

An underwater photograph of a coral reef. The coral is a large, flat, brownish-green species, likely Acropora palmata, showing signs of bleaching or disease. The water is clear, and the lighting is natural, highlighting the texture of the coral.

**How prevalent are
Acropora palmata diseases
around South Caicos?**

by Jenny Lentz



Introduction



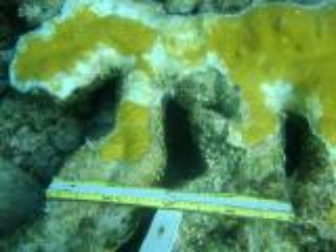
- Caribbean *A. palmata* have decreased over 95% over the past 30 years
- *A. palmata* is currently listed as a candidate for the list of Threatened Species under the ESA
- Many causes for degradation (hurricane, snail predation, sedimentation, bleaching, overfishing, etc)
- Primary cause of mortality are the fast spreading White Band Disease (WBD) & White Pox Disease (WPD)



Purpose of this Study



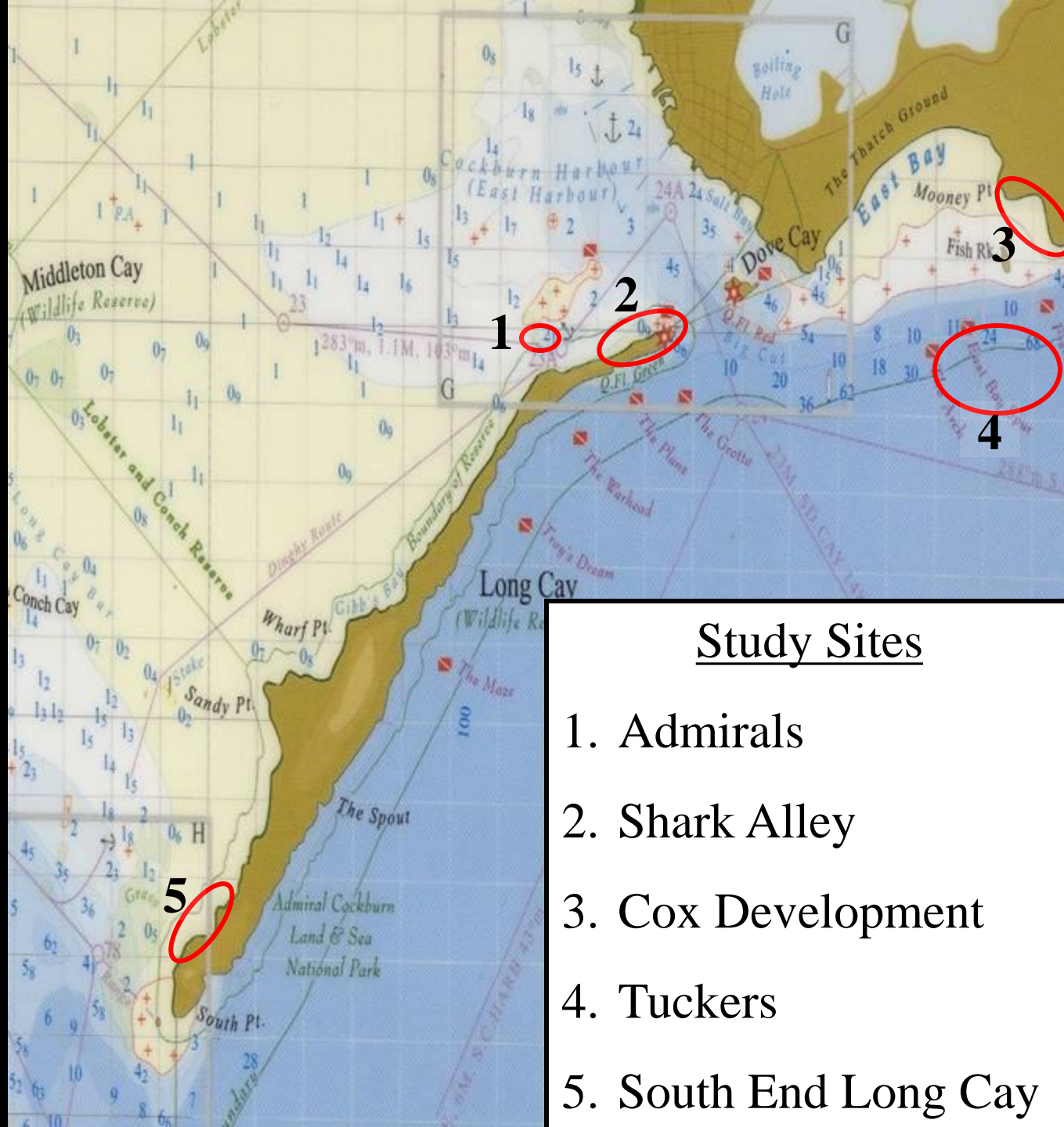
- Determine the relative health and abundance of *Acropora palmata* populations around South Caicos Island
- Are diseases present
 - ↳ if so: - how abundant are they
 - what is their rate of spread
 - how does this compare to other studies



