

Coral Crisis in US Virgin Islands National Parks



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South Florida/Caribbean Network I&M Program



Tremendous Collaborative Effort

USGS – Dr. Caroline Rogers

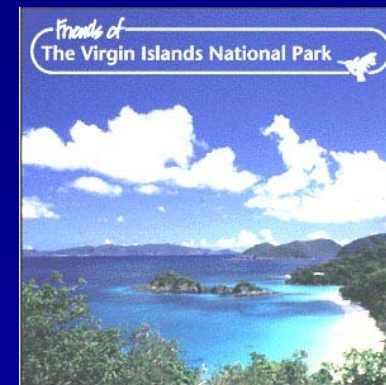
- Erinn Muller

- Tony Spitzack

- Bane Schill



SCA and Intern program



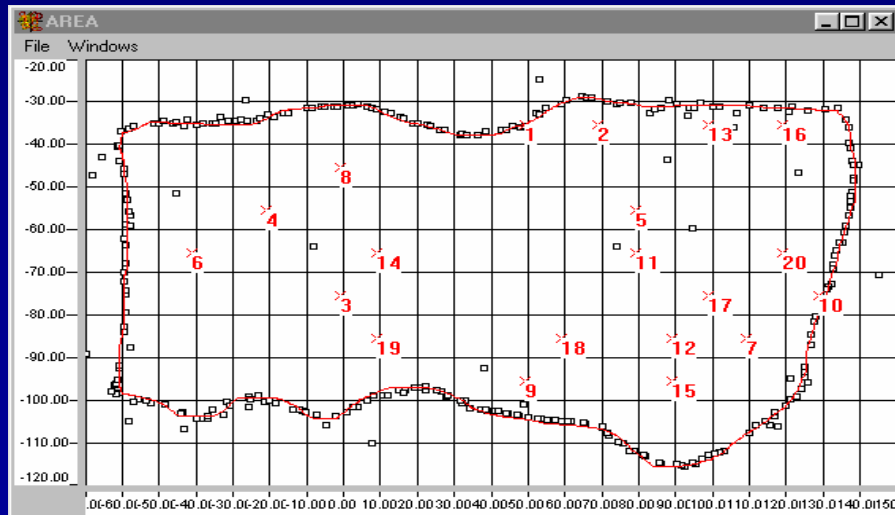
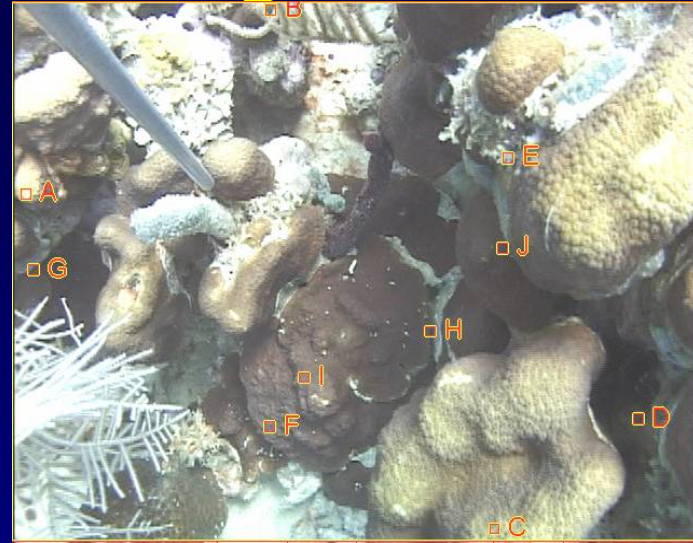
Volunteers



South Florida/Caribbean Network I&M Program

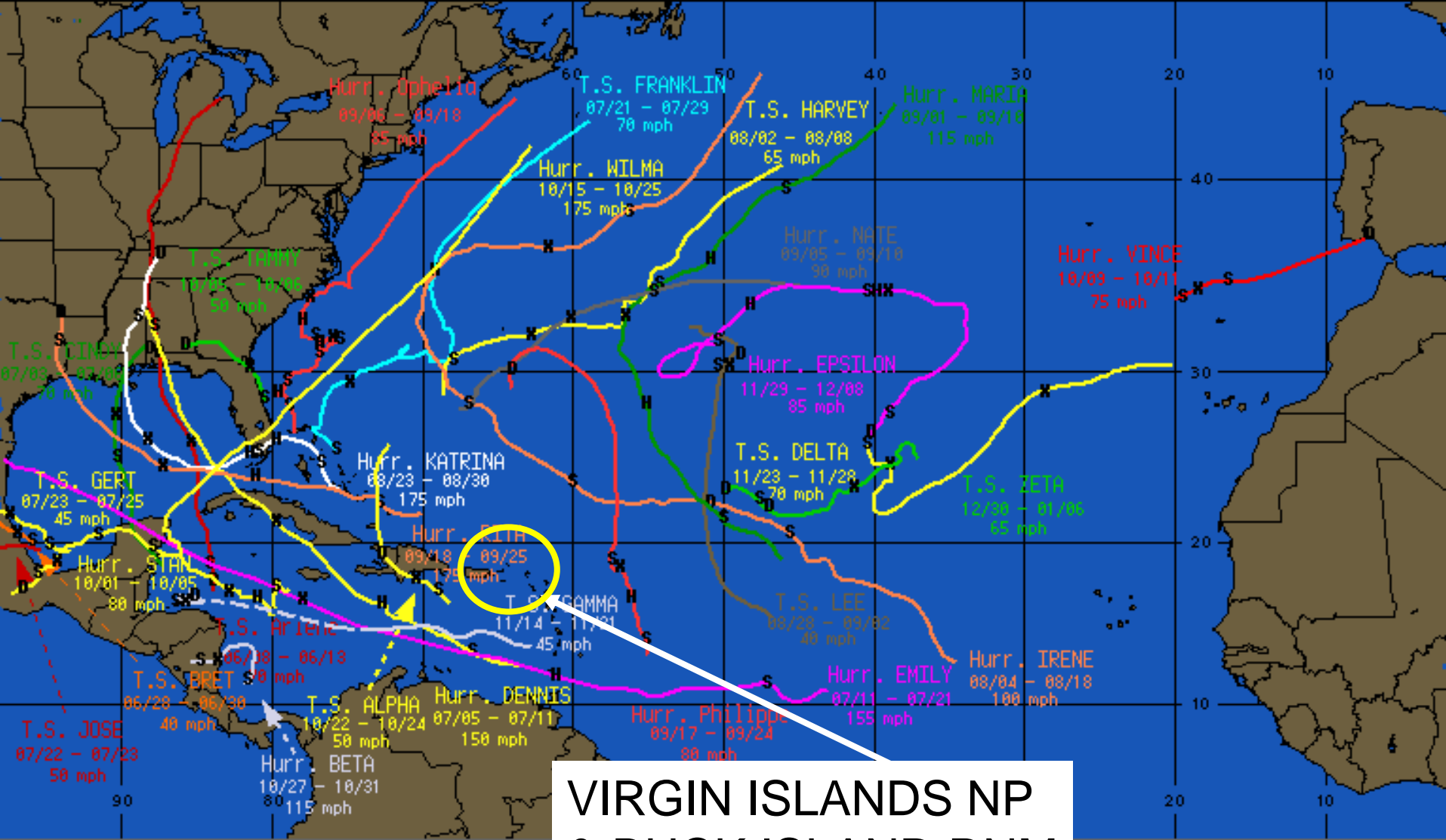


Coral Reef Monitoring Protocol



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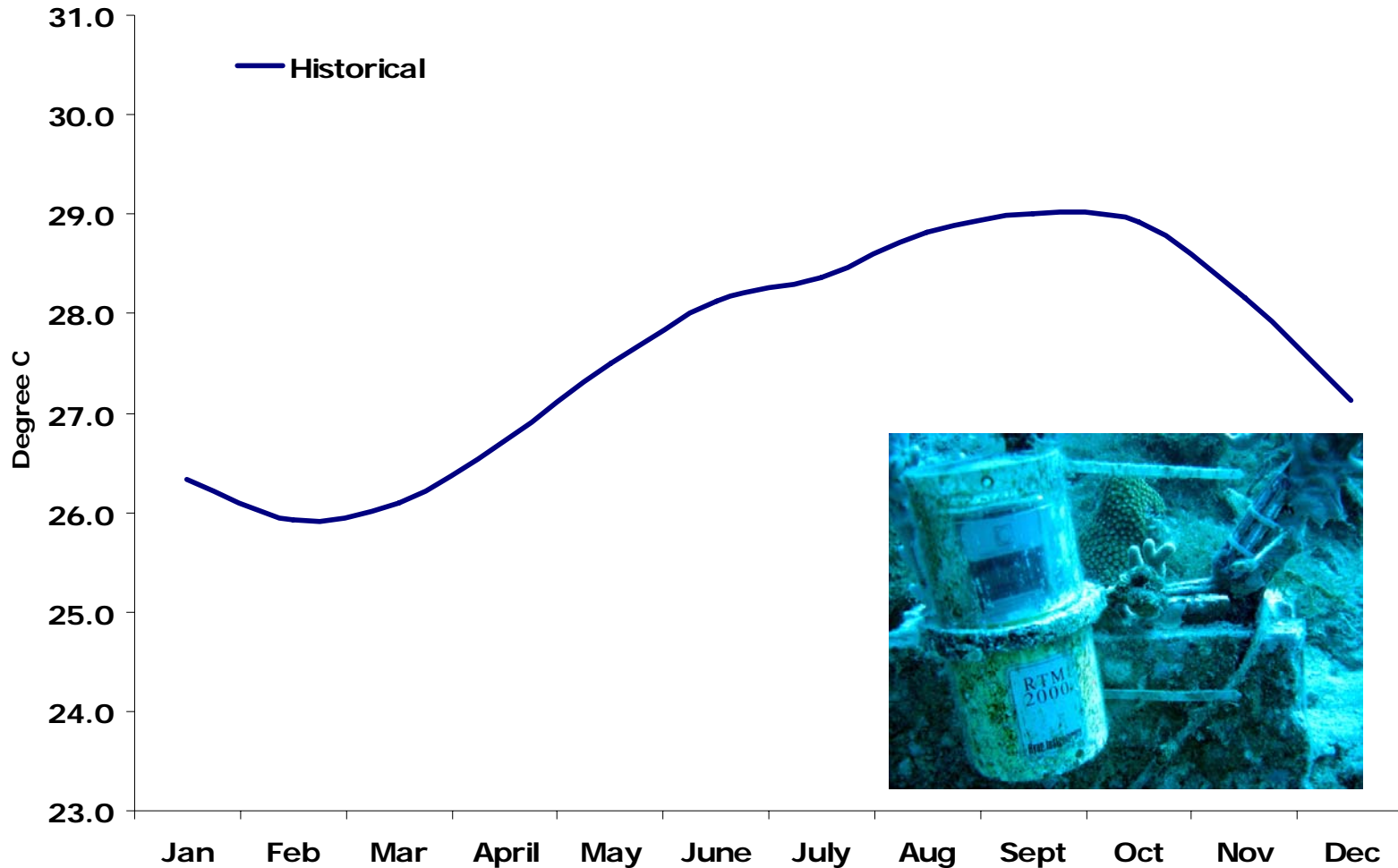
VIRGIN ISLANDS NP
& BUCK ISLAND RNM

