BIODIVERSITY AND ENDANGERED SPECIES

(the presented material is based on Duane Chapman, Environmental Economics: Theory, Application and Policy, Addison-Wesley 2000)
Public goods

- Habitat conservation that protect plant biodiversity
- Conservation activities to protect endangered wildlife (black rhinoceros) that has an existence value
Definition

• Genetic biodiversity

• Species biodiversity

• Debate about what measure to use (species per acre, categories per acre)

• Which are the pivotal species?
Definitions

• “Endangered” species means in danger of extinction throughout all or a significant portion of its range.

• “Threatened” or “Vulnerable” means likely to become endangered.
Legislation

• Nationally:
  U.S. Endangered Species Act
  (Fish and Wildlife Service)
• Internationally:
  Convention on International Trade in
  Endangered Species (CITES)
  International Union for the Conservation of
  Nature (IUCN)
Economic valuation of biodiversity

Nonhuman value + Total economic value

TEV= Direct use value
     Indirect use value
     Option value
     Bequest value
     Existence value
Passive non-use values as public goods

Passive non-use values are Existence value and Bequest value

Because of their non-market nature, economic valuation methods are important in determining the economic value of biodiversity or endangered species.
An example: The Spotted Owl

• The Northern spotted owl is listed as “threatened” by the U.S. Fish and Wildlife Service

• Two stylized facts:
  • The northern spotted owl has close “cousins” that are not threatened or endangered.
  • It nests in old-growth Douglas fir, which is a main source for the timber industry.
The Spotted Owl

• Economic analysis would calculate:
  - the willingness to pay by surveyed households for ecosystem protection
  - The opportunity cost of lost timber revenue and employment in the timber industry, as well as lost consumer surplus from higher timber prices
Some common features of providing public goods

• The benefits that individuals derive from public goods differ because of heterogeneity. This implies differences in support for programs that provide environmental services.

• Because of private underprovision of the good (free-riding problem), the public sector and NGOs are fundamental in funding public goods provision.

• Benefits are spread nationally, or even internationally, whereas the costs often are regional.
Examples of funding mechanisms

- U.S.: Conservation Reserve Program
  - Regional funds to buy water in western states
  - Government funds to finance purchases of resources to protect endangered species
  - The American Farmland Trust and the Trust for Public Lands invest in purchases of land to slow urban sprawl
- Debt for nature swaps
Strategies for targeting environmental services funds

- Maximize purchased land
- Maximize benefit (buy the highest quality land available)
- Maximize environmental benefit per dollar spent (benefit cost targeting)

Problem: slippage

An increase in output price may affect productive capacity (previously unused land will be brought into production).
CITES: Poaching and the ivory ban
CITES and the ivory ban

• As seen above, the direct effect of a trade ban is to decrease demand (through stigma effects amongst others) and reduce price and the quantity of poached ivory.

• But other issues arise:
  - a trade ban on African ivory may move markets to Asia
  - a trade ban devalues the resource even more and may thus increase extinction through habitat destruction