

CDHC: CORAL DISEASE OUTBREAK AND UNUSUAL MORTALITY EVENT RESPONSE PROGRAM

Coral Disease & Health: The Issue

Historically responses to unusual mortalities or disease outbreaks in the marine environment are handled opportunistically. Under these conditions, the samples are often taken from a particular research perspective, rather than from an investigative approach. This leads to a bias in sample collection, analysis and documentation is based on the collector's point of reference. This approach to coral disease has hampered progress in our ability to understand the dynamics of coral disease. As a result the processes for investigating disease outbreaks or unusual mortality events are still in their infancy. In an effort to address these shortcomings, we have undertaken a project to establish what we initially called "rapid response teams" that could be mobilized on short notice to conduct a formal coordinated disease investigation, including potential biotic and abiotic etiologies.

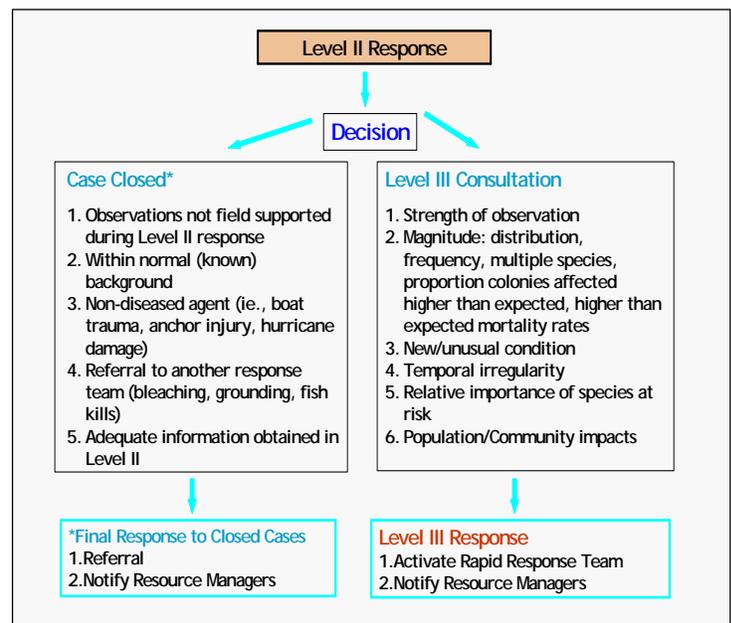
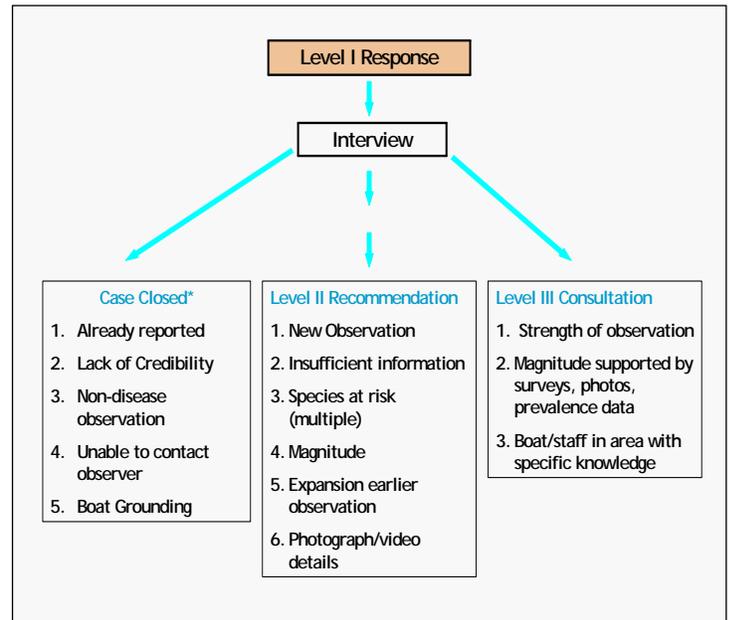
Objectives of the Response Program

- Facilitate collection and dissemination of reference data on the health of corals and health trends
- Correlate coral health with available data on physical, chemical, biological and environmental parameters
- Synthesize available surveillance information to identify emerging diseases
- Ensure coordinated effective responses that maintain data and sample integrity and continuity
- Provide training and mobilization procedures for personnel, facilities, and other resources necessary to conduct a rapid and effective response in accordance with Incident Command System
- Report out findings to resource managers and stakeholders

Contingency Plan Development

In FY05, the CDHC and individuals with knowledge and experience in coral diseases continued development and formalization of the "Coral Disease Outbreak and Unusual Mortality Event Response Program". The Program Organizing Team met in February 2005 and drafted a Contingency Plan for outbreak investigations.

This team was composed of 12 experts in coral disease, disease investigation and outbreak response and represented NOAA (NOS & NMFS), USGS (National Wildlife Health Center), EPA, Biscayne National Park and University of Hawaii.



