

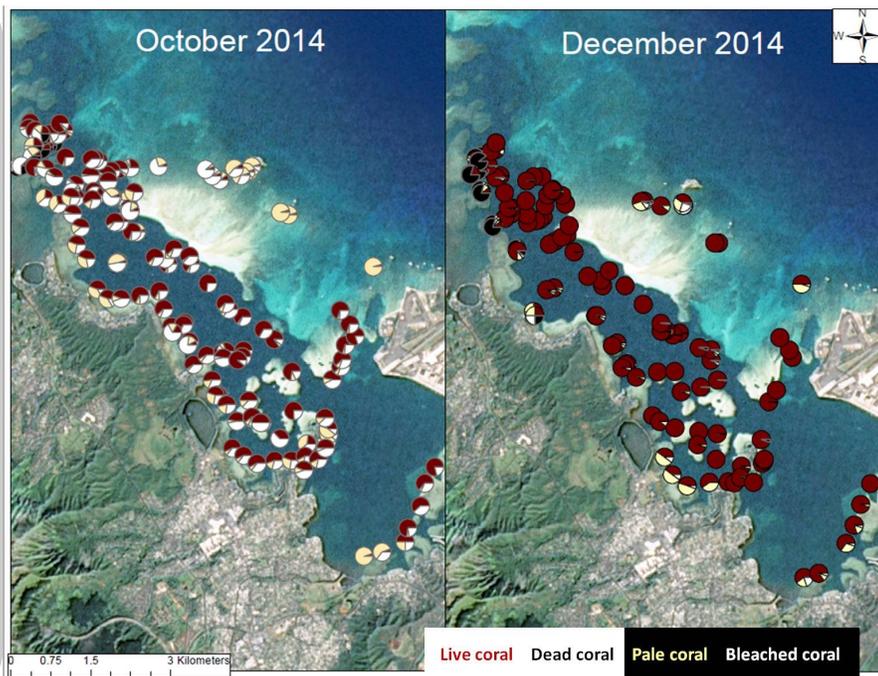


## Report Summary

Between November 2014 and January 2015, 20 reports were received through the Eyes of the Reef Network. No Rapid Assessments were initiated, though coral bleaching monitoring continues statewide. Final results of a year of coral disease investigation on Kauai is available on the Reef Response Website.

### Coral Bleaching

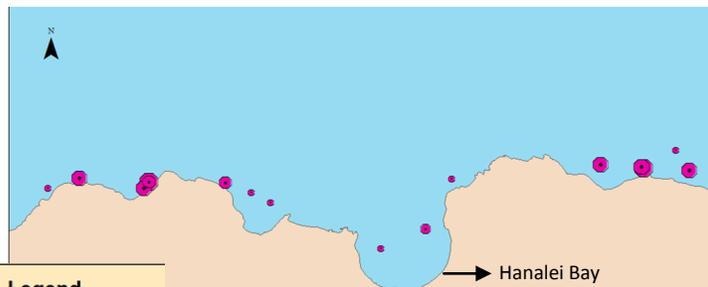
15 coral bleaching reports were received through the Eyes of the Reef Network between Nov 2014—Jan 2015. Areas affected by the 2014 bleaching event have seen the majority of tagged colonies recovering, although mortality and bleached coral was also observed. Monitoring will continue in coming months. Severe bleaching is predicted in 2015.



### Coral Disease

There were a total of 4 EOR Network reports of coral disease between November 2014—January 2015. All of the reports were from the north shore of Kauai due to the ongoing Black Band Disease outbreak. Additional investigative work by the University of Hawaii took place there in August and October, the final report is available on our website, [www.dlnr.hawaii.gov/reefresponse](http://www.dlnr.hawaii.gov/reefresponse).

DAR staff also surveyed coral disease in Molokini crater. Tissue loss and bleaching was observed during these surveys.



#### Legend

#### BBD Abundance

- 0.00 - 0.02
- 0.03 - 0.08
- 0.09 - 0.51
- 0.52 - 1.15
- 1.16 - 2.61
- 2.62 - 9.00



(above) BBD abundance throughout the N. shore of Kauai.

