Field Response Teams

Module 4

The field response is broken into three basic teams:

Survey Team (2-3)
- Site analysis
- Mapping
- Transects
- Marking colonies for sampling

Collection Team (2-3)
- Sample collections
- Photodocumentation
- Colony data collection

Support Team (2)
- Sample technician
- Logistics chief

Supplies for Field Surveys

Essential equipment:

- Slates, datasheets, two 30 m tape measures, 1 m bar marked in 5 cm increments
- Floats and line, GPS in waterproof bag
- Floating chains with tags, digital camera with macro capability, scale bar for photos

Optional equipment :

- Video camera
- Tow boards and/or scooters

Objectives of Survey Team

- **Site characterization** (environmental conditions, unusual biological occurrences)
- **Define affected area** (location within reef, depth, perimeter of outbreak)
- **Benthic composition & cover** (substrate and biota)
- **Species diversity, cover, size structure of coral population**
- **Species & sizes of affected corals**
- **Distribution & abundance (prevalence) of diseased corals**
- **Coral condition & progression of the disease**

Survey Dive Team Members

Videographer

- Documents site, benthic community and affected corals using video and/or digital still images

Cartographer

- Delineate affected area
- Record GPS coordinates
- Creates map of affected area

Benthic ecologist (tactical specialist)

- Deploys transects
- Assesses benthic community
- Completes coral disease assessment
- Identifies colonies for sampling

Benthic Data Collection

- Point intercept transects characterizes
  - substrate type and condition
  - cover of algae & invertebrates
- Belt transects characterize
  - coral community structure
- Transect length, # transects and # points/line varies depending on location, reef structure and coral community
  - Field manual describes 20 m length, points assessed every 0.5 m, 2 transect minimum inside & 2 outside outbreak area

Determine transect length & sample interval

Indo-Pacific Reefs:

- 20 m length, 1 m wide belt and point intercept every 0.5 m (40 points/line)
- Corals recorded to genus; measure size 10 cm or larger; group small corals 0-5 cm, 6-9 cm; or group sizes into 10-20, 21-40, 41-80, 81-160, 161-320, > 320 cm

Western Atlantic Reefs:

- 10 m length, 1 m wide belt (min. 3 within outbreak, 2 outside, 2m between transects)
- 10 m length point intercept, every 10 cm (100 points/line; min. 2 transects w/in outbreak, 2 outside)
- Record coral species and measure to nearest cm for 5 cm or larger corals; ID and count # of smaller corals (or lump sizes: <5, 5-9, 10-14, 15-19, 20-24 etc.)
- Alternate: use 30 m long transect for bank/barrier reefs

Benthic Data Collection

belt transects: minimum 3 within outbreak at each depth; 2 surrounding area

Diver 1:
Conducts COLONY COUNTS of all corals within each belt transect

Records species (or genus) & maximum diameter (to nearest 5 cm)

Records presence of specific disease signs outbreak related & other diseases or biotic stressors on affected corals

Colony count gives indicator of coral community structure and portion of population at risk [e.g., prevalence: (# diseased colonies/total # corals) X 100)] and colony size provides an index of reef "health"

Benthic Data Collection

Diver 2: Conducts DISEASE ASSESSMENT
Colonies with disease signs within each belt transect

- **Records taxa and size**
- **Describes lesion**
- **Photographs colony**

Diver 3: Completes POINT INTERCEPT
At predetermined points along predetermined transect length (min.40 points per transect, 120 points per site/depth IP; 100 points peer transect WA)

