Lab this week:
meet SATURDAY south side BSE at 7am (return 6pm)
(see website for lab readings)

Global Climate Change Lecture Series
All lectures will take place at UA Centennial Hall.
http://cos.arizona.edu/climate/

10 October Question 4
Which unit of biology deserves protection? Why?
New Question!...
Habits and Ecosystems...

1971 Ramsar Wetlands (Iran)
   119 countries
   500 listed wetlands

1972 UN (UNEP)
   United Nations Environmental Program
   -include social issues

1992 Earth Summit (aka Rio Summit)
   -Agenda 21
     (environment, social issues, poverty,
      technology transfer, sustainability,
      water, pollution)
   -178 Governments
   -Developed countries aid developing
   -Sustainable Development
   -Polluter Pays
   -Convention on Global Warming
   -Convention on Biodiversity

http://www.pima.gov/cmo/sdcp/

Biological Basis of the Sonoran Desert Conservation Plan

Thanks to Bob Steidl and others…
SDCP Biological Goal

*Ensure the long-term survival of the full spectrum of plants and animals that are indigenous to Pima County...*

Approach

- Select elements for planning
- Establish *quantifiable* goals
- Develop *explicit* rules for reserve design process
- Organize, synthesize, and acquire information
- Evaluate
  - Establish, Monitor, Manage

Select Species

- Regionally “vulnerable” species
- Short-list of 55 species

*Species chosen should have little influence on ultimate reserve design*

Species List

- 9 mammals
- 8 birds
- 7 reptiles
- 2 frogs
- 6 fish
- 16 invertebrates
- 7 plants

- 7 bats
- 6 riparian
- 3 riparian
- all riparian
- all riparian
- mostly snails
- 2 riparian

>60% of plants and vertebrates associated with riparian environments

Species Information

- Natural history accounts
- Species-environment matrix
- Decide best method by which to achieve goals for each species
- Less helpful if:
  - either rare or common
  - on lands that are protected or off-limits
  - limited natural-history information
- Reduced from 55 to 44 species

Land Cover

*Composite Land Cover Map for Pima County*
Species Distributions

• Based on **models** rather than known locations or published distributions
• Developed to **predict species distributions based on potential habitat**
• Input and evaluation by **experts**
  – Habitat associations, known distribution
• Iterate
• Combine to identify areas of high species richness
Biological Core

Species Richness – Expert Opinion

Biologically Preferred

Riparian as Foundation for Linkages

Chapter 5 (Paradigms...)
- Genetic Diversity (MVP, PVA)
- Island Biogeography
- Metapopulations
- Habitat Heterogeneity
- Disturbance

Chap 6 – Genetics of Conservation Biology
Small Populations
- reduced gene flow
- inbreeding depression
- drift
- stochasticity
- effective population size ($N_e$)

Declining Populations

Effective Population Size

- $N_e = \frac{4N_mN_f}{N_m+N_f}$

Eg: a population of seals with 6 males and 150 females?

- $N_e = \frac{(4\times6\times150)}{(6+150)} = \sim23$