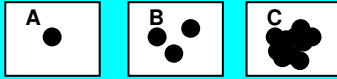


Seven steps to describing lesions in corals

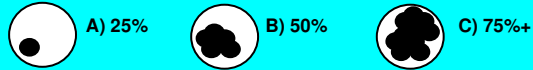
If you see a lesion, first scan the area to detect possible obvious causes (predation/competition). If the lesion cannot be explained, record the following:

1. Name of coral, location and date.
2. Lesion: **Tissue loss**, **Growth anomaly**, **Discoloration**.
3. Lesion color (color chart bottom).
4. Distribution of lesion on colony.



5. If present, color of border surrounding lesion (color chart bottom).

6. Estimated percent of colony affected.



7. If tissue loss, pattern of algal colonization of skeleton (purple-coral tissue; white-bare skeleton; green-algae).



DISEASES OF HAWAIIAN CORALS



Diseases can kill corals and can be a manifestation of stressed reefs.

Montipora Banded Tissue loss



Hosts: *M. patula*

Distribution: Oahu, Kauai

Abundance: Rare

Montipora Growth Anomaly



Hosts: *M. capitata*, *M. patula*

Distribution: Main and northwestern Hawaiian islands (NWHI)

Abundance: Occasional

EXAMPLE OF LESION DESCRIPTION



1. *Porites lobata* (lobe coral), Maui, 27 July 2003.

2 3 4 5 6 7
 T J A B A A

DISEASES OF HAWAIIAN CORALS

Corals, like all animals, are susceptible to diseases. Diseases can be caused by infectious (biotic) agents such as viruses, bacteria, fungi or parasites or by non-infectious (abiotic) agents such as temperature changes or poisons. In some regions, diseases have led to severe declines of coral reefs. Disease in a coral can be manifested as tissue loss, discoloration or growth anomalies. However, other processes such as tissue loss due to predation or discoloration from competition with algae or other organisms can also cause these lesions. These cards provide a standardized manner to describe lesions in Hawaiian corals and illustrate the more common syndromes found on Hawaiian reefs. Lesions with known causes are also shown. For additional information, please see the following websites:

www.nwhc.usgs.gov/hfs/Corals.htm
www.hawaii.edu/HIMB/HawaiiCoralDisease/

Thierry M. Work & Greta S. Aeby (2006). Funded partly by Bishop Museum, Hawaii Coral Reef Initiative, Hawaii Division of Aquatic Resources, Hawaii Institute of Marine Biology, and the U.S. Geological Survey.



Montipora Banded Tissue Loss

DESCRIPTION: Distinct areas of tissue loss revealing intact skeleton. Dark band separates bare skeleton from live tissue, and exposed skeleton may be partly covered with algae.

2 3 4 5 6 7
 T H C I B C

Montipora Growth Anomaly



DESCRIPTION: Distinct areas of excessive skeletal growth. Tissue overlying growth anomaly usually pale to white. Growth anomalies can be smooth with reduced number of calices or rough with elongated calices.

2 3 4 5 6 7
 G J B [] C []

Montipora Tissue Loss



Hosts: *M. capitata*, *M. patula*,
M. turgescens

Distribution: Oahu, Maui, NWHI

Abundance: Occasional to common

Montipora Multi-focal Tissue Loss



Hosts: *M. capitata*

Distribution: Oahu, northwestern
Hawaiian islands

Abundance: Rare to Occasional

Porites Discolored Tissue Thinning



Hosts: *P. lobata*

Distribution: NWHI

Abundance: Occasional

Porites Growth Anomaly



Hosts: *P. evermanni*, *P. compressa*,
P. lobata, *P. monticulosa*

Distribution: Main and northwestern
Hawaiian islands

Abundance: Occasional to common

Montipora Tissue loss

DESCRIPTION: Distinct, diffuse areas of tissue loss revealing intact white skeleton. Exposed skeleton may be partially covered with algae and thin band of bleached tissue may be seen at interface between skeleton and intact tissue.

2 3 4 5 6 7
T J C C A

Montipora Multi-focal Tissue loss

DESCRIPTION: Multiple, distinct, circular to irregular areas of tissue loss revealing intact white skeleton. Lesions can coalesce to form larger areas.

2 3 4 5 6 7
T J B A A

Porites Discolored Tissue Thinning

DESCRIPTION: Diffuse, indistinct areas of tissue thinning and pale discoloration poorly defined from surrounding healthy tissue. Polyps are usually shrunken or reduced.

2 3 4 5 6 7
D H C B

Porites Growth Anomaly



DESCRIPTION: Variably sized, distinct raised areas of skeletal growth. Tissue overlying growth anomaly generally paler. Calyx formation appears chaotic or calices enlarged.

2 3 4 5 6 7
G E C A

Porites Trematodiasis



Hosts: *P. compressa*, *P. evermanni*,
P. lobata

Distribution: Main and northwestern
Hawaiian islands

Abundance: Common

Porites Swollen Discolored Patches



Hosts: *P. evermanni*

Distribution: Hawaii

Abundance: Rare

Porites Brown Necrotizing Disease



Hosts: *P. lobata*

Distribution: Northwestern Hawaiian
islands

Abundance: Rare

Porites Bleaching and Tissue Loss



Hosts: *P. compressa*

Distribution: Oahu

Abundance: Occasional

Porites Trematodiasis

DESCRIPTION: 3-5 mm distinct, multifocal to coalescing, pink to pale swollen raised nodules, clustered or widely distributed on coral.