2005 HURRICANE TRACK SUMMARY
LAST UPDATED 8:04 AM ET THU 19 JAN 06

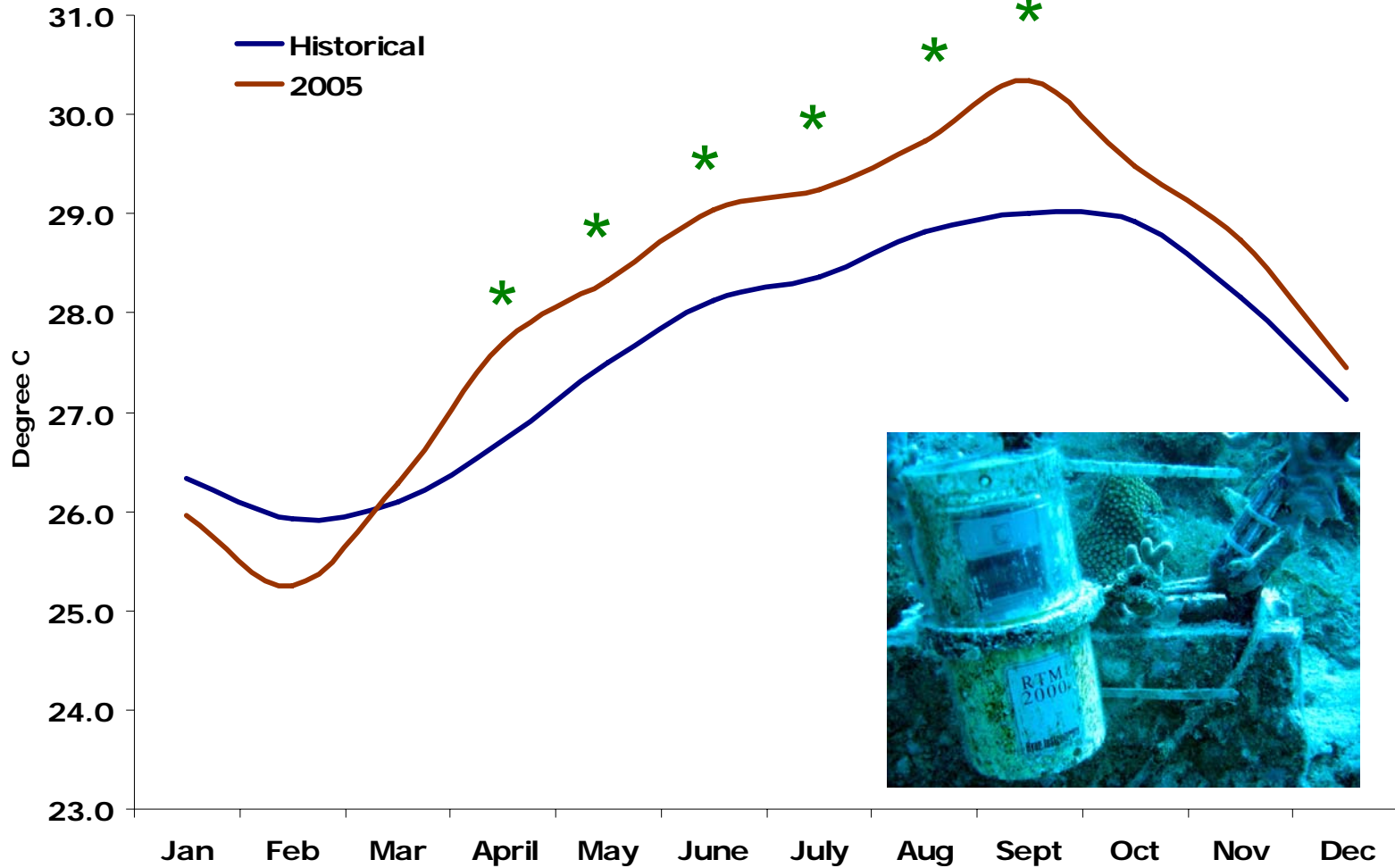
S = BECAME STORM
H = BECAME HURRICANE
X = PEAK INTENSITY



Average Monthly Temperature (at resource depth)



Average Monthly Temperature (at resource depth)





Coral Cover Range

6% - 25%

120 permanent transects
focused in
6 reef areas



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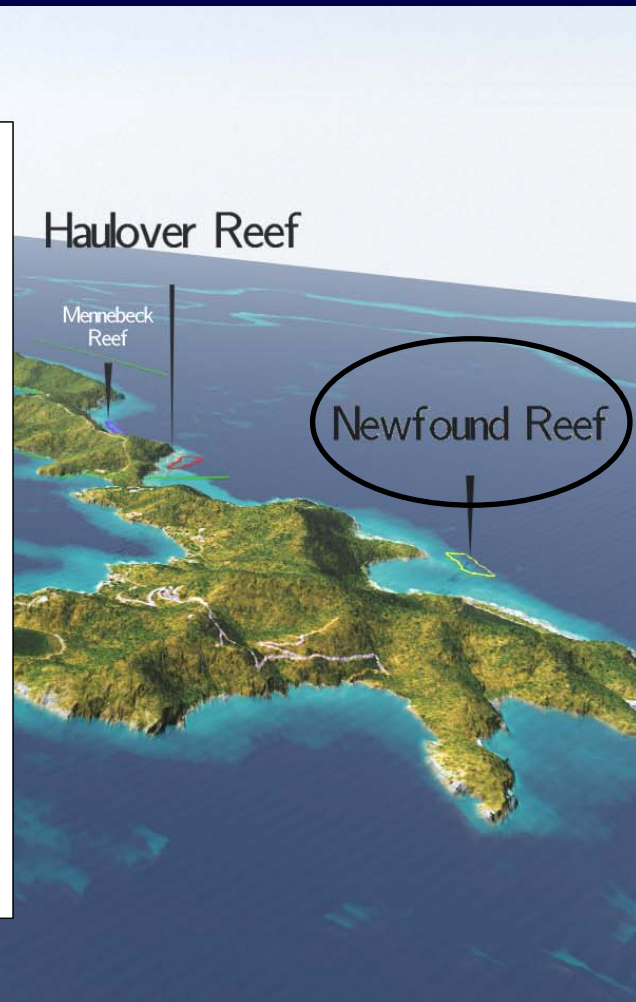
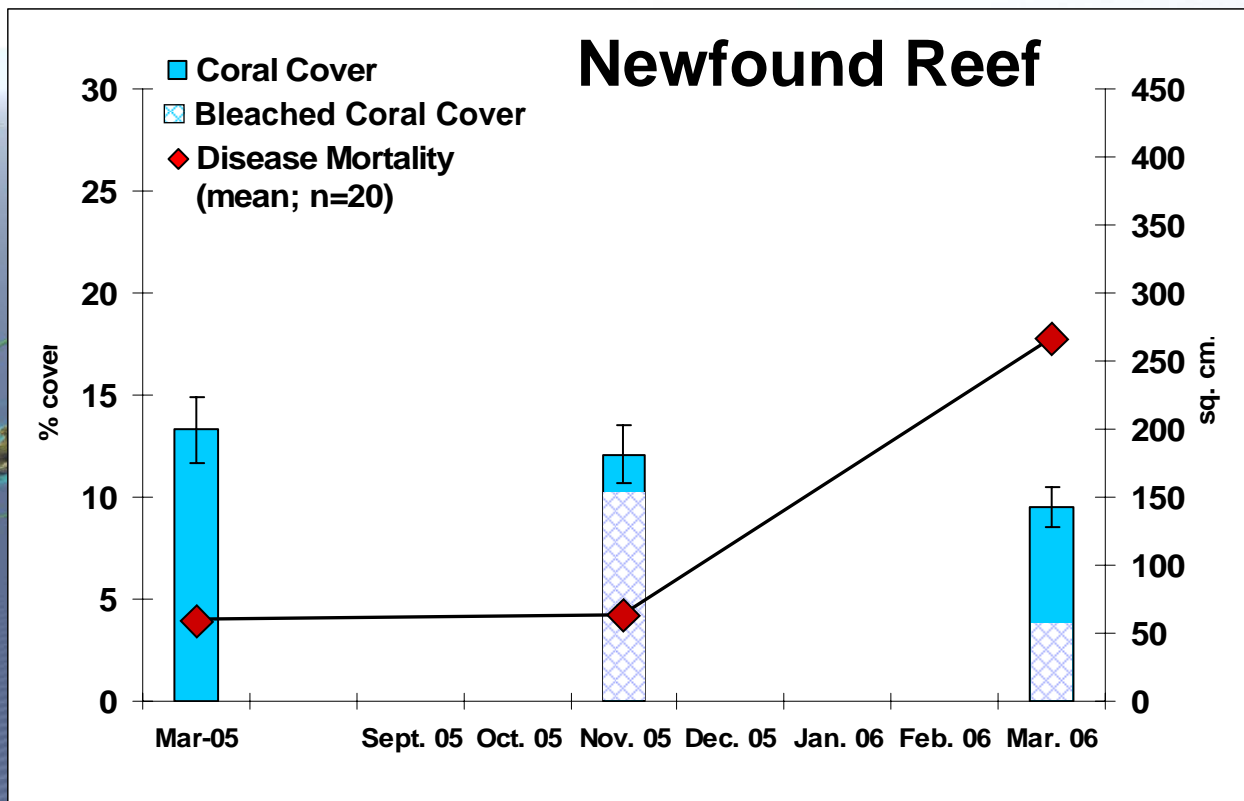


