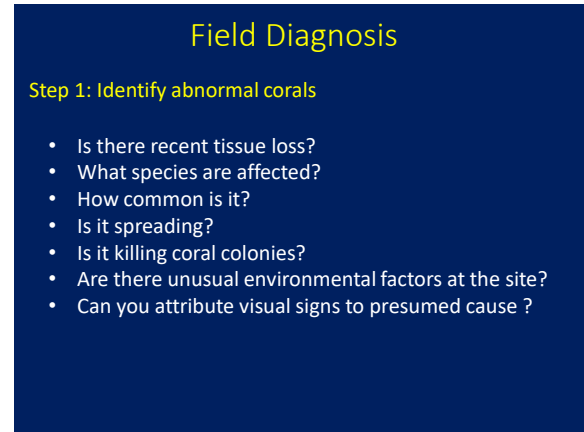
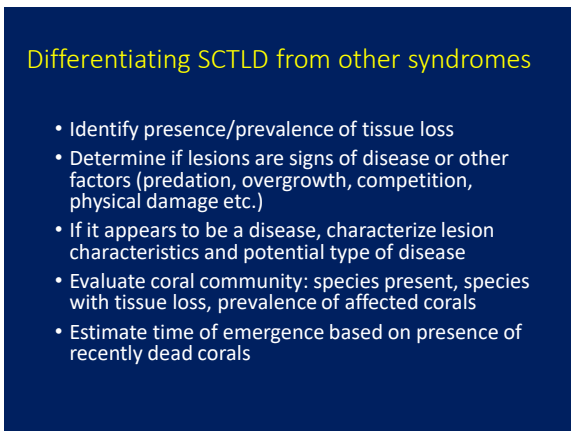


1



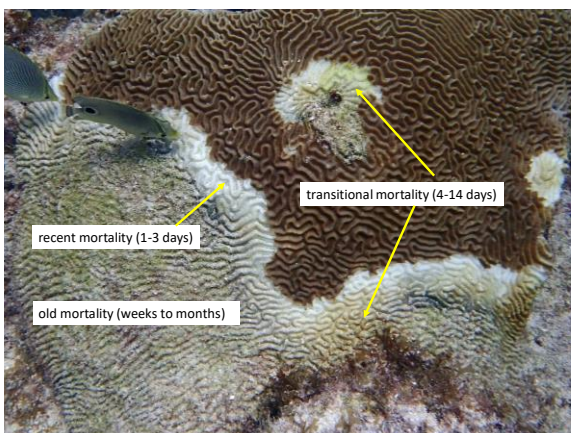
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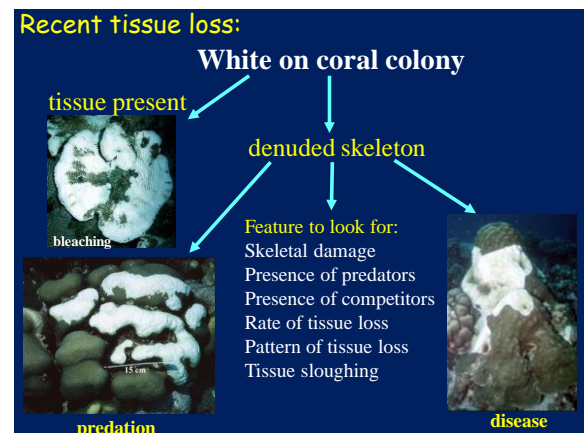
3



4



5



6

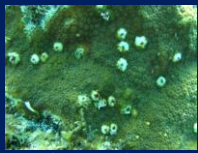
### 1. Is coral loss due to other (non-disease) factors?



Sponge bioerosion/overgrowth



Competition/overgrowth



Galls/tumors/tube dwellers



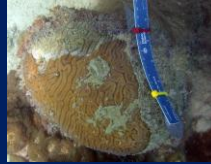
Abrasion



Aggression

7

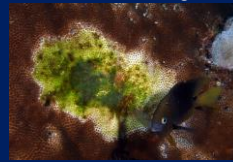
### Exclude other causes of mortality



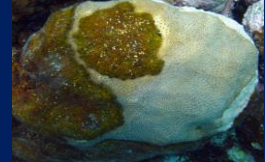
Sediment damage



Algal abrasion/



Damselfish algal garden



Algal overgrowth

8

### Other causes: Predation

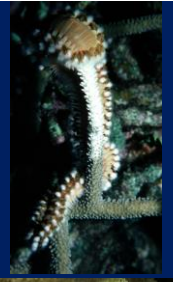
1. Is a predator present ?
2. Is there a loss of underlying skeleton?
3. What are the patterns of tissue loss?



