

**THE COMPARATIVE FEEDING BEHAVIOR OF
CRINOIDS AND OPHIUROIDS**

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Purpose: Make repeated samplings of echinoderm food preferences and ambient supply of suspended food material. Document the crinoid distribution in the area, study the possible cause of their cryptic behavior, and make comparative samplings of nocturnally emergent plankton from various reef substrata (Report No. 79-3)

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Accomplishments: The color patterns, living habitats, morphology, and depth distribution of four crinoids (*Nemaster rubiginosa*, *Nemaster discoida*, *Comactinia echinoptera* and an additional color form belonging to the genus *Nemaster*) were examined on the east and west walls of the Salt River submarine canyon. The three *Nemaster* species were sampled for gut contents in order to determine their feeding preferences. An ambient plankton sampling was taken concurrently with 64 micron mesh net. Insufficient numbers of crinoids at the site prevented the taking of a series of nocturnal feeding samples which would have enabled the times of maximum feeding activity to be documented. Data was collected for this population on the degree of nocturnal emergence, which appeared to be slight. The cryptic behavior of these crinoids was also observed. Two individuals of the yellow-tipped *Nemaster* were attached to fiberglass screening covering a

weighted plexiglass tray during the day. The tray was left in the open in the natural habitat, preventing the crinoids from crawling back into the normal semicryptic living position. Insufficient numbers of suspension feeding ophiuroids were found to compare to crinoids on the basis of feeding behavior and diet preferences. A single adult basket-star (*Astrophyton nuricatum*) was found on a night excursion along the west wall, but this individual was not in the normal feeding posture. A few juvenile basket-stars were also observed. Despite the abundance of sponges in the study area, the ophiuroid *Ophiothrix suensonii* was not common. A few individuals associated with the tube sponges were found along the west wall. The nocturnal suspension feeding ophiuroid *Ophiopsila* was found but is not common. The nocturnal emergence of demersal plankton from interstices of the reef may influence the day-night differences in feeding behavior of reef-dwelling suspension feeders. Because the crinoid study site was located 350 m from the underwater laboratory, the plankton sampling was conducted in closer proximity to the laboratory. Four traps (each covering 0.25 m x 0.25 m) were used to sample plankton emerging from several types of substrata (coral, sand, rubble, and *Halphila* grass on sand). Samples from these substrata were obtained over a variety of sampling periods, day and night. The samples will be analyzed in the laboratory and compared to results obtained from other reef areas.