90%
Coral Cover
Bleached

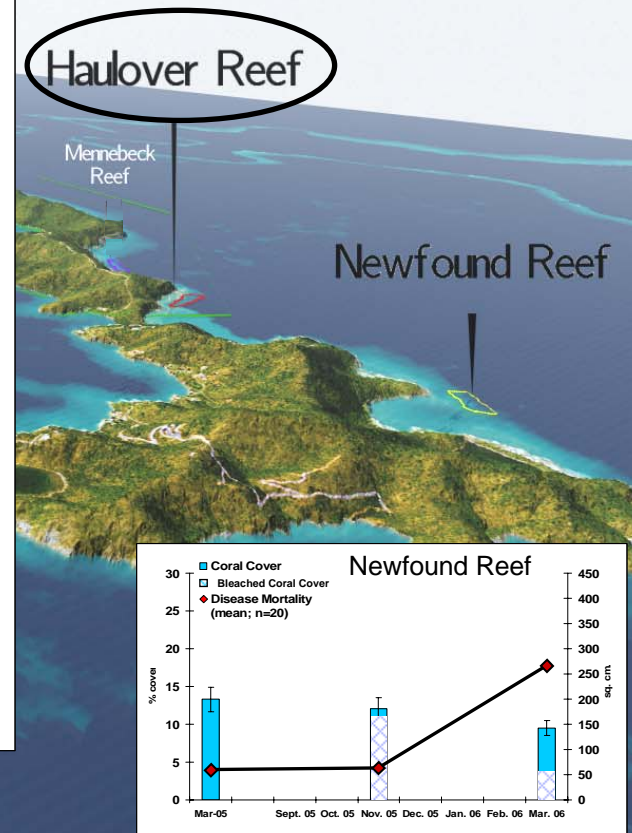
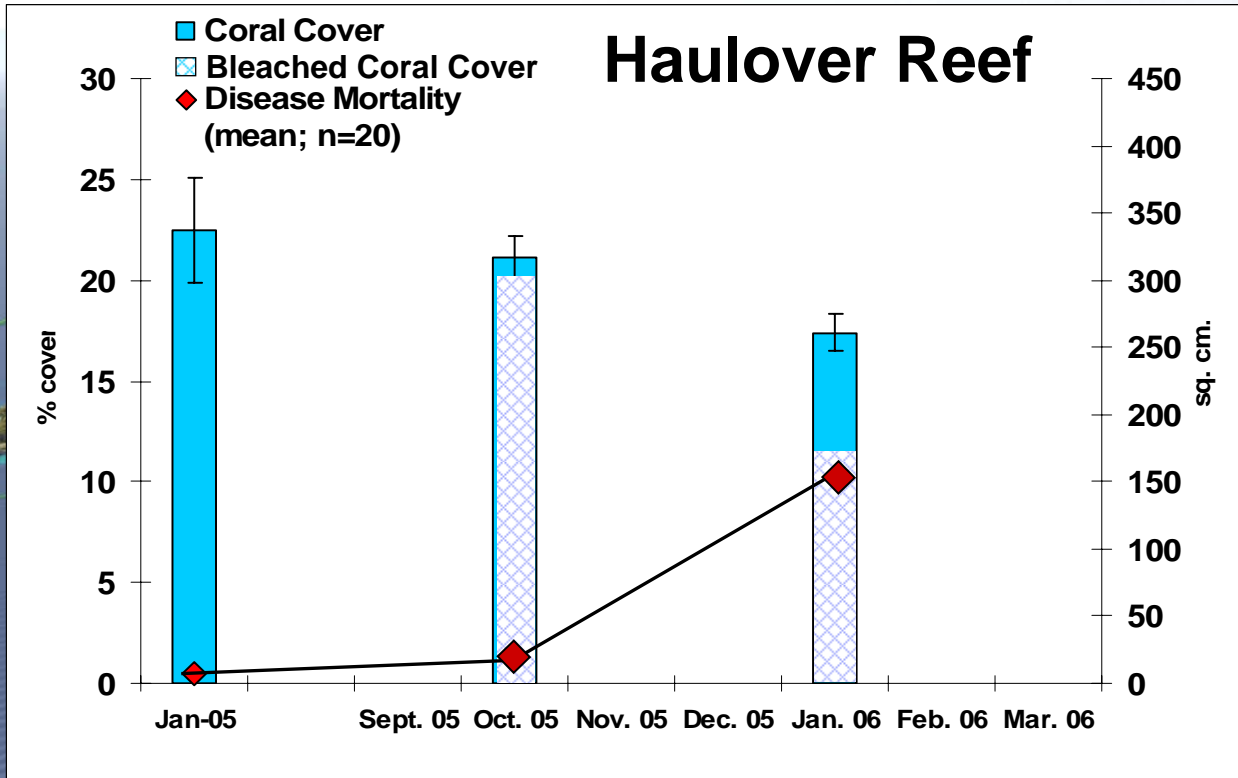
Episodic Monitoring
during - after bleaching
event revealed...



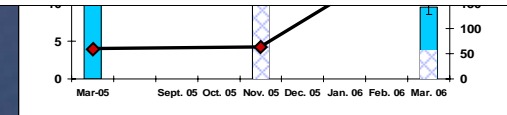
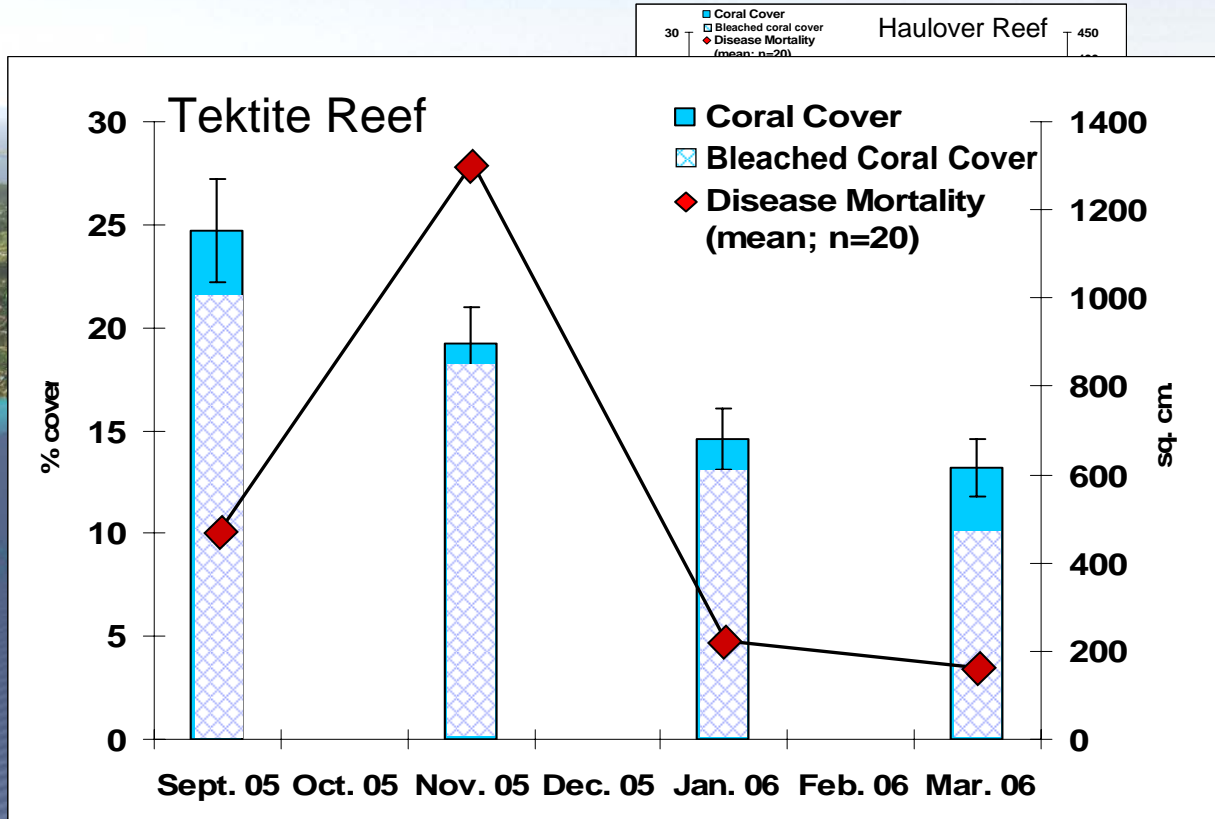
Virgin Islands National Park

