

## CATFISH

Whoever heard of fish that feed themselves? A major food company now markets a mechanical feeder that catfish trip when they get hungry. It's all part of the South's newest industry--catfish farming!

According to Dr. Jack Greenfield, Industrial Economist with BCF Ann Arbor, Michigan, about 12 million pounds of farm-raised catfish worth \$4.6 million were harvested during 1968. Production in 1969 may be double, he says; by 1972 it could be 52 million pounds. Catfish are being grown in 25,000 acres of ponds. Mississippi (9,000), Arkansas (7,600), and Louisiana (2,700) lead in acreage and production.

### The Catfish Market

Walter Jones, Regional Marketing Coordinator at BCF Ann Arbor, reports that most of the 1968 catfish were marketed locally as live or dressed fish to fish markets, individuals, and restaurants. Some catfish also were marketed as live fish to operators of pay-fishing lakes. The markets are changing rapidly, however. This year, there are at least 5 plants in the South processing catfish into a dressed, frozen product for distribution to restaurants, supermarkets, and other outlets throughout the U.S. Several franchised restaurants specializing in catfish also have been opened.

BCF is providing technical assistance and information on plant design and sanitation for new processing plants.

### Grown in Ponds

Jim Ayers, BCF Fishery Marketing Specialist, Little Rock, Arkansas, explains that most catfish are grown in ponds ranging from a few acres to 40 acres or more. Ponds are filled with 3 to 6 feet of water and stocked with 1,000 to 1,600 fingerling catfish per acre. They are fed a pelleted feed (many companies market commercial catfish feeds) for a year or more until they reach the popular market size of 1 to 1½ pounds. Production per acre ranges from 1,000 to 2,000 pounds and averages about 1,400 pounds. Although several species of catfish are being grown, the most popular is the channel catfish (*Ictalurus punctatus*).

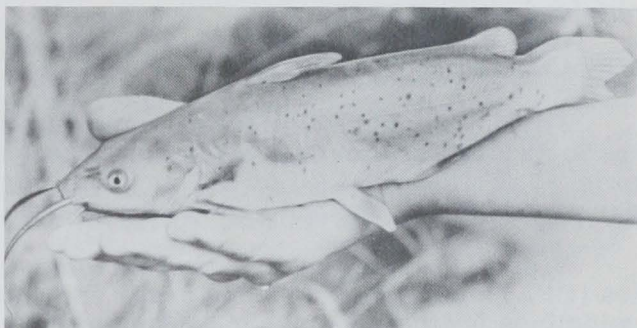


Fig. 1 - Just about market size, this catfish soon will be on its way to a catfish-processing plant. BCF has developed a full-color cookbooklet called "Fancy Catfish," available from Government Printing Office. (Photo: Arkansas Game and Fish Commission)



Fig. 2 - Catfish farms now form geometric patterns across the Southern United States.



Fig. 3 - Everyone wades in to load catch after BCF biologists give a catfish-harvesting demonstration. At Bureau's Gear Research Base in Kelso, Arkansas, biologists are searching for quicker, more efficient methods of harvesting.

A big problem is harvesting the fish, says Don Greenland, BCF Gear Research Base in Kelso, Arkansas. A Base-developed mechanized haul seine harvests effectively many catfish ponds. He says that one of the Base's primary objectives is to improve and modernize harvesting methods. BCF demonstrations are given throughout "catfish country" to familiarize farmers with techniques and gear. The results are good: Several farmers have obtained similar gear.

#### Why Catfish?

Why are farmers converting some acreage to catfish farming? Catfish are popular in the South for their excellent eating qualities, says Walter Jones. More important, catfish can produce profits equal to, or higher than, soybeans, cotton, or rice; they are worth more per pound (35¢ to 45¢ and higher) than cattle, pork, or poultry. Demand also has been good.

With all the interest in catfish farming, a new organization, Catfish Farmers of America (CFA), was formed to bring order and unity to the industry. The CFA drew up stringent guidelines for their members. "Quality and continuity of supply are our watchwords," says President Charles Pickering. The organization has asked BCF to develop quality control standards.

The prospects for fish farming are good. As farmers gain experience and try new methods, greater efficiency and lower product costs will be realized. Many species of fish and shellfish can be grown successfully in fresh or saltwater ponds. The potential for diversification is excellent. Genetic breeding for faster-growing and more meaty fish offers new possibilities.

