SYNOPSIS:

When people think of farming, they often think of rows of crops or livestock. However, aquaculture is on the rise and may help alleviate our depleting natural fish stock. A wide variety of new jobs result from the emerging fish farming industry. Aquaculture is gaining popularity throughout many regions of the world. The contribution to global supplies of fish, crustaceans and mollusks continues to grow. Aquaculture is growing more rapidly than all other animal food producing sectors. This program highlights fish farming practices from the hatchery to the raising of the fish. Scientists must deal with obstacles like parasites and fish hatchery escapees that may negatively affect the environment.

CURRICULUM UNITS:

Biology
Ecology
Environmental Science
Marine Biology

CAREER OPPORTUNITIES:

Biologist
Environmentalist
Marine Biologist
Aquaculturist

PROGRAM OVERVIEW:

Large fishing fleets used to be the cornerstone of a thriving fishing industry. The oceans contain massive amounts of protein rich seafood. However, the established method of harvesting seafood by using massive fleets of fishing trawlers to harvest specific species is dangerous. Over fishing has depleted wild fish stocks and has threatened an ecosystem that supports a diversity of other species. The fishing industry is experiencing a well needed makeover. The best alternative to fishery over-harvesting is aquaculture. Many aquaculture practices have long researched the viability of raising species such as cod and halibut, but are just recently finding success. In addition, they have taken on research into newer species to farm, such as cobia or bluefin tuna. This will raise their diversity by creating business within new markets. On the other hand, salmon is a species that is commonly farmed. Leading producers of salmon are Scotland, Norway, Chile and British Columbia.

ISSUES & CRITICAL THINKING:

1) As a local coastal community member, list the advantages and disadvantages of permitting a large, commercial aquaculture fish farming busi ness to begin farming in your local environment. What agreements would be paramount before you would allow the aquaculture farming company a permit to begin?

2) Identify traits that are inherent in fish species that would make them good candidates for fish farm ing. Create a hierarchical list, with an explanation for your judgment, with fish species most likely to succeed in aquaculture environments.

3) Compare the issue of lice on salmon populations to the problems with land-farming infestations. How are researchers combating the problems using similar skills?

4) Develop a sustainable aquaculture farming plan, using one of the major world aquaculture species. Include factors such as environmental conditions, market value, consumer choices, ecological impact, and technological needs.

GLOSSARY:

Aquaculture: Cultivating marine or freshwater food fish, such as salmon and trout, or shellfish, such as oysters and clams, under controlled conditions.

Broodstock- Groups of sexually mature individuals of a cultured species kept for breeding purposes.

Dioxins- Toxic compounds that are carcinogenic and teratogenic in certain animals.

Fjords- Long, narrow, deep inlets of the sea between steep slopes.

Genetic Engineering- Development and application of scientific methods, procedures, and technologies that directly manipulate genetic material in order to alter the hereditary traits of a cell or organism.

Melatonin- A hormone produced in the pineal gland that plays a role in regulating biological rhythms, including sleep and reproductive cycles. In many animals, it also regulates the physiological effects that occur in response to seasonal changes.

Methane- (symbol: CH4) An odorless, colorless, flammable gas that is the major constituent of natural gas, and is used as a fuel; an important source of hydrogen and a wide variety of organic compounds.

Mollusks- Any invertebrates of the phylum Mollusca, typically having a calcareous shell of one, two, or more pieces that wholly or partly enclose the soft, unsegmented body. They include chitons, snails, bivalves, squids, and octopuses.

Protandric- Having male sexual organs while young, and female organs later in life.

Sonar- A system using transmitted and reflected underwater sound waves to detect and locate submerged objects.

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