NOAA Office of Ocean Exploration Quick Look Report

Expedition Title: _Deep-Sea Precious Corals as Habitat for Macroinvertebrates in Hawaii

Results (please check all disciplines in which this cruise collected data)	**Details** (please describe any novel discoveries in the discipline, answers such as "possible, awaiting data analysis" and "no apparent discoveries" are acceptable)
Bathymetric Mapping ☐ Yes ■ No	(please note total area mapped and technology employed, e.g. multibeam, side scan, etc.)
New Species Discovered ■ Yes ☐ No	(please note number, type, and significance ,i.e. radically new vs. slight adaptation of known species) We likely collected at least one new species of Paragorgiid. Other possible new species of corals and invertebrates will require post cruise processing.
Bio-prospecting ☐ Yes ■ No	(please note number, type, and potential use of new compounds discovered)
Habitat Range Extended ☐ Yes ☐ No	(please note species discovered in new habitats and how far from previous range were they found0 This will require post-cruise processing for both corals and associated invertebrates.
Chemical Processes ☐ Yes ■ No	(please note new or unusual chemical properties such as methane seeps, hypersaline pools, vents, etc. observed)
Geologic Processes ☐ Yes ■ No	(please note new or unusual geologic processes that may impact scientific understanding of the region)
Physical Processes ☐ Yes ■ No	(please note new or unusual oceanographic processes that may impact scientific understanding of the region)
Sub/ROV/AUV Dives ■ Yes ☐ No	(please note name, type, and cumulative hours of bottom time for each platform / if available please provide average working time per dive for each platform / please note if new depth records were set) Pisces V submersible – 8 dives - 61 hours 54 minutes of dive time RCV- 150 - 12 dives – 16 hours 8 minutes of bottom time No new depth records were set.
New Technology ☐ Yes ■ No	(please note any new tools developed for or during this cruise, also identify first use of an existing technology in a new application)
Maritime Cultural Heritage ☐ Yes ■ No	(please note discoveries impacting knowledge of the past, i.e. number and type of shipwrecks)
Outreach ■ Yes ☐ No	(please describe outreach channels, e.g. web, port call, etc., used in this project) This project will receive summary treatment on the OE web site. We also collected specimens of precious corals and crinoids for the Waikiki Aquarium. Finally, the BBC are participating in our cruise for a documentary on seamount fauna.
Students Involved ■ Yes ☐ No	(please note the number and level of students on the expedition) 2 graduate students (1 Ph.D., 1 M.S.) from UAF participated in the expedition. Each one had an opportunity to have their first submersible dive. Also, a UH graduate student in the Microbiology Dept. came out for one day to collect coral microbes for his dissertation research.
Multidisciplinary ■ Yes ☐ No	(please identify the formal disciplines represented in the science party) Invertebrate zoology, Taxonomy, Ecology, Genetics
Exploration of New Regions ■ Yes ☐ No	(please note if the area of operations had been previously studied, if so please check no and approximate as slight, moderate or significant, the level of knowledge before the cruise) All three of our sites had previously been visited by ROV or submersible, however we

	covered a much larger area at each of these sites than had been previously studied. We were also able to do some exploration at Keahole Point to depths of 800m. This site had only been explored to about 500m previously.

NOAA Office of Ocean Exploration
FY 2004 Expeditions

Quick Look Report Required Elements

The NOAA Office of Ocean Exploration (OE) has developed a standard Quick Look Report format. Elements are similar to and complement reports submitted under other requirements (e.g. Cruise Summary Report (CSR) or Fisheries-Oceanography Coordinated Investigations (FOCI)). The following describes each of the elements:

Project title: (as listed in original proposal)
Deep-Sea Precious Corals as Habitat for Macroinvertebrates in Hawaii

Principal Investigator and institution: (as listed in original proposal)
Amy Baco-Taylor and Tim Shank, WHOI
Thomas Shirley, UAF

Expedition title: (working name of the expedition)
Deep-Sea Precious Corals as Habitat for Macroinvertebrates in Hawaii

Expedition dates and itinerary: (a simple table is sufficient)
Oct. 2-18, 2004
Oct. 2-4 Makapuu Bed
Oct. 7-12 Cross Seamount
Oct. 13-17 Keahole Bed

Chief Scientist and institution:
Amy Baco-Taylor, WHOI

Co-sponsors / partners / participating organizations: (a table of names and affiliations)
See above
BBC – for seamount documentary
Mark Specks – UH graduate student participated for one day to collect samples for his dissertation.

