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UNIQUE DEVICES BEING DEVELOPED FOR FISHERY RESEARCH AND MANAGEMENT

The haddock, which has been a popular northwest Atlantic food fish for four centuries, is about to join the "do-it-yourself" club--that is if a device which technicians and biologists of the Department of the Interior now have in process of invention proves successful. The device is an instrument with which a haddock will automatically attach a metal tag to its own body.

Two methods for tagging haddock are being explored. Common to both will be a fish weir or trap with an escape opening. One plan is to have an electronic tagging device which the fish will trigger as it goes through the opening. Another is to have both a tagging device and an underwater television camera at the point of escape. A man on shipboard would watch the fish as it goes through the opening, press a button and put the tagging apparatus in action.

The second method would permit the accumulation of biological data as well as providing a means for tagging. This device is being developed for use on haddock research but can be used quite generally in tagging work.

Other aids to fishery research and management which the Bureau of Commercial Fisheries, United States Fish and Wildlife Service, is developing include: an electric "sentry" to keep carp and other undesirable fish out of river basin impoundments; a detector which will "put the finger" on a herring carrying a metal tag even though that particular herring may be covered by a whole netful of other herring; a pocket-size underwater television camera for use in streams; and a temperature regulator which will permit testing the reaction of fish to changes in water temperature.

The Bureau of Commercial Fisheries has already created or developed such things as the electrical fence to kill sea lamprey or to guide adult salmon away from danger areas; an electric fish counter and an automatic camera by which a fish takes its own picture as it passes a research point; a transmitter which can

can be attached to the back of salmon and which will inform on the whereabouts of the salmon for as long as eight hours; a telemeter to indicate the location of a mid-water trawl; and a "carriage" which permits proper mobility of underwater television cameras in fishery research.

One of the tasks of the Bureau of Commercial Fisheries is to develop data and to effect practices which will help commercial fishermen catch fish at a rate to assure maximum sustained harvest. One of the items essential to carrying out this responsibility is knowledge of the migration pattern of a species.

Considerable research is being done on haddock because of its importance to the consumer and the fisherman, and because the annual harvest which once exceeded 260 million pounds now approximates 135 million pounds. Haddock is one of the species of fish which spawn in the sea and which put their fertilized eggs at the mercy of the winds and the waves. Even the young fish are at the mercy of the currents for some three months before they flip their tails skyward and head for the bottom.

The electric "sentry" will be especially valuable to the sport fisheries since this technique offers what appears to be an excellent opportunity to keep rough fish out of sportfish waters. This device will be largely an adaptation of the electric fence already being used. It will be located at points through which the rough fish enter the impoundment and will carry an electric charge heavy enough to kill any fish entering the field. It will operate at places and times to prevent or minimize destruction of the wanted species.

The herring tag detector is being developed for use on Alaska herring research. These small fish are taken in such great quantities that tagged individuals are too often "lost in the crowd". The detector will help locate these fish when they are harvested and permit notation of pertinent migration data.

Underwater television is being used in biological studies in coastal waters but present equipment is too large for effective use in smaller streams. Since many species of fish spend part of their life in inland streams a small television camera would prove valuable in studies of these fish or any fish which spend all or part of their life in rivers or creeks. The temperature regulator would permit laboratory simulation of natural water temperature conditions.

Several of the devices mentioned above have been developed at the Fisheries Instrumentation Laboratory, a unit of the Pacific Salmon Investigations at Seattle, Washington. This unit has a staff of experts--electrical engineers, electronic engineers and instrument makers--who are qualified to develop new devices that will improve the efficiency and effectiveness of fishery research and management. The services of this unit have been made available over a wide geographical area and the demands for its services are constantly increasing. The development of specialized units of this type to serve the needs of research workers is one of the means adopted in recent years to improve the effectiveness of the Bureau's operations.

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