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January 9, 1947

Institute for Fisheries Report No. 1083

EXPERIMENTS IN ANESTHETIZING SMALLMOUTH BASS FOR FIN CLIPPING

by

L. R. Anderson

PLACE: Lydell Fish Hatchery, Comstock Park, Michigan

DATES: October 15, 16, 17, 18 and 25, 1946

SPECIES OF FISH: Smallmouth bass (Micropterus dolomieu), 38,350 fish, 4 mos. old, ranging in length from 2.3 to 6.5 inches

ANESTHETICS USED: Ether, Urethane, and "Shaking"

FIN REMOVED: Right pectoral

I - Ether, 2% solution (380 c.c. ether to 19,200 c.c. water), at 54 degrees F.

Procedure: About 200 fish were dipped from fresh water into the solution, which in approximately 30 seconds retarded their motion sufficiently to allow the operations to proceed. Two men can clip this number of fish in about 6 or 8 minutes. At the end of this time the last 10 or 15 fish will have turned belly up, but they revive immediately upon release into fresh water. The 2% solution of ether remained potent for almost four hours. The solution can be strengthened if necessary.

The following observations on mortality were made:

31 bass observed for one-half hour - - - No mortality

2,217 " " one hour- - - - - - - - "

7,359 " " 15 hours- - - - - - - - "

14,850 " " three days- - - - - - - "

A 0.2% ether solution was used on 1, 799 fish, but it required about 4 minutes to anesthetize the fish sufficiently for clipping operations. No mortality was observed in the latter case, but there was undue waste of time waiting for the fish to "go under."

II - Urethane, 0.5% by weight in water (95 gms. of urethane to 19,200 c.c. or gms. water), at 54 degrees F.

Procedure: A 0.3% solution was used first on 50 fish. This did not retard the action of the fish at all. This was followed by using a 0.5% solution, which retarded the action of the fish sufficiently for fin-clipping operations. The effectiveness of the 0.5% solution increased noticeably as the temperature of the solution increased to 63 degrees F. A total of 18,415 fish were handled by this method over a period of three days, during which time there was no noticeable mortality. In treating the 18,415 fish it was necessary to replace the five gallons of 0.5% urethane solution once, due to a reduction in potency of the original solution. It is believed that a 0.7% or 0.8% solution could be used to good advantage without harm to the fish.

III - "Shaking." This method was suggested by Mr. Claude Lydell.

In this method the fish is momentarily stunned by holding the fish quite firmly in the palm of the hand and shaking the fish with a

quick jerk (snapping motion) toward the tail. The fish will remain quiet for a few seconds, allowing the clipping operation to be performed. 3,283 fish were operated upon by this method. There was no mortality. It was found in the use of this method that some fish had to be snapped a half dozen times before "going under," and if the fin-clipping operation was not completed quickly some fish had to be stunned a second time. This caused excess handling and undue waste of time and energy. This method is recommended only in case of emergency or where only a few fish are involved.

Conclusion - In comparing the relative cost of materials it was found that about 6 pounds of ether and 0.4 pound of urethane were used. The ether at 42 cents per pound cost $2.52, and the urethane at $1.42 per pound cost $0.57. Thus the cost by the use of urethane was considerably cheaper. It is believed that the urethane solution could have been stronger, to obtain quicker retardation of movement, but even with a stronger urethane solution its use would be cheaper than the use of a 2% ether solution. It was found that ether reacts much better in cold water than does urethane, but the latter remains potent longer in warmer water. Ether is much easier to handle but has a sickening odor, whereas urethane is odorless. It was found that by using anesthetics of this type, about 12,000 to 15,000 fingerling bass could be fin-clipped per day by a four-man crew.

Members of the fin-clipping crew during these experiments were Cy Moody, Elton Rector and Claude Lydell of the Comstock Park Hatchery, Dave Platt of the Hastings Hatchery, and K. G. Fukano,

C. M. Taube, G. P. Cooper, and L. R. Anderson of the Institute for Fisheries Research.

A lot of 1,000 of the fin-clipped smallmouth bass, selected for uniformity in size range in length (2.8 - 3.9 inches), was put in Pond No. 21 at the Lydell Hatchery on October 18, 1946. They will be held in the pond until the spring of 1947, and possibly longer, for observations on regeneration of the clipped fin (right pectoral).

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