

Coral Bleaching Rapid Response Surveys September-October 2014



Photo: Catlin Seaview Survey

Brian Neilson, DLNR-Division of Aquatic Resources
brian.j.neilson@hawaii.gov

Coral Bleaching Surveys



Photo: Catlin Seaview Survey

Main Questions:

- What is the magnitude of the bleaching event?
- What coral species are affected and to what extent?
- How do coral colonies recover from this event?

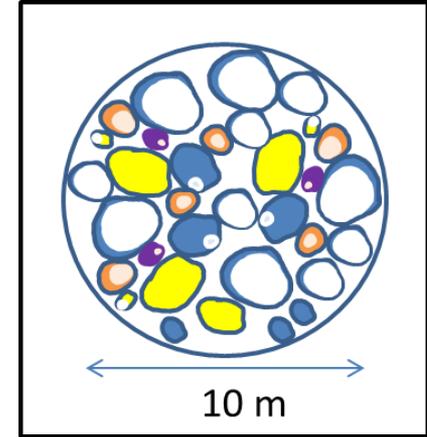
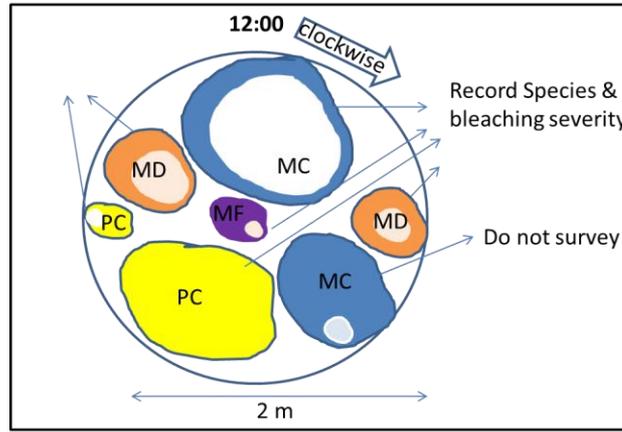
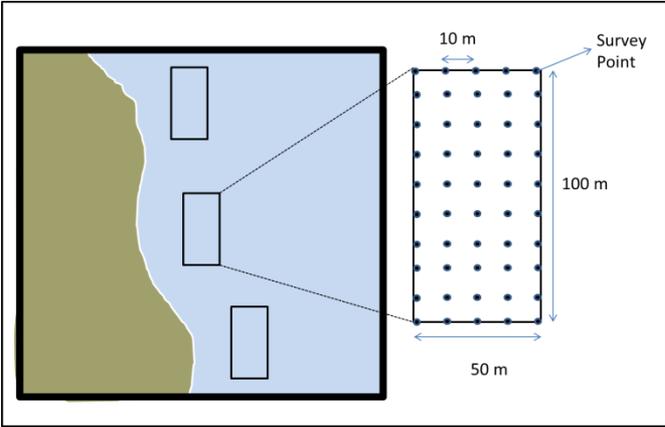
Survey Criteria:

- Survey large areas in a short amount of time
- Process data “quickly”
- Make a general characterization of the bleaching event for a given area

Survey Approach:

- Snap-Assessment approach adapted to coral bleaching
- Tagged individual coral colonies for weekly photographs

Survey Methodology



- 1) Line up 10 m apart, survey every 10 m
- 2) Assess bleaching of one colony of each species within 2 m
- 3) Estimate percent bleached within 10 m
- 4) Estimate percent coral
- 5) Tagged colonies and photographed

1 m radius				5 m radius	
Site	Waypoint	Species	Bleach	% Bleached	% Coral

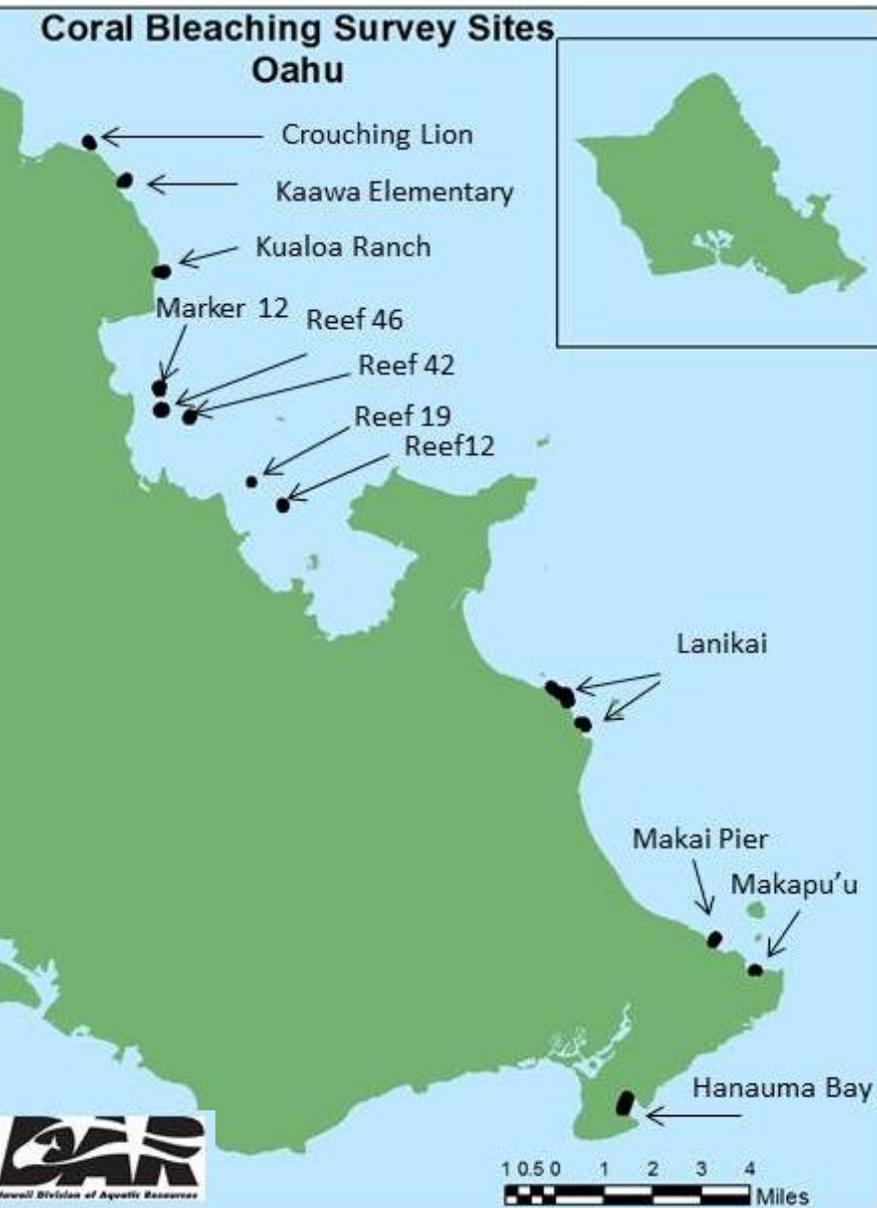
Bleaching Categories

- 0: No coral
- 1: Coral, no bleaching
- 2: Pale
- 3: Partial
- 4: Severe



Photo: Catlin Seaview Survey

Oahu Surveys (Summary)



North-West Windward Coast:

- Surveyed Oct. 2, 2014
- 80% of coral colonies exhibited signs of bleaching
- 44% showed signs of severe bleaching

Kaneohe Bay:

- 87% of coral colonies exhibited signs of bleaching
- 50% showed signs of severe bleaching
- North Bay bleaching was more severe

Lanikai:

- 75% of coral colonies exhibited signs of bleaching
- 53% showed signs of severe bleaching

Makai Pier:

- 95% of coral colonies exhibited signs of bleaching
- 52% showed signs of severe bleaching