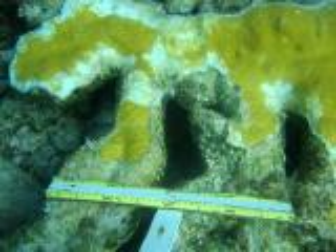
Materials and Methods



- Tag & measure all *A. palmata* colonies at each site
- Estimate the percent Recent and Total mortality for each colony
- Tag, Measure, and photograph each disease occurrence on each colony



- ### Study Sites
1. Admirals
 2. Shark Alley
 3. Cox Development
 4. Tuckers
 5. South End Long Cay



Materials and Methods

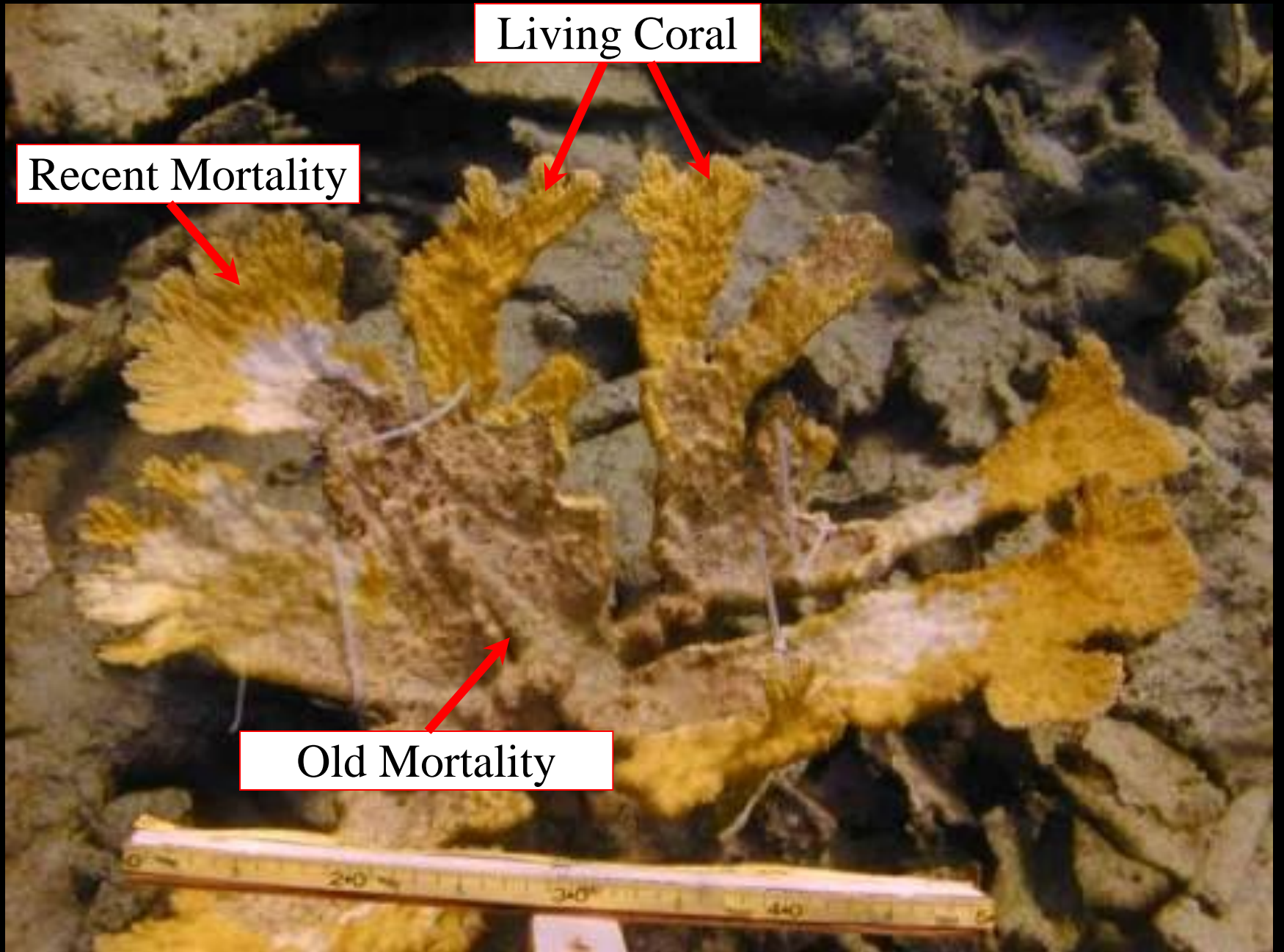


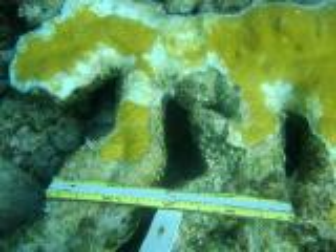
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Living Coral

Recent Mortality

Old Mortality



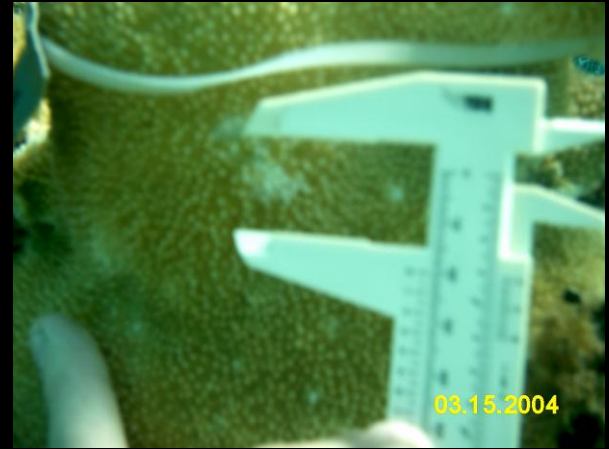


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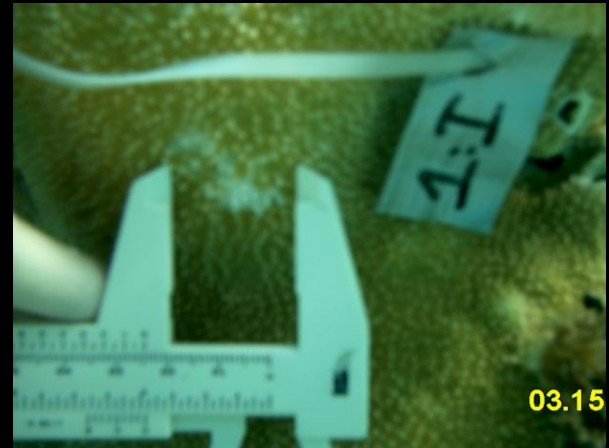