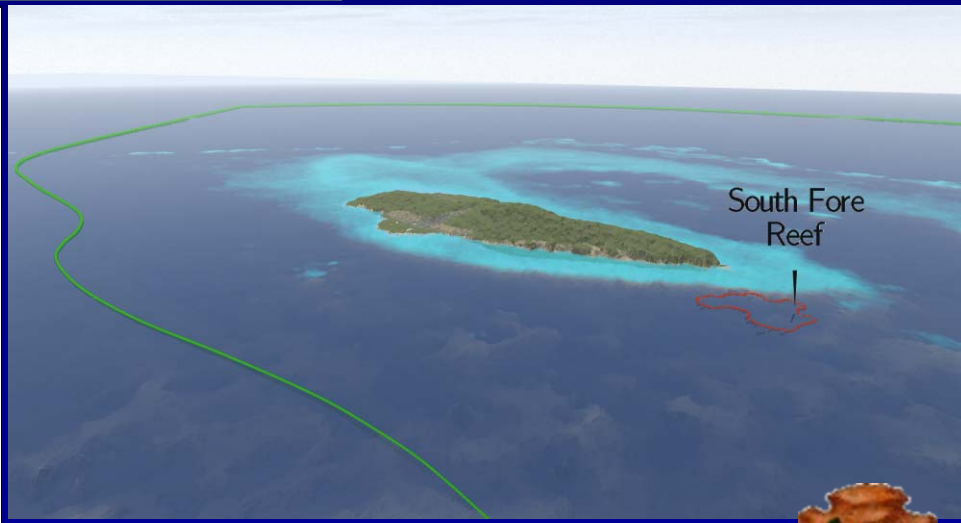
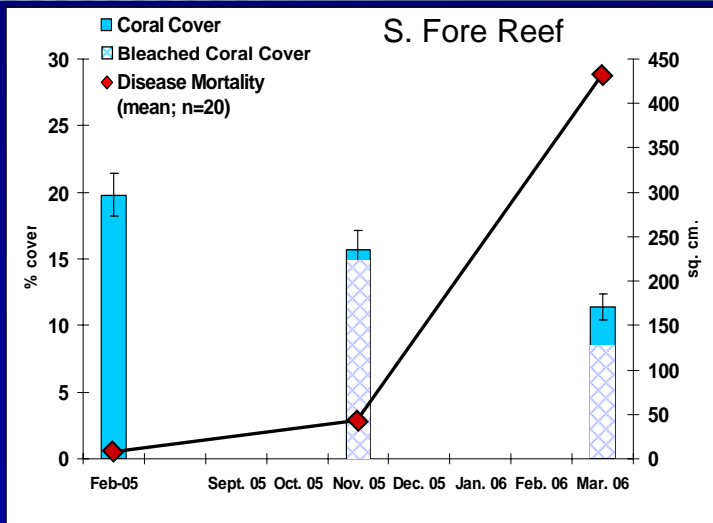
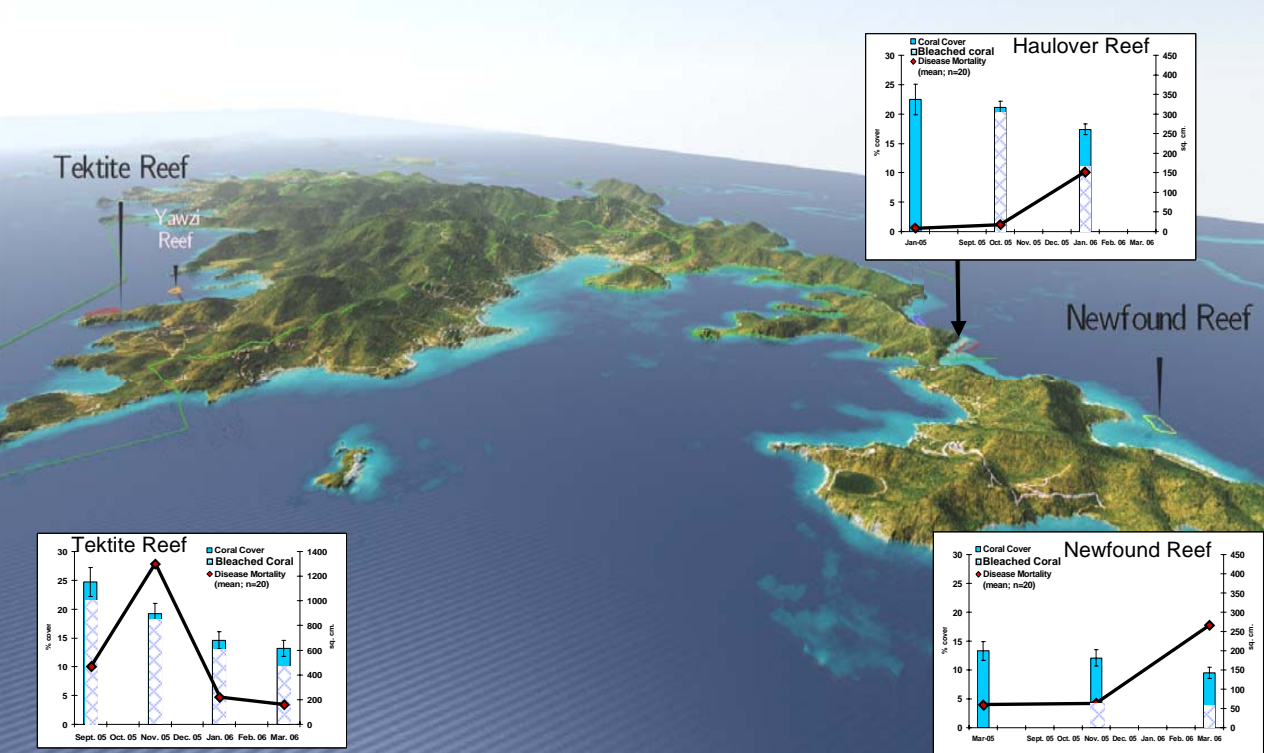


Virgin Islands National Park



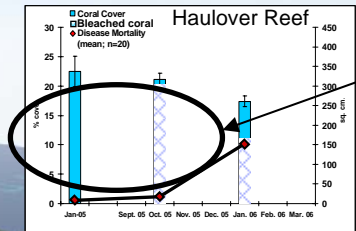
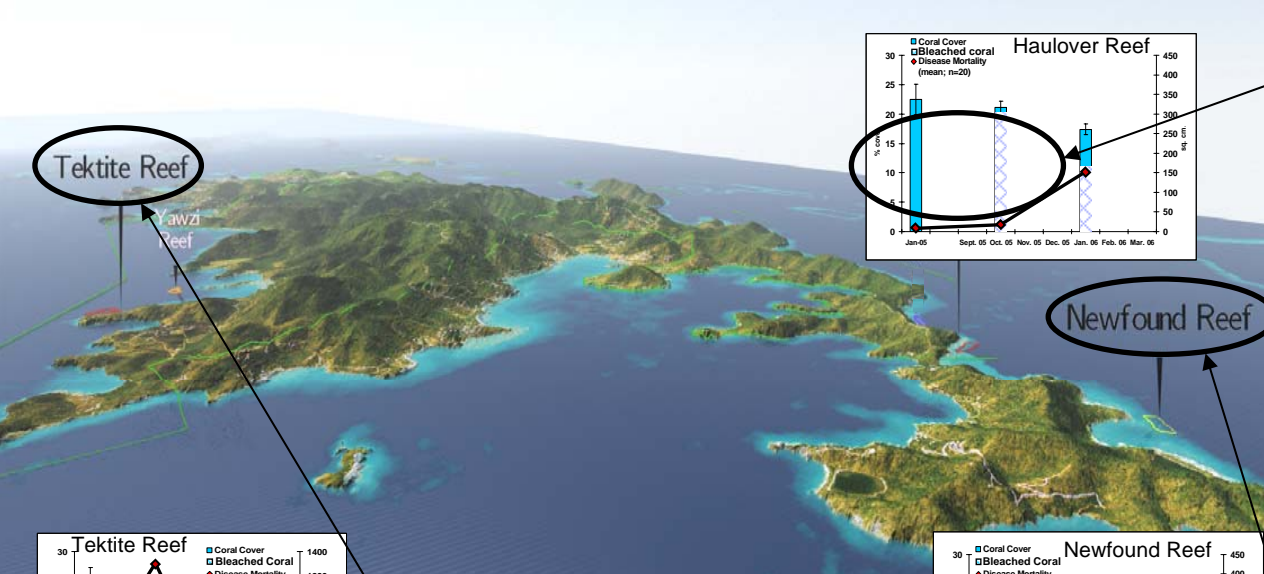
Virgin Islands National Park





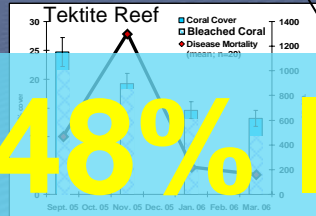
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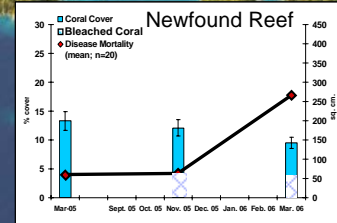
23% loss

In one Year !



