

## **Appendix**

- I. Lecture Material,
- II. II. M. of C. Fisheries Part 2, Worksheet Lecture Material

Use this sheet as your material to lecture. During the lecture ask questions and have the students discuss what you are talking about. Put the information on the board or on an overhead.

### **Past Fisheries Success vs. Present Fisheries Success (generalized)**

When commercial fishing started, there was a seemingly inexhaustible supply of fish to be caught. Commercial fisherman caught all that they could catch and thought there would be plenty to catch tomorrow. At first this belief seemed to be true, fisherman could go out everyday and catch large quantities of fish.

(Discuss why they could catch large quantities of fish in the beginning- never been fished before, large schools of fish, undisturbed habitat created ideal spawning grounds, etc.)

After a couple of years they started to notice a decline in the amount of fish that they caught. Some thought this was just a bad year for fishing but the decline continued. Even with advancements in technology the harvest continued to decline. Commercial companies fished harder and harder and the harvest kept declining. When one species of desired fish declined to a point where it could not be fished anymore they would find another species of fish to catch. This would allow the first species of fish to recover somewhat.

(Discuss what is happening with the declining fish populations and why a fish species could recover after over-fishing—renewable resource being used faster than it can be replaced, destruction of habitat due to over-fishing destroys spawning grounds, increased population leads to the damming of rivers which impedes access to spawning beds upstream, fish recover because they are a renewable resource.)

This cycle continues until a lot of fisheries are over-fished and harvest of most species is on the decline. That is when people start to realize that

fisheries are not an inexhaustible resource. They must be managed in order to ensure future use of them.

(Discuss from Part 1 some of the Acts that helped protect fisheries - formation of US Fish Commission, Sport Fish Restoration Act, Wallop Breaux Act, Magnuson Fishery Conservation and Management Act)

The passing of these acts has helped return some fisheries to a fishable state. The fisheries are not at their initial levels of fish nor will they ever be but they are at a sustainable level.

What are some reasons it is important to manage fisheries?

(Discuss what the students think are some reasons.)

First of all you must realize the benefits we receive from fisheries:

1. They provide a source of protein that is low in fat and had fewer calories than other meats.
2. Recreation—fishing, exercise, relaxation
3. Employment—charter boat for fishing trips
4. Related business— restaurants, marinas, bait shops, boat dealers
5. Commercial fishers—income
6. A way of life for some such as Native Americans

These are just a few benefits we receive from fisheries. As with all resources people place a value on the resource. These values represent both the satisfaction that people derive from a resource and the worth they place on them. These values include:

1. Social values
  - Cultural—collective feeling towards fish and wildlife. People like to know that these things exist.
  - Social—based on relationships between people as part of a family or community.
  - Psychological—relates to the satisfaction, attitudes, and motives associated with the use or with the knowledge of the existence of a fishery.
  - Physiologica— relates to the improvements in human health related to the sport of fishing.

## 2. Economic values

User:

- Consumptive (harvest by anglers)
- Non-consumptive (scuba diving)
- indirect (learn about fish)

Nonuser:

- Option (may use fishery sometime in the future)
- Existence (value the fishery because they know it is there)

## 3. Ecological values

Vital role in functioning of ecosystem

Fish are a good tool for people to learn about ecosystems and their processes and help monitor the quality of an aquatic environment.

(Discuss with the students how they value a fishery.)

As you can see there are many reasons we value a fishery. It is because of these reasons we must manage and protect our fisheries. If we do not manage the fisheries there will be nothing for future generations to catch and we will have lost a great resource. When we talk of fisheries management we are really talking about fisheries sustainability.

**Fisheries Sustainability**—the act of managing a fishery so that there are products to be harvested in the future and so that the fish populations can regenerate themselves at a level high enough to ensure a future population of fish.

How do we manage a fishery to ensure it sustainability? (Discuss with students to see what ideas they have)

1. Limit the amount of product that can be taken from a fishery. You can do this by issuing permits to limited number of commercial fishers, limits on the number of fish or on the weight of fish brought in, or limit the time a fisher can fish.
2. Use fishing methods that are more selective in the fish that they catch and that are less damaging to the ecosystem. Use nets that do not drag the bottom and disrupt spawning beds and vegetation needed by the aquatic organisms.

3. Fish for species that are plentiful enough to be able to recover from year to year. Do not fish for species that do not have the numbers to recover.
4. Reduce pollutants that harm fisheries. Fertilizer runoffs, open-ocean dumping, etc.

(Discuss with the students any ideas they may have on how to manage a fishery now that they have a little more information.)

Close class with a discussion on what they learned today and see if they understand the importance of fisheries and why we must protect them. Hand out worksheet.