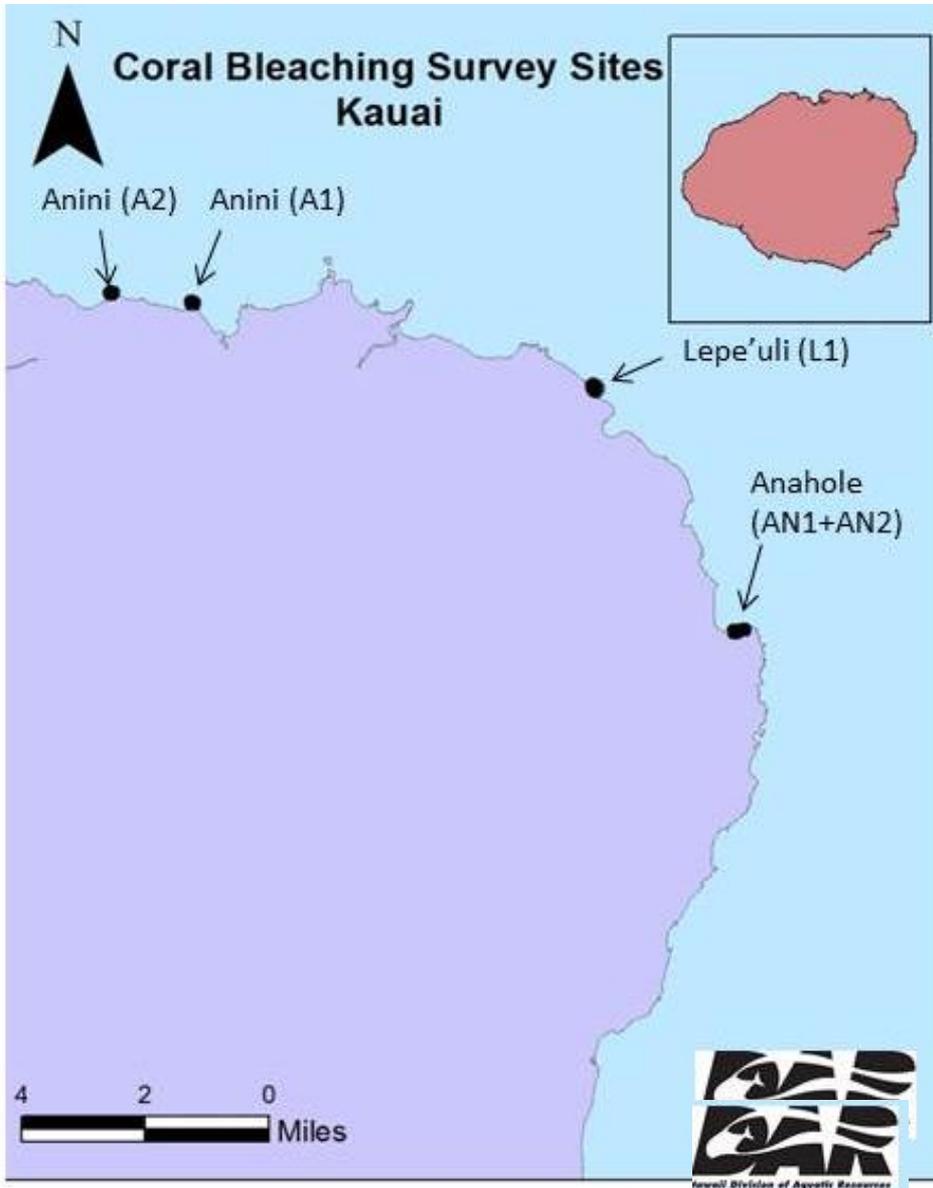
Mokapu:

- 91% of coral colonies exhibited signs of bleaching
- 31% showed signs of severe bleaching

Hanauma Bay:

- 47% of coral colonies exhibited signs of bleaching
- <1% showed signs of severe bleaching

Kauai Surveys (Summary)



Surveyed September 17th, 2014

Anini West:

- 80% exhibited some sign of bleaching
- 78% exhibited severe bleaching

Anini East:

- 50% exhibited some sign of bleaching
- 6% exhibited severe bleaching

Lepeuli:

- 68% exhibited some sign of bleaching
- 5% exhibited severe bleaching

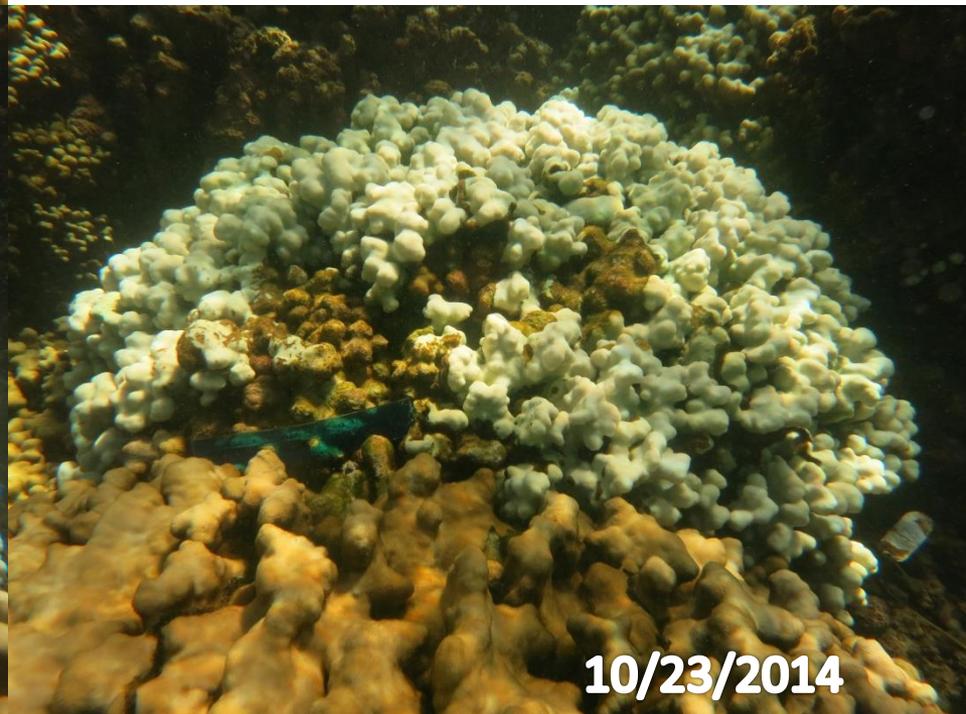
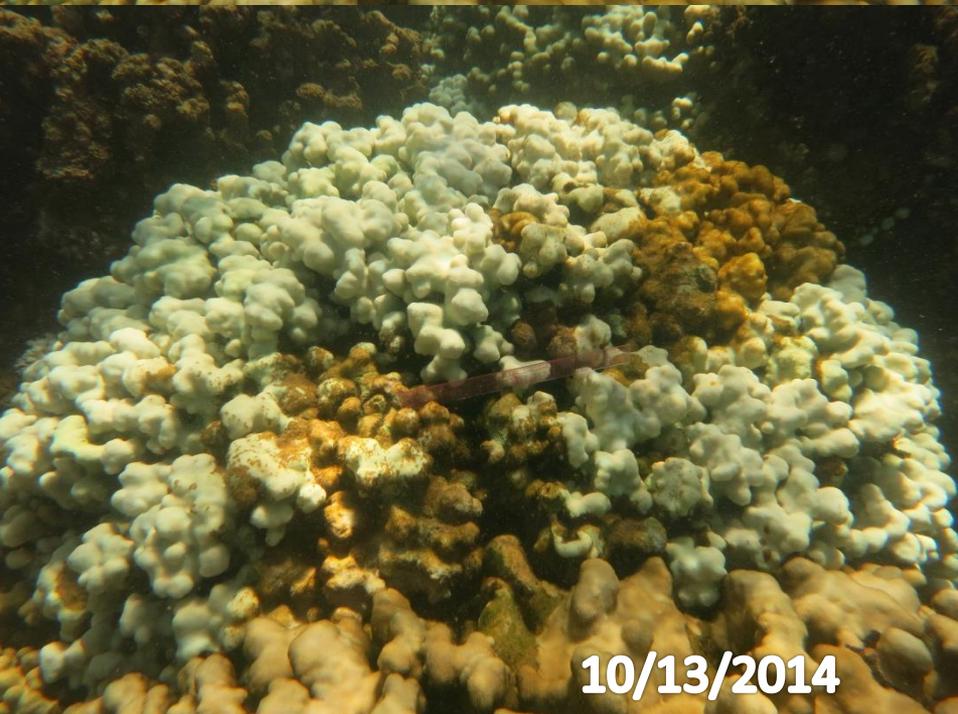
Anahola:

- 89% exhibited some sign of bleaching
- 26% exhibited severe bleaching

Tagged Colonies Photo Time Series



Porites compressa: R46 tag 143
Documented bleaching after primary
bleaching event (L) with one week
(below L) and two week (below R)
follow up.