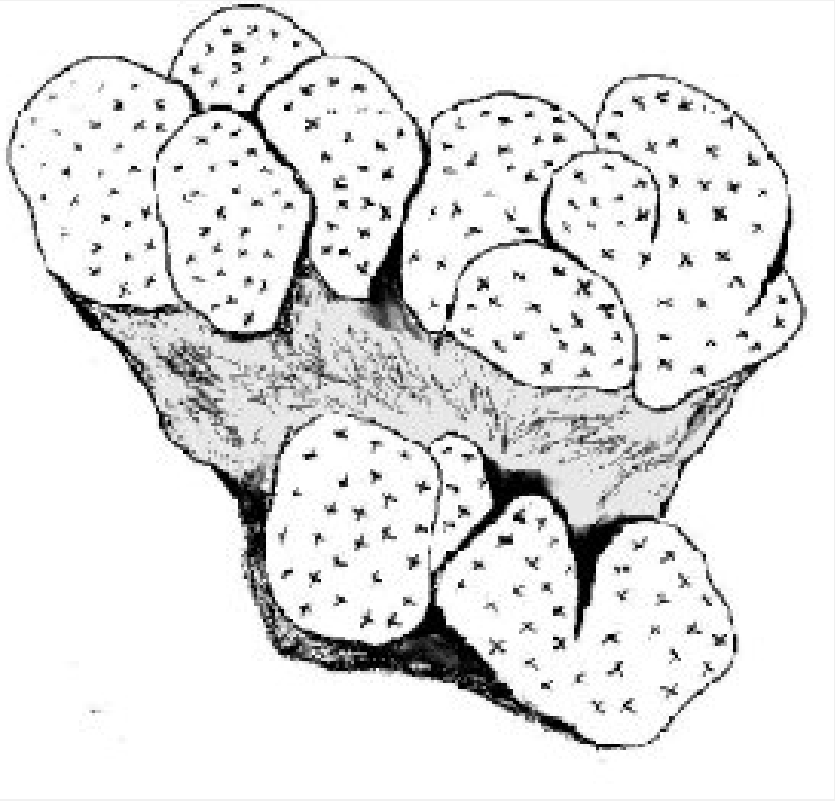
- **Records substrate type** (sand, rubble, pavement, dead coral, live coral)
- **Records organism** (e.g., algal type, invertebrates, coral genus & species

Colony Disease Assessment

Diver 2: All colonies with disease outbreak signs within belt transect

- Record taxa & diameter (longest dimension)
- Characterize lesion (tissue loss, skeletal damage, color change, growth anomaly)
- Describe lesion: location, distribution, size, disease margin, severity
- Record maximum dimension of lesion
- Estimate amount of recent/transitional/old mortality
- Photograph colony
- Temporary tag representative colonies (and species) for sampling