(left) UH researcher at a coral disease monitoring site, Kauai

Map and photo credit: C. Runyon (UH)

	Total Number of EOR Reports Received 11/2014 - 1/2015
<b>Coral Bleaching</b>	15
<b>Coral Disease</b>	4
<b>COTS</b>	0
<b>Fish Mortality</b>	0
<b>Other</b>	1

### Other Reports

There were no reports of COTS or fish disease during this reporting period. There was 1 report of distressed green sea turtles on Kauai, no Rapid Assessment was initiated.



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# Reef Response

## Coral Bleaching Current Conditions – Nov 2014—Jan 2015

Rapid Assessment of Coral Bleaching, Disease, COTS, and Marine Life Mortality events



### Bleaching Conditions Summary:

NOAA Coral Reef Watch Indicated temperature stress was reduced between Nov 2014—Jan 2015 to 'no stress' levels across the state

15 citizen reports of bleaching observations were received through the EOR Network during this time.

DAR staff continues to monitor areas affected by the 2014 bleaching event on Kauai, Oahu, and Maui.

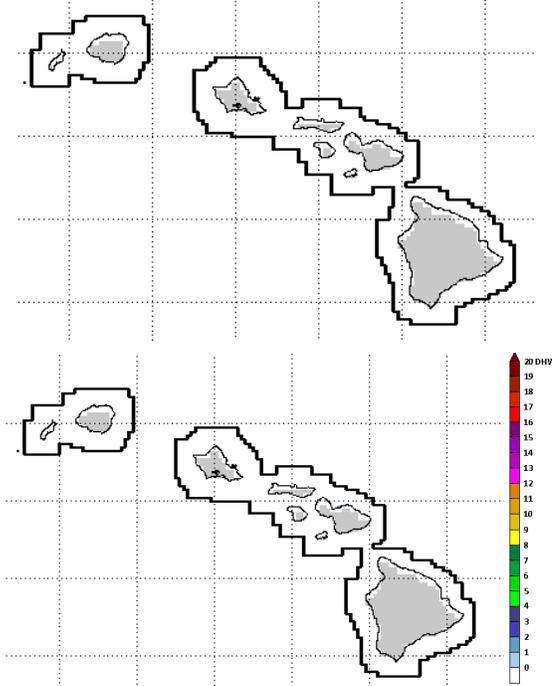


Figure 1. Current NOAA CRW Bleaching Alert Area, Exp. 5 km 1/28/2015

### NOAA Bleaching Alert Levels

	No Stress	No bleaching
	Bleaching Watch	Possible bleaching
	Bleaching Warning	Possible bleaching
	Alert Level 1	Bleaching Likely
	Alert Level 2	Coral Mortality Likely

Figure 2. NOAA CRW Degree Heating Week, 1/28/2015

### Fig 3. NOAA Virtual Station Thermal Stress Levels—1/28/2015

Kauai and Niihau	No stress
Oahu	No stress
Maui and Molokai	No stress
Lanai	No stress
Kona, Hawaii Island	No stress
Hilo, Hawaii Island	No stress

### NOAA Coral Reef Watch Summary

A NOAA Coral Reef Watch "Bleaching Watch" is issued when sea surface temperatures (SST) in those areas may be causing low-level thermal stress to corals. The alerts are scaled based on the intensity of the bleaching risk. These products are experimental and generally tend to overestimate bleaching conditions. Currently, all islands are at the 'no stress' level, indicating a very low risk of mass coral bleaching (Figure 1). The Degree Heating Week map (Figure 2) depicts accumulated thermal stress. Areas within the MHI are all at zero, showing no accumulated thermal stress. Peak bleaching season is from July—September.