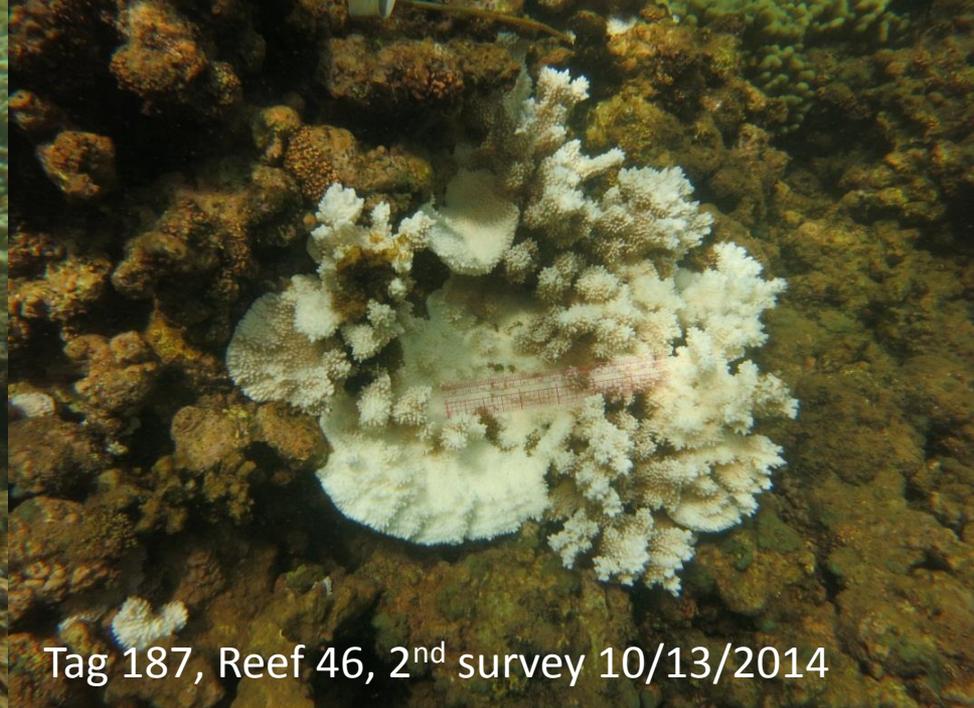
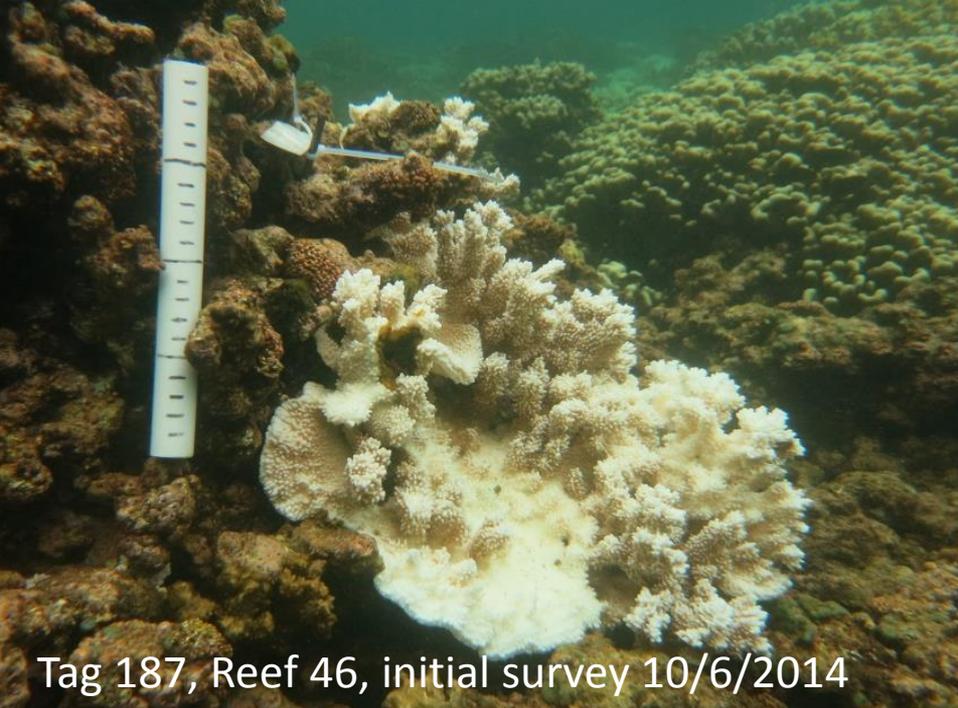
Porites compressa: R46 tag 185
Documented bleaching after primary
bleaching event (L) with one week
(below L) and two week (below R)
follow up.



