

# 8. DEEP-SEA ECHINODERMS IN THE TONGUE OF THE OCEAN, BAHAMA ISLANDS: A SURVEY, USING THE RESEARCH SUBMERSIBLE *ALVIN*.

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## SUMMARY

Deep-sea echinoderms of the Tongue of the Ocean, Bahama Islands, have been studied, using trawled collections made by the University of Miami together with observations from the deep submersible *Alvin*. Transect runs in the submersible permitted studies of population densities and behaviour of approximately 38 species of larger invertebrates, of which 27 were echinoderms. Several echinoderm species show a patchy distribution pattern which is apparently not related to available food resources. Some species are exclusively herbivores, feeding on fragments of turtle grass, *Thalassia testudinata* and sargassum weed, *Sargassum* spp. Feeding habits of some Tongue of the Ocean echinoderms are compared with those of the same species from further north, where supplies of plant material are not nearly so abundant.

Trawled collections of echinoderms do not include some of the most common and ecologically important holothurians; conversely, some burrowing species very common in the area were not observed from the *Alvin*. Further observations were made on swimming behaviour of holothurians. All swimming forms studied apparently derive nourishment from the seafloor. Short tracks on the seafloor indicate that swimming behaviour is a common means of transportation from one area to another. The ophiuroid *Bathypectinura heros* is capable of active swimming movements. Uniformly conical mounds on the seafloor are often built up around a central core of holothurian faeces.

## INTRODUCTION

During January, 1977, a series of eight dives were made in the submersible D.S.R.V. *Alvin*, to depths in excess of 3,660 metres, in the Tongue of the Ocean, Bahama Islands. The purpose of the dives was to make “. . . first-hand observations . . . on the biology of deepwater benthic fishes and larger invertebrates and to take qualitative and quantitative data by visual and photographic methods” (D. M. Cohen, 1 March 1977, Cruise Report NOAA — MUST dives with D.S.R.V. *Alvin* in the Bahamas — unpublished).

I was able to participate in four dives, and on one, Dive 703, an excellent opportunity was provided to make quantitative studies of echinoderms and other large invertebrates, and to observe activities of echinoderms. This paper represents for the most part the results obtained during Dive 703, although some aspects of “natural history” of echinoderms were obtained during one or more of the other dives in which I participated. Additional information on echinoderms from the Tongue of the Ocean was obtained from the extensive collections of the Rosenstiel School of Marine and Atmospheric Science, University of Miami, whose staff members have occupied numerous trawl stations in the Tongue of the Ocean over the past several years.

## METHODS

### 1. LOCATION OF ALVIN DIVE 703 AND DESCRIPTION OF ACTIVITIES

Dive 703 was made on January 12, 1977 in the Tongue of the Ocean, Bahama Islands