge. It appeared unaffected by the algal growth. Of the numerous individuals of *H. trigonarius* observed in the area, this was the only one so affected. Spines of the individual bearing the algal have been deposited in the University of South Florida Herbarium.

The form of the alga on the spines indicates that it had grown over the epidermis of *H. trigonarius*, and had not simply colonized an extensively denuded area. Living epidermis of the spine was found beneath the growing algal disks.

Although initial colonization might have required a denuded portion of the spine, the subsequent growth of the alga over the epidermis indicates that *F. farinosa* has the ability to overcome the resistance of the epidermis to algal growth. Likewise,

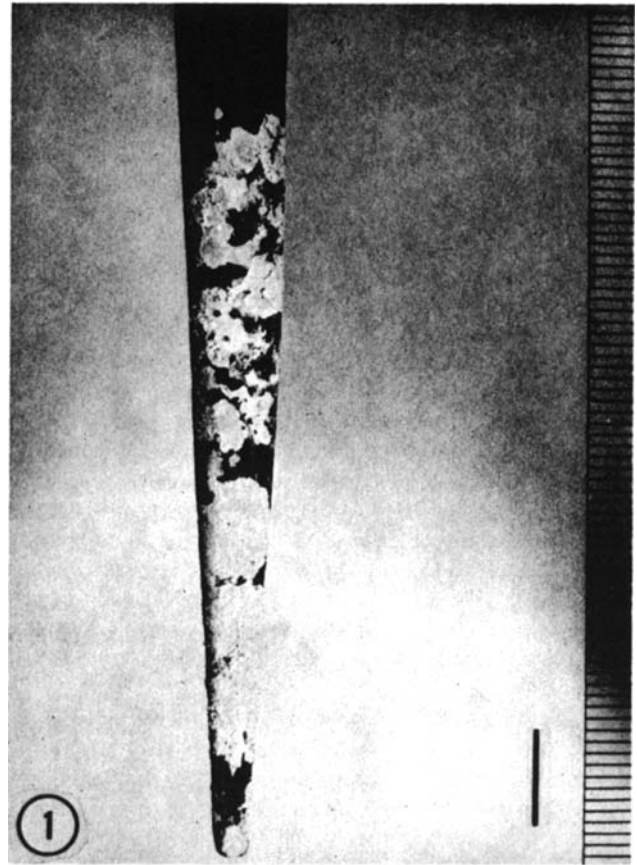


FIG. 1. Spines of the sea urchin, *Heterocentrotus trigonarius* (Lamarck) with the red alga, *Fosliella farinosa* (Lamouroux) Howe, growing over the epidermis. The length of the longest spine is 20 cm.

the alga appears not to affect the epidermis of *H. trigonarius*.

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