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How to Measure WBD & WPDa



Height

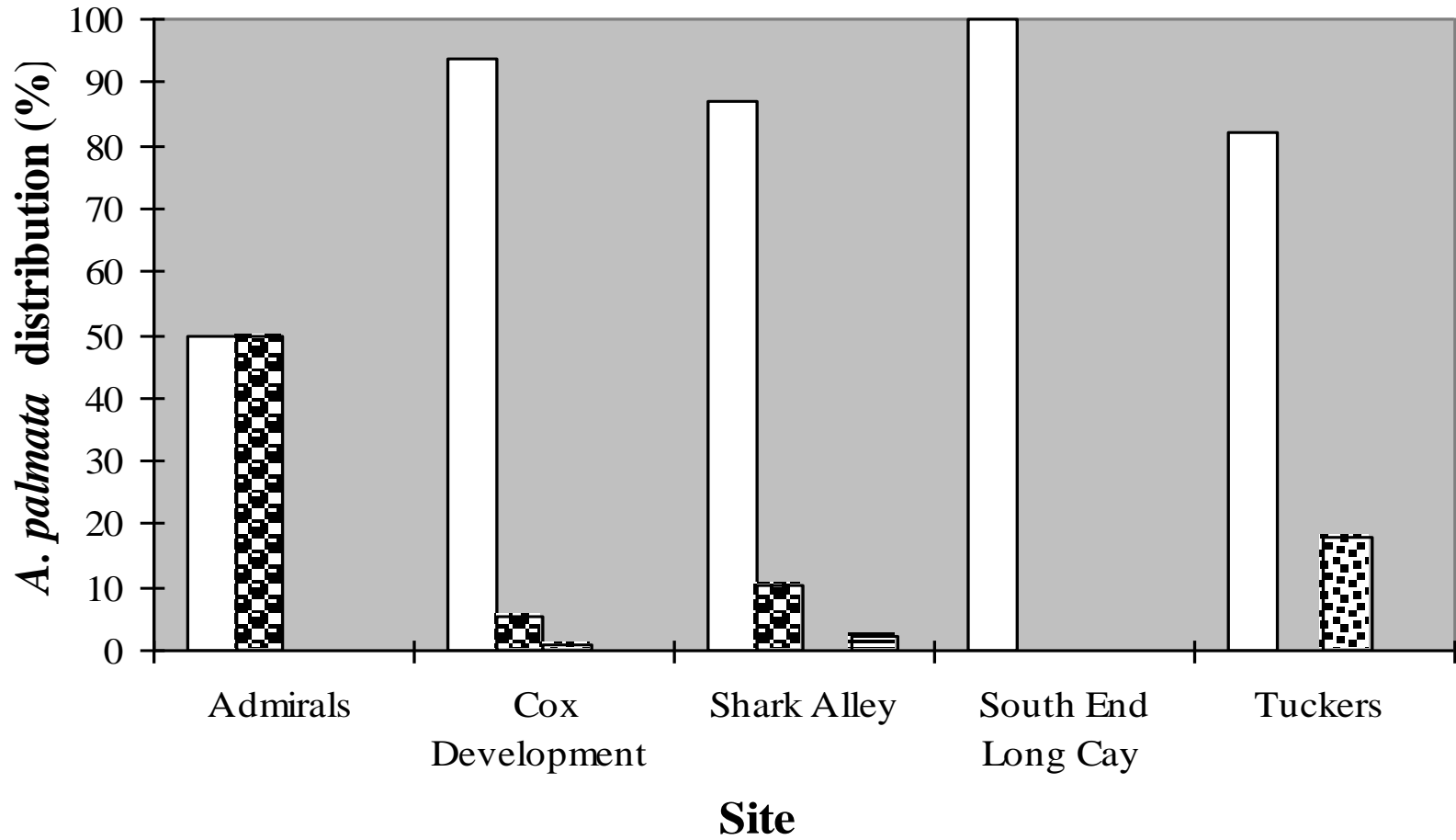


Width

Results

- Disease distribution
- Atypical White Band Spread
- Two types of White Pox spread (WPD_a & WPD_b)
- Spread rate variation between & among reefs
- Photographic analysis

