METHOD FOR PROTECTING LAKE TROUT TAKEN IN TRAWLS

Alfred Larsen and Warren Handwork

A rescue device for returning live fish to below-surface depths was used to increase survival of lake trout (Salvelinus namaycush) caught during BCF exploratory trawling in Lake Superior. Lake trout stocks, now being rehabilitated in Lake Superior and other Great Lakes after near extinction by the sea lamprey (Petromyzon marinus), cannot be fished commercially at the present time. The development of an effective method to return live fish to their habitat was prompted by incidences of losing trout to predation by gulls when the fish were released on the surface after their removal from the trawl net. Many lake trout were unable to swim down from the surface upon release because air bladders expand at lower pressures as fish are brought to the surface. Trout that had been returned to the lake often were observed swimming at or near the surface for long periods trying to submerge. During these periods the fish are extremely vulnerable to preying gulls. In 1967, the trout rescue cage was tested successfully aboard the chartered commercial trawler 'A. E. Clifford' during exploratory trawling in Lake Superior.

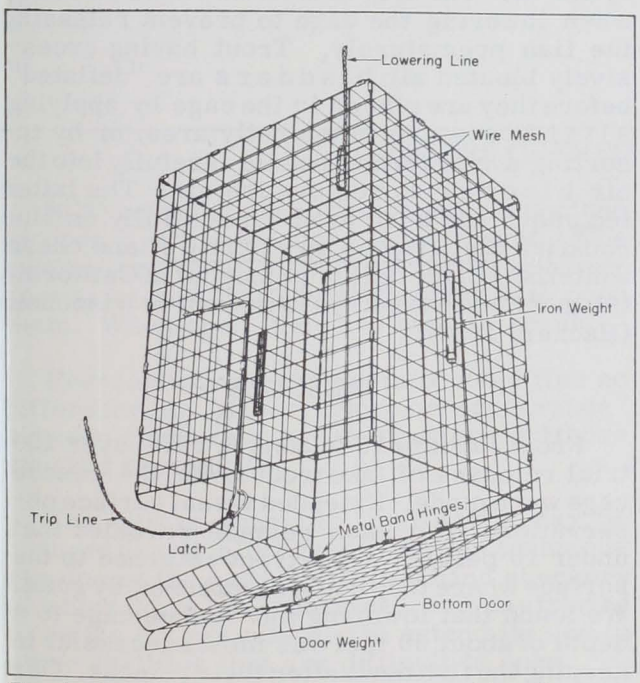

Fig. 1 - Construction details of rescue cage used in underwater method of releasing lake trout.

EQUIPMENT

The trout rescue cage is a rectangular wire-mesh container, which measures 2 by $1\frac{1}{2}$ by $1\frac{1}{2}$ feet, constructed of 1-inch square mesh, 14-gauge, galvanized wire (figs. 1, 2, 3, and 4). The interior of the cage was later lined

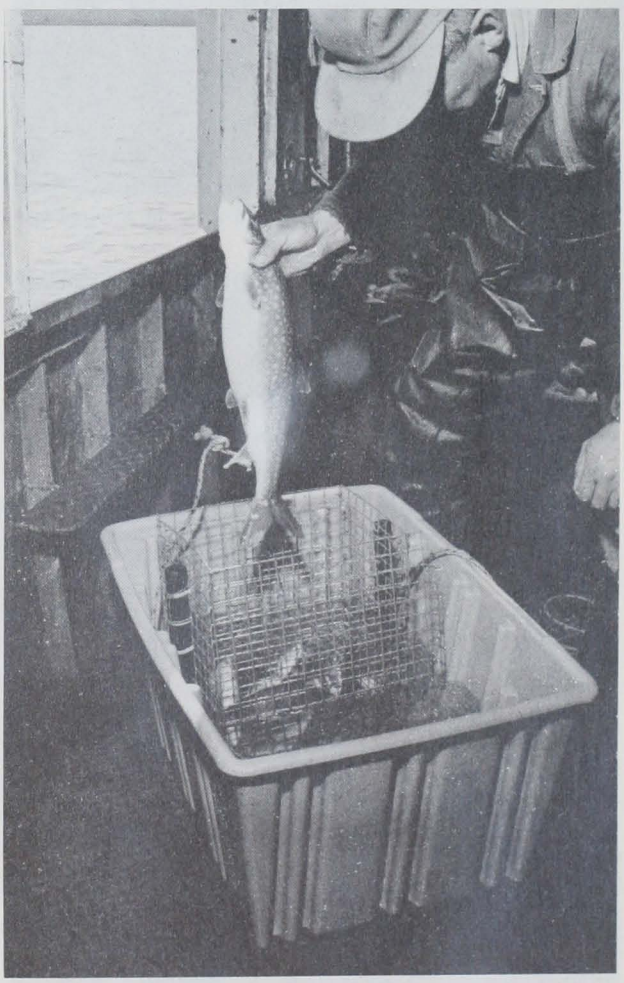

Fig. 2 - Fisherman placing a lake trout into the rescue cage.