#### Problems May Develop

The future is not cloudless. Overexpansion and overproduction are definite possibilities during the next few years. Although BCF marketing specialists are trying to introduce catfish in other areas, the catfish image outside the South is not always good--and may not be changed easily. Some resistance also is being encountered to present prices of farm-grown catfish. Competition from foreign and cheaper production along the Gulf Coast may occur.

BCF is working with the industry to overcome the problems. Some of its specialists believe the catfish farming industry will become a significant new source of fishery products for U.S. consumers. (National Marketing Services Office, Bureau of Commercial Fisheries, United States Department of the Interior, 100 East Ohio Street, Room 526, Chicago, Illinois 60611.)

### THE WAY OF ALL GIANTS?

A century ago lobsters sold for 2¢ a pound and were so common they were sometimes used as fish bait. Better transportation and refrigeration have drastically changed this, and fishing pressure has become intense. Dockside prices for lobsters are 80¢ a pound or more.

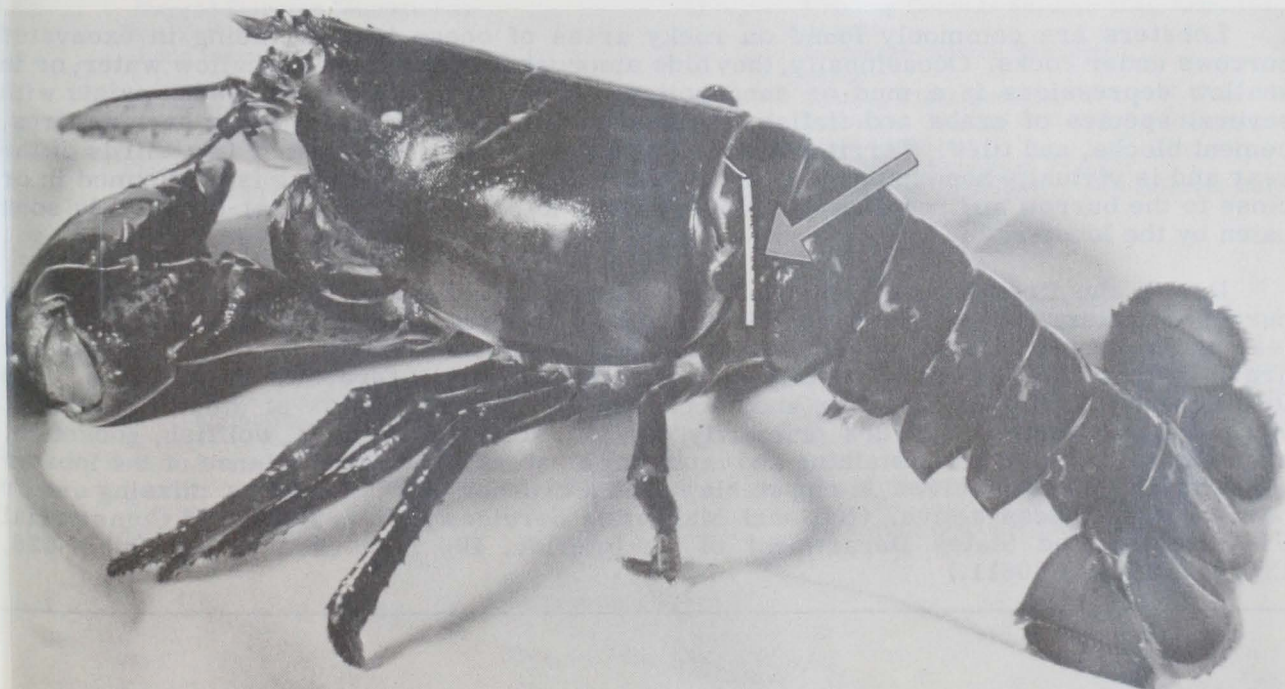
Vessels are now fishing in the deep offshore waters, where giant 20-30 pound lobsters are found, according to Bernie Skud, Director of the BCF Biological Laboratory in Boothbay Harbor, Maine. The offshore catch used to be less than one percent of the total lobster catch. Now, however, the offshore fishery is growing rapidly; it provides almost a fifth of the U.S. catch. Although the inshore fishery of New England still produces most of the world's supply, BCF, as early as 1965, became concerned that the two fisheries might be competing for the same supply of lobsters. Like any other crop, the lobster has an upper limit of harvest; go beyond that limit and everyone suffers -- fishermen, processors, and the consumer.