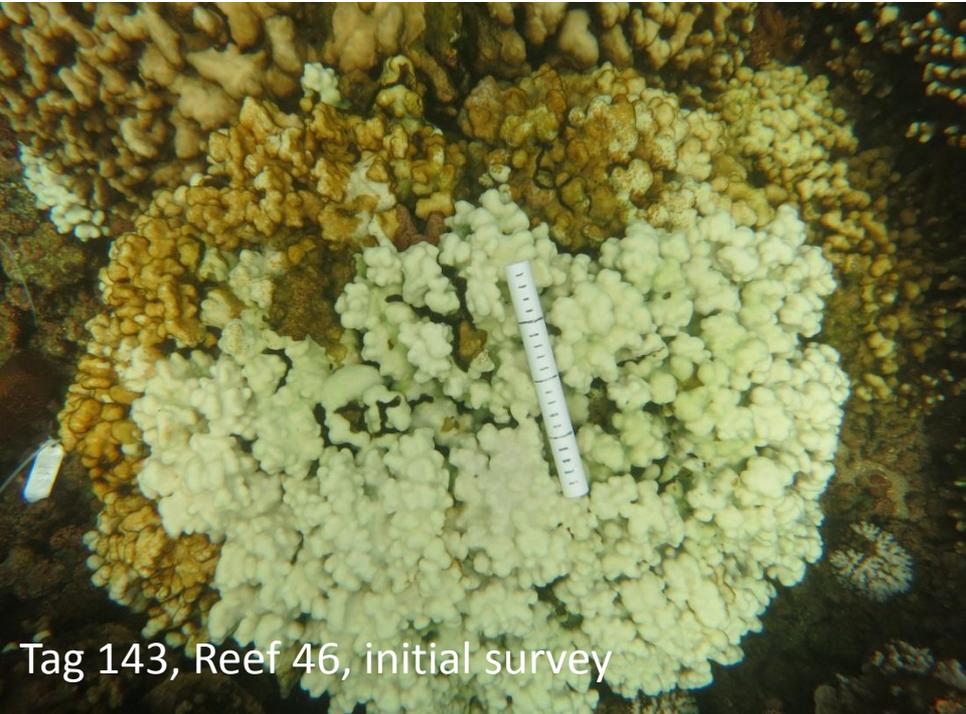
10/13/2014



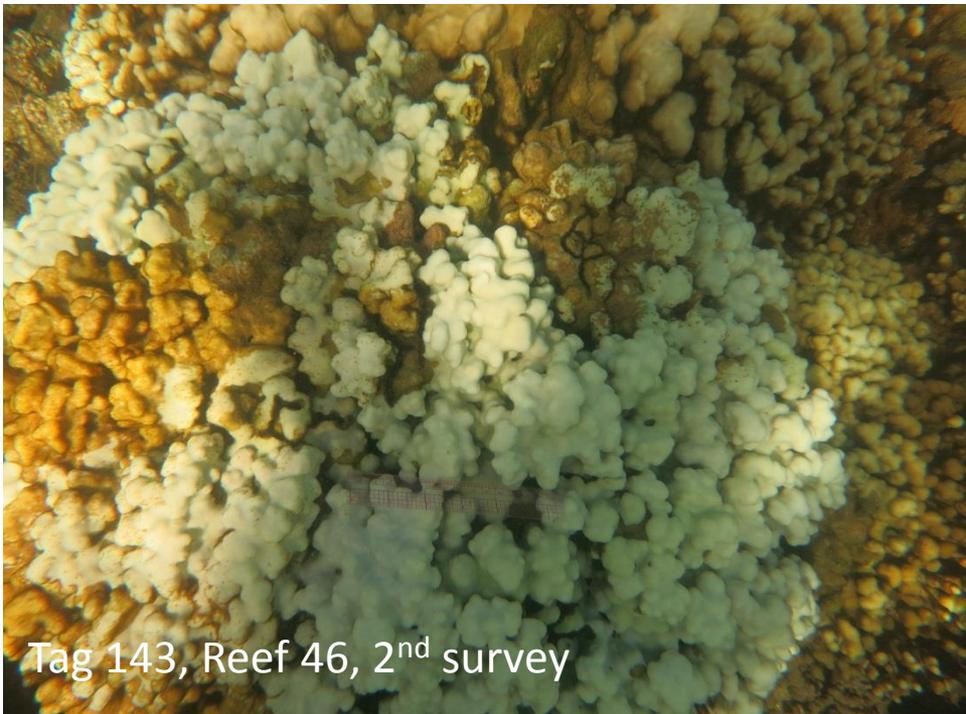
10/23/2014



Tag 187, Reef 46, 3rd survey 10//2014

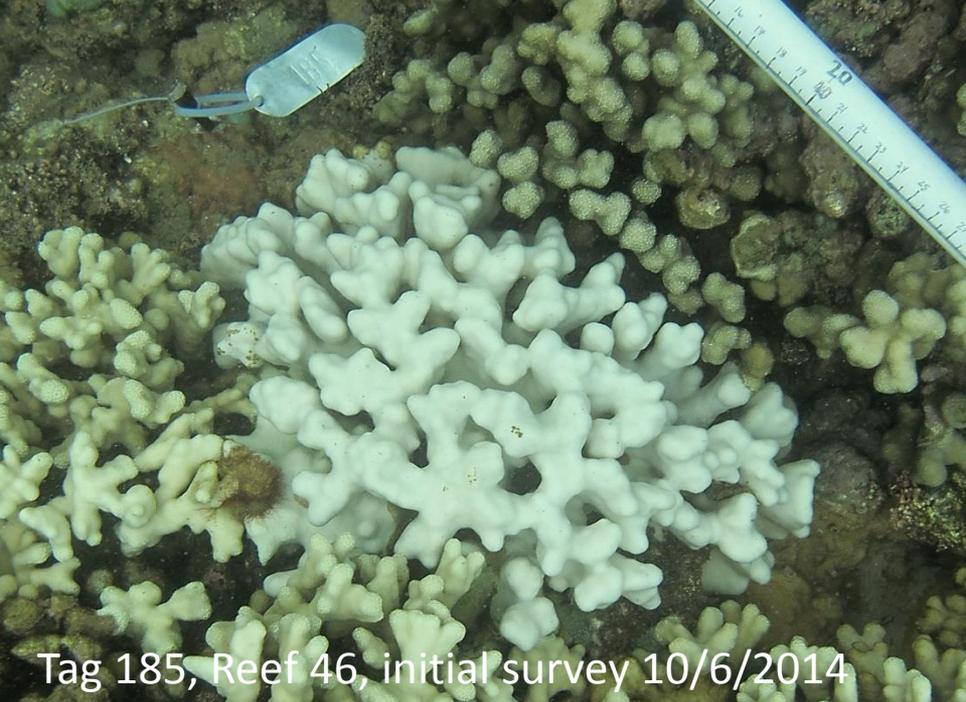


Tag 143, Reef 46, initial survey

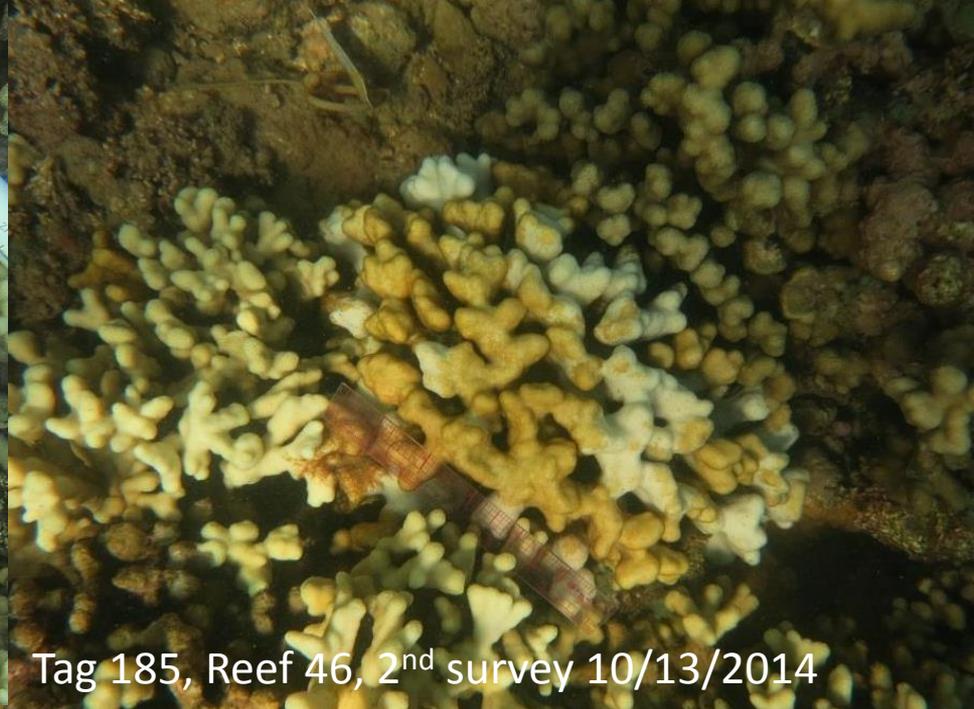


Tag 143, Reef 46, 2nd survey

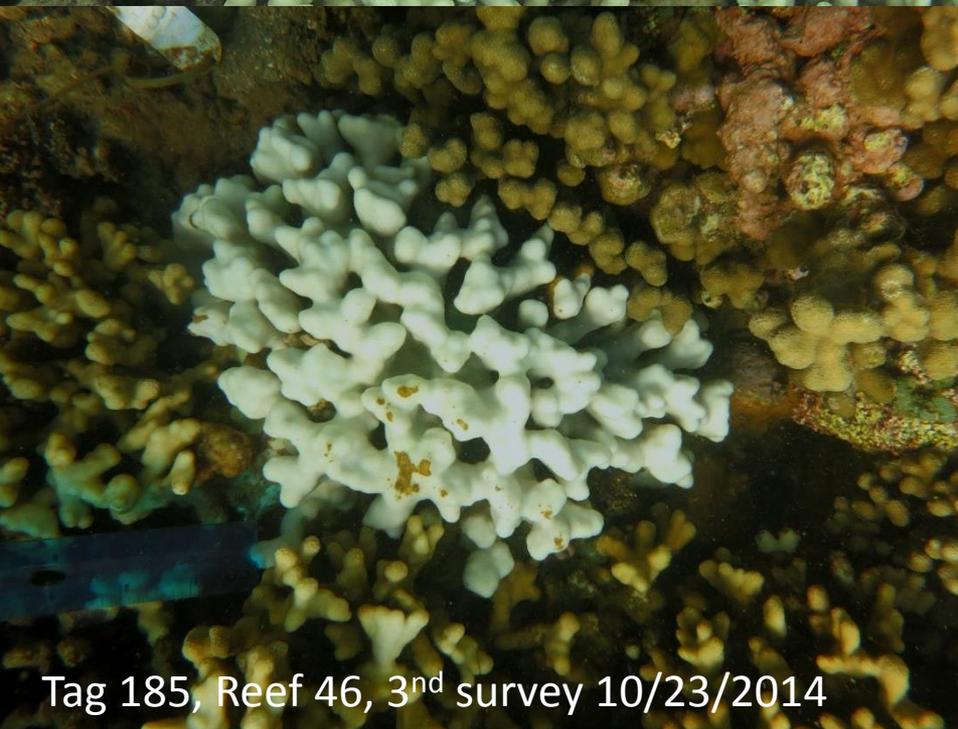
Tag 143, Reef 46, 2nd survey



Tag 185, Reef 46, initial survey 10/6/2014



Tag 185, Reef 46, 2nd survey 10/13/2014

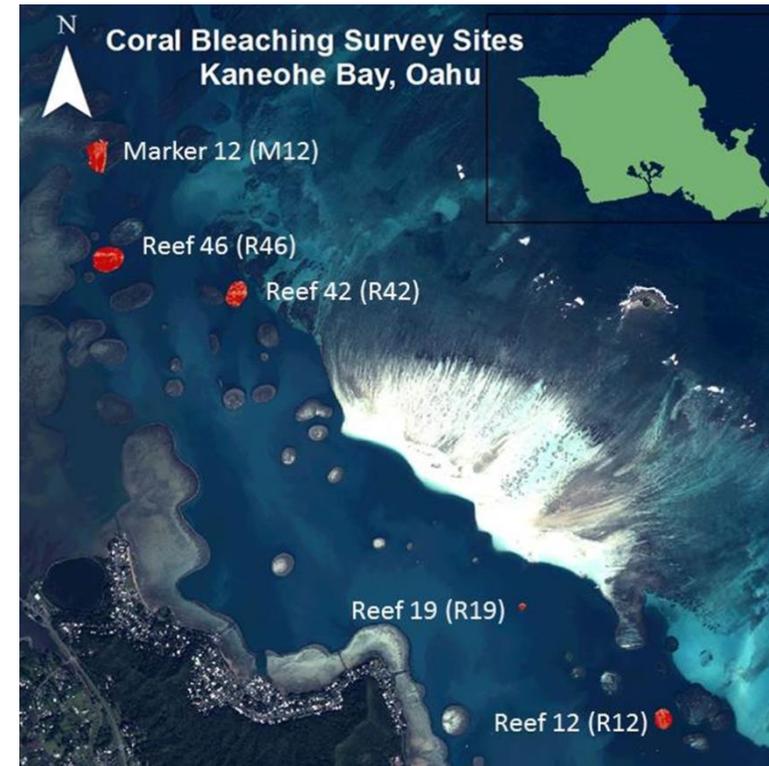
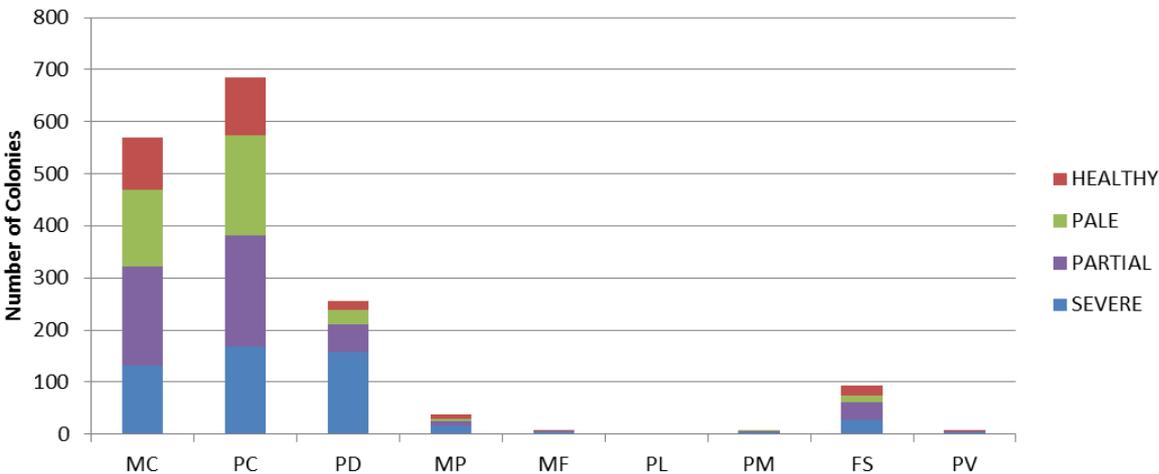


Tag 185, Reef 46, 3rd survey 10/23/2014

Coral Bleaching Survey Data

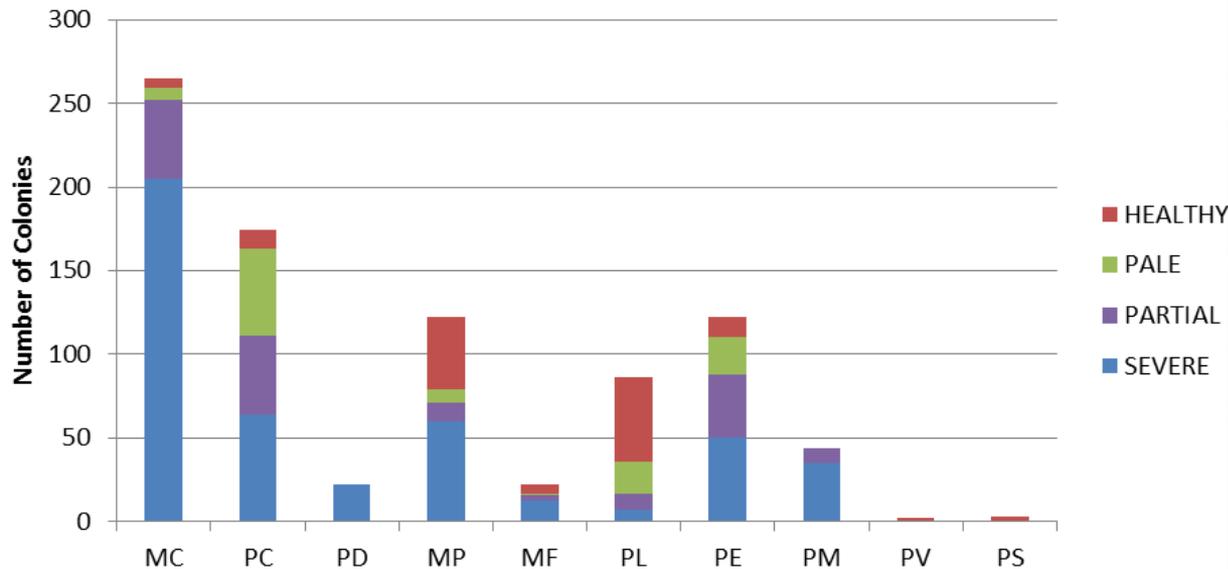
Kaneohe Bay

- Survey Date: September 30, 2014
- All coral species surveyed, exhibited some signs of bleaching