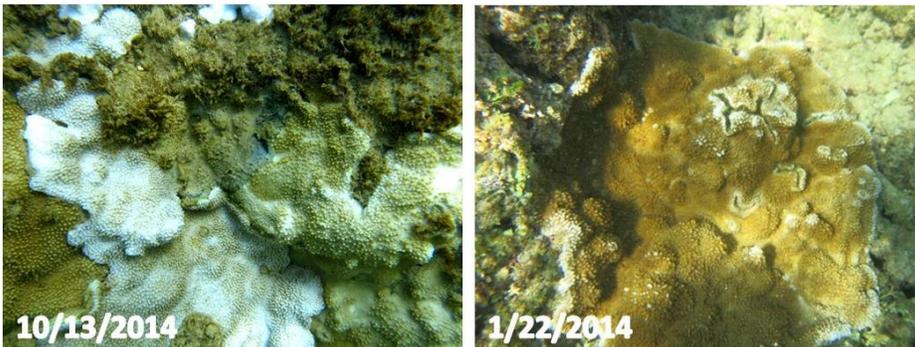
Data from NOAA's virtual stations are derived from the operational 50m satellite products. Virtual offshore measuring stations indicate that Sea Surface Temperatures (SST) did not surpass the maximum monthly mean at any of the stations in the MHI during Nov 2014—Jan 2015 (Figure 3).

### EOR Network Coral Bleaching Reports

DAR received 15 reports of coral bleaching statewide through the Eyes of the Reef (EOR) Network. Reports came from Kauai, Oahu, Maui, and Hawaii island. The reports indicated varying levels of bleaching from pale, to spotty, and completely white.

### DAR Rapid Response Team Monitoring Results

The DAR Rapid Response team have been monitoring affected coral reef areas in Kaneohe Bay, Oahu and multiple locations on Kauai and Maui. The teams have been marking and photographing coral colonies over time to determine whether the coral is recovering. Over 50 colonies have been tagged in Kaneohe Bay. Of the tagged colonies, 12% have died. The majority of corals on Kauai, Oahu, and Maui are recovering. Monitoring will continue and teams prepare for predicted bleaching conditions in 2015.



Bleached coral (left) and recovered coral (right) at Anahola, Kauai. Photo credit: DAR



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# Reef Response

## Coral Disease Current Conditions – Aug - Oct 2014

Rapid Assessment of Coral Bleaching, Disease, COTS, and Marine Life Mortality events



### Coral Disease Conditions Summary:

In October 2014, the Kauai cyanobacterial coral disease continues to affect three species of rice (*Montipora*) corals along the north shore. A DAR-led Management Response Team was formed in January 2014. UH Has conducted surveys since 2013, results are on the Reef Response Website.

The EOR Network received 4 reports of coral disease between Aug—Oct 2014. DAR staff also continues to monitor coral disease at Molokini, Maui.

### Nov 2014 - Jan 2015 Coral Disease Summary

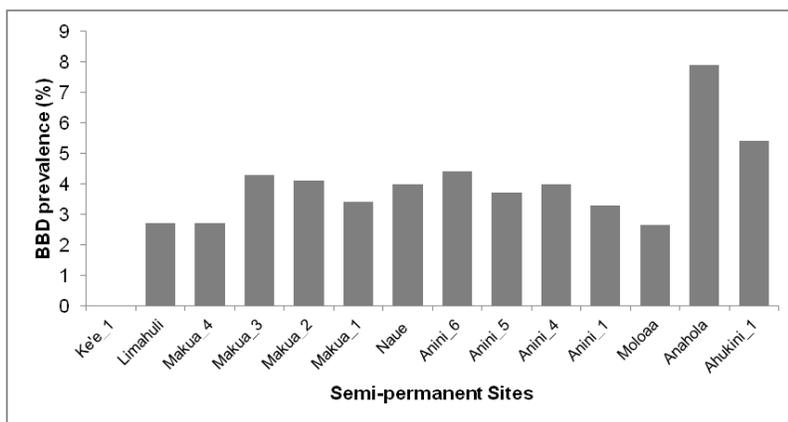
Overall, the causes of coral disease events are relatively poorly understood. Diseased coral often die quickly, outbreaks can change dramatically and can vary seasonally. Disease outbreaks often follow other disturbances including bleaching, flood plumes, and storms. These stresses all disturb coral due to physical injury and/or coral physiology. Reduced coral health leads to an increase in disease risk.

