Caribbean Conservation Association
One Caribbean, One Vision

NCC
NATIONAL CONSERVATION COMMISSION

Folkestone Marine Reserve, St. James Barbados

Centre for Resource Management and Environmental Studies

CERMES

University of the West Indies Barbados

Funded by

GEF SGP The GEF Small Grants Programme

UNDP

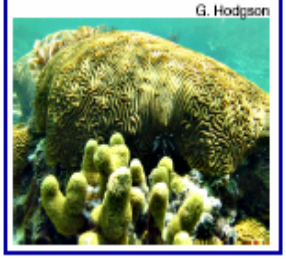
Community-based Coral Reef Monitoring and Management

Reef Watchers Programme

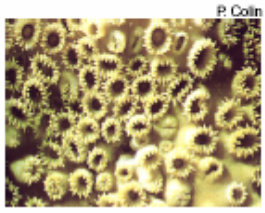
Underwater Guide

Reef Watchers Substrate Guide

Hard Coral (HC)
All living hard coral species. Includes fire coral (*Millepora*).



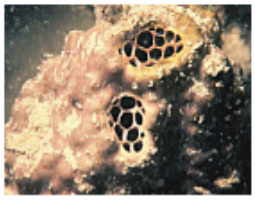
Soft Coral (SC)
In Atlantic, only zoanthids. Does not include sea anemones (recorded in Other).



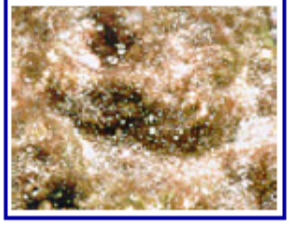
Recently Killed Coral (RKC)
Bare skeleton with tissue gone and corallite structures are still recognizable.

Nutrient Indicator Algae (NIA)
Ulva, various blue-green algae (cyanobacteria), and bubble algae.

Sponge (SP)
All erect and encrusting sponge species.



Rock (RC)
Any hard substrate. May be covered by turf or encrusting coralline algae, barnacles, oysters etc.



Rubble (RB)
Reef rocks between 0.5 and 15 cm in diameter.

Sand (SD)
Sediment less than 0.5 cm in diameter. In the water, sand falls quickly to the bottom when dropped.

Other (OT)
Any other attached organism (sea anemones, tunicates, etc) and non-living objects (e.g. tires, log, etc).

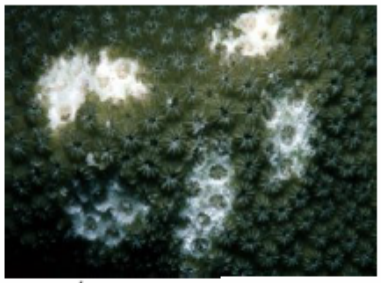
Silt/Clay (SI)
Sediment that remains in suspension if disturbed. SI recorded if color of the underlying surface is obscured by silt.

Reef Watchers Predation, Bleaching and Coral Disease Guide

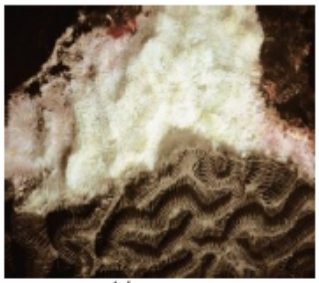
Bleaching: The loss of symbiotic algae (zooxanthellae), or the loss of photosynthetic pigments from these algae, causing coral tissue to become translucent and making underlying white skeleton visible. Entire colony is not always affected. Extent of bleaching can cause coral tissue to appear lighter in color, pink, blue or white. Unlike diseases, bleaching will not create a white band or a sharp boundary between pigmented and white transparent tissue.