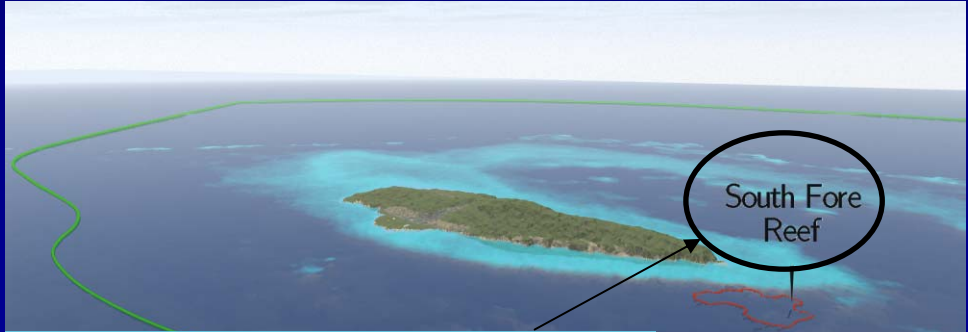
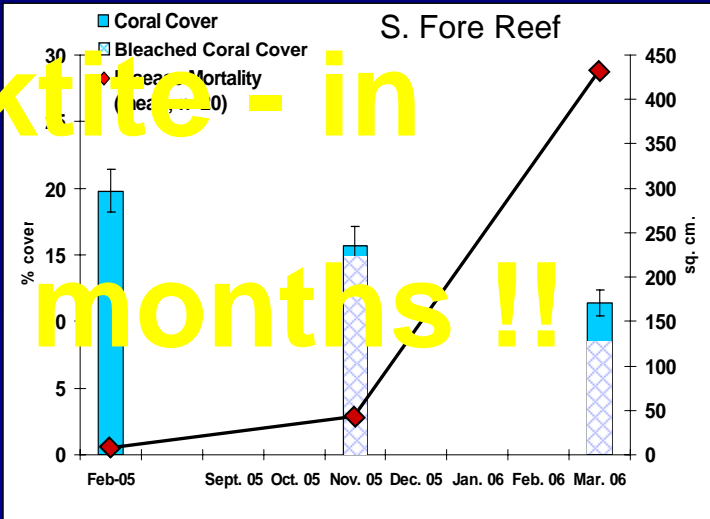
48% loss

Newfound Reef



28% loss

Tektite - in six months !!



42% loss



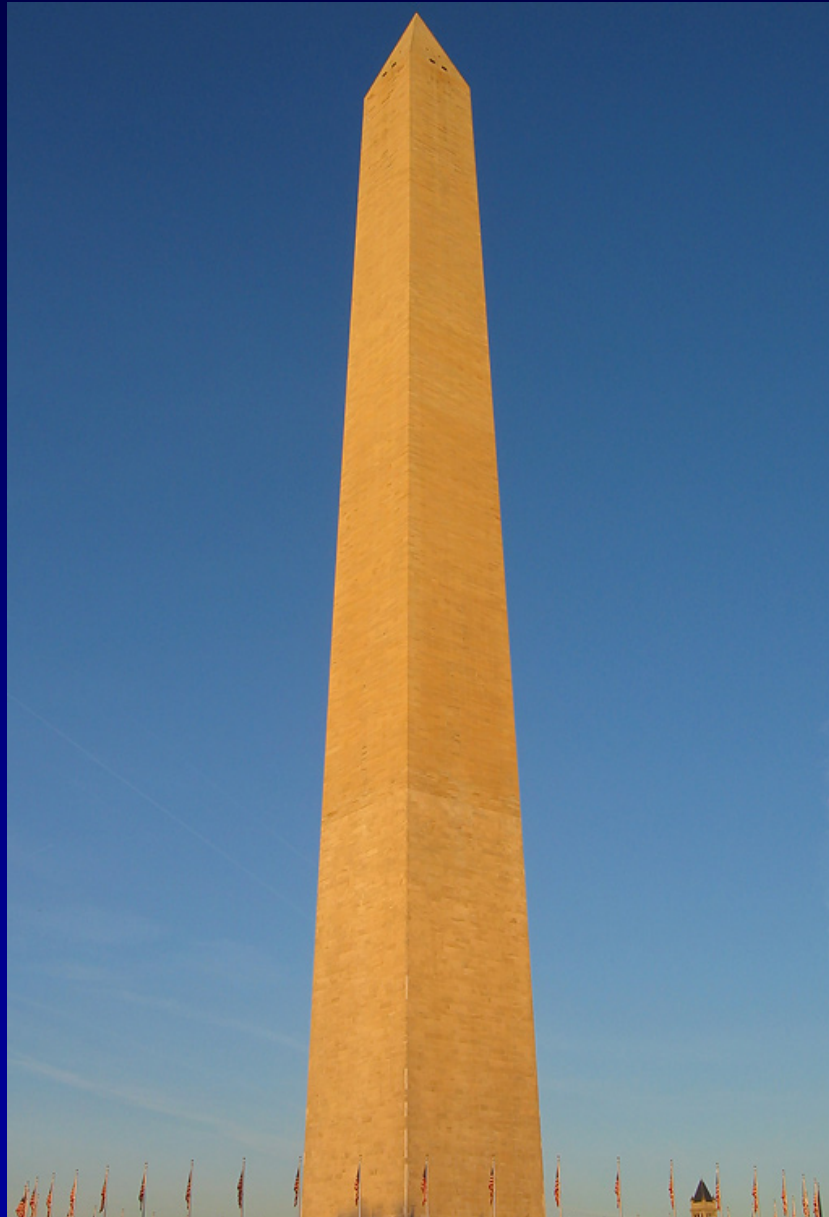


Photo by Km164/ Wikipedia

South Florida/Caribbean Network I&M Program





Photo by NPS

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Photo by Judd Patterson

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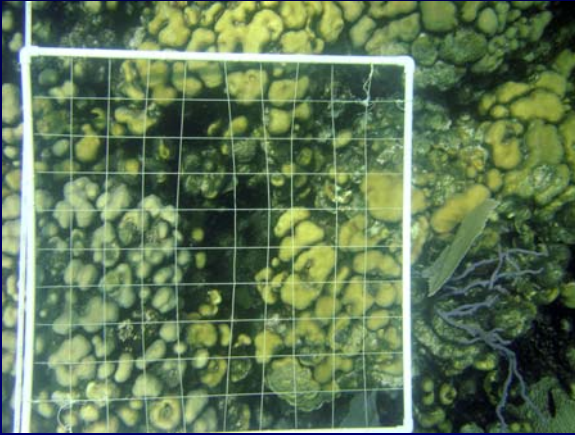


Photo by Judd Patterson

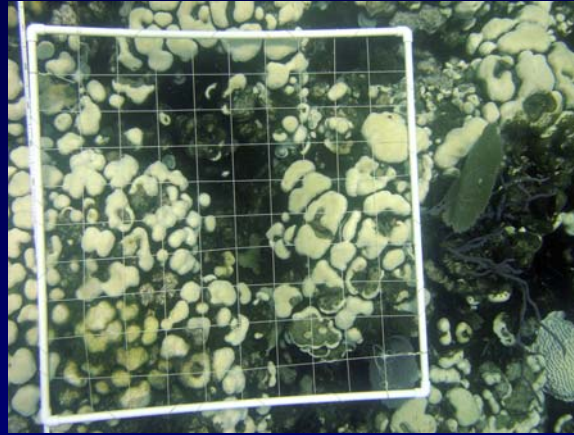
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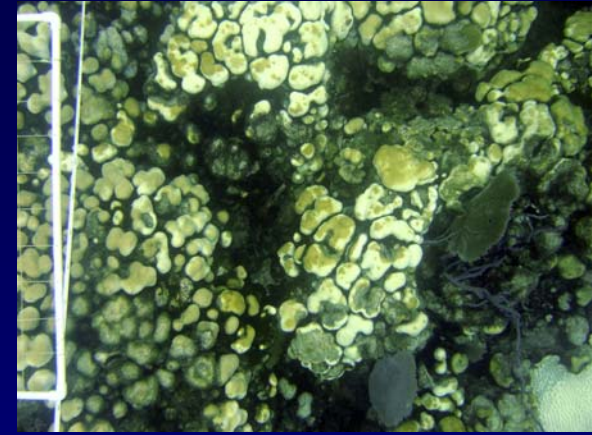
Bleaching – Disease connection