- 83% of dominant species (*M. capitata* and *P. compressa*) exhibited some sign of bleaching.
- 87% of coral colonies surveyed exhibited some signs of bleaching
- 50% of coral colonies exhibited severe signs of bleaching.
- North bay reefs (R46, M12) exhibited the most severe bleaching.



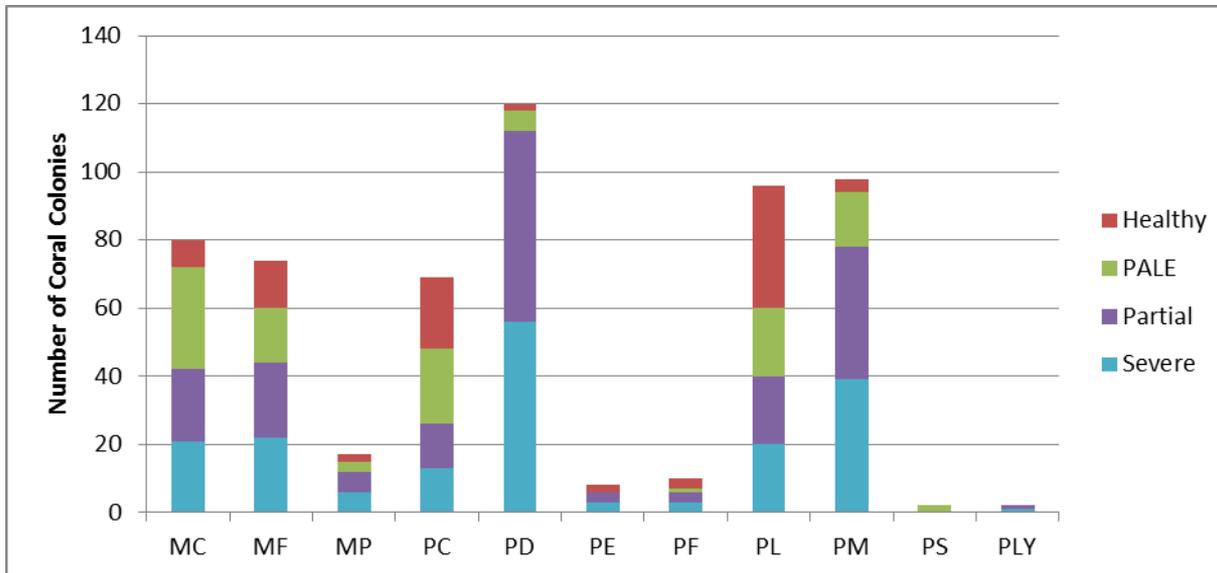
Lanikai

- Survey Date: October 1, 2014
- All coral species surveyed, exhibited some signs of bleaching
- 87% of dominant species (*M. capitata*, *M. patula*, *P. evermanni*, and *P. compressa*) exhibited some sign of bleaching.
- 75% of coral colonies surveyed exhibited some signs of bleaching
- 53% of coral colonies exhibited severe signs of bleaching.
- *P. lobata* and *M. patula* exhibited less signs of bleaching than other species.