Fish Predation: Damage to coral caused by fish can be identified by the character of the bite scars they leave behind. Fish bites will remove coral tissue and excavate the skeleton (a coral disease will not erode the skeleton). Parrotfishes leave the largest scars. Spot scars result from parrotfishes taking single bites. Often the scars are in pairs caused by the upper and lower jaw of the fish. Larger focused scarring is produced by fish returning to bite a particular area of the coral repeatedly over time. Damselfishes can also create small scars on coral surfaces.

Snail Predation: Certain snails eat coral tissue exposing the white coral skeleton. Close examination of eaten area may show small scalloped shaped raspings. Live tissue at edge of exposed skeleton does not show evidence of disease (no microbial infections or peeling away of tissue).



Spot bite scars



Focused bite scars

Parrotfish bite scars

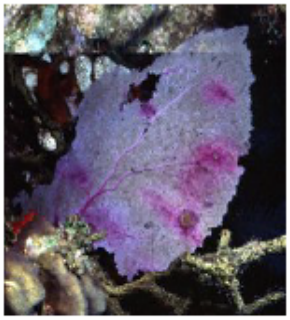
Photos by Andrew Bruckner

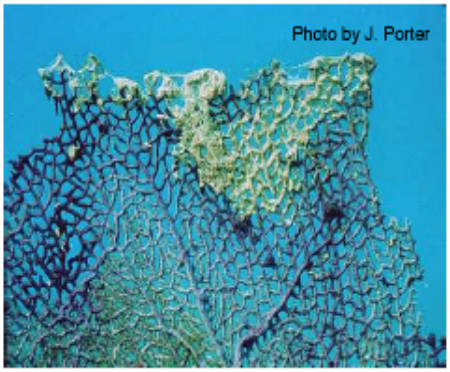
Coral Bleaching

The snail *Coralliophila sp.* eats coral tissue exposing the white coral skeleton. Often found hiding at the base of corals during the day, feeding only at night. Snails are encrusted with algae making them difficult to see.

Predation by Snails

Black Band Disease: Black to maroon mat or band separating denuded skeleton from live tissue. The crescent or circular dark band is from a few mm to several cm wide and is easily dislodged from the coral surface.
White Band Disease: Found on *Acropora* species. Transitional margin of tissue decay between white, recently exposed skeleton and live tissue. Tissue at interface peels away from skeleton, leaving behind fragments of tissue. Usually advances from base of colony and progresses up branches.
White Plague: Affects non-*Acropora* species. Sharp boundary between live tissue and exposed skeleton. White area adjacent to living tissue can be a few mm to 30 cm in width, depending on rate of infections advance.
Aspergillosis: Affects sea fans. Distinct lesions with white fungal filaments present. Skeleton as well as tissue may be missing. Adjacent tissue often dark purple and dark nodules may form.





Aspergillosis

Black Band Disease

White Band Disease

White Plague

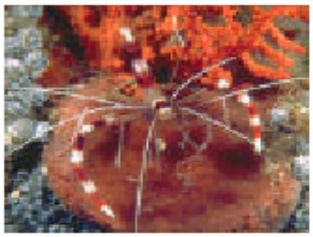
Reef Watchers Invertebrate Guide

West Indian Sea egg
(Tripneustes ventricosus)

Long-Spined Urchin
(Diadema antillarum)

Flamingo Tongue
(Cyphoma gibbosum)
Photo by G. Hodgson

Lobster
(Palinuridae)



Banded Coral Shrimp
(Stenopus hispidus)
Photo by J. Jeffords

Sea Fans/Sea Whips
(Gorgonacea)
Photo by Florida Keys NMS

Pencil Urchin
(Eucidaris tribuloides)

Reef Watchers Fish Guide

Grunts/Margates
(Haemulidae)
Photo by J. Randall

Grouper > 30 cm
(Serranidae)
Photo by R. Patzner

Snapper
(Lutjanidae)
Photo by R. Patzner

Morey Eel
(Muraenidae)
Photo by R. Patzner

Parrotfish > 20 cm
(Scaridae)
Photo by R. Patzner

Butterflyfish
(Chaetodontidae)
Photo by R. Patzner