April 1, 2015

Communities: Part 2

Announcements

- Quiz 7 now available
    - Due Sunday, April 5, 11:59pm
- Critical thinking #5 now available
    - Due Monday, April 6 11:59 pm

Community Interactions

- Important to study for conservation efforts
- Interaction strength can be species specific
    - Species may only directly affect one other species
    - Species may interact with large number of species
        - Foundation Species
        - Ecosystem Engineers
        - Keystone Species

Dominant or Foundation Species

- Most common in the community
- Species in high abundance or large biomass
- Strong effect on other species in community
- i.e. Trees in a Forest are most dominant species in forest habitats
    - Found in such high abundance
    - Create habitat for species living in the forest

Ecosystem Engineers

- Species create, modify, or maintain physical habitat for use by other species
- i.e. Oysters, Mangroves, Woodpeckers, kel, and beavers
    - Oysters: little and invertebrate
        - Grow on top of each other and serve as habitat for fish and crabs
    - Mangroves: Grow at edge of shoreline (water meets land)
        - Create habitat for birds (nest in foliage), muscles (grow on roots), and fish (hide in roots)
    - Kelp: microalgae (no differentiated tissue)
        - Grows in barren sand flat and creates environment
    - Woodpeckers and Beavers modify environment to make it more habitable
    - Pileated Woodpecker: one of largest woodpeckers (large strong beak) can create caverns and holes in living trees, not just dead ones
        - Caverns then become habitat for other species (owls and warblers)
    - Beavers: build dams in lakes and rivers that create large flooded pools and can change the flow of water
        - Creates more habitat for aquatic life

Keystone Species

- Species with an effect on the community greater than would be expected based on its biomass or abundance
- Dominant species has high abundance and biomass whereas key stone species has small abundance and biomass but is very important to the community
- i.e. Sea urchins: reduce amount of algae and promote settlement of coral

Communities change over time

- Communities are dynamic
    - Rate of change varies for different communities
- Communities interact with environment
    - Environmental change= community change
    - Anytime the environment changes the community can be expected to change
- "Agents of Change" can be natural or anthropogenic, biotic, or abiotic
    - Influences communities at multiple temporal and spatial scales
    - "Agents of Change"= factors or variables that lead to change in community;

      natural, anthropogenic, abiotic, and biotic variants of Agents of Change
- Species interactions
    - Coral and zooxanthellae
- Changes in abiotic factors
- Changes in biotic factors
- Catastrophic events
    - Tsunami
- Ocean Acidification

Agents of change: Biotic Factors

- Negative interactions
    - Parasitism
    - Predation
    - Competition
    - Herbivory