

COMMITTEE REPORT, SOUTHERN DIVISION MEETING

The trout committee held its regular workshop meeting at Vonore, Tennessee on June 3 and 4. We had 16 in attendance and ten members gave summaries of current trout management projects in the southeast. Abstracts of these presentations were reproduced and mailed to all committee members.

During the business meeting on June 3 we organized a coordinating subcommittee to plan evaluation projects for exotic salmonids e.g. the Ohrid trout and the Danube salmon. This subcommittee will also coordinate planning with the A.F.S., Committee on Exotic Fishes.

We will have an updated listing of trout workers and trout management papers in the southeast if anyone would like to write <sup>the chairman</sup> me for a copy.

LPW:h

*Thank you*

*I move the adoption of this report*

*Include discussion conducted at Charleston meeting*

ABSTRACTS OF DISCUSSION TOPICS  
PRESENTED AT  
ANNUAL TROUT COMMITTEE MEETING AND WORKSHOP  
VONORE, TENNESSEE

June 3 and 4, 1971

(This information is preliminary to final publication and should not be cited as a reference work.)

## EMPIRICAL STOCKING OF GREERS FERRY DAM TAILWATER WITH INTRODUCED INVERTEBRATE ORGANISMS

Jim Collins  
Arkansas Game and Fish Commission

The Greers Ferry Dam, which was constructed by the U. S. Corps of Engineers on the Little Red River near Heber Springs, Arkansas, is a 31,000 acre, deep, cold water release impoundment. Twenty-five miles of the seventy-nine miles, which comprises the tailwater region, are suitable for trout.

Problems arose in 1964 after the completion of the dam because of a heavy silt load released and deposited downstream during the construction at the dam site. All bottom organisms were destroyed for many miles downstream because of the siltation. In 1965, after hydroelectric generation had removed much of the mud, the Arkansas Game and Fish Commission inoculated the Little Red River with aquatic fauna and flora obtained from the Spring River, which is fed by a large, cold water spring at Mammoth Spring, Arkansas.

The primary introduction consisted of two loads of organisms which were stocked in the early spring of 1965. During January, 1966, 40 number-three washtubs were hauled and finally 24 tubs of vegetation and organisms were stocked in June, 1966. The aquatic organisms consisted mainly of isopods, decapods and amphipods.

During the fall of 1966, it was determined that the flora and fauna introductions had been successful and rainbow trout were then stocked in the Greers Ferry Dam Tailwater.

## TECHNIQUES OF BROOK TROUT STREAM RECLAMATION

Joseph R. Fatora  
Georgia Game and Fish Commission

Mill Creek and Tate Branch in the Tallulah River watershed and Tuckaluge Creek in the Chattooga River watershed, located in Rabun County in extreme northeastern Georgia, were renovated in June and July, 1970. Both Tuckaluge and Mill possess natural barriers that prevent ingress of fish into the renovated section. A log barrier had to be constructed on Tate Branch.

Renovation of the existing fish population was accomplished by application of emulsified rotenone at the rate of 2 ppm for 1 hour and 1 ppm the second hour using calibrated 12 vdc electric pumps. Spring drainages and small branches were poisoned by spraying. NaCl was used as a tracer on Tuckaluge. Detoxification was accomplished by application of a known rate of  $KMnO_4$  by a drip station located at the lower extremity of the renovated section. Stream flow data were obtained on the day preceding renovation.

Fish were recovered during a two-day pickup to obtain standing-crop data and data on population composition, length-weight relationships, condition factors, age-growth, and food habits. On Mill and Tate, fish population data were obtained by cresol sampling to compare this method with the estimate derived from total stream renovation. Blockoff nets were used to obtain standing crop data for various sections of the streams to compare habitat differences.

Dicks Creek and Coleman River in the Tallulah River watershed in Rabun County, and Blood Mountain Creek in the Chestatee River watershed in Lumpkin County will be renovated in June and July, 1971. Shocker surveys will be conducted to compare this sampling technique with the estimate derived from total stream renovation. Fish taken by shocker survey will be fin-clipped and released to obtain an estimate of percentage of recovery. Benthos samples will be obtained prior to renovation to determine forage ratios.

The renovated streams contained rainbow trout (Salmo gairdneri) with the exception of an unidentified Notropis species near the mouth of Tate Branch. They are being restocked with wild strains of brook trout (Salvelinus fontinalis) and will be managed as a native trout fishery.

Data analyses are not complete enough at present to derive any conclusions. However, data from the Rock Creek watershed in the Tennessee Drainage, renovated in September 1968, indicated a standing crop of about 4 pounds/acre in Mill Creek and 2 pounds/acre in a small unnamed tributary. Mill Creek contained a trout population with a cyprinid population in the unnamed tributary.