9

### *Hermodice* predation

- Fireworms consume branch tips, projections or knobs; also seen on necrotic/diseased tissue
- Tissue adjacent to exposed skeleton appears normal
- Most feeding at night – fireworms often not seen near injury
- Fireworms often associated with diseased corals

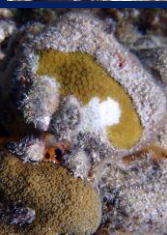
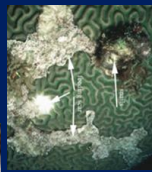


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### Snail predation

#### *Coralliophila galea*

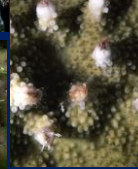
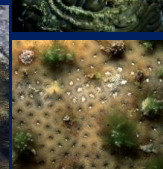
- Snails on or around lesion; often retreat to base of coral (or underside)
- Aggregate (2-50+ snails)
- Create characteristic scallop-shaped injury or a "trail" that extends across colony
- Tissue adjacent to exposed skeleton non-necrotic
- Snails often associated with diseased tissue
- Occur on most species of stony corals
- May be cryptic (algal covered shells)



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### Damselfish predation

- Threespot and yellowtail damselfish create lesions & algal lawns
- Referred to as "ridge mortality" on brain corals
- Lesions colonized by algae
- coral may produce chimneys or galls to contain algae



12



### Parrotfish White Spot Biting (PWSB)



#### spot biting

- one or more fish
- many species of scarids
- scraping behavior
- tissue regenerates in weeks
- recent and old lesions on coral

#### focused biting

- one or more fish
- only *Sparisoma viride*
- excavating behavior
- tissue may regenerate
- lesions expand outward

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### Step 2: Evaluate disease signs



1. Abnormal (darker or lighter) coloration



2. Presence of a pigmented band



3. Recent tissue loss

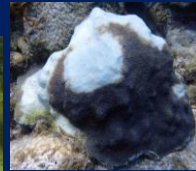


4. Unusual pattern of growth

A coral may exhibit multiple signs

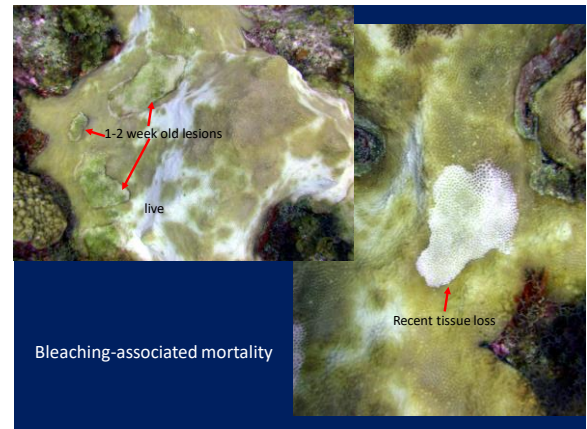
14

### 1. Abnormal coloration



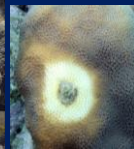
Bleaching: tissue present

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### Caribbean yellow blotch disease (CYBD)