Vessel Identification: (if applicable)
Ka`Imikai – O - Kanaloa

Primary Equipment: (embarked vehicles, sensors, and tools of significance)
Pisces V submersible
RCV-150 ROV

Geographic area of operations (identify common name such as North West Hawaiian Islands as well as boundary coordinates for the area, and a map if available)
Main Hawaiian Islands (Oahu and Hawaii) and Cross Seamount. 3 points of a bounding triangle:
21° 19.12' N, 157° 32.8' W
18° 42.59' N, 158° 15.69' W
19° 48.20' N, 156° 08.05' W

Summary of Expedition Objectives: (a list the proposed objectives that were met as a result of the expedition)
Collected samples of corals and invertebrates to exaine distributions and coral-invertebrate associations. Specimens were also collected for the Waikiki Aquarium and for microbial studies of corals.

Milestones Achieved: (This section of the report should amplify the information provided in the official OE cover sheet summary of results. This section should elaborate on key findings)
A total of 185 coral specimens were collected and identified from 8 dives made on 3 precious coral beds. A large number of coral specimens are processed and packaged for mailing to the National Museum of Natural History, Smithsonian Institution upon disembarkation. Faunal assemblages on the corals included species from 13 different phyla and a large number of lesser taxa. Some of these species may represent range extensions or records of undescribed species, but await post-cruise processing for identification and clarification. All corals were also preserved for future genetic analyses. Many of the invertebrates were also preserved for potential future genetic analyses. Samples were taken from ten corals and associated seawater for microbial community studies. Twelve Corallium samples were provided to the Waikiki Aquarium as well as three crinoids.

Sample log entries: (from any daily logs of activities that were kept)

Summary of Digital Data Collected: (Identify volume in MB/GB/TB etc. and type of data collected. Be as explicit as possible, e.g. identify high definition video as opposed to simply video.)
Approximately 56 hours of submersible video were recorded on each of two cameras totaling about 102 hours of video. These were copied onto DVDs and the original DVCAM tapes are deposited at HURL. Also, over 16 hours of video were recorded during ROV operations. These are also on DVD with original mini-DV tapes deposited at HURL.

Summary of outreach and educational activities: (a summary discussion of the nature and success of the activities, i.e., number and types of displays and participants in the case of an open-house event)

This cruise received "summary" coverage on the OE website, including a mission essay, biographies and slide show. HURL also provided an essay on the RCV-150 ROV for the OE website vehicles webpage. Two graduate students participated in the cruise, each of which had an opportunity to have their first submersible dive and their first experience with the RCV-150 ROV. Corallium and crinoid samples were collected from the Makapuu bed for the Waikiki Aquarium, who are developing an exhibit on deep-sea corals of Hawaii. The BBC also participated in the cruise and provided HMI lights for the submersible for filming. The BBC camera person captured video from several dives from the sub camera and also used a handheld camera during 2 submersible dives. For one of these dives, they filmed the bioluminescence of 2 coral species using a special low-light camera designed by NHK. This filming was for a new BBC documentary series, "Planet Earth" which will have one episode devoted to seamount fauna. Finally, one graduate student from University of Hawaii spent one day on the cruise and collected samples of corals and coral mucus for preliminary samples for his dissertation research.

Thoughts for the Future: (a discussion of any ideas for future exploration, research, or management activities related to the work accomplished)

The coral bed at Cross seamount showed many signs of damage by pelagic long-line fishing including lost lines, trees that were knocked down, and cook sharks with injuries related to line entanglement. We recommend that long-line fishing be banned on/around Cross Seamount. We also observed extensive reduction of invertebrate diversity and decrease in coral abundance at the Makapuu precious coral bed since it was last visited by ABT in 1998. The corals in this bed were harvested in 1999-2001.

Summary of Expedition Operations (A good summary would identify as many of the following elements as possible for each "operation." Table formats are ideal for this aspect of the report: data type collected / time / position / ID tag /operation type /dive tracklines / depth /comments)

All dives were made to depths of 300-500m within the precious coral beds. At Cross Seamount, we also explored several pinnacles in this depth range that were outside of the bed, to determine if precious corals were present. At Keahole Point, we also began each of the two dives at a depth of 700-800 m to explore for deeper corals and associated fauna to compare to the precious coral bed corals and fauna. On each dive video transects were conducted with the cameras in fixed positions. Corals and associated fauna were collected before and after transects to allow for identification of animals observed in videos. Each sampled coral was photographed, visible fauna were counted, and then either the entire coral (if small) was collected, or a subsample was placed into a numbered biobox or jar for return to the surface. The position, time, depth, temperature and collection box for each sample was retained in digital spreadsheets. CTD and dissolved oxygen data were recorded for the entire dive. Submersible observations were augmented with ROV transects at each site. Tracklines for each dive were recorded by hand on existing multibeam bathymetry (provided by HURL) for each site. A small number of coral and invertebrate samples were obtained from Rob Dunbar and colleagues who were sharing the cruise with us and sampling in the same areas for corals for their aging and climate studies.

Please provide a Quick Look Report within two weeks of completing your cruise. Send via Email to:
john.mcdonough@noaa.gov