

April 20, 2015

## Threats to Biodiversity Part 3- Global Climate Change

### Announcements

- YouTube video= due by Wednesday April 22
- Critical Thinking Question #7 due Sunday, April 26<sup>th</sup>, 11:59 pm
- Quiz 9 now available due Sunday, April 26<sup>th</sup>, 11:59 pm
- Last day of Classes= Monday, April 27<sup>th</sup>
- Final Exam Monday May 4 1300-1550
  - o Office Hours: 0900 to 1200

### Threats to Global Biodiversity

- Global Climate Change: change in climate and environmental factors
- Climate vs. Weather
  - o Climate: main factor in distribution of organisms and ecosystems
    - Ecosystem services
    - Community interactions
    - Biogeochemical Cycles (nutrient cycles)
    - Primary Production (energy flow in the system)
  - o Weather is what happens right now
- “Change” occurring at a faster rate than historical changes
- Adaptation by organisms is a slow process
  - o Can species “keep up?”
- Interactions between other threats to biodiversity and climate change
  - o Small populations= low genetic diversity

- Can they change?

Clicker Question: Which do you think is more controversial?

- a) The causes of climate change
- b) The effects of climate change
- Teacher trend shows that people are realizing that things are happening and that the effects of climate change are real
  - o More controversy with what is actually causing the climate change

Carbon Footprint

- Avg foot print/person in US = 20.40 metric tons
- Avg food print for industrial nations = 11 metric tons
- Avg worldwide carbon footprint = 4 metric tons
- Worldwide target= 2 metric tons
- As population is growing the carbon foot print grows
- Clicker Question: How does your carbon footprint compare?
  - a) More than US average
  - b) Below US average
  - c) Same as average

Greenhouse gases

Global Climate Change

- IPCC: Intergovernmental Panel on Climate Change
  - o International scientific collaboration to asses global causes and effects of climate change
  - o Latest report published in 2014

- Documented several changes in Climate
- Changes in Climate
  - Ocean acidification
  - Increased Global temperature
    - Decrease in polar ice
    - Sea level rise
    - Change in weather patterns

#### Ocean Acidification

- Ocean absorb ~25% of CO<sub>2</sub> from atmosphere
- Between 1751-1994, pH of ocean decreased by 0.1 pH units
  - ~30% increase in acidity

#### Increase in Temperature

- Average global temperature= +0.85°C in last 100 years
  - 0.6°C of that increase was in last 30 years
- Varies by region- greater increase seen in high northern latitudes
  - Northern Canada and Alaska have had an increase of 1.4°C since 1961

#### Natural Cycle or Human-Induced Warming?

- Computer models' reconstruction of past temperatures
  - Considering only natural causes
    - The average temperatures predicted by the model and actual temperatures do not match, especially after 1960
  - Considering Natural and Anthropogenic causes