

Draft Talking Points – Kauai Coral Disease

October 2013

- **General Information on Corals and Coral Disease**

- Corals form the foundation of tropical marine ecosystems, similar to rain forests, that support a variety of living creatures like fish and molluscs by providing food, habitat and nurseries. Coral reefs also act as storm barriers providing protection to coastal communities, contribute to beach sand and help form surf spots.
- Reef corals are slowly-growing living animals that co-exist with specialized algae in their tissue that provide essential nutrients. They are susceptible to disease, as all animals are, and therefore can get sick and die.
- Diseases can and do kill coral reefs. In the Caribbean, over 80% of reef corals have been lost due to disease. Losing corals on a large scale is similar to losing the trees in a rainforest, leading to a cascading loss of multiple sea creatures that depend on them including fish.
- Exposure to stressors can make corals more vulnerable to disease; the stressors include physical damage, land-based pollution, and overfishing, as well as non-anthropogenic disturbances including temperature stress and ocean acidification.
- Physical damage can reduce coral cover directly by killing individual coral colonies.
- Land based pollution kills corals by smothering them with silt or creating adverse environmental conditions that impair healing, growth, or regeneration of corals.
- Overfishing alters the ecological balance eliminating important groups of algae grazers (parrotfish, surgeonfish, etc) that results in algae overgrowing corals.
- Many stressors can be reduced or eliminated through adoption of best management practices.
- Coral disease can be the result of infectious or non-infectious agents. In many cases, pathogens already exist in the wild, and as corals become stressed from human and/or natural disturbances, their immune system is weakened and they are therefore more susceptible to disease

- **History of the Kauai Coral Disease Outbreak**

- Disease first spotted at low levels on Kauai in 2004
- Identified on the North Shore of Kauai in 2012 at 10 times background levels by an Eyes of the Reef Network member
- The disease continues to adversely affect coral reefs throughout North Kauai.

- **Partners**

- Currently DLNR – DAR, UH, USGS, NOAA (PIFSC-CRED), SOEST, and HIMB are working together to gather more information on the coral disease affecting Kauai
- Community and private groups are also supporting this effort including Seasport Divers, Bubbles Below, Underwater2Web, Eyes of the Reef, Hanalei Watershed Hui, and Kauai Community College.

- **Research**

- Coral diseases are an emerging issue. Little is known about coral disease and ways to manage diseased reefs.
- Current research being conducted by partners includes:
 - Determining how widespread the disease is on the reefs of Kauai
 - Disease etiology (what bacteria are causing the disease)
 - Disease transmission (is transmitted from one colony to another)
 - Disease virulence (how harmful the disease is to coral colonies)
 - If coral health is affecting the coral's ability to resist this disease
 - What drives the presence of the disease on certain reefs
 - Which reefs are vulnerable to future infection
 - How the disease affects coral cells
 - Lesion occlusion (covering the bacterial infection with a putty) as a means of disease treatment
- These data will provide essential information to more effectively identify management options

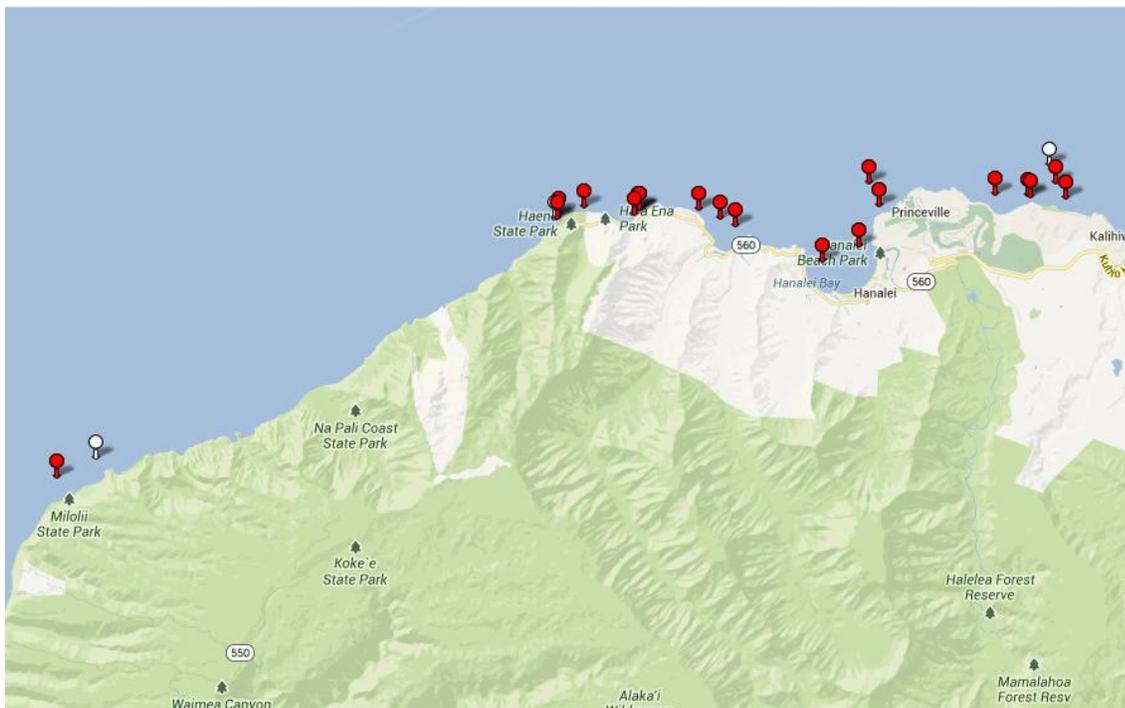
- **What we know right now about the Kauai coral disease**

- The coral disease affecting Kauai's coral is a bacterial infection associated with a community of at least three different bacterial strains.
- Found to affect 3 species of rice coral (montiporids). This is of concern because *Montipora* corals form the basic structure of reefs on North Kauai.
- A specific trigger to this outbreak has yet to be identified
- Spatial prevalence studies so far suggests a potential association with sources of ground water influx into the Bay
- It is probably that a variety of stressors over time have made Kauai's corals more susceptible to the disease.
 - Stressors include:
 - Siltation from both natural (e.g. introduced wild pigs digging up the forests and watershed) and man-made erosion (vegetation clearance, agriculture)
 - Climate Change
 - Increased nutrients from land use practices (cesspools, fertilizer, etc.)
 - Large freshwater inputs
 - Floods and storm events
 - Other land-based sources of pollution
 - Chemicals and pesticides
 - Overfishing

- **Current Treatment Trials**

- Application of putty to the edges of the disease lesions on corals
 - This method has been used in other areas that have experienced similar outbreaks.
 - A preliminary trial of this method was used in late 2012 on one reef on Kauai and was found to effectively stop or slow disease progression on corals.
 - A larger trial of the effectiveness of lesion occlusion is scheduled for the future
 - This approach can only be effective on a small scale and for individual colonies.
- In the long term, managing coral disease in Kauai will require cooperation within the community and with community partners, private sector, and government agencies.
- Prevalence of Outbreak
 - Map and list of sites with confirmed disease outbreak

http://www.spatialepidemiology.net/user_maps/php/temp/10-03-13-96077.html



red pins = with disease, white = no disease