Live (pale/lemon yellow) tissue

Primarily affects *Orbicella*  
Rare cases on *Pseudodiploria* and *Mcav*

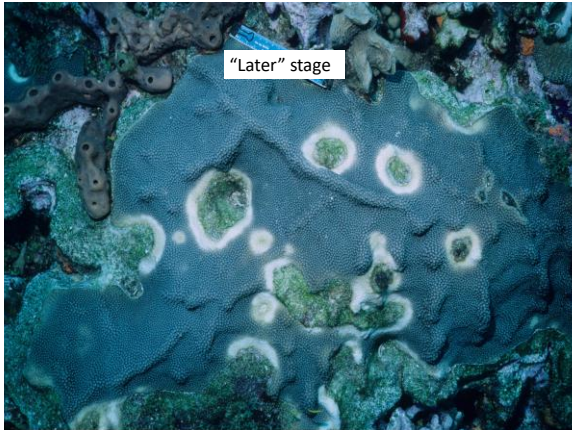
recent tissue loss



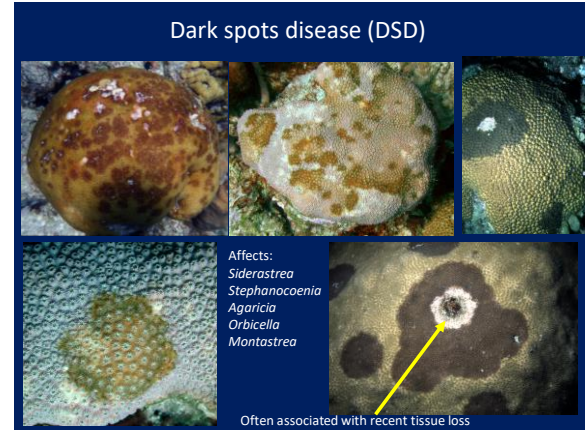
17



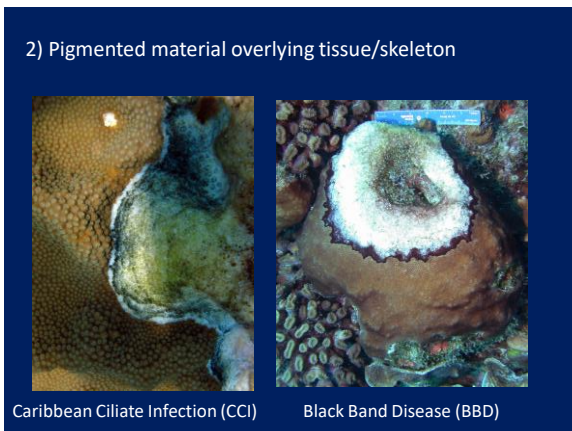
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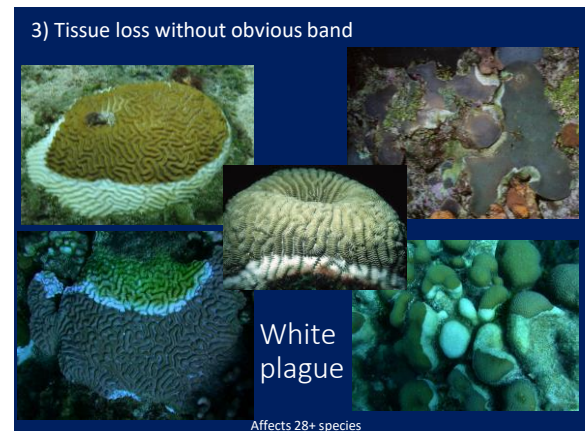
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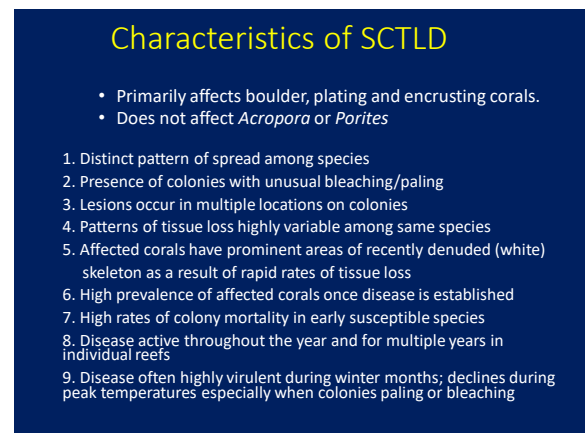
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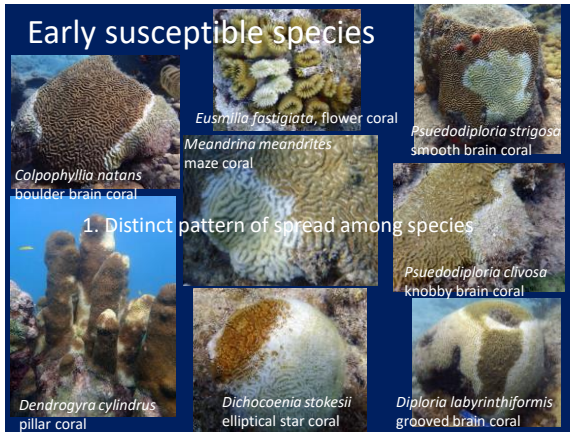