2	3	4	5	6	7
D	B	B		B	

Porites Swollen Discolored Patches

DESCRIPTION: Variably sized, distinct irregular areas of swollen tissue with pale discoloration occasionally surrounded by irregular and intermittent variably sized pink border.

2	3	4	5	6	7
D	H	C	B	B	

Porites Brown Necrotizing Disease

DESCRIPTION: Diffuse, distinct areas of brown discoloration characterized by a gelatinous texture and loss of recognizable polyp structure.

2	3	4	5	6	7
D	E	C		B	

Porites Bleaching and Tissue Loss

DESCRIPTION: Widespread, indistinct, irregular areas of bleaching intermixed with patches of tissue loss revealing intact bare white skeleton.

2	3	4	5	6	7
T	J	C		B	A

Porites Tissue Loss



Hosts: *P. compressa*, *P. evermanni*,
P. lobata

Distribution: Main and northwestern
Hawaiian islands

Abundance: Common

Porites Multi-focal Tissue Loss

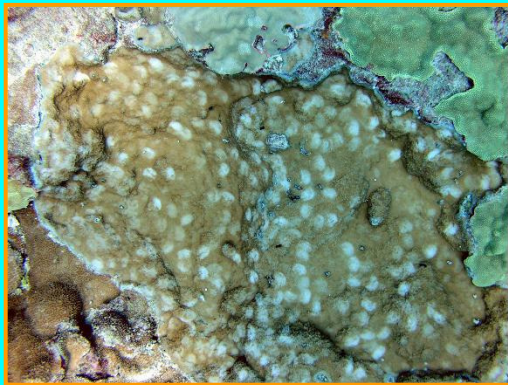


Hosts: *P. lobata*

Distribution: Oahu

Abundance: Rare

Montipora Fish Bite



Note uniformly sized and shaped lesions.

Pocillopora White Band



Hosts: *P. meandrina*

Distribution: Northwestern Hawaiian
islands

Abundance: Rare

Porites Tissue Loss

DESCRIPTION: Diffuse areas of tissue loss revealing intact skeleton that may occasionally be covered with turf algae. Usually with a border of discolored (white or pink) tissue or mucus.

2 3 4 5 6 7
T H A [] A C

Porites Multi-focal Tissue Loss

DESCRIPTION: Variably sized, distinct multi-focal irregular areas of pale swelling or tissue loss, revealing intact skeleton bordered by a thin band of pale swollen tissue.

2 3 4 5 6 7
T H B J A A

Montipora Sedimentation



Note deposition of sediments.

Pocillopora White Band

DESCRIPTION: Diffuse area of tissue loss revealing intact skeleton, covered with algae and separated from normal tissue by a linear band of bare, white intact skeleton.

2 3 4 5 6 7
T J C [] A B

***Porites* Algal Irritation**



Note areas of pink irritation of coral (arrow) adjacent to algae brushing up against coral.

***Acropora* White Syndrome**



Hosts: *A. cytherea*

Distribution: French Frigate Shoals

Abundance: Common

***Pocillopora* Snail Predation**



Note patches or bare skeleton associated with adjacent snails (arrow).

***Acropora* Growth Anomaly**

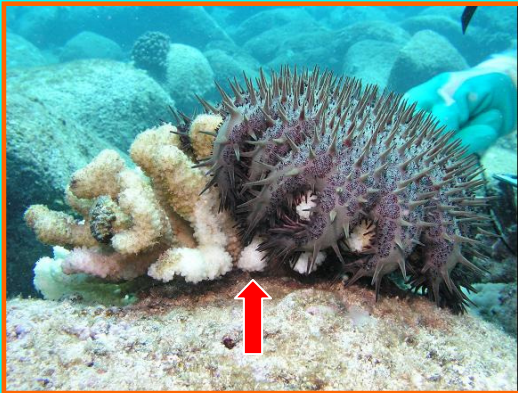


Hosts: *A. cytherea*

Distribution: French Frigate Shoals

Abundance: Occasional

Pocillopora Crown-of-Thorns Starfish Predation



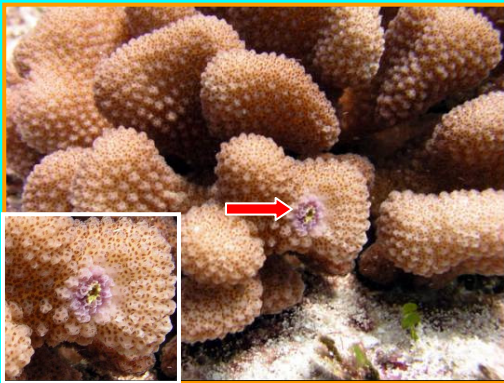
Note areas of bare coral skeleton associated with presence of starfish (arrow).

Acropora White Syndrome

DESCRIPTION: Distinct, diffuse areas of tissue loss revealing intact skeleton covered with algae and separated from normal tissue by a band of bare white intact skeleton.

2	3	4	5	6	7
T	J	C		C	B

Pocillopora Kahe Crab



These crabs form small holes (arrow) in branches that are often rimmed with purple.

Acropora Growth Anomaly

DESCRIPTION: Focal to multi-focal, raised, irregular skeletal growths covered by pale to white tissue. Growth anomalies can appear smooth with reduced numbers of polyps or rough with elongated calices.

2	3	4	5	6	7
G	E	B		C	