Disease prevalence per site



□ % Heathy ▣ % WPDa ▤ % WPDb ▥ % WBD

Results

- Disease distribution
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White Band Disease (WBD)



Typical



What we found

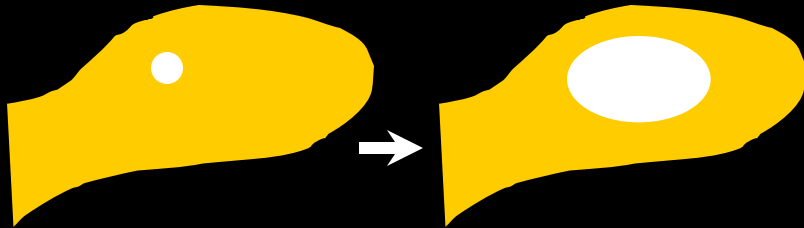
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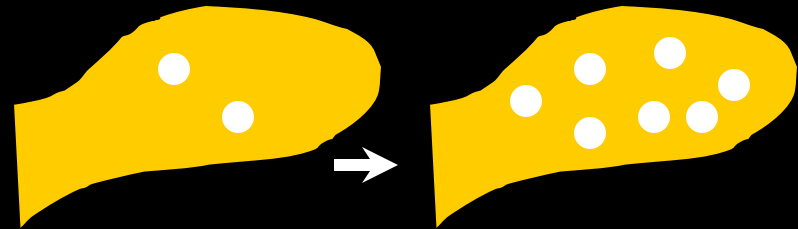
White Pox Disease