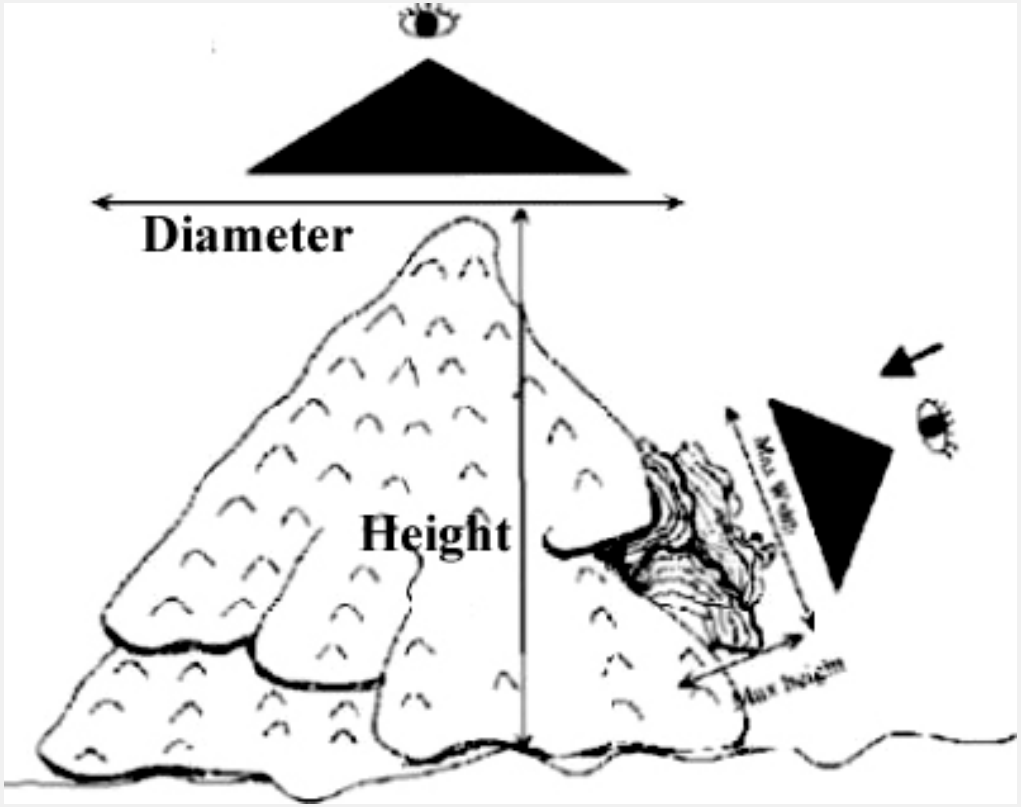
Colony Boundaries

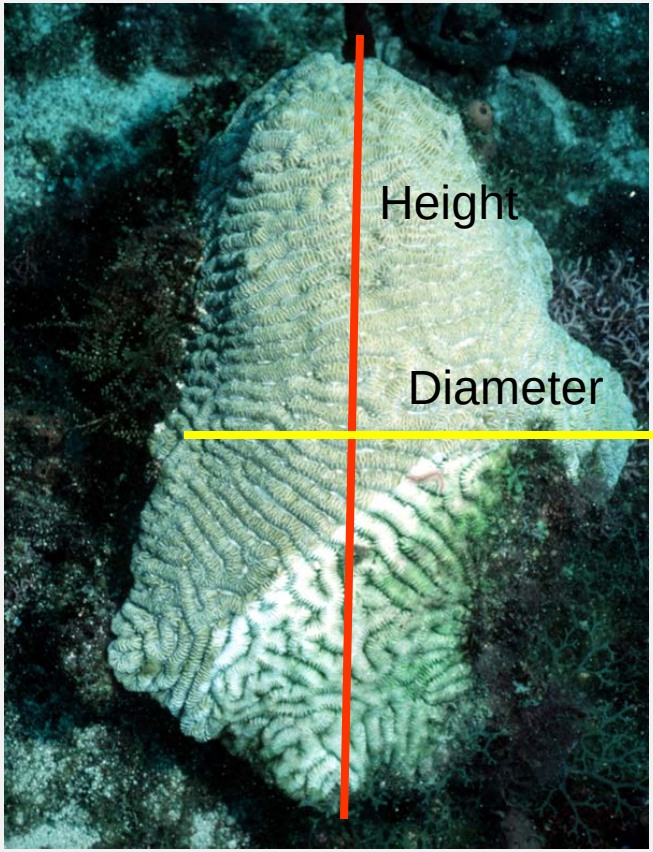


- Any freestanding skeleton
- Must be attached
- Separate living portions can be connected by non-living skeleton
- Living tissue can be distributed among physiologically separate units
- For species occuring in monospecific fields look for distinct differences in color, polyp shape or other ways to separate genets

Colony Size Measurements

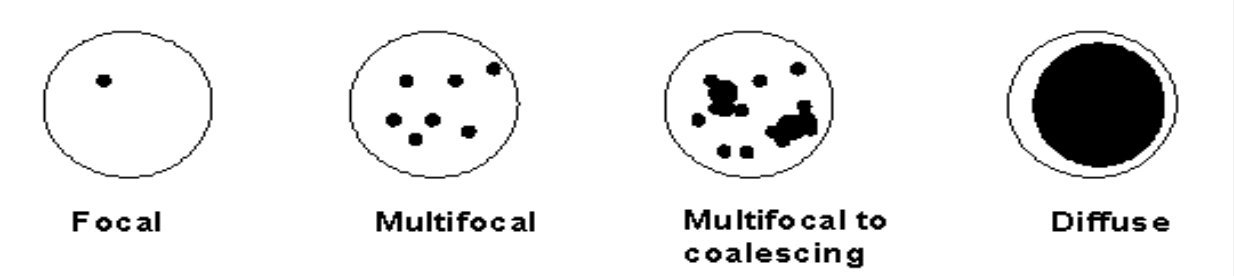
- Planar view
- diameter: perpendicular to growth axis
- width – measure perpendicular to diameter
- height: parallel to growth axis

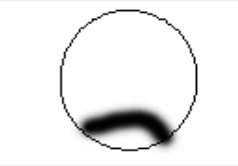




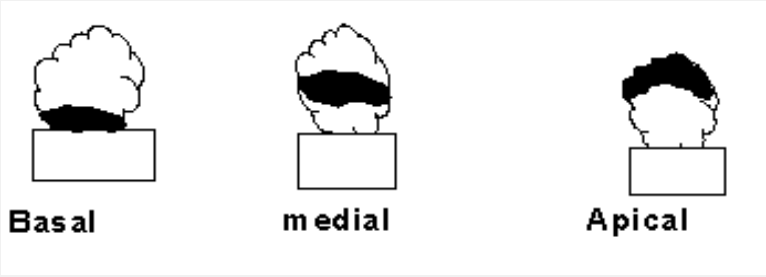
Diagnostic Descriptors

- Distribution: focal, multifocal, coalescing, diffuse, linear





- Location: basal, apical, medial



- Size: largest dimension, thickness
- Color: lighter, darker, discolored, bleached (record color)

