Appendix

I. Lecture Material

II. Management of Commercial Fisheries, Part 1 Worksheet Lecture Material (Appendix I)

1. Ask the students, "Who likes seafood?" followed by, "When was the last time you had fish or seafood for dinner?"
2. Allow the students to answer and maybe have a discussion of different types of seafood.
3. Then ask the students, "Where does seafood come from?"
4. Allow the students to answer and discuss were different types of seafood may come from such as crab, lobster, tuna, etc. (Alaska, Maine, open oceans etc)
5. When the discussion of where seafood comes from is over tell them all of these places are fisheries.
6. Place this material on an overhead or write on the board.
7. What constitutes a fishery? (Ask students to discuss what they think a fishery is.)
8. There are three interacting components that make up a fishery:

    - Habitat—the environment including both living and nonliving components in which the organism lives.
    - Biota—the living organisms in an ecosystem including fishes, plankton, aquatic insects, birds, and mammals.
    - People—users of the fishery and competitors for water from the fisheries.

9. A fishery can be found in both salt and fresh waters. (Have students discuss how these three components interact with each other.)

    Organisms ← → Habitat ← → People

    (Students know we use fisheries for food, ask them what other things we use them for.)

10. What other uses do we have for fisheries other than food?

- Employment
- Pet feeds
- Recreation
- Environmental indicators
- Research
- Aesthetic value

Statistic—Average Global fisheries harvest = 154–198 billion pounds

11. How is this harvest used?

1. Food
   - 70% of harvest is consumed by people
   - In U.S. average per capita consumption = 16 lb/yr
   - Good source of protein with less fat
2. Jewelry
   - Pearls
   - Mollusk, shells, corals
3. Personal Hygiene
   - Sponges
4. Fish leather and fur
   - Salmon skin wallets, purses, belts
   - Sea otter and seals fur for clothing
5. Thickening agents from seaweed
   - Agar
   - Paints
   - Drugs
6. Animal feeds
   - Cuttle bones for birds
   - Fish products for cat and dog foods
7. Pets
   - Tropical fish

8. Recreation
    - Sport fisherman—3 billion people age 16 and over went fishing in 1991 (Most significant nonfood fishery product)

12. Have students discuss how they use a fishery and ask if they are surprised at some of the uses of a fishery. Make sure students understand what a fishery is before you go on. Reteach if necessary.
13. What are renewable and nonrenewable resources?
    - Renewable resource—resource that can be taken from the environment and is replaced relatively quickly (fish, trees, etc.).
    - Nonrenewable resource—resource that cannot be replace once it is taken out of the environment (fossil fuels, minerals, metals, etc.) .
14. Why are fish and fishery products considered renewable resources? (Have students discuss and give reasons.)
15. If fish and fisheries products are renewable resources does that mean we can take all we want from the fisheries and they will replenish themselves? (Have students discuss and help them understand that this is not so.)

Past fisheries history will show that this is not so. (Brief look into management.)

1. Prior to 1860
    - People thought the fisheries resource was inexhaustible
    - Fisheries used mainly for subsistence and commercial uses
    - Industrial Revolution of the late 1800s increased demand, improved processing and shipping, and improved fishing technology
2. 1860–Early 1900s
    - U.S. Fish Commission was created in 1871 to help regulate fisheries
    - Regulations initiated to protect fisheries
    - Technology continues to improve so harvests from fisheries increase
3. Early 1900s–1950
    - Over-fishing becomes a bigger problem

- Scientific studies increase to monitor fisheries and the impact on them due to over-fishing
- Attempts made to understand how water quality and fish life history effect a fisheries health

4. 1950–present
    - Economic view—producing economic value should outweigh producing physical yield (economics- law of supply and demand)
    - Sociological view—number of fish caught is not a good measure of angling experience
    - Ecological view—fisheries must be looked a in a broader sense: how the three interacting components affect each other when changes are made

(Make sure students understand the past history. Outline it for them showing how a once inexhaustible resource became depleted enough to make people start to wonder if their methods of harvesting were right. Show how steps have been made to create sustainable fisheries.)

16. Acts passed to help fisheries:

- Sport Fish Restoration Act (1950)—tax on fishing gear used to manage recreational fisheries
- Wallop Breaux Act—(1985) expanded tax on the above act
- Magnuson Fishery Conservation and Management Act (1976)—enforce a harvest of optimal sustainable yield in order to protect fisheries and extended U.S. boundaries to 200 miles in order to protect fisheries from large foreign fishing fleets

(Close the class with a summary of what has been taught. Have students describe a fishery to you: how it is a renewable resource, why we should manage it. Answer any questions.)