

INLAND FISH FOR COMMERCE

The 1964 production of freshwater fish in the United States was approximately 150 million pounds, worth about \$23 million to the fisherman. This represents a small catch in relation to potential production. Japan, a country $\frac{1}{25}$ the size of the United States, produces only 30% less freshwater fish than does the United States.

Expansion of inland commercial fisheries is expected to be evidenced in propagation of catfish and trout in farm ponds, in greater utilization of the fishery resources in reservoirs, and in development of the underutilized fisheries of the Great Lakes.

The Bureau of Commercial Fisheries research program will emphasize the underexploited Great Lakes fisheries. An effort will be made to develop methods for predicting abundance of major commercial species and to formulate recommendations on attaining a maximum sustainable yield.

Research concerning reservoirs will involve developing methods for predicting the size of commercial fish stocks, the influence of the environment on fish populations, and the effect of commercial fishing operations on recruitment.

Federal research on warmwater pondfish and trout culture is underway at eight field stations. In addition, Federal Aid programs will augment these studies by contract with the States under the Commercial Fisheries Research and Development Act.

COMMERCIAL SHELLFISH

Shellfish are nearly five times more valuable in terms of price per pound than are all other fish marketed. Demand frequently exceeds supply for major shellfish species. The development of marine farming by using methods similar to modern agriculture is of great interest in the industry.

Research on oyster and shrimp agriculture is increasing. Future studies will involve artificial spawning, selective breeding, nutrition, hatcheries, and pond culture on oysters, shrimp, lobsters, crabs, and some fish.

King crab and west coast shrimp fisheries have developed recently. Research will increase knowledge of crab and shrimp life histories and population characteristics and will provide data essential for better management of the fisheries and for international negotiations.

Research on Gulf of Mexico shrimp, surf clams, and lobsters will continue. The activities of the Shellfish Advisory Service will be increased to provide more frequent contacts with industry.

OTHER COMMERCIAL MARINE-LIVING RESOURCES

The other commercial marine-living resources element includes seals, whales, and other marine plant and animal resources, such as algae, marine bait worms, and mussels.

The fur seal annual harvest is expected to reach 70,000 animals by 1973—an increase of 8,000 to 10,000 yearly over the average of the previous decade. The goal is attainment of a maximum sustainable yield. Since 1956, the herd population density has been varied in efforts to determine the most suitable herd size.

The collection of biological data on and the marking of whales is underway as the basis for setting quotas and developing management plans for the principal species in the North Pacific Ocean. Slight increases in the whole catch can be expected by 1973. Scientific management, however, will permit a large increase in whale harvest by the year 2000, if international cooperation is achieved soon.

The total national fishery program is enhanced by the Federal Aid program. As administered by the Bureau and carried out by the States, the Aid program has been mutually beneficial to the agencies concerned with other marine plant and animal resources.

HARVESTING

Limited economic and technological resources preclude commercial fishermen from systematically improving conventional harvesting methods. Consequently, a major segment of the American fishing industry exhibits low technological ability. Assistance is required in two major areas: vessel design and modification (to reduce operating costs) and development of more versatile harvesting techniques (to improve fishing efficiency). In addition, knowledge must be expanded on resources of potential commercial significance.

Efforts will be directed toward developing a variety of fishing techniques that are tailored to the behavioral patterns of specific fishes and toward studies in