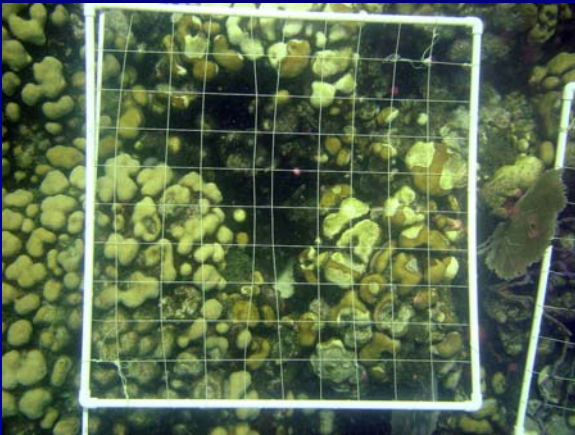
August



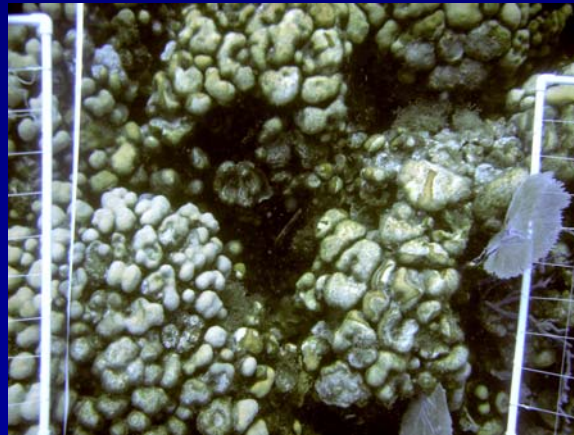
September



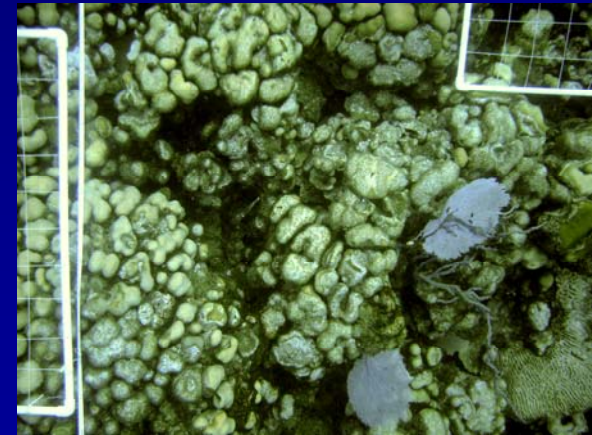
October



November

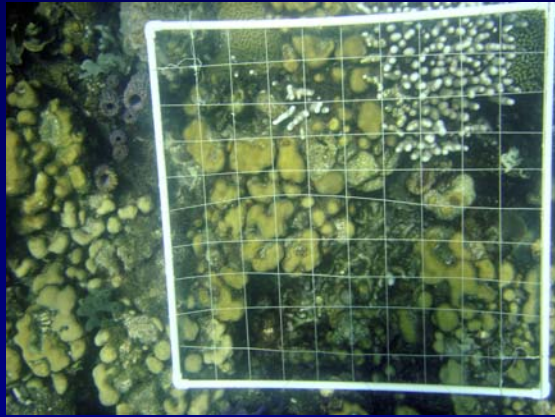


December

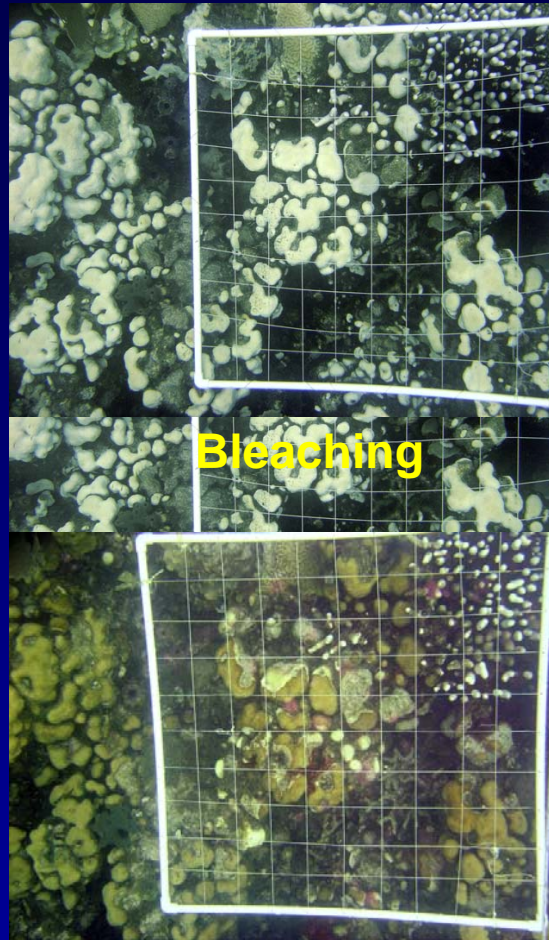


January

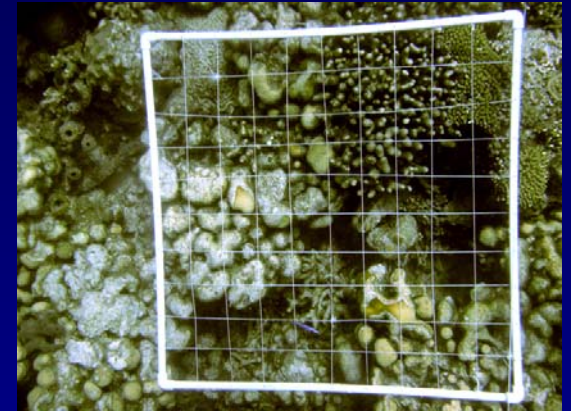
Bleaching – Disease connection



2005

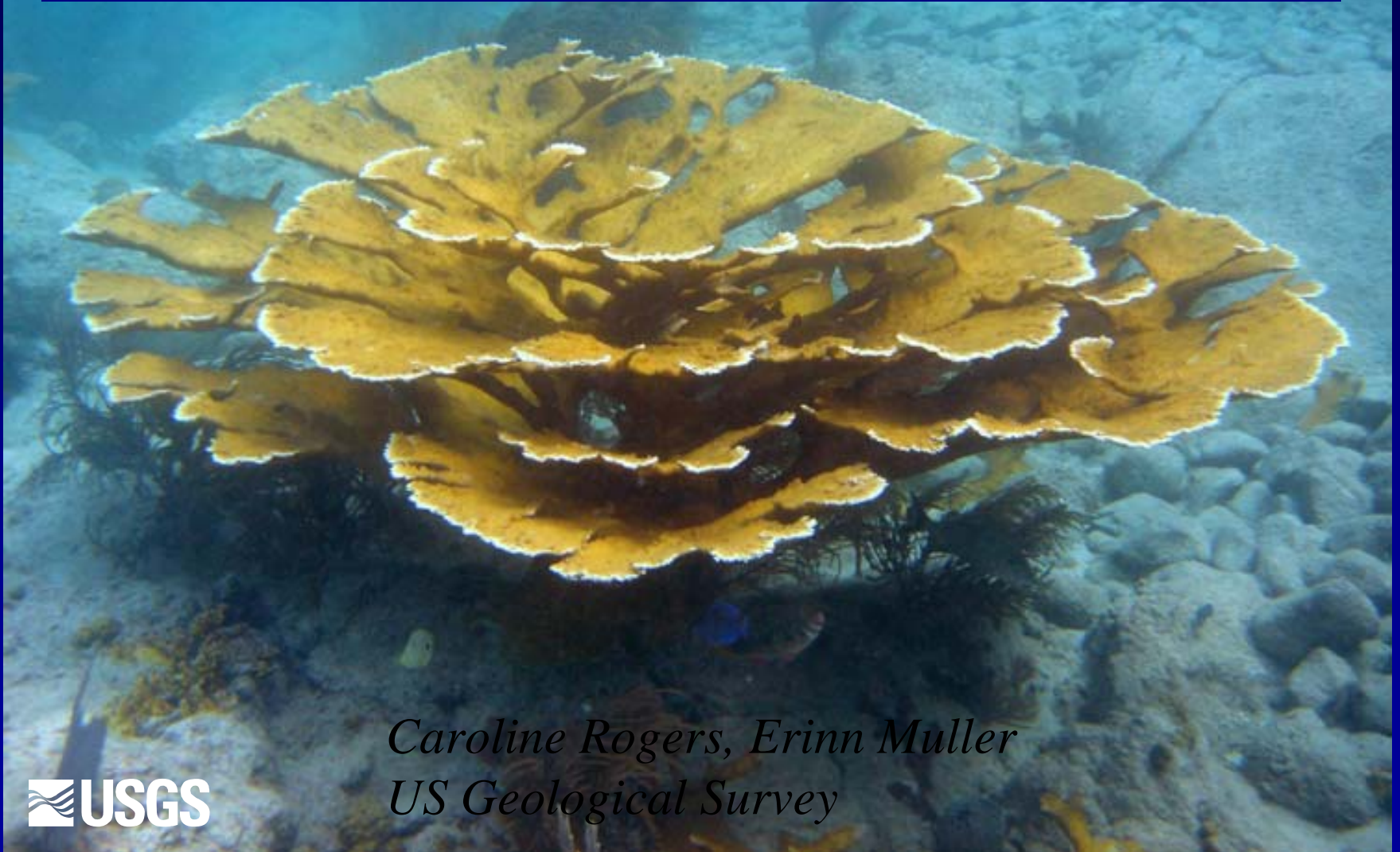


Disease



2006

Response of *Acropora palmata* (elkhorn coral) to bleaching in the US Virgin Islands



Caroline Rogers, Erinn Muller
US Geological Survey

Why is elkhorn coral important?

- Large, complex colonies create the architecture of the reef
- Habitat for high diversity of organisms—fishes, sea turtles
- Proposed for listing as threatened--ESA