Diagnostic Descriptors (cont)

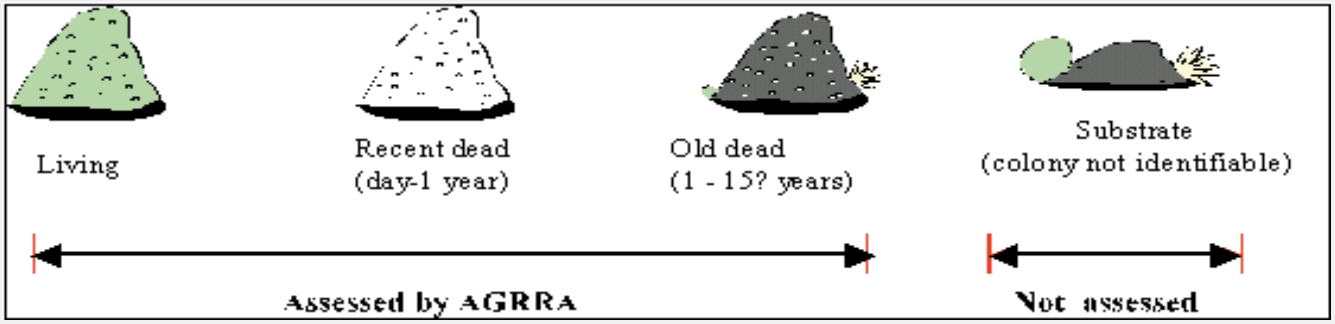
- Lesion margin: smooth, irregular
- Presence/absence tissue sloughing
- Extent of recent (white skeleton) tissue loss:
  - mild (<10% or less, based on remaining live tissue)
  - moderate (10-24%)
  - severe (25-49%)
  - extreme (>50%)
- Duration:
  - *Acute* - no algal colonization
  - *Subacute* - green filamentous algae
  - *Chronic* - gradation from white exposed skeleton to filamentous algae, macro and coralline algae

Mortality Estimates

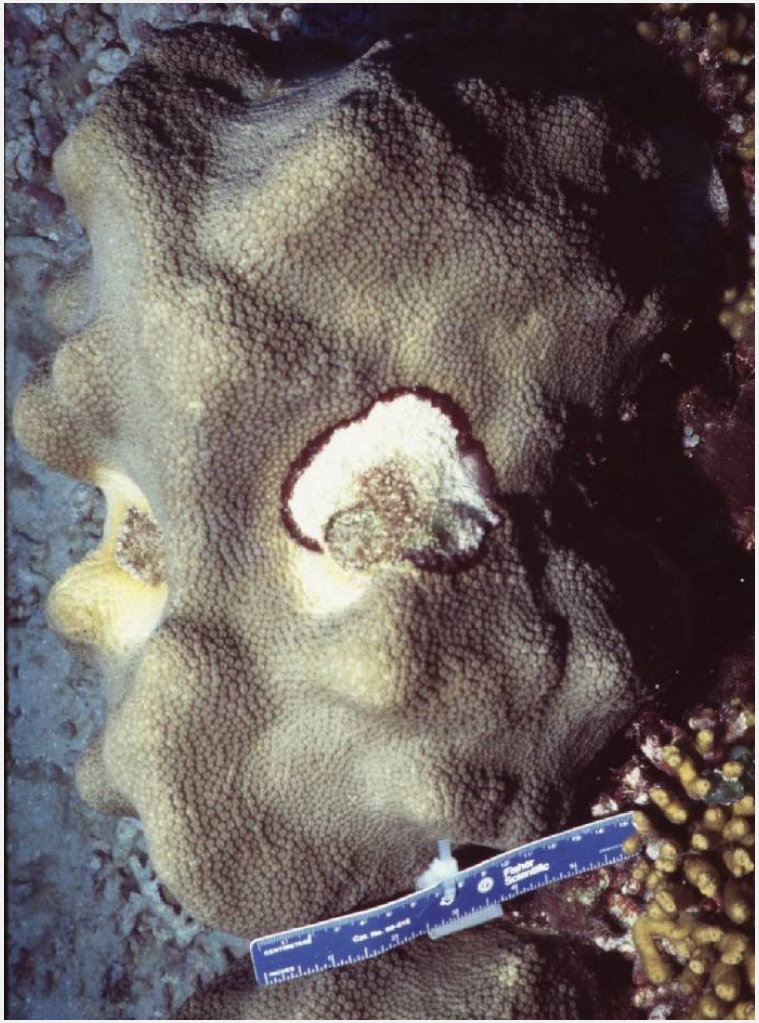
Old Mortality: areas of coral in which corallite structures are gone and are not white; or areas covered by organisms that are not easily removed