Method of disease spread

WPDa



WPDb



Field Shots



WPDa



WPDb

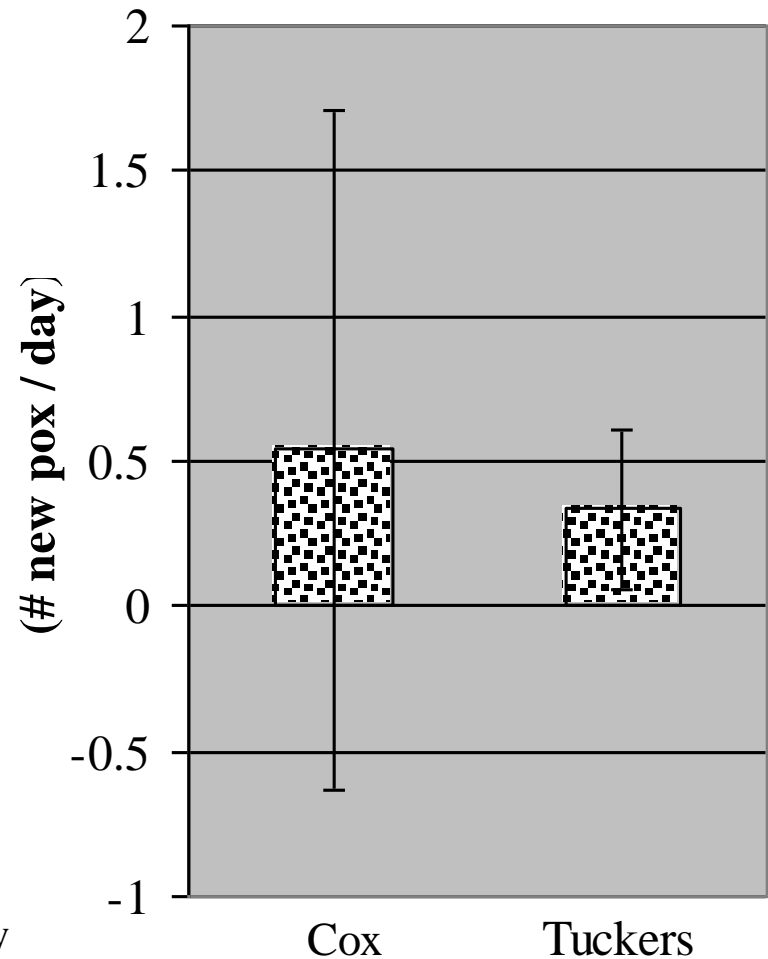
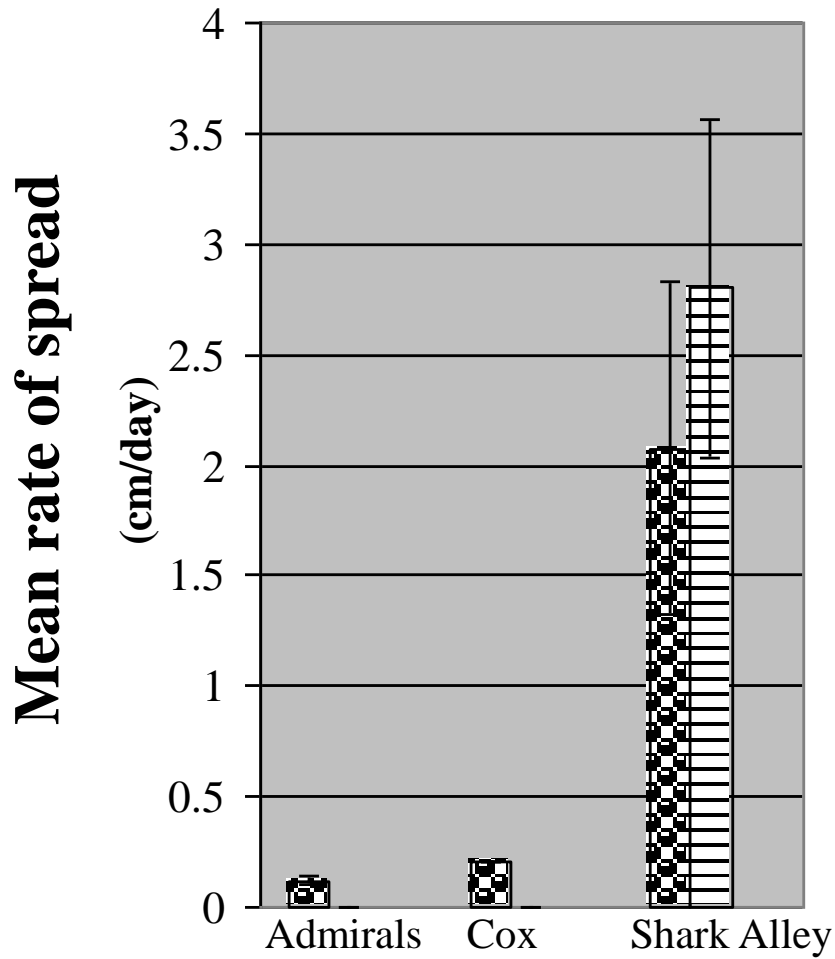
Results

- Disease distribution
- Atypical White Band Spread
- Two types of White Pox spread (WPDa & WPDb)
- High spread rate variation between & among reefs
- Photographic analysis