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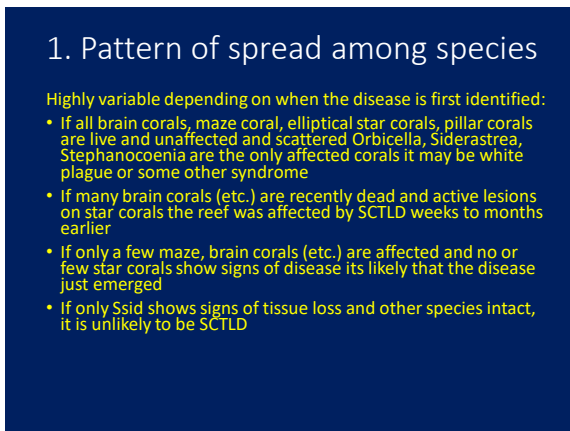




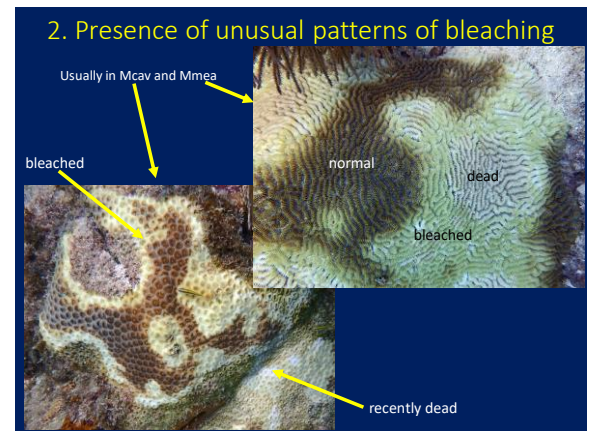
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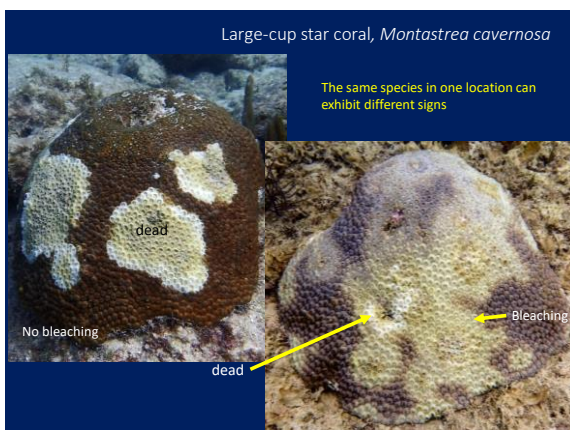
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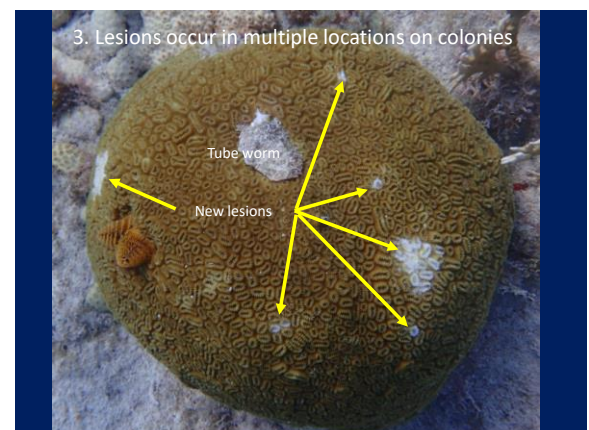
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28

