



## Summary of Findings

# 2015-2016 Coral Bleaching Recovery Surveys: South Kohala, North Kona

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## Coral Reefs and Bleaching

Corals form the three-dimensional structure of reefs, providing the foundation for coral reef ecosystems. Coral reefs provide more than \$360 million annually in valuable services to the people of Hawai'i, including protection from storm surge, food for local families, recreational opportunities, and an important tie to our cultural heritage. Coral bleaching critically threatens these important ecosystems and the services they provide to people. Coral bleaching is a stress response caused by the breakdown of the symbiotic relationship between the coral and the algae (zooxanthellae) that live inside its tissues. When the coral expels these algae, the coral skeleton becomes visible, giving it a pale or "bleached" appearance. Mass bleaching events are caused by higher-than-normal ocean temperatures associated with a warming planet and are expected to increase in severity, extent, and frequency. Bleached corals may eventually die if temperatures remain high and the symbiosis is not reestablished. But corals can also recover from bleaching, with zooxanthellae repopulating the coral tissue to normal densities in the months or year following the end of the thermal stress.

*Severe bleaching at Keanapukalua in October 2015.*



## Coral Bleaching in Hawai'i

By early October 2015, the west side of Hawai'i Island had experienced severe thermal stress for 18 consecutive weeks; more stress for longer than anywhere else in the Hawaiian archipelago. Scientists from The Nature Conservancy, The National Oceanic and Atmospheric Administration's (NOAA) Coral Reef Ecosystem Program (CREP), and Hawai'i's Division of Aquatic Resources (DAR) conducted field surveys at shallow (5-8 m) and deep (12-15 m) areas of 20 reef sites to assess coral bleaching impacts. The team surveyed more than 14,000 coral colonies across the South Kohala and North Kona regions of West Hawai'i in 2015, assessing the prevalence (proportion of coral colonies that bleached) and severity of bleaching of each colony. The same sites were surveyed in October 2016 to examine changes in coral reef community condition and composition between 2015 and 2016.

### Highlights: Extent and Severity of Bleaching in 2015

- 38-92% of all coral colonies on North Kona and South Kohala reefs were partially or fully bleached.
- An average of  $68 \pm 15\%$  of shallow water (18-21') and  $60 \pm 18\%$  of deeper water (38-42') corals were partially or fully bleached.
- Average bleaching severity across all colonies was ~75%, and similar in shallow and deeper reef zones.
- Survey sites in South Kohala (north end of the survey area) experienced worse bleaching than those in North Kona (south end of the survey area).

