DEPARTMENT of the INTERIOR

news release

FISH AND WILDLIFE SERVICE
Bureau of Sport Fisheries and Wildlife

WILDLIFE FEATURE

Walker 343-2463
Carroll 343-5634

For Release Monday, June 1, 1970

INTERIOR RESEARCHERS PERFECT SURGICAL PROCEDURE FOR FISH

Medicine and a number of other sciences will benefit from a fish surgery procedure perfected by the Department of the Interior's Bureau of Sport Fisheries and Wildlife.

Assistant Secretary Leslie L. Glasgow, who heads Interior's programs for fish, wildlife and parks, said that the surgical procedure permits researchers to keep fish alive after one or more operations, and this enables their use for continuing research in laboratories.

"Fish are sensitive indicators of both favorable and harmful elements, and the surgical procedure allows scientists to get firsthand views of the effects of the elements on live specimens," Dr. Glasgow said.

Besides medicine, other disciplines such as toxicology, pharmacology, veterinary science, and nutrition can benefit from using fish in their experiments, he indicated.

The surgical technique was perfected in Bureau laboratories to an extent that more than 98 percent of the fish operated on recover afterward.

BSFW experimenters developed the technique to inspect damage to diseased organs in fish and to see how therapeutic drugs and special diets help. It's part of the agency's research program aimed at developing healthier fish for planting in U.S. waters.

Dr. O. H. Robertson of Chicago University in the late 1940's pioneered surgery on fish. Then BSFW in the early 1960's put together a team of experimenters headed by Dr. John E. Halver to establish fish surgery as a standard laboratory procedure for test purposes.

By the late 1960's the technique had been standardized sufficiently to be used routinely by scientists at BSFW's Western Fish Nutrition Laboratory at Cook, Washington, and its field station at Hagerman, Idaho, helping them amass information on fish nutrition, health, and viability in diverse environments.

A major success resulting from application of the procedure was the cure in 1968 of hepatoma--a liver cancer in rainbow trout that was threatening to destroy trout culture in the United States. Internal inspection of diseased fish enabled BSFW scientists to isolate a mold in commercial fish feed as the cause of the tumor. By advising improved preparation and storage procedures in the manufacture of the fish food, BSFW scientists totally eliminated the disease from trout hatcheries in the country.

As used at the BSFW laboratory, the technique requires the use of conventional surgical instruments and sutures. Researchers give the fish both light and deep anesthesia for the operation, which can last from five minutes to several hours. They use special probing tools to inspect the vital organs and can remove diseased tissues for special analysis.

Teams of surgeons operate in a special room to which fish are sent on a conveyor. The head of the fish is constantly immersed to permit gills to extract vital oxygen while the operation takes place; also, skin is kept moist to prevent injury. Special plastic tags are applied to identify each "patient."

Incisions usually are made on the belly side of the fish, but other avenues of entry are possible. After internal inspection, an antibiotic is applied to prevent infection, sutures are sewn, and the fish is placed in a special postoperative tank for from one to several hours. Then it is placed in a special recovery tank where, after three days, it is able to accept food.

The procedure permits internal inspections to be made at intervals of three months or more. Thus the scientists are able to see changes for better or worse over a considerable period.

To date, more than 10,000 operations have been performed at the BSFW laboratory, and less than two percent of the fish have died from either trauma or other postoperative complications. Those that recover show only a slight scar and can be operated on again. Primarily rainbow trout have been used in the research, but experimenters also have had success with salmon, carp, and catfish.

BSFW researchers are convinced that with proper diet and by selective breeding to impart disease resistance, faster growth and greater tolerance of unfavorable environmental conditions like heat, healthier fish can be grown for planting in the Nation's waters. The surgical procedure is enabling the scientists to see internally the success or failure of some of their research efforts.

/News Editors: Black and white photo showing fish surgery is available from Office of Conservation Education, Bureau of Sport Fisheries and Wildlife, Department of the Interior, Washington, D.C. 20240./

x x x

25173-70