Recent Mortality: white & intact non-living parts of coral; not covered with a layer of Filamentous algae, mud or silt; white, Abraded corallites not colonized by algae (died < 14 days ago)

Transitional mortality: recent dead algal-colonized parts of coral, green to brown but no macroalgae coralline algae or inverts



Lesion Distribution

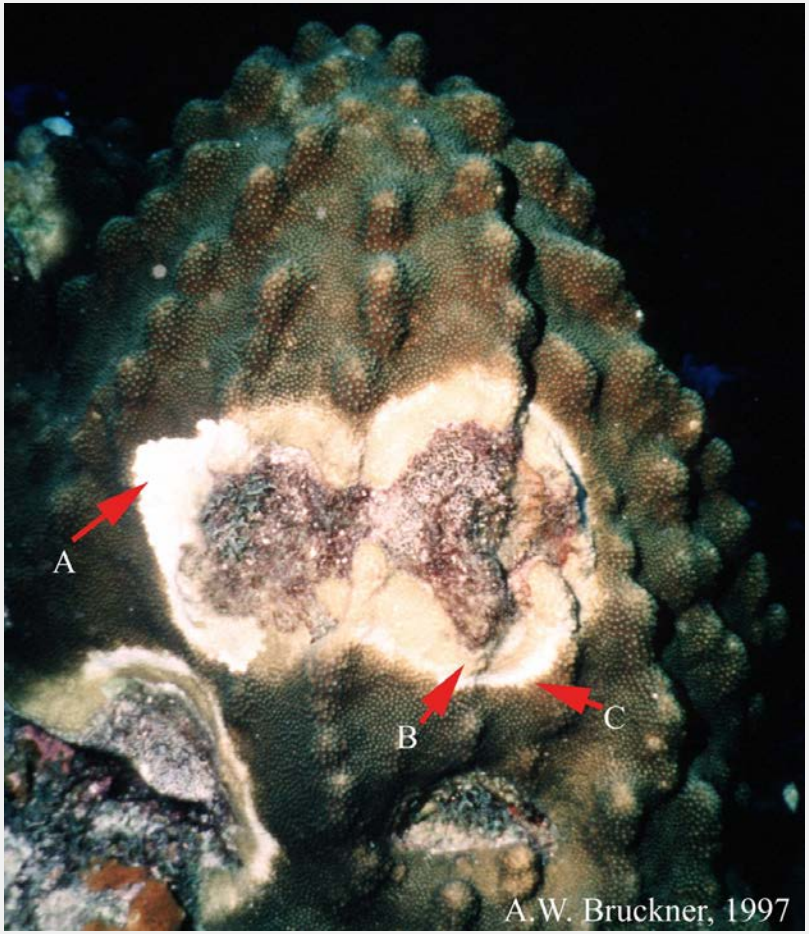


Focal

Multifocal

Lesion Distribution

Multifocal, Coalescing, Diffuse



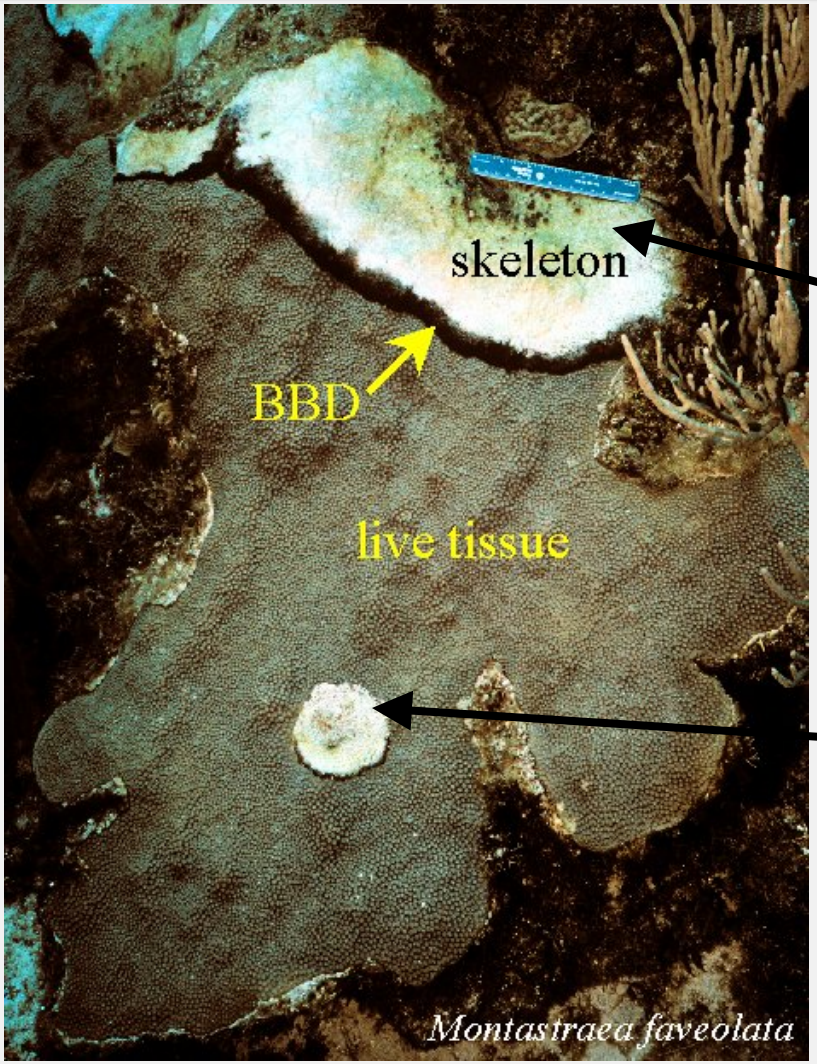