Disease Distribution per site

WPDa & WBD

WPDb



Site

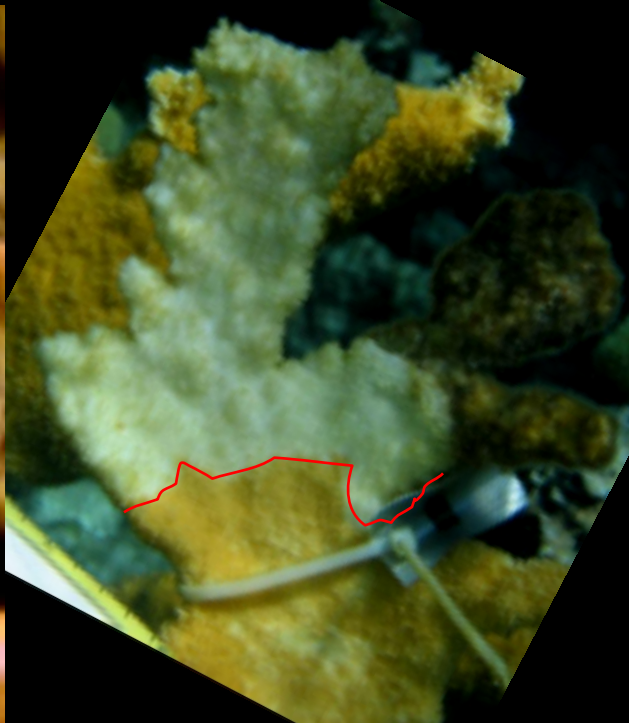
Results

- Disease distribution
- Atypical White Band Spread
- Two types of White Pox spread (WPDa & WPDb)
- Spread rate variation between & among reefs
- Photographic analysis

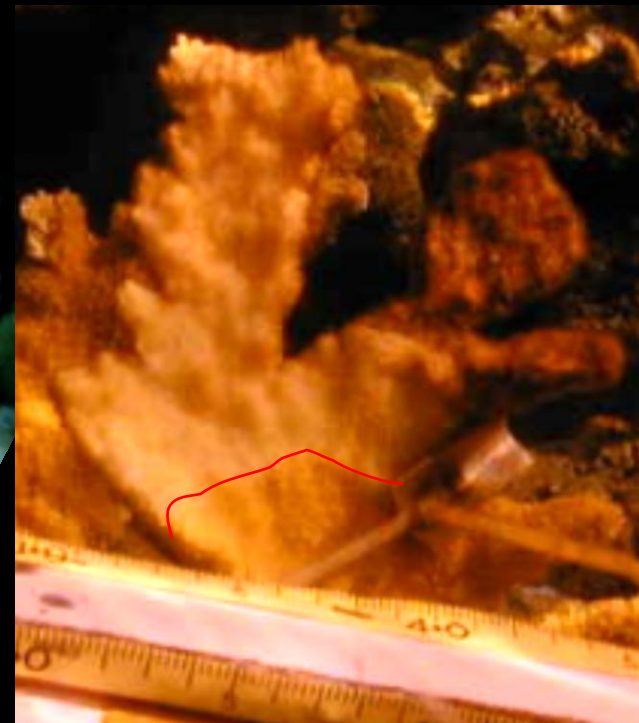
Photographic Analysis of White Band Disease Spread