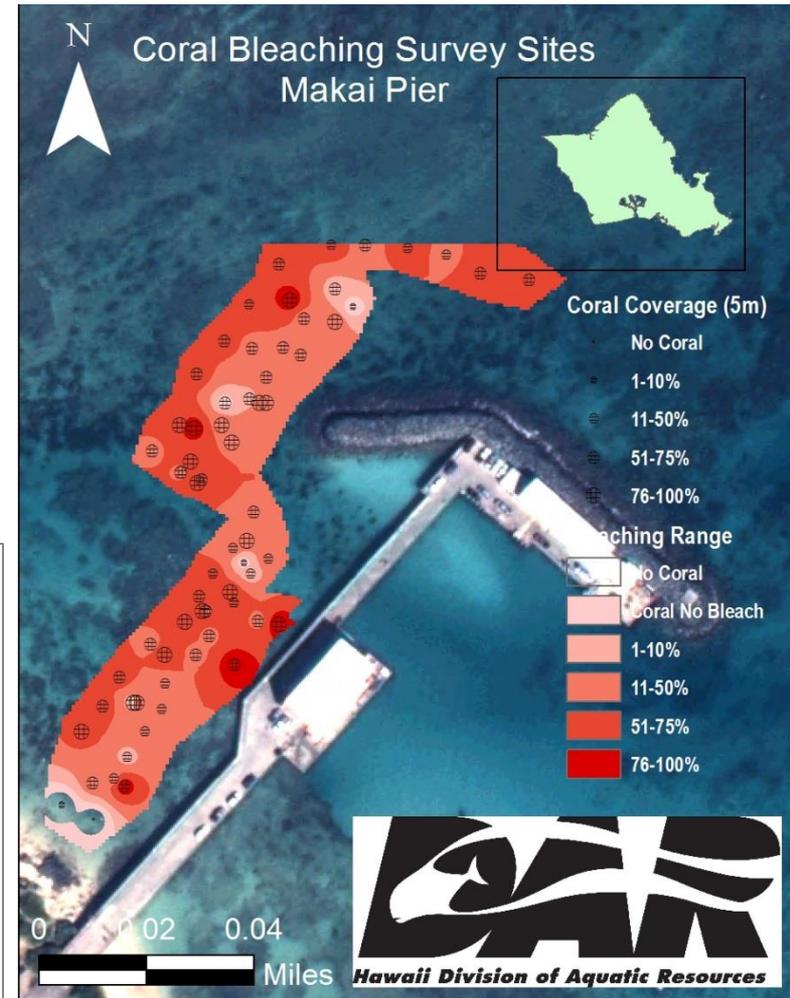
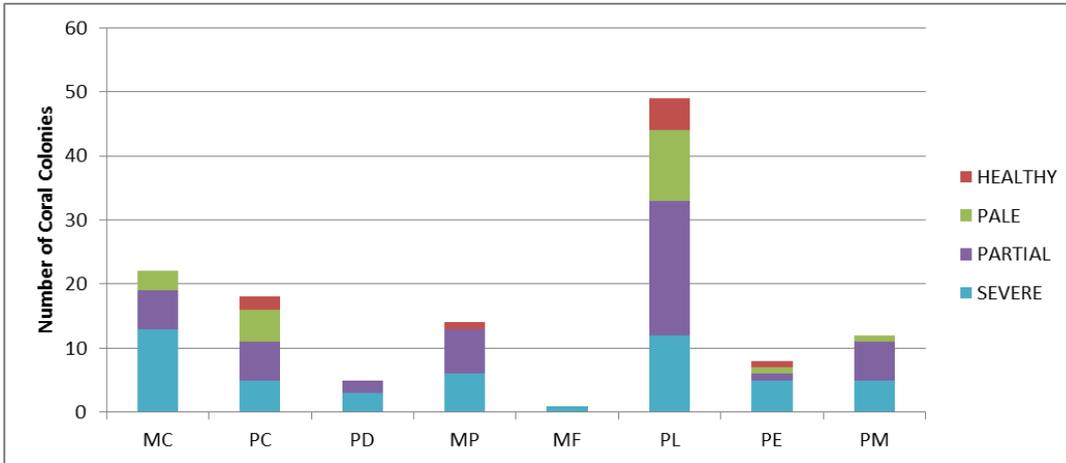
Kahana Bay, Kualoa Ranch, Kaaawa

- Survey Date: October 2, 2014
- 10 of the 12 coral species surveyed, exhibited some signs of bleaching
- 80% of coral colonies surveyed exhibited some signs of bleaching
- 44% of colonies exhibited severe signs of bleaching.



Makai Pier

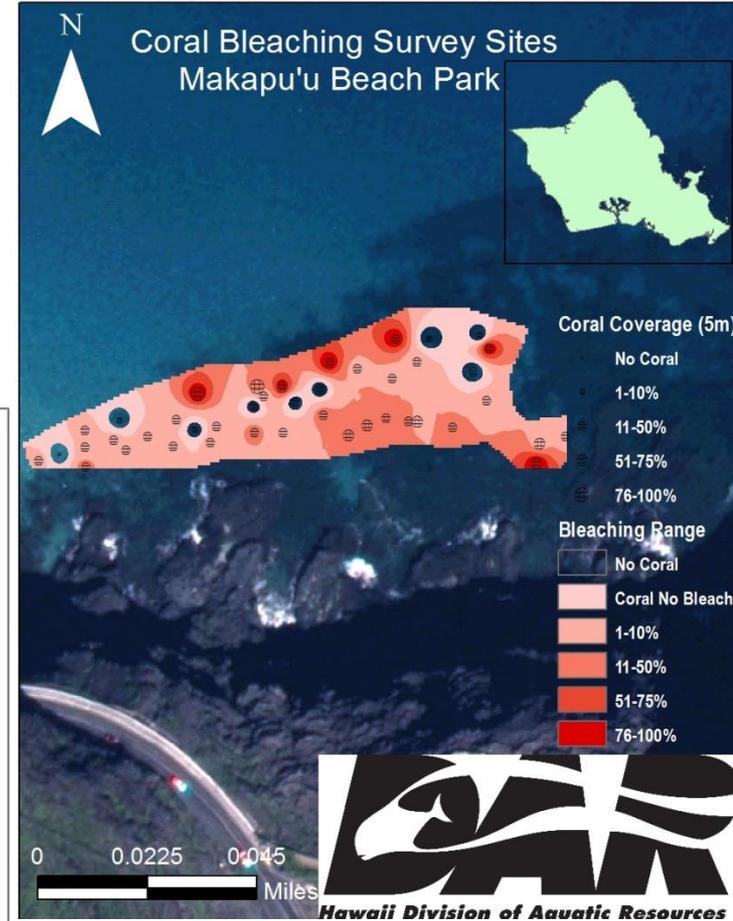
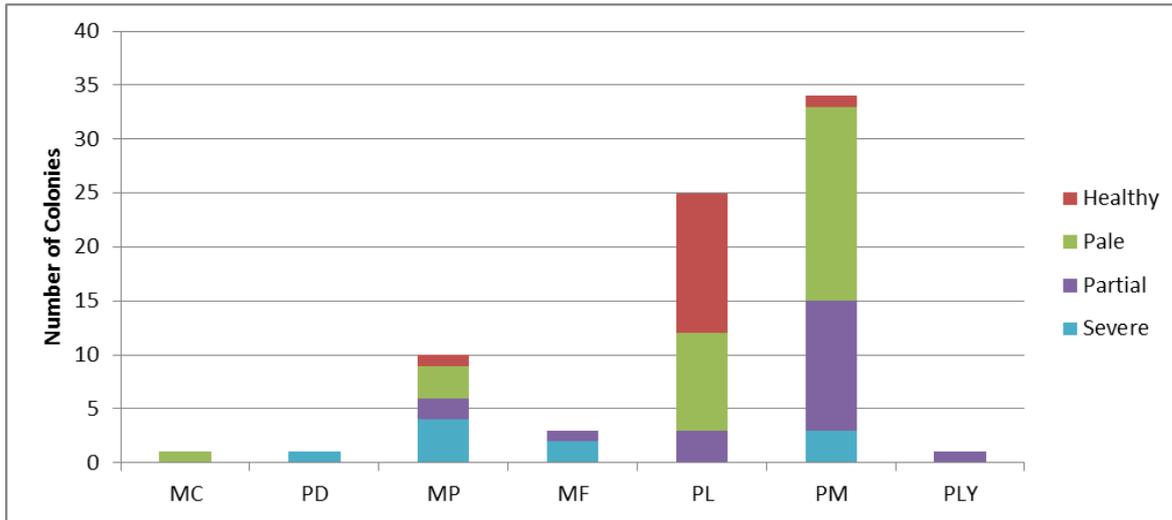
- Survey Date: October 1, 2014
- All coral species surveyed, exhibited some signs of bleaching
- 95% of coral colonies surveyed exhibited some signs of bleaching
- 52% of colonies exhibited severe signs of bleaching.



