

in fresh water. In recent years in the U. S. thousands of ponds have been stocked and farmed.

The farmer fertilizes the pond with manure, compost and artificial fertilizer. That produces lush vegetable growth which nourishes vegetation-eating fish such as bream. On them feed the carnivorous fish—bass and others.

Some farmers report that they can produce more food and more income from an acre of pond than from an acre of field.

In the Orient they knew that centuries ago. The fertilized fish ponds of China and southeast Asia have produced annually half a million tons, mostly carp. Carp reproduce prodigiously: 300 to 400 pounds per acre each year is not unusual. Fertilized carp ponds are also common in Europe, and are found in many other parts of the world where people cannot otherwise provide themselves with high protein foods.

About one-fifth of all the fish caught are taken from fresh water. Yet the number of all fresh water fish is an infinitesimal fraction of the fish that are in the sea.

A British naval captain recently reported sighting a school of herring four miles long, two miles wide, and so dense that it looked like a solid mass. The world's annual catch of herring is something over 50,000,000,000 individual fish. Yet the number of herring in the sea seems to increase.

### Mackerel Also Prolific

Mackerel is another prolific fish. A school 20 miles long and half a mile wide has been reported.

Herring and mackerel, which live close to the surface of the ocean, give us some idea of their number. About others that live deeper, we could not even guess, until electronics gives us a clue.

Formerly a fishing vessel cruised blind. The captain ordered the net or trawl put down when he had a hunch there were fish in the neighborhood. Now most modern fishing vessels are equipped with the echo-sounder. A school of fish shows up on the screen or on a scroll of paper with a moving stylus. The captain does not put his nets out until he sees the fish under his hull. This takes much of the guesswork out of fishing.

In World War II scientists making echosoundings off the California coast found a layer of moving objects, thickly spaced, that covered an area of 300 square miles. Then other layers as large were discovered from Pearl Harbor to the Arctic. And today more such layers keep turning up, in most of the deep oceans of the earth.

Nobody knows yet what these moving objects are. One theory is that they are fish. Another that they are squid, a favorite food in Italy and elsewhere.

Whatever they are, if this "scattering layer" is edible and catchable, it could provide food for several times the population of the earth.

The more we learn of the sea, the more we recognize the incredible abundance of its animal life.

Of the 16,000 known varieties of marine fish, only about 200 are used by man. Only seven species are of major commercial importance: herring, cod, mackerel, salmon, tuna, flat-fish (halibut, flounder, sole, plaice) and, of late, red-fish.

The red-fish, a rose-colored fish averaging three-quarters of a pound, until recently was thrown away when taken in the nets. Then somebody had an idea, presented it to the public as "ocean perch." Now 200,000,000 pounds are caught and sold annually. Many other fish could be "discovered" in the same way.

The first effort to develop the marine resources of the globe on a world-wide scale has been undertaken by the Food and Agriculture Organization of the United Nations. It is charting a fish map of the oceans showing all the fisheries now in use and those unused ones that promise results.

Some of the best potential fishing areas are off the coasts of the underdeveloped countries that have a low standard of living, in Asia, Africa, South America. The FAO is trying to help them develop such sources of food.

If, for example, India could develop a fishing industry only half as efficient as Japan's, its ever-present specter of famine would recede.

One of the best ways of helping people to help themselves is to teach them to fish, and to aid them in getting better fishing equipment. But it is not only the underprivileged peoples who need to learn better fishing methods. Even the most modern fisherman of the West is still in the hunting era. He must look to the day when great schools of fish are herded and controlled from the time they are spawned to the day they are harvested.

Man, who has been hungry through all the millenia he has dwelt on land, may ultimately get himself enough food from the inexhaustible resources of the sea.

Science News Letter, October 23, 1954

### ZOOLOGY

## Fossa Cat of Madagascar Comes to Washington

➤ FOSSA, A big cat of Madagascar that is not really a cat, has taken up residence at the Washington Zoo.

Believed by Dr. William M. Mann, director of the Smithsonian Institution's National Zoological Park, to be the only such animal in the United States, this recently imported fossa is an elongated cat-like animal, a three-foot long male. Dr. Mann has never seen one before.

The fossa has a very unusual place among the carnivores, since this one species, *Cryptoprocta ferox*, is the whole of a subfamily in the animal kingdom, bridging the weasel cats and the true cats.

Despite the idea once prevalent that it attacked sheep and young cattle ferociously, it is not bloodthirsty like the lion and tiger. It feeds on wild birds and lemurs and raids chickens of Madagascar natives.

Science News Letter, October 23, 1954

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