Extensive losses from disease
and hurricanes—1970s, 1980s

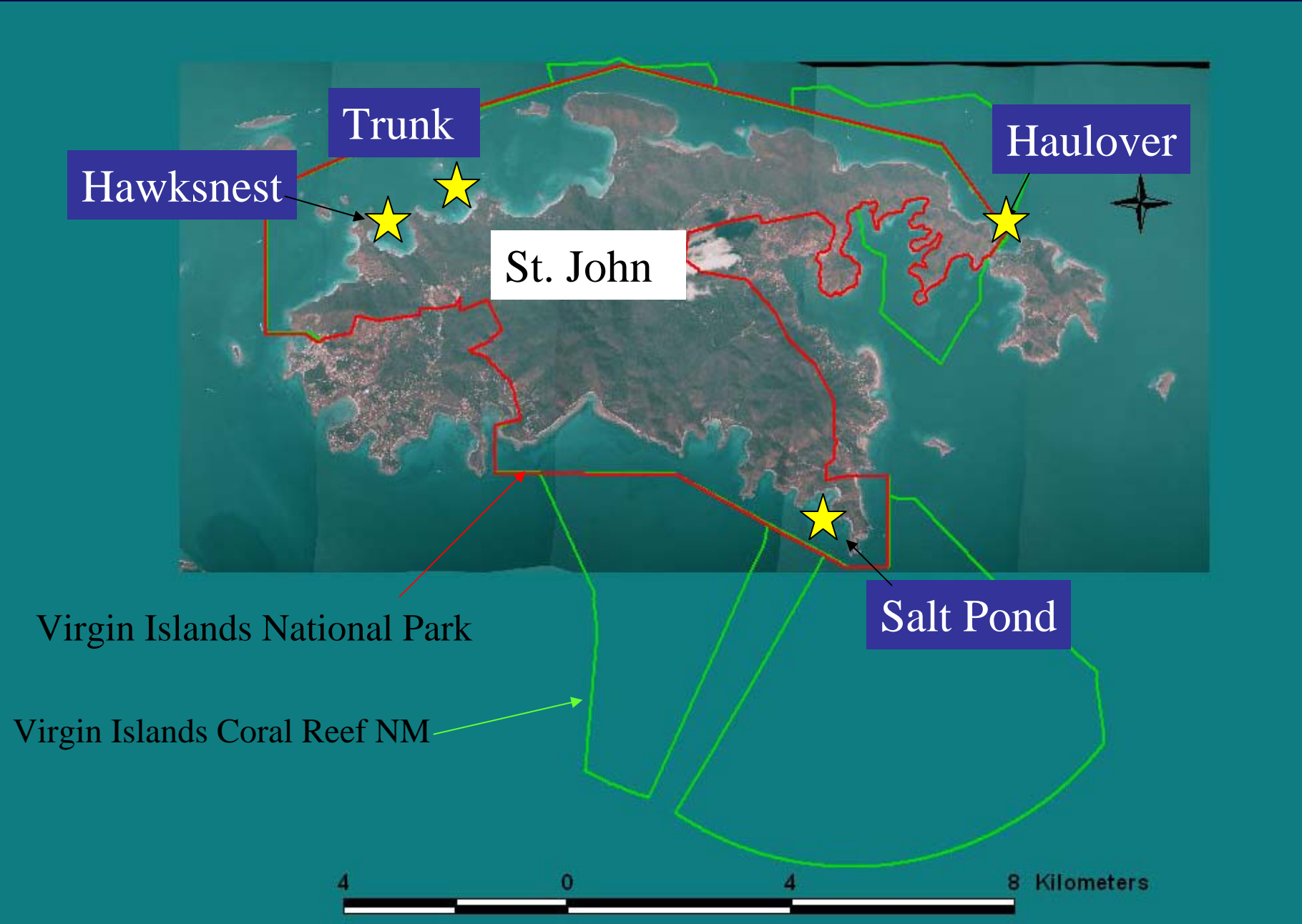
Monthly Monitoring of individual *Acropora palmata* colonies

460+ individual *A. palmata* colonies

4 sites within Virgin Islands National Park



Disease, physical damage, other factors that could limit recovery



Trunk

Hawksnest

Haulover

St. John

Salt Pond

Virgin Islands National Park

Virgin Islands Coral Reef NM



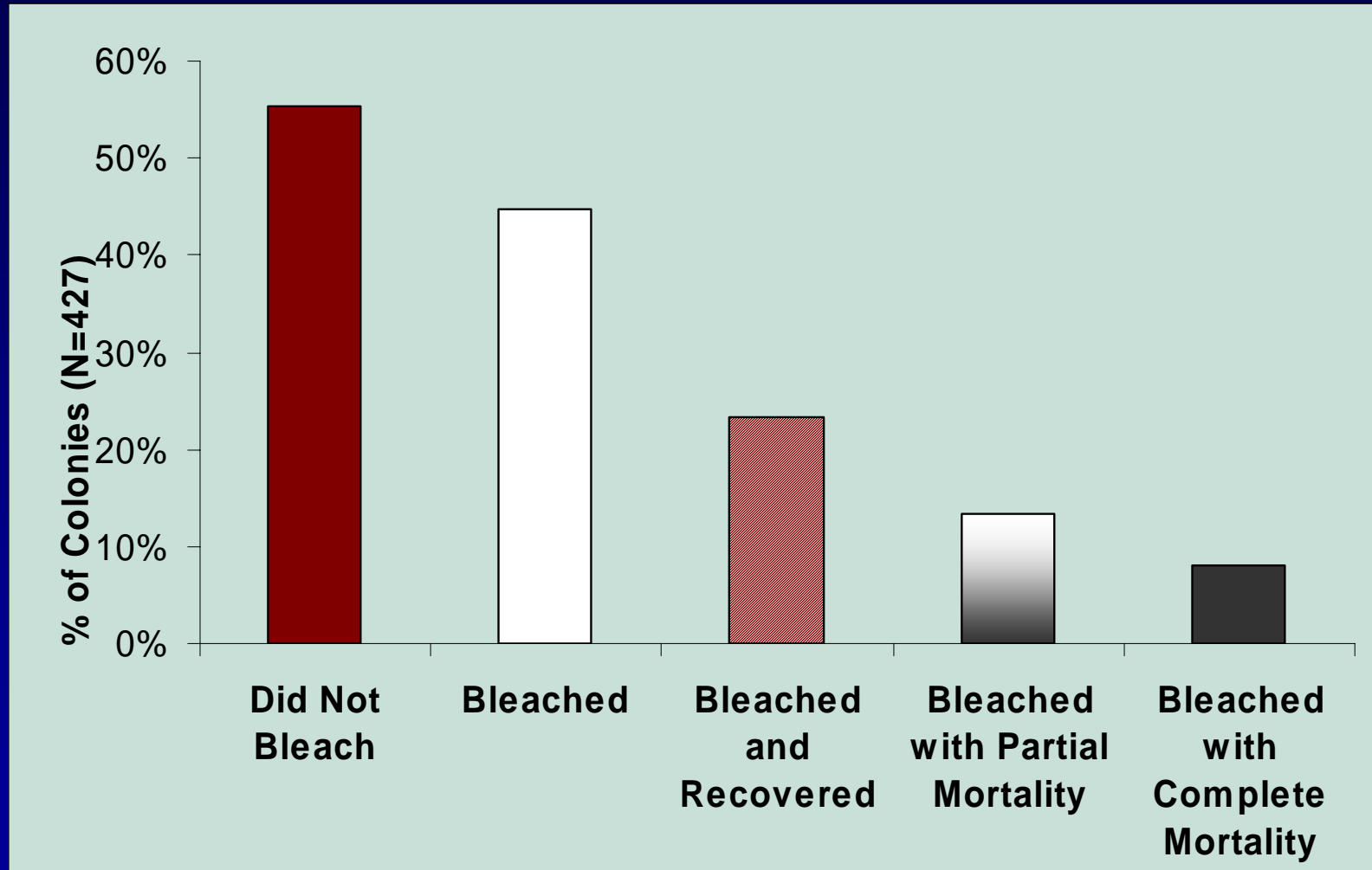
First Record of Elkhorn Bleaching--USVI

Summer/Fall 2005

- September 8, 2005-
paling of branch tips
- September 28, 2005-
severe bleaching of some
colonies



Response of elkhorn coral from St. John study sites





- Diseases have caused more mortality than bleaching at some sites
- Vulnerable to physical damage





Longterm *A. palmata* monitoring sites





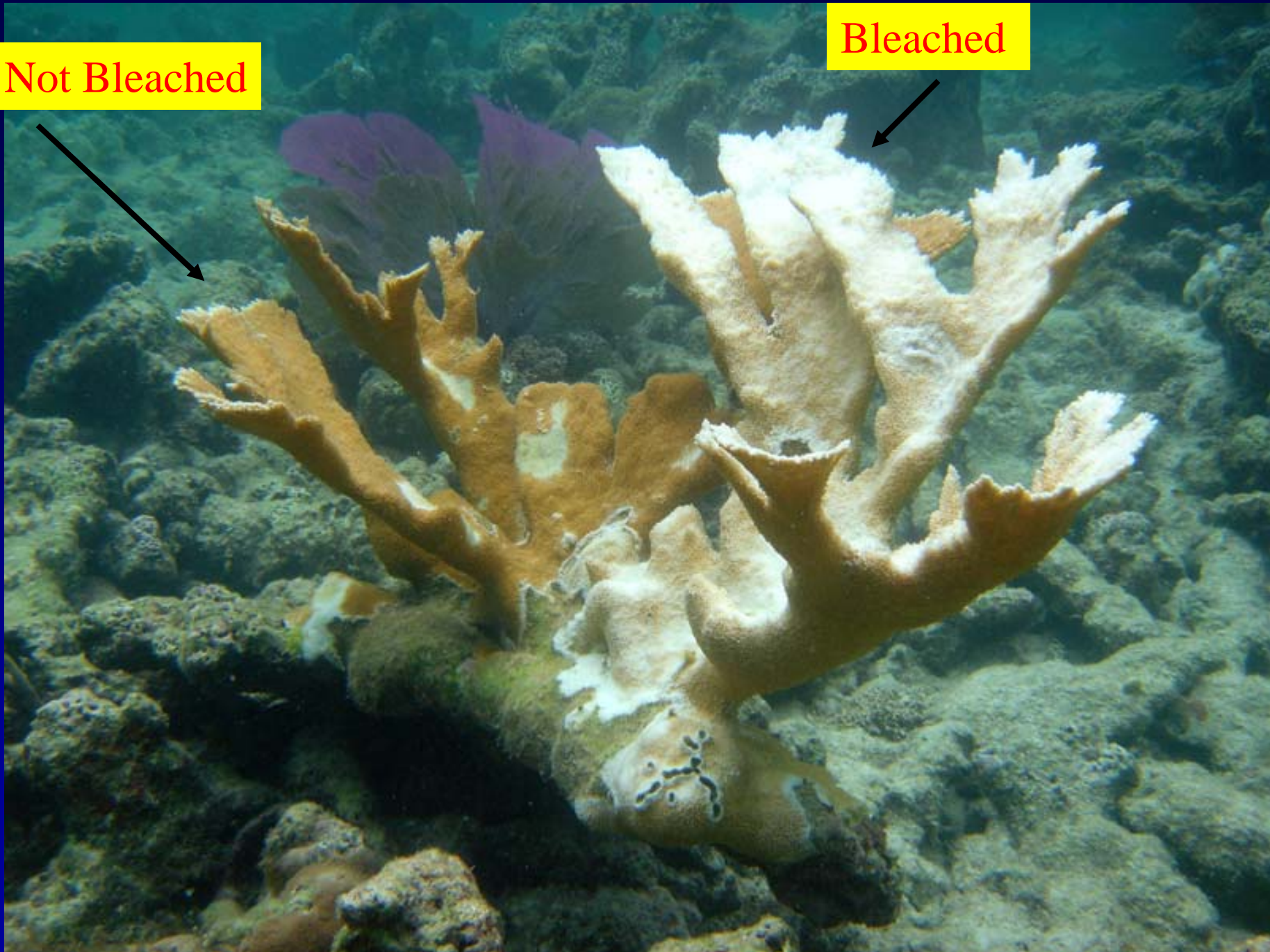
Bleached elkhorn coral, Buck Island Reef National Monument.



