

## Assignment for next class meeting

- Read Chapter 4 (Temperature Relations), be prepared to apply that information to an example in class
- Activate your CPS clicker OR contact me to get a time extension. (I will take attendance Thursday using the clickers)
  - Instructions at course website – [www3.uakron.edu/biology/mitchell/ecology/](http://www3.uakron.edu/biology/mitchell/ecology/)
  - Class code: **K46992L512**



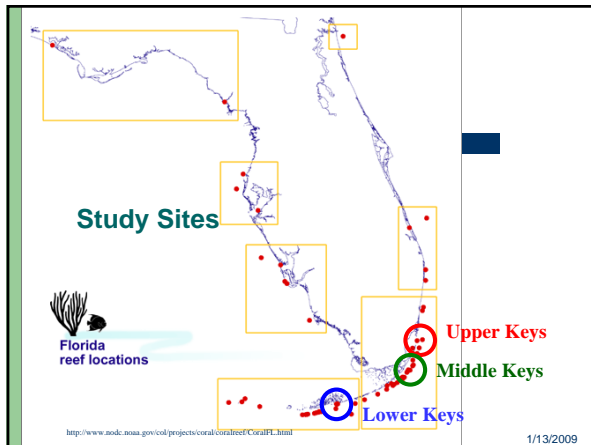
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## Coral Reefs

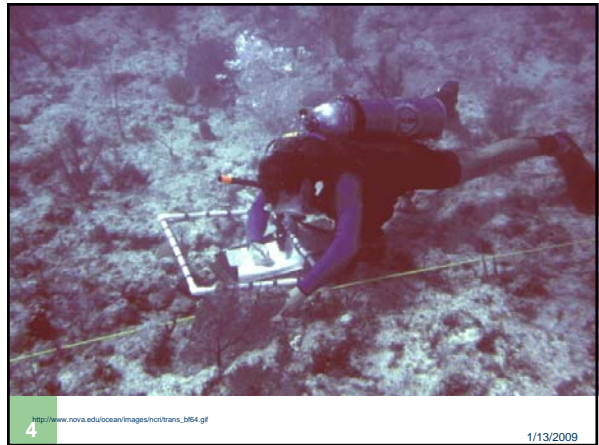


1/13/2009

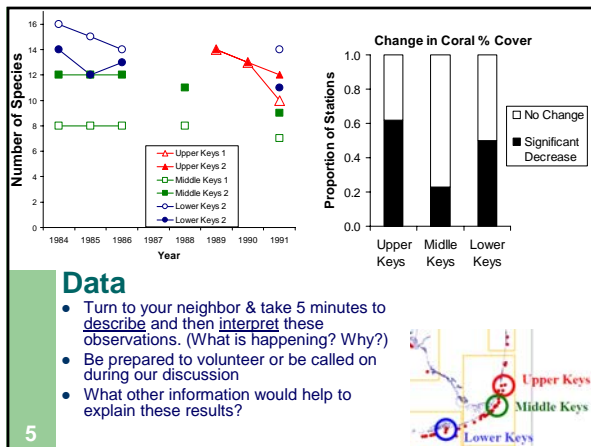
## Study Sites



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## Black Band disease



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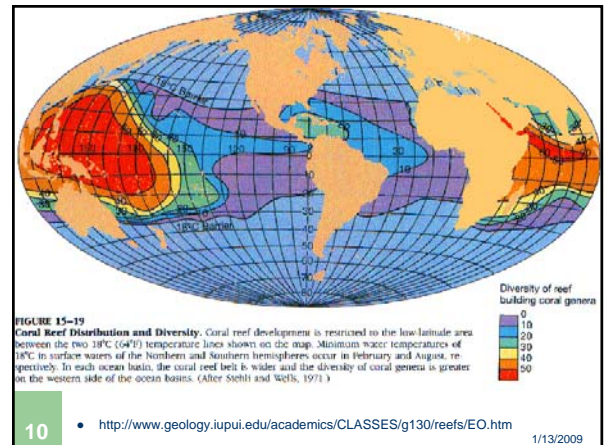
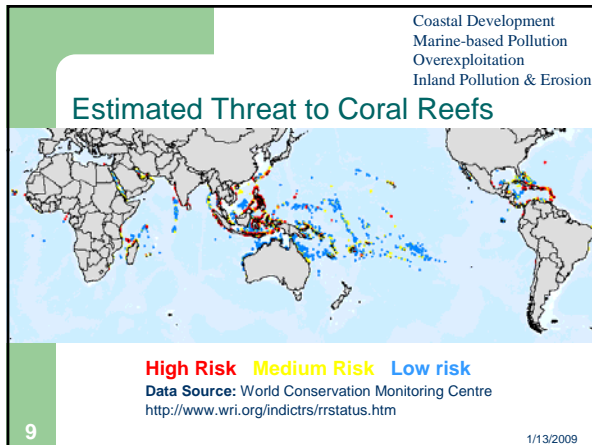


### Threats to Coral

- Diseases
- Reduced water flow
- Toxic chemicals
- Increased salinity
- Increased nutrients
- Low oxygen content events
- Increased water temperature
- Increased atmospheric CO<sub>2</sub>

<http://coris.noaa.gov/about/hazards/>  
Plastic bag on corals suffocates them

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### What can be done?

11 <http://www.sciencemag.org/cgi/content/full/318/5857/1712> 1/13/2009

### Effects of increasing CO<sub>2</sub>

$\text{CO}_2 + \text{H}_2\text{O} \rightleftharpoons \text{HCO}_3^- + \text{H}^+$

$\text{H}^+ + \text{CO}_3^{2-} \rightleftharpoons \text{HCO}_3^-$

$\text{CaCO}_3 \rightleftharpoons \text{Ca}^{2+} + \text{CO}_3^{2-}$  (coral)

More CO<sub>2</sub> → less carbonate (more acidic)

- Less carbonate means corals can't build CaCO<sub>3</sub> skeletons
- Blue dots are for observations over last 420,000 years (ice cores)
- Atmospheric CO<sub>2</sub>>480ppm will cause coral skeletons to dissolve
- Temperatures above the thermal threshold cause symbiotic zooxanthellae to abandon the coral

Science, December 14 2007

12 <http://www.sciencemag.org/cgi/content/full/318/5857/1737> 1/13/2009