MC: *Montipora capitata*, **MP:** *Montipora patula*, **MF:** *Montipora flabellata*, **PC:** *Porites compressa*, **PE:** *Porites evermanni*, **PL:** *Porites lobata*, **PD:** *Pocillopera damicornis*, **PM:** *Pocillopora meandrina*

Makapu'u

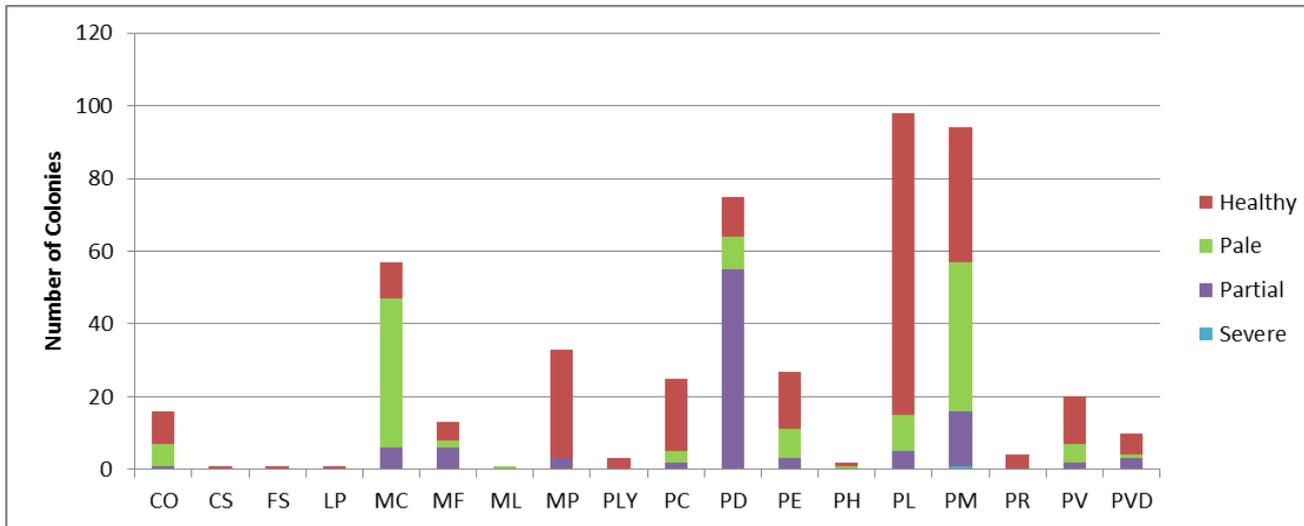
- Survey Date: October 1, 2014
- All coral species surveyed, exhibited some signs of bleaching
- 91% of coral colonies surveyed exhibited some signs of bleaching
- 31% of colonies exhibited severe signs of bleaching.



MC: *Montipora capitata*, **MP:** *Montipora patula*, **MF:** *Montipora flabellata*, **PL:** *Porites lobata*, **PD:** *Pocillopera damicornis*, **PM:** *Pocillopora meandrina*, **PLY:** *Palythoa*

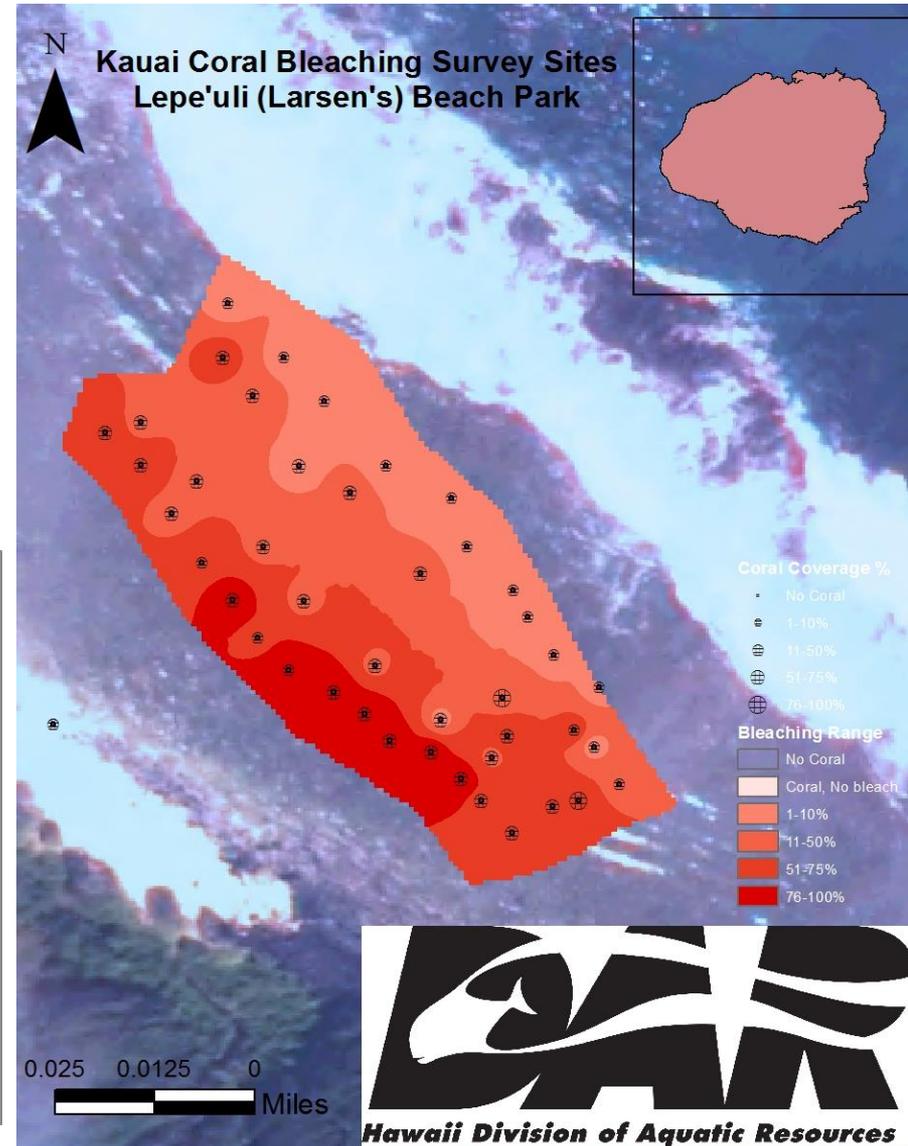
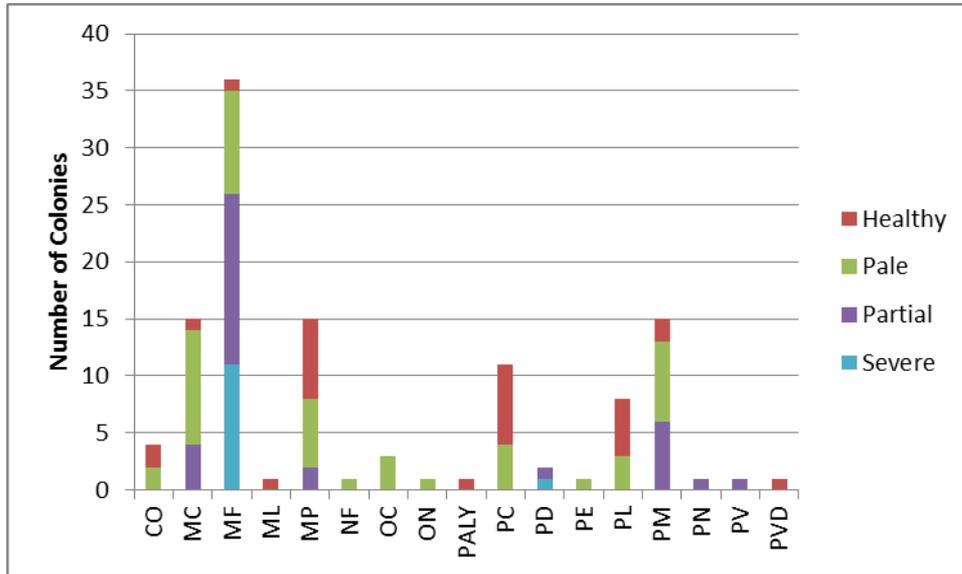
Hanauma Bay