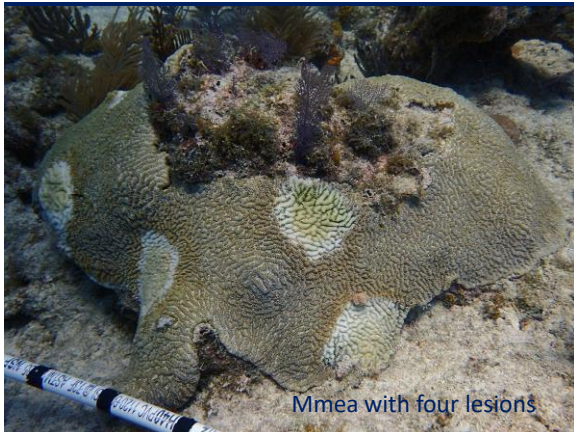


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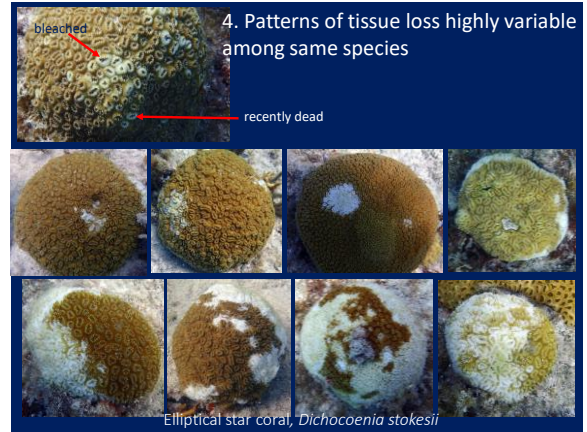


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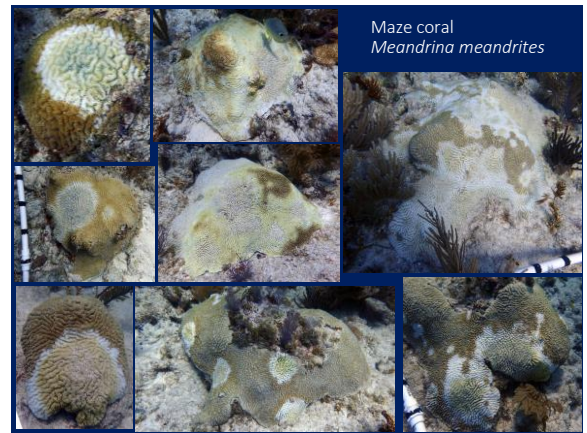
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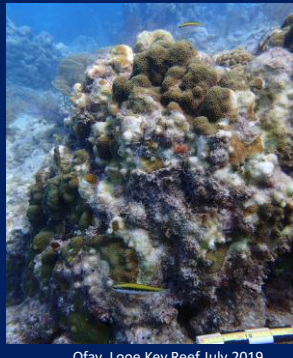
36



5. Affected corals have prominent areas of recently denuded skeleton



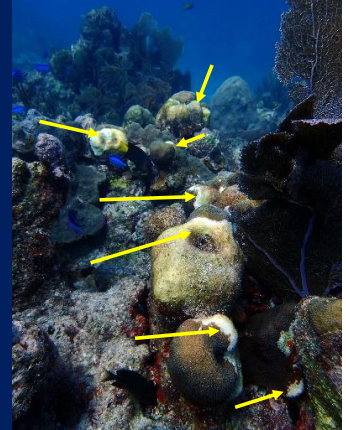
Mcav Marquesas 12/2019



Ofav Looe Key Reef July 2019

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6. High prevalence of affected corals once disease is established



38

7. High rates of colony mortality in early susceptible species



Once the disease moves through a reef, few susceptible species remain

39

8. Disease active throughout the year and for multiple years in individual reefs



2015



Dec 2016



March 2017



Apr 2018



May 2019



June 2020

Cheeca Rocks, Upper Keys, Florida

40

9. Disease often highly virulent during winter months; declines during peak temperatures especially when colonies paling or bleaching



Extensive rapid tissue loss in winter, then it slows and colonies go in remission  
Denuded skeleton colonized by filamentous algae/diatoms

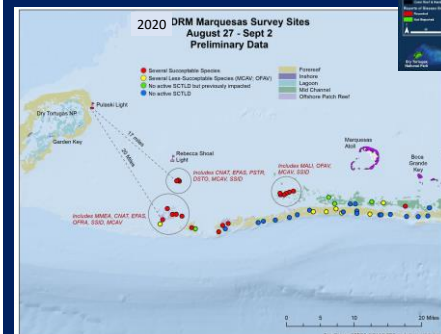


No SCTLD/ paling during peak temperatures

Jaap Reef 08/18/2020

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Spatial patterns of spread



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