ECN 371: Exercise set 6 - suggested answers

1. Policies for managing biological diversity in forests

   (a) I would suggest a two-tiered system, consisting of a reporting scheme and an auction scheme with the following characteristics:

   - Reporting: Any landowner who suspects he/she has any habitats which are candidates for a special management regime/preservation receives a yearly payment from the state if that is reported to the regulatory authorities. If surveys shows that this is correct, landowners keeps the payment. If no preservation values are found, the landowners must repay the compensation + an additional amount for incorrect filing. This solves the adverse selection problem/participation constraint for reporting for those who think they have something preservation worhty, while landowners with no such known values will not file.
   - Land owners where surveys document preservation values worthy of forestry restrictions, are invited to join an auction where those accepting these restrictions at the least costs, have these restrictions placed on their land use and receives their bid in compensation. Note that no landowner will deliver a bid that makes him/her worse of than they initially where.

   (b) It is possible to make land owners form teams that encompass such problems (see Lecture on teams for elements in such a regulatory scheme). Another alternative is to have special premiums paid if pre-surveys identify preservation worthy habitats crossing property borders.

   (c) The price info that becomes available from the auctions can be used in court settlements if landowners of unique habitats state bids that are unreasonably high.

2. Policies for managing large predators

   (a) Animal owners in an area are given a yearly compensation based on the expected damages from the areas' predator density (numer of predators per acreage) plus an extra payment. Those with lower losses than the average will know profit from having predators (thereby meeting the participation constraint), while those with higher losses will loose out and exit the industry. As a result, losses due to predators will be reduced, and hence also the compensatory payments to animal owners over time. Such a scheme provides incentives for animal owners to implement preventive measures (fences, herding) to reduce losses to the point where their marginal costs equal their expected marginal benefits, and is informationally viable. Questions remain regarding informational efficiency of the scheme.

   This does not solve the problem of poaching per se, but making they payment contingent on predator density inflict costs to animal owners of reducing predator stocks (the compensatory payment goes down).

(b) The problem of welfare losses for those living in rural areas is hard to correct. It is difficult to use valuation methods to elicit such losses (why?), making it hard to use compensatory payments. These welfare losses will, however, decline over time because: (i) persons experiencing these welfare losses are those living/having moved to an area prior to large predators coming to the same area, and (ii) over time information about the likelihood of encounters with large predators are gained. That does not imply that regulators can ignore these welfare losses. Several possibilities exists to reduce such losses, including:

- Allow hunting on predators that are too close to where people live. This may also make predators avoid areas where people frequent the most, thereby reducing the conflicts and responding to some of the concerns of rural dwellers.
- Improved transport services for children going to school/evening activities.

While such measures will not completely compensate rural dwellers for their losses, it will certainly reduce their losses. That constitutes a first step in a process on how to deal with the issue.