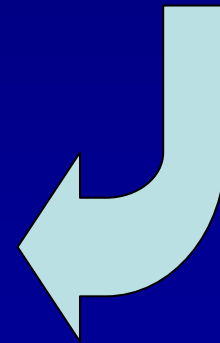
Colonies larger than around St. John—Higher mortality

Not Bleached

Bleached



2 Genetically Different Corals



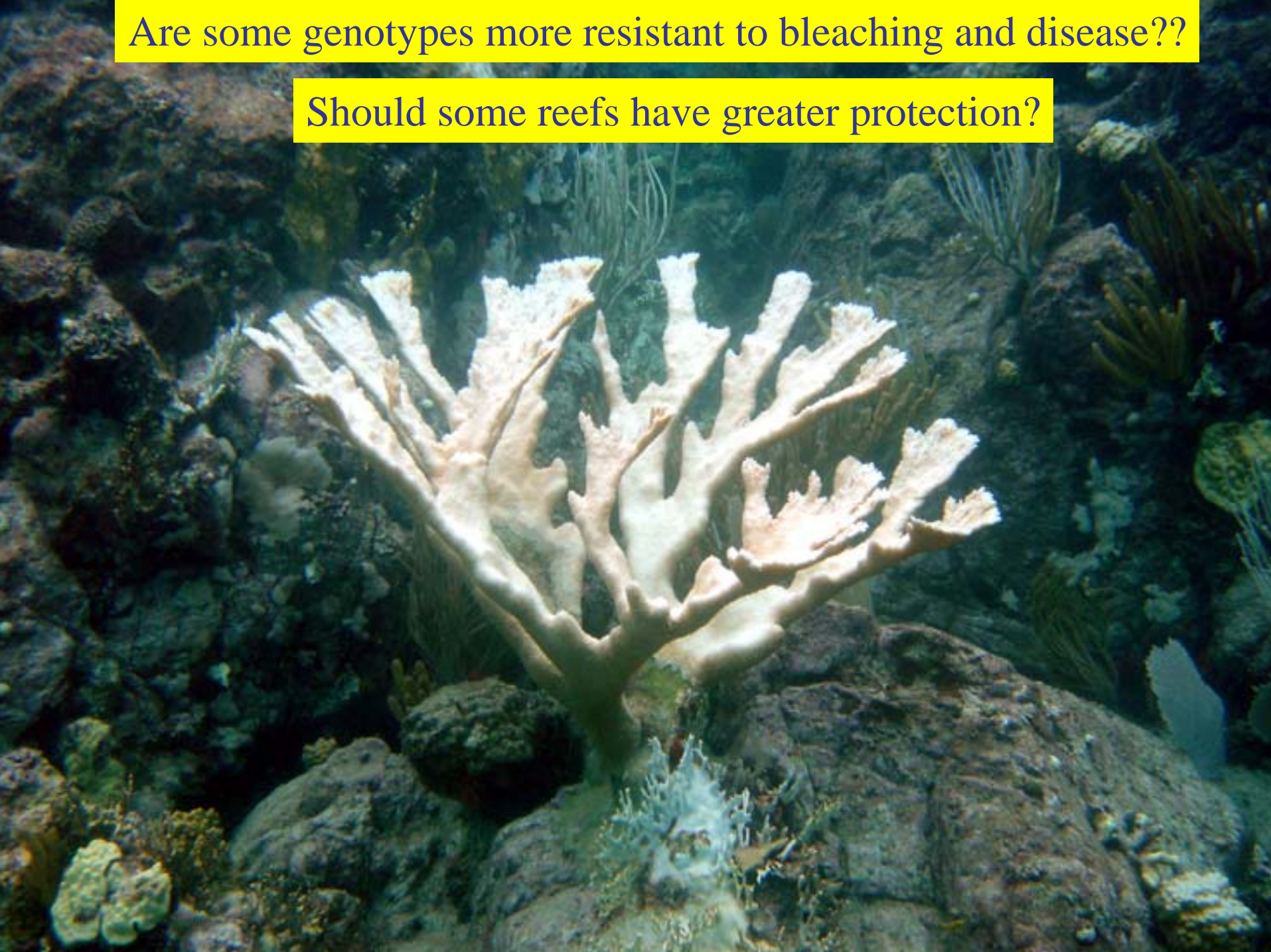
On the Cutting Edge



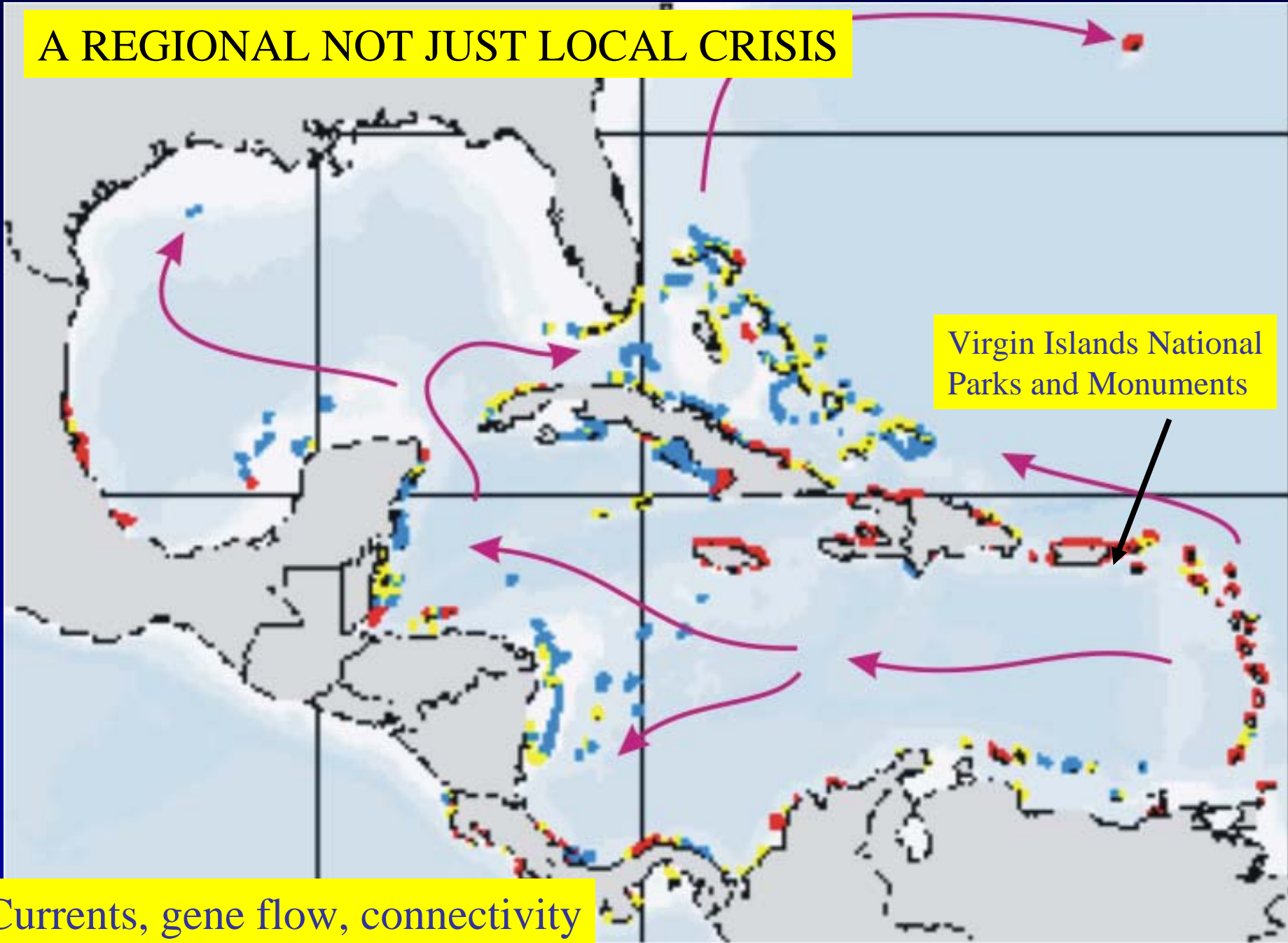
USGS has developed a new, non-destructive sampling method

Are some genotypes more resistant to bleaching and disease??

Should some reefs have greater protection?



A REGIONAL NOT JUST LOCAL CRISIS



Virgin Islands National Parks and Monuments

Currents, gene flow, connectivity



- Supported by, USGS, NPS, NOAA, UVI, Disney Wildlife Conservation Fund
- Special thanks to Tony Spitzack, Pedro Nieves, Hank Tonnemacher, Ian Lundgren, Barry Devine, Bane Schill, Mark Monaco, Chris Caldow, Iliana Baums, and numerous volunteers