There have been four coral disease outbreaks in the MHI since 2008. The most recent outbreak occurred on the north shore of Kauai, first recorded at an epidemic level in 2012. In 2013 and 2014, DAR helped to support a PhD student from the Hawaii Institute of Marine Biology who mapped the prevalence of the Black Band Disease (BBD) and measuring potential environmental drivers. No connection has been found to date between the disease and environmental variables, although lesions were found more often when temperatures rose in the summer. In January 2014, DAR coordinated the formation of a Management Response Team (MRT) to review incoming monitoring data and discuss effective management actions. Several other agency partners have been instrumental in this effort including NOAA, USGS, UH, EPA, UH SeaGrant, and several Kauai-based organizations.

For more information and latest updates, including the UH final report please go to the team's website: <http://dlnr.hawaii.gov/reefresponse>



BBD on a Montipora coral. Photo credit: C. Runyon (UH)

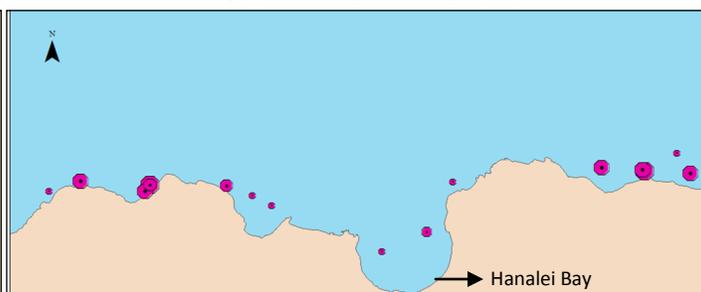
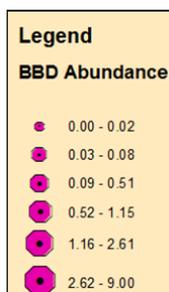


ABOVE: BBD prevalence on the N. shore of Kauai, showing disease hotspots.

BELOW: BBD Abundance on Kauai's N. shore. Data and graphs courtesy of C. Runyon (UH)



UH researcher at a coral disease monitoring site, Kauai. Photo credit: C. Runyon (UH)



### EOR Network Coral Disease Reports

There were a total of 4 EOR Network reports of coral disease between Nov 2014—Jan 2015. 3 reports were from known locations of the BBD affecting the north shore of Kauai. 1 report described sedimentation concerns at Waimea Bay. DAR staff also conducted follow-up monitoring looking at coral disease at Molokini, near Maui.

For more information on coral disease, please visit DLNR's Reef Response website: [www.dlnr.hawaii.gov/reefresponse](http://www.dlnr.hawaii.gov/reefresponse)



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# Reef Response

## COTS, Fish, Miscellaneous Current Conditions – Nov 2014—Jan 2015

*Rapid Assessment of Coral Bleaching, Disease, COTS, and Marine Life Mortality events*



### COTS, Fish, and Miscellaneous Conditions Summary:

There were 0 COTS reports between 11/2014—1/2015. There were no reports of fish disease. There was 1 report of distressed green sea turtles.

### Crown-of-Thorns-Starfish (COTS) and Miscellaneous Summary

Crown-of-thorns-starfish (COTS) are coral-eating starfish that have the potential to take over coral reefs quickly. Damaging outbreaks have been seen in other areas of the Pacific. In 2013, both the Great Barrier Reef in Australia and areas in American Samoa experienced severe outbreaks. In Hawaii, two localized COTS outbreaks were recently reported and assessed in 2012. Those have been the only major reports of COTS in large numbers since 2008.

Although not officially covered in the RRCPC, the EOR Network does receive reports of other types of unusual events including fish disease, invasive species, native species blooms, and miscellaneous observations. This was valuable during the 2010 pufferfish die-off when the EOR Network was engaged to collect affected specimens.

### EOR Network COTS Reports

There were 0 reports of COTS in Hawaii in Nov 2014—Jan 2015. No Rapid Assessments were initiated.

### EOR Network Fish Disease/Mortality Reports

There were 0 EOR reports of fish mortality in Aug-Oct 2014.

### EOR Network Miscellaneous Reports

The EOR Network received one report of distressed green sea turtles on Kauai. No Rapid Assessments were initiated.



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