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Fish and Wildlife Service
Sep. No. 838

Fig. 3 - Lake trout in the rescue cage about to be lowered into the water.

Fig. 4 - The rescue cage after fish have been released.

with $\frac{1}{4}$-inch square mesh hardware cloth to retain small trout. The bottom panel of the cage is hinged and held closed by a spring wire formed into a latch fastened to a side of the cage. A $\frac{1}{4}$-inch nylon line is used to disengage the spring-wire latch that opens the bottom door for releasing the fish. Another $\frac{1}{4}$-inch nylon line, tied to the center of the top of the cage, is used for lowering the cage to the desired depth. A 6-ounce lead weight, which is fastened to the bottom panel on the side opposite to the hinges, furnishes the force needed to pull the panel open when the latch is released. Two 1-pound iron pipe weights are lashed to opposite sides of the cage to help sink it faster.

PROCEDURE

Trout captured in the trawl are immediately sorted from the catch and placed in a 30-gallon recovery tank with circulating water (fig. 2). When the fish appear to be in good condition (swimming normally), the vessel is stopped. The trout are then placed in the rescue cage, lowered to a depth where water pressure is greater (thus recompressing the inflated air bladders), and released (figs. 2, 3, and 4). The trip line must be kept slack when lowering the cage to prevent releasing the fish prematurely. Trout having excessively bloated air bladders are "deflated" before they are placed in the cage by applying slight pressure in the belly area, or by inserting a hypodermic needle carefully into the air bladder to remove the air. The latter technique has been used successfully on blue rockfish (Sebastodes mystinus) and ocean whitefish (Caulolatilus princeps) in California (Gotshall, 1964) and on lake trout in Wisconsin (Hacker, 1962).

RESULTS

From January 16 to June 8, 1967, over 100 trial releases of lake trout from the rescue cage were made. Extended visual surface observations after each release revealed that under 10 percent of the trout returned to the surface where they could be attacked by gulls. We found that lowering the rescue cage to a depth of about 30 feet was most successful in keeping the fish down after their release. Observations by means of underwater television showed that upon release the trout dispersed downward from the cage.

CONCLUSIONS

A trout rescue cage, tested during BCF exploratory fishing in Lake Superior, increased the survival of trout that were caught in trawls and brought aboard the fishing vessel. The rescue cage is used to return live lake trout to below surface depths where inflated air bladders become recompressed to help the fish stay submerged. The method was successful in reducing the amount of sea gull predation that occurred when numbers of fish remained on the surface when thrown overboard after removal from trawl catches.

LITERATURE CITED

GOTSHALL, DANIEL W.
1964. Increasing tagged rockfish (genus Sebastodes) survival by deflating the swim bladder. California Fish and Game, Vol. 50, No. 4, pp. 253-260.

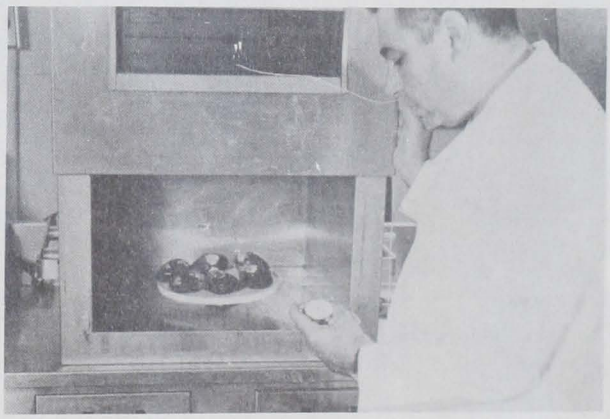
HACKER, VERNON A.
1962. A summarization of life history information of the lake trout, Salvelinus namaycush, obtained in gill netting, finclipping and tagging studies at Green Lake, Wisconsin - 1956-1961. Wisconsin Department of Natural Resources, Bureau of Fish Management, East Central Area, Investigational Memorandum No. 3, 24 pp.

OYSTERS OPENED BY MICROWAVES

BCF scientists have developed a technique to open oysters by using microwaves. The oysters are exposed to enough microwave energy to open them--but not enough to cook them. When open, they are easy to shuck.

Persons who ate the oysters could find no difference in "flavor, odor, or appearance" between microwave-treated oysters and those shucked normally.

The oyster-shucking industry may be changed drastically because the new technique eliminates the need for expert hand shuckers of which there is a shortage. BCF is striving to refine the process and to extend its use to other shellfish that are difficult to open.



A BCF scientist tests the microwave technique for opening oysters or clams.

--Harold Allen