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ON THE OCCURRENCE OF *ACANTHASTER PLANCI* (THE CROWN-OF-THORNS) AT MINICOY ATOLL.*

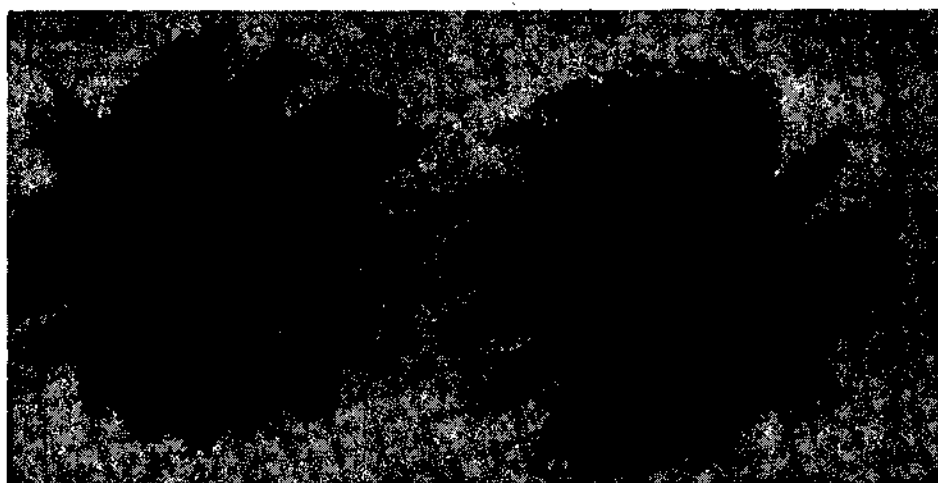
The predation of coral-polyps by the multi-armed star fish *Acanthaster planci* is identified during the last two decades as a major biological factor that causes large scale death to reef corals at several parts of the Indo-Pacific. Though this starfish is known to enjoy a wide distribution from Hawaii to Red Sea its large

scale occurrence or plague is mainly reported from the Pacific. In the last 15 years the infestation and large scale mortality to reef corals are reported from Tuamotu Archipelago, Fiji, Cook Islands, Samoa, Society Islands, Hawaii, Japan, Philippines, Solomon Islands, Great Barrier Reef, New Caledonia, New Britain and Malaysia in the Pacific Ocean. They are also known from Red Sea and there is unconfirmed (till 1977)

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report on its occurrence in the form of infestation in Seychelles and Maldives. Though, 2 to 5 individuals per sq. km of reef surface is regarded as a harmless population of *Acanthaster planci* in any region, 40 to 100 individuals that could be collected or spotted during a 20 minutes search in a rowing boat would be a positive case of infestation, detrimental to reef corals.

The aboral surface and the arms of this star fish possess large, pointed spines, 3 to 4.5 cm long, which gave rise to the popular name, Crown-of-Thorns. The general colour of this animal shows regional variation and ranges from gray, bluish-green, reddish to brown. Adult individuals attain a size of up to 60 cm in diameter. The number of arms varies from 9 to 21, depending on the size of the animal. The animal is capable of movement from one spot to another, sometimes over sandy stretches, or climbing on arborescent corals mostly with the aid of the arms than the tube feet. They feed on coral polyps of almost all genera of reef corals leaving white patches on the coral skeleton.



The star fish is mostly cryptic during day time, hiding under the branches and crevices of coral colonies and they are nocturnal feeders. The nocturnal feeding habit could be a behavioural adaptation, for many of the coral colonies are said to expand their polyps more at night than day time. An adult star fish is estimated to be capable of feeding on the polyps of nearly 6 sq. m of reef coral coverage on a reef surface. The large patches of corals fed by them at several areas of their infestation have caused a world awareness of the problem in the last 20 years.

During a recent visit by a team of scientists from Central Marine Fisheries Research Institute, the

presence of this star fish in the lagoon of Minicoy Atoll was noticed in November, 1979. The details of this find are briefly reported here.

A general paucity of the Echinoderm fauna was noticed throughout Minicoy lagoon, though rarely *Culcita*, *Linkia* and *Holothuria atra* are found on the sandy bottom or on coral shoals along with *Acanthaster planci*. A few specimens of sea-urchins and brittle stars are seen under the stones or corals. Five specimens of adult *Acanthaster* were collected at the south-western part of the lagoon near Bosh Point. The area is with a luxuriant growth of corals, chiefly, *Acropora corymbosa*, *A. intermedia*, *A. hebes*, *A. humilis* and *A. hemprichi* that cut large thickets intermittent with sandy areas. The depth of water at low tide range from 25 to 50 cm, some of the coral thickets being partly exposed. Other corals include a few faviids and poritids. One of the specimens of *Acanthaster* was seen on sandy bed away from any coral while others were observed on *Acropora* thickets. Small white

patches at the site of the star-fish on corals clearly indicate predation of the polyps. However, no significant dead area of corals due to star-fish predation was observed. Two of the specimens brought to the laboratory (Photo) have greater diameters of 40 and 36 cm in dried condition. The general colour in the living condition was reddish-brown which turned a deep-pink on sun drying after killing with formalin. Both the specimens have 17 arms each. The spines on the aboral side measure 3.5 to 4 cm.

The intensity of population is roughly 2 to 3 adult individuals per sq. km at the site of their present occurrence, which is nothing but a natural, harmless con-

dition. However, a word of caution is necessary. There were past cases of *Acanthaster pliguae* occurring all on a sudden, causing severe destruction of reef corals in several parts of the Pacific in the recent past. The exact reason for such population explosion is not known, though many plausible biological factors such as, a release on the predation-prey relationship, evolution, of mutant strains capable of prolific reproduction, introduction of large number of individuals as larvae or adult from other areas by water currents or migration, may be suggested.

The corals of Lakshadweep are a very valuable natural wealth, particularly in view of the associated reef fishes, of which good many are used as live baits

for traditional *Tuna* fishing. Any considerable destruction to corals of the lagoons of the Lakshadweep atolls will certainly have a deleterious long term effect on the reef associated ichthyofauna. In the event of a population explosion of *Acanthaster*, destruction to reef corals is a possibility that would deserve attention. Therefore a careful watch on the *Acanthaster* population is necessary for which a local awareness of the problem among the fishermen is necessary. Many control measures of star fishes have been practised elsewhere in the Pacific. However, hand-picking of the adults with the aid of pointed spears and killing them with formalin or ammonia solution is the most effective. Careful search among the corals is required, since the crown-of-thorns hide under the crevices during day time.

