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

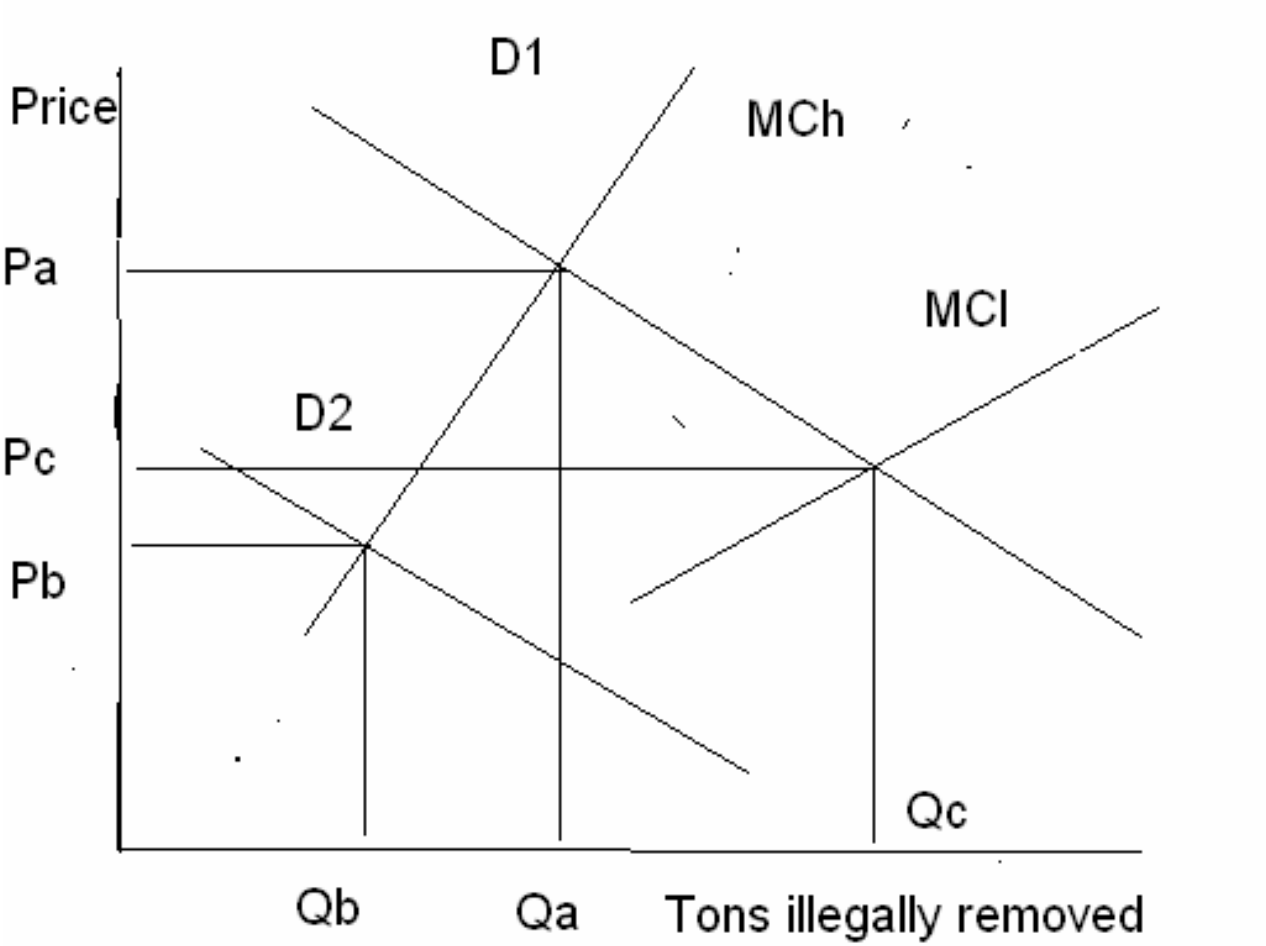
Strategies for targeting environmental services funds

- 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