INTRODUCTION

Seamounts are characterized by having wide depth ranges, are dominated by hard substrates, have steep topographic gradients and complex topography, impinging currents with topographically-induced upwellings, and are geographically isolated from continental platforms. Seamounts are dominated by invertebrate suspension feeders. Seamount faunas exhibit a high degree of endemism, owing to their isolation as well as the high degree of landscape variation at small and large spatial scales.

MULTIBEAM MAPPING

A multibeam sonar system was used to produce maps of the target seamounts to aid in analysis of data (i.e., map coral and other faunal distributions) as well as to plan Alvin dives.

RECRUITMENT OF CORALS

An experiment was deployed to determine the spatial relationships of coral colonies and the occurrence of new recruits. Basalt blocks (new substrate) were deployed within an aggregation of corals (Paragorgia) and at a location approximately 50 m outside the aggregation at Manning Seamount. We will revisit this site in 2004 to collect the blocks and examine them for new recruits. This experiment will provide some insight on how far coral larvae are transported from parent colonies.

SEAMOUNT LANDSCAPES

The underwater landscape, composed of both physical and biological components, mediates the distribution and abundance of species. Distributions of organisms will be correlated with landscape attributes to obtain a first order understanding of how seamount environments influence patterns of diversity.

TAXONOMIC AND REPRODUCTIVE STUDIES OF OCTOCORALS

Corals were collected for a variety of studies. Live corals were kept at ambient temperatures and examined for preliminary classification, polyp morphology and behavior, and reproductive state. Skeletal and tissue samples were preserved for morphological and genetic analyses.

EDUCATION AND OUTREACH

In addition to the scientific objectives, the Mountains in the Sea also included a comprehensive education and outreach plan. Among the education accomplishments were teacher workshops, teachers at sea, and a live interview from a classroom to the Alvin while diving on Bear seamount. The mission also produced near real time outreach via the www.oceanexplorer.noaa.gov website that provided daily logs of the mission, multibeam images, photos and video clips of the research activities. This website also provided eight lesson plans focused on seamount science for teachers.

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Objectives of the cruise were:
1. map the distribution of the octocorals and assess the overall diversity of organisms living in the coral communities of the New England seamount chain.
2. determine the reproductive state and potential larval strategies of seamount octocorals.
3. investigate the colonization dynamics of dense coral aggregations.
4. determine whether seamount octocorals are genetically isolated between seamounts and from continental slope species.
5. determine the relationship of demersal nekton to the landscape features with and without corals.
6. assess physical impact of bottom trawling on octocoral communities and seamount biodiversity.

The New England Seamount chain is a line of extinct volcanoes running from the southern side of Georges Bank midway across the western Atlantic. Several of the seamounts were visited by geologists in 1974, but there has been little biological exploration of the area. A cruise on the RV Atlantis was conducted from July 11-19, 2003. We used the submersible Alvin to sample the fauna from Bear, Kelvin, and Manning seamounts using both video and still imagery as well as collections of living organisms. Dives were in the range of 2200 - 1100 m.