#### Coastal & Offshore Fisheries Compete?

To determine if the coastal and offshore fisheries do compete for the same supply of lobsters, BCF established an intense research program at its Boothbay Harbor Laboratory. The program had several objectives. One was to establish a management plan for each fishery to secure the maximum catch possible without jeopardizing the lobster fishery. Another was to study the possibility of lobster farming. Skud says: "We think, on a high-priced product such as lobsters, that a company could farm them, make a nice profit, and still not compete with the commercial fishery. The supply to the consumer would, of course, also be increased; who knows, maybe we could all afford to eat lobsters."

#### Tagging Studies

To study the movements and interchange of lobsters in the inshore and offshore fisheries, BCF began a series of tagging studies. The early tags were attached directly to the armor-like shell-covering. However, these tags were lost when the lobster moulted. A small, harmless, yellow tag, retained through moulting, was developed later by Bureau scientists.



A small, harmless, yellow tag is used by BCF biologists to determine movements of lobsters on inshore and offshore fishing grounds. Through research, the biologists hope to develop a tag that stays attached even when the lobster casts its shell. These studies will provide data necessary to properly manage the important lobster fishery.

Since 1966, nearly 10,000 lobsters have been tagged and released on the coastal and offshore fishing grounds. Those recaptured by fishermen showed that lobsters in the coastal areas remained in their chosen territories; in the offshore areas, however, lobsters moved long distances: one-third of those tagged moved over 50 miles, and one lobster traveled 185 miles in 70 days!

These tagging studies will soon tell BCF scientists whether the offshore fishery can be expanded without hurting the inshore fishery. "If we can, it will mean more lobsters for the fishermen and for the consumer," explains Skud. "Further development and added fishing pressure will undoubtedly spell the end of the giant lobster era. But that is inevitable in any productive fishery--and is the way of all giants."

Other research designed to preserve the multimillion dollar industry includes an analysis of the yearly growth of the offshore fishery; studies of the structure, growth, blood, and tissues of lobsters to learn whether separate groups inhabit the different fishing areas; and oceanographic studies to help determine what the lobster requires of its environment. An artificial reef was also constructed; BCF SCUBA divers have made new observations about lobster behavior.

### Lobster History

The American lobster is called Homarus americanus to distinguish it from all other species, variously known as spiny lobster, langusta, and rock lobster. In 1968, for the first time, it provided the U.S. with the world's most valuable lobster fishery.

An organized fishery for lobsters began in Eastport, Maine, in 1843, when the canning process was developed. Most of the product was exported. The fishery was carried out among the rocks and ledges of the New England coast; the lobsters were caught in traps resembling orange-crates. Today, the traps are much the same as they were then, but the dories and pea-pods have given way to power boats.

### Lobster Habits

Lobsters are commonly found on rocky areas of ocean bottom, hiding in excavated burrows under rocks. Occasionally, they hide amongst attached algae in shallow water, or in shallow depressions in a mud or sand bottom. Competition for hiding places exists with several species of crabs and finfish. Lobsters will utilize artificial cover such as tires, cement blocks, and tiles. Territoriality is practiced during the warmer two-thirds of the year and is virtually nonexistent during the winter. The act of shedding is performed in or close to the burrow and requires 10 to 20 minutes to complete. The cast-off shell is soon eaten by the lobster.

During the first several years of life, lobsters spend most of their time within the burrow complex. At age 3 or 4, the lobster begins to roam over the ocean bottom at night, leaving the burrow at sundown and returning before sunrise. These nocturnal movements are in search of food and generally do not cover more than several hundred yards. The lobster eats practically anything and, occasionally, eats the shells of other organisms. Predation on the lobster occurs primarily at night; sculpins, cunners, wolffish, goosefish, and cod have been observed stalking and capturing lobsters. The main defense of the lobster is his relatively large claws, a ripper claw, and a crusher claw. Lobsters missing one or both claws are less active. (National Marketing Services Office, Bureau of Commercial Fisheries, United States Department of the Interior, 100 East Ohio Street, Room 526, Chicago, Illinois 60611.)