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The CONTINGENCY PLAN includes (1) a list of persons, (i.e., coral disease network participants, at a regional, State, and local level), who can assist in implementing a coordinated, safe and effective response to an unusual coral disease outbreak; (2) the types of coral tissues and analyses necessary to assist in diagnosing causes of the coral disease events; (3) training, mobilization, and utilization procedures for available personnel, facilities, and other resources necessary to conduct a rapid and effective response to unusual coral disease outbreaks; and (4) such requirements as are necessary to (i) minimize the spread of the coral disease in the wild; (ii) assist in identifying the cause or causes of an unusual coral disease outbreak; (iii) determine the effects of an unusual disease outbreak on the affected populations of corals; and (iv) identify any roles played in an unusual coral disease outbreak by physical, chemical, and biological factors, including contaminants.

The contingency plan calls for regional response coordinators and a network of responders that will 1) conduct a preliminary assessment (including sample collections) of the outbreak event and notify management agencies and other appropriate stakeholders of the status; 2) evaluate the seriousness of the outbreak and classify the threat (i.e. What impacts to the reef ecosystem will result from the outbreak on a local, regional, or national scale?); 3) assess the feasibility of containing the disease and reducing contributing anthropogenic stresses (i.e. chemical and thermal inputs); 4) provide recommendations to decision-makers regarding potential response; and 5) provide guidance for efficient control methods. To carry out a response, the following capabilities are needed: event coordination, local ecological and logistical expertise, initial threat assessment, specialized sample collection, initial on-site sample processing to preserve sample integrity and insure comparable data across outbreaks, and public relations specialist.

The Regional Coordinator is responsible for the overall communication and logistics for a given event. This includes such activities as event coordination (how to communicate with scientists, managers and the public), initial threat assessment, how to implement control and prevention procedures, determining amount, type and quality of data appropriate to collect, setting up logistics, safety and permitting issues as well as preparing summary reports and transmitting data to a centralized data analysis facility. Response Team members will receive both classroom instruction and field exercises (mock investigations) that cover logistics, specialized sample collection, initial on-site sample processing, QA/QC procedures (for sample and data integrity), sample handling and shipping, and safety.

A specific outbreak investigation will be led by an Onsite Coordinator who will make immediate recommendations to the coral disease outbreak network on how to proceed with response activities. The Onsite Coordinator will coordinate and direct the activities of all persons responding to an

unusual coral disease outbreak in accordance with the contingency plan, and with respect to any matter that is not covered by the contingency plan, they are to use his or her best professional judgment and in consultation with the unusual coral disease outbreak working group.

Response Process

The RESPONSE COORDINATION will be through a WORKING GROUP, including individuals with knowledge and experience in coral diseases and pathology to provide guidance for (i) developing and implementing the contingency plan to assist in responding to unusual coral disease outbreaks; (ii) determining whether an unusual coral disease outbreak is occurring; and (iii) determining, after an unusual coral disease event has begun, if response actions with respect to that event are no longer necessary.

CDHC: Work In Progress

- **Rapid Response Teams** – A long-range project geared to providing local response capabilities to coral disease outbreaks. These will be well trained teams that can be mobilized on short notice to carry out a formal disease investigation for unusual coral disease outbreak or mortality events and includes investigating both biotic and abiotic as potential sources. The planning and organizing committee is currently finalizing the draft Contingency Plan for Response to Unusual Coral Disease Outbreaks and Mortality Events and developing training manuals for in class and field exercises for use in conducting an outbreak investigation.
- **Field Manual** - The manual is intended to serve as an operational guide to coordinate effective, informative responses by outbreak response teams to unusual incidents of coral disease or mortalities. Available July 2008. Available on request from Dr. Cheryl Woodley. Email: Cheryl.woodley@noaa.gov.
- **DVD** – A DVD produced in conjunction with the National Park Service (underwater videography), is now available. It provides guidelines and instruction for conducting coordinated investigations of Unusual Coral Disease Outbreaks, demonstrating data and sample collection protocols and field techniques for handling and processing of samples to stabilize them for laboratory analyses. Available on request – Dr. Cheryl Woodley. Email: cheryl.woodley@noaa.gov.

CDHC: Educational Opportunities

- **Pauley Program** – Hawaii Institute of Marine Biology <http://www.hawaii.edu/HIMB/>. Various topics each summer.
- **Diseases of Corals and Other Reef Organisms** – Mote Marine Laboratory, Summerland Key, Drs. Esther Peters and Robert Jonas, Summer 2008
- **CDHC Response Workshops**: Two training workshops are planned, one in the Caribbean and the other in the Pacific to train responders in methods of outbreak investigation for unusual coral disease outbreaks. Expected dates: Guam Spring 2009; Puerto Rico 2009.

CDHC National Office

The CDHC is a virtual entity, centralized within the US NOAA, Charleston, SC via the office of Dr. Cheryl Woodley. **Further information about the CDHC can be obtained by writing to Cheryl.woodley@noaa.gov or Andy Bruckner at andy.bruckner@noaa.gov.**