Annular, Coalescing

Lesion Distribution

Diffuse

Linear

Lesion location

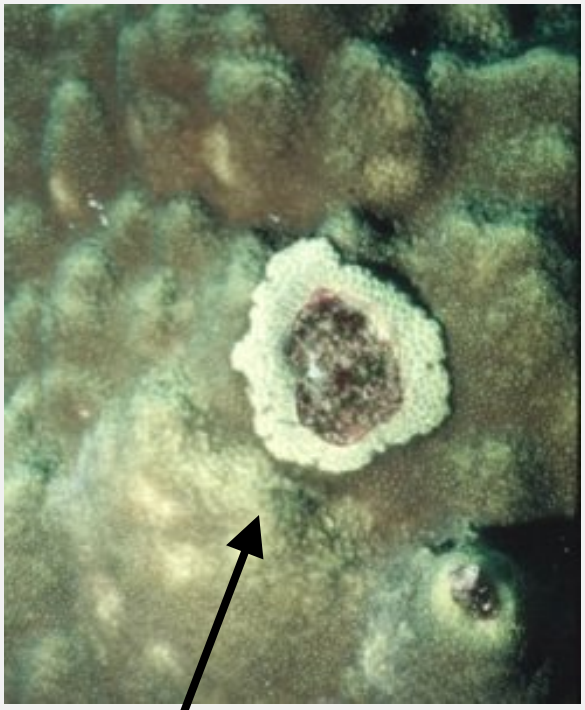


Apical

Medial

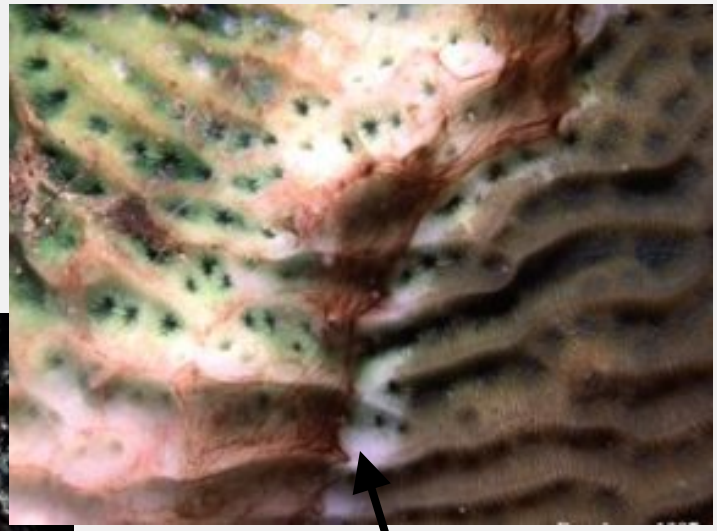
Basal

Lesion Color



Lighter

Darker



Bleached

Lesion Margin

Smooth

Irregular