- Survey Date: October 9, 2014
- Bleaching was much less severe at Hanauma Bay compared to windward Oahu survey sites
- 14 of the 18 coral species surveyed exhibited signs of bleaching
- 47% of coral colonies surveyed exhibited some signs of bleaching
- Less than 1% of colonies exhibited severe signs of bleaching

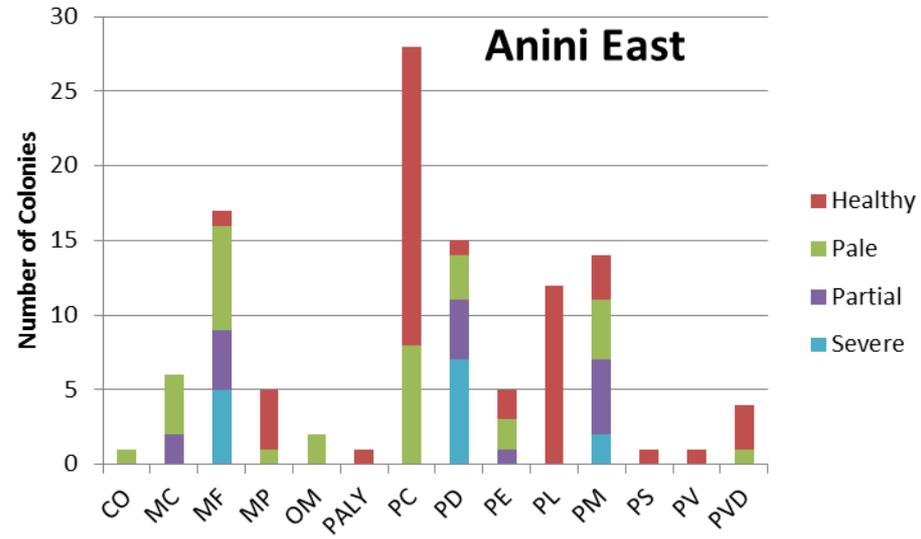
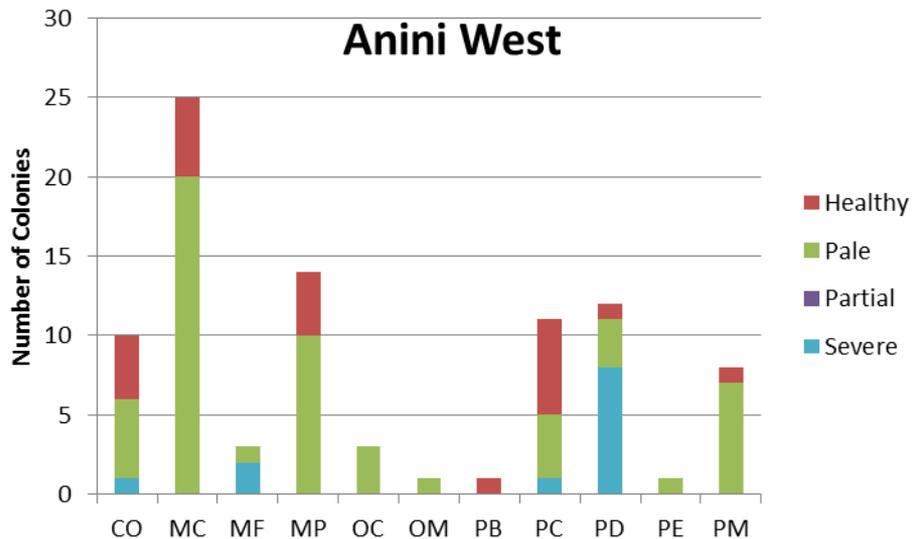
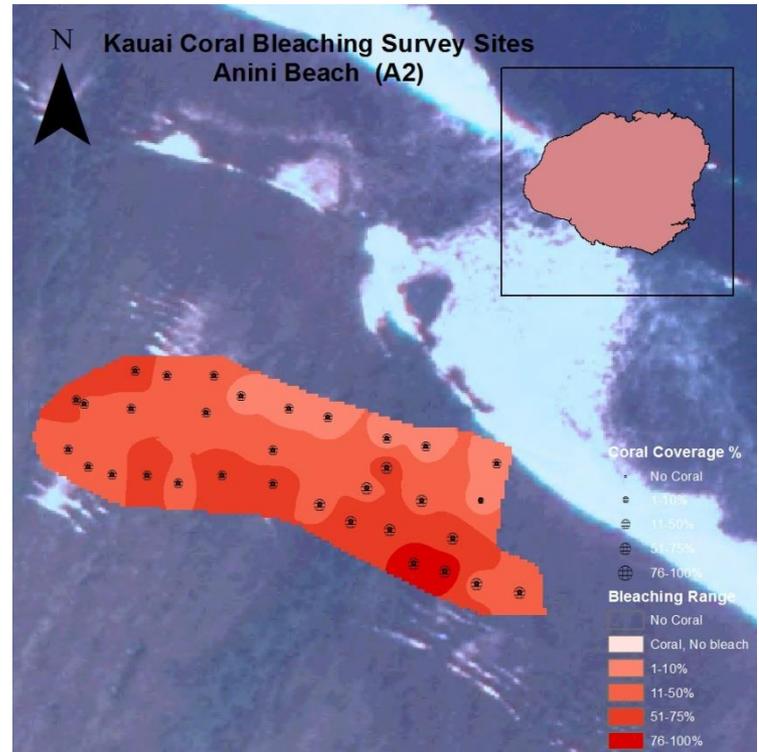
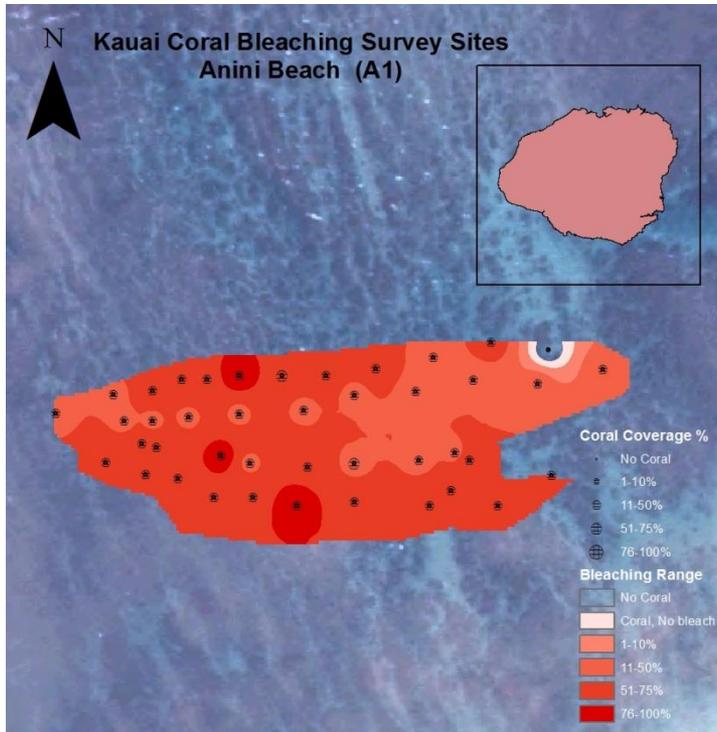


Kauai-Lepeuli

- 15 of the 17 coral species surveyed exhibited signs of bleaching
- 68% of coral colonies surveyed exhibited some signs of bleaching
- 5% of colonies exhibited severe signs of bleaching



Kauai: Anini



Kauai-Anahola

- All coral species surveyed exhibited signs of bleaching
- 89% of coral colonies surveyed exhibited some signs of bleaching
- 26% of colonies exhibited severe signs of bleaching