March 24th



March 30th



April 9th

0.21 cm²/day higher mean rate of spread with photo measurements



Discussion



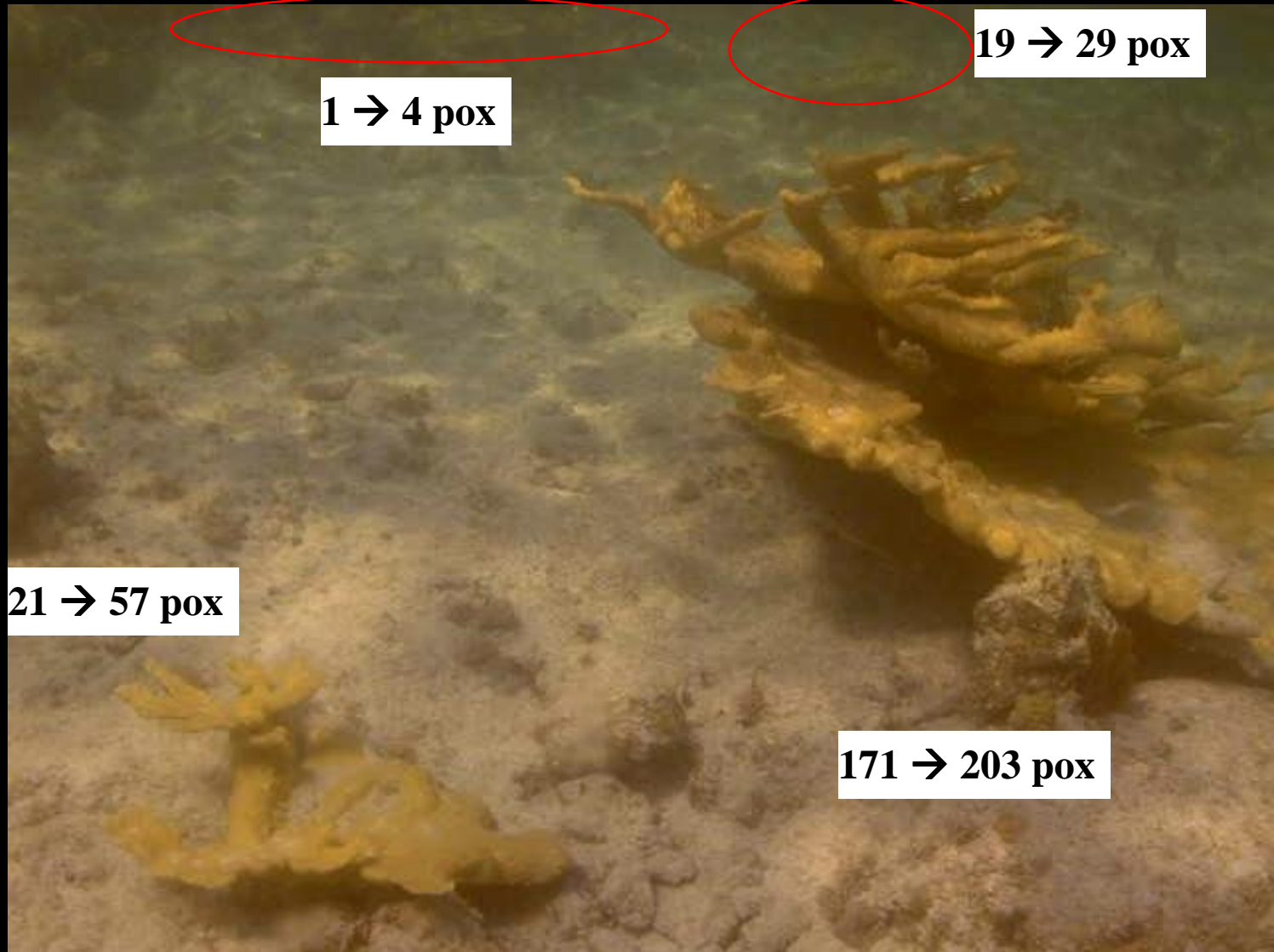
- TCI *A. palmata* reefs were found to be much healthier than USVI reefs
- Found a new type of WBD
(slightly higher mean spread rates, MUCH higher maximum rates)
- Found 2 types of WPD spread
(WPDa had higher mean spread rate)
- Visual observations concur with Patterson's (2000) nearest neighbor contagion model

Cox Development



WPDb Distribution and Spread

(March 27th & April 3rd)





Conclusion



While the present condition of *A. palmata* populations around South Caicos is very good, the presence and high rates of spread of White Pox Disease are cause for concern. Since very little is currently known about coralline diseases, it is almost impossible to prevent their spread. Limiting the stressors on *A. palmata* is likely the best place to start.