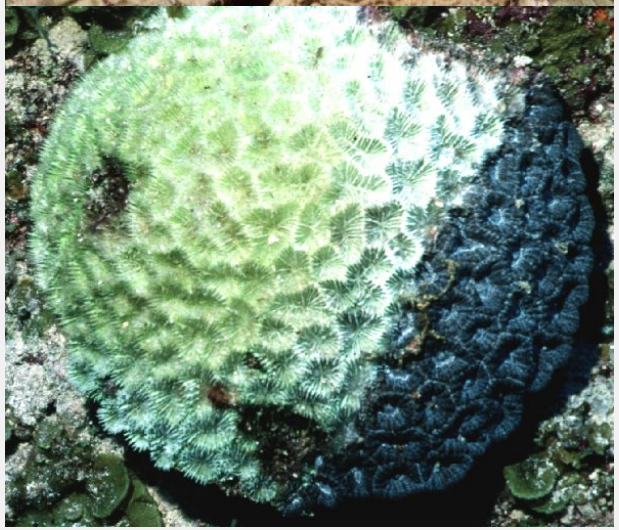
Tissue Sloughing

Extent of Recent Tissue Loss

Mild

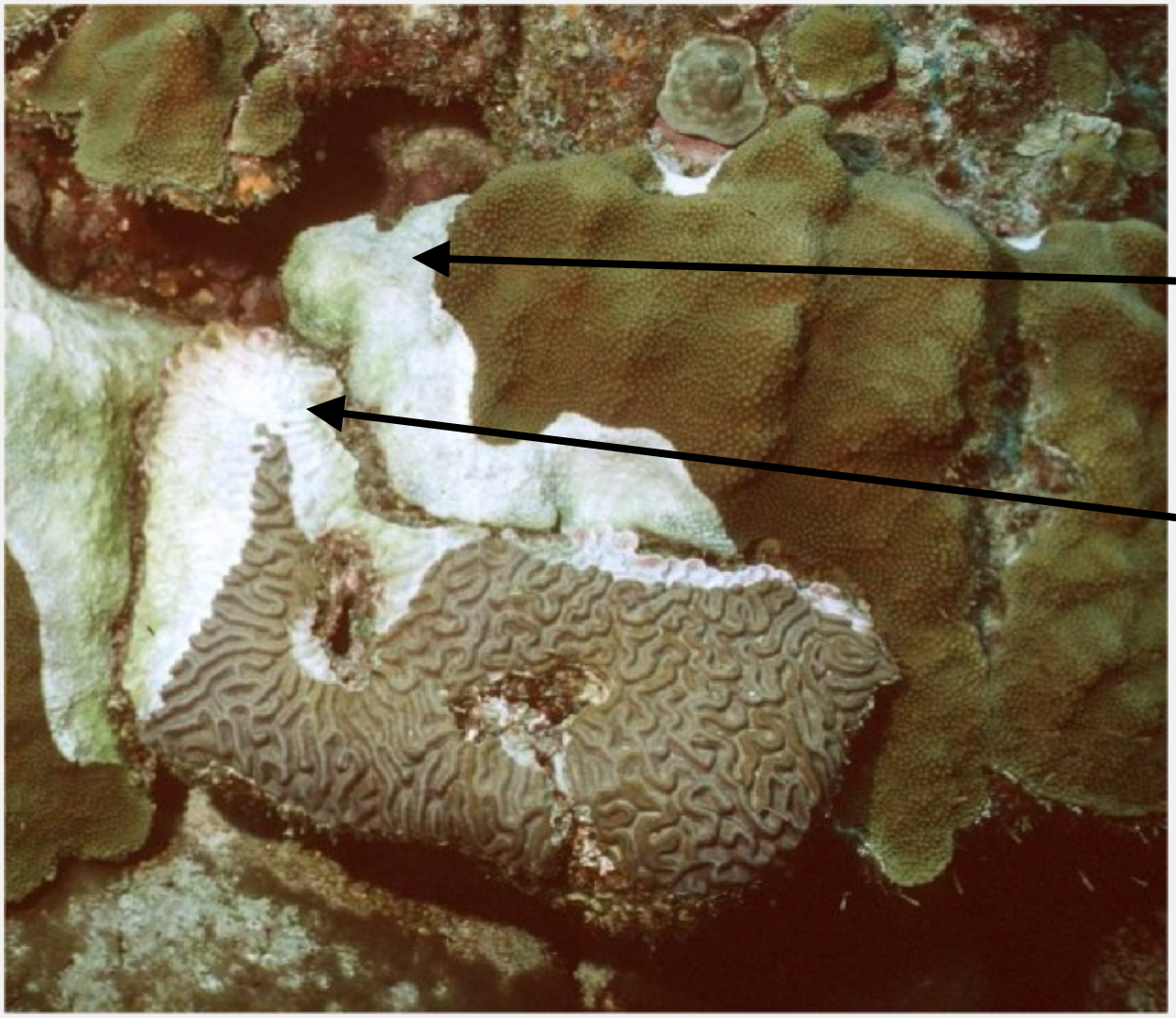
Severe

Moderate



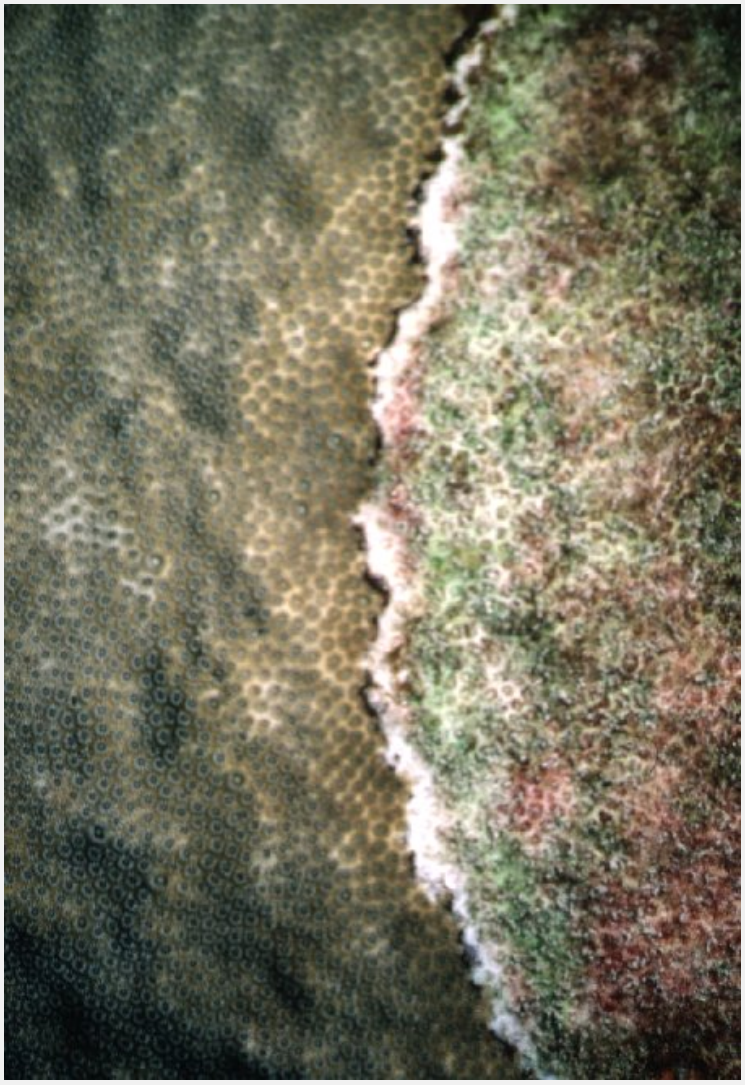
Extreme

Duration



Acute Tissue Loss

Duration



Chronic