

**Econ 325: Environmental and Natural Resource Economics**  
**Fall 2007**  
**Problem Set 4**

Due in class: Thursday November 8, 2007

Instructions: Answer all 4 questions. Please show your work, and be sure to label all graphs accordingly.

1. According to the biological decision rule, when should a forested be harvested? Will this maximize economic efficiency? Explain.

2. With the aid of a graph, explain efficient conversion of forest land into agricultural land. Under what circumstances might this conversion be efficient?

3. With the aid of a graph, explain whether economic rent will be earned in the fishery? Why or why not?

4. Australian lobstermen fear a collapse of the lobster industry from over-harvesting. They are comparing various policy options for regulation. Use the following information to analyze their choice.

Suppose it costs \$30 for each lobster trap set. Lobsters sell for \$15. If  $X$  traps are set, the harvest rate of lobsters,  $L$ , as a function of the number of traps, is given by:

$$L = 45X - X^2.$$

- a. With no restrictions on the number of traps, and open access to the waters, how many traps will be set? How many lobsters will be harvested? How much profit will be realized from lobstering?
- b. Suppose lobstermen could limit the number of traps permitted. How many traps should be permitted, if Australia wanted to maximize overall profits from lobstering? How many lobsters would be harvested? What would total profits be from lobstering?