#### RAINBOW SURVIVAL RELATED TO TIME OF RELEASE IN TWO-STORY RESERVOIRS

James R. Axon  
Kentucky Department of Fish and Wildlife Resources

The Lake Cumberland Trout Studies project was undertaken in 1967 to document the two-story trout fishery in terms of habitat, harvest, use of tributary streams and the growth and longevity of rainbow trout (Salmo gairdneri). The trout fishery was established by stocking trout in the fall months, primarily in October. In February 1969, however, 34,200 trout that averaged 8.2 inches were stocked. Trout had also been stocked in October 1968 that totaled 45,500 and averaged 8.4 inches in length. Approximately 25,000 of the October stocking were fin-clipped, as were 17,500 of the February stocking.

A stratified creel survey was conducted at night, from May through September 1969, in the area immediately above the dam. Most of the trout are caught at night in this area during the summer months. Of the 239 marked trout harvested during the summer survey, 205 came from the February 1969 stocking and 34 came from the October 1968 stocking. Returns of the marked trout from the February stocking consistently outnumbered returns from the October stocking during each of the survey months.

Studies concerned with the survival of trout in a two-story reservoir have given evidence that predation on trout can be a major factor in trout survival

(Keith, William E. and Sammy W. Barkley, 1970). Predation could very well be the primary reason for the low returns from the October stocking in Lake Cumberland. An electrofishing study was conducted in October 1970 at Ramseys Point the first night following the stocking of 7 inch trout. Nine bass, including seven spotted bass (Micropterus punctulatus), one smallmouth bass (Micropterus dolomieu), and one white bass (Roccus chrysops), were captured from the stocking area. Five of the spotted bass contained seven trout that were between 6.0 and 7.0 inches in total length. An 11.0 inch bass was the smallest to consume a trout. Although this study indicated that predation on trout was occurring, the size of trout preferred by bass needs to be known and will be studied more extensively during the October 1971 stocking.

A second predation study was conducted after the February 1971 stocking of trout, but only one spotted bass was collected and it contained no trout. Predation is lower in February than in October; therefore, February appears to be the better month for stocking trout.

#### TROUT PROPAGATION AS A SOURCE OF SUPPLEMENTAL INCOME FOR THE LANDOWNER

Floyd R. Fessler  
Soil Conservation Service

Trout production by private growers occurs in the South in North Carolina, Georgia, Alabama, Oklahoma, Arkansas and Tennessee. The total annual production is estimated to be about  $4\frac{1}{2}$  million pounds.

There are approximately 46 operators in Tennessee with an estimated (by Tennessee Game and Fish Commission) 1971 production of 782,000 pounds with a wholesale value of \$547,400 70¢/lb. The major part of this production is accomplished in raceways. Thirty-nine of the operators market their fish through catch-out ponds which brings the highest retail price (6 to 11¢/oz.) for their fish. A few (5) market their product directly for food and a few (7) also sell fingerlings.

A common practice among trout producers (private, state and federal) is to clean the growing facilities by flushing the material into the stream flowing from the operation. This poses a pollution problem that may need to be corrected in the future. However, state and federal installations should be the leaders in this endeavor.

Fish to have wastes. The daily BOD production rate of the  $4\frac{1}{2}$  million pounds of trout would be equivalent to 22,500 1000 lb-steers or 60,000 100 lb-hogs, using the BOD production rate of channel catfish as reported by Murphy and Lipper of Kansas State University (P.F.C. Vol. 32, No. 4, Oct. 1970).

ECONOMIC IMPACT AND ACCEPTANCE OF A TROUT FISHERY WHERE NONE  
EXISTED BEFORE

Robert L. Bounds  
Texas Parks and Wildlife Department

From March, 1967 to September, 1970 a total of 24,000, 8 to 10 inch rainbow trout were stocked in the tailrace waters of Canyon Reservoir, Comal County, Texas. A creel census of the 8,000 fishermen who fished for trout during this 3-year period indicates that 30,000 man hours were expended to harvest 10,343 fish or 43% of the total stocked. An economic survey conducted in conjunction with the creel census shows that fishermen spent \$32,000 for bait, fishing tackle, food and other incidental expenses in the immediate area of the fishery. Before trout were added, the fishery provided less than 500 angler use hours per year. After trout were stocked the angler use hour increased some 2,000%. The "put and take" trout fishery has proven successful both recreationally and economically and it is now considered an established program of the Texas Parks and Wildlife Department.

EXPERIENCE WITH AND MANAGEMENT OF THE COHO SALMON IN VIRGINIA

Robert E. Wollitz  
Virginia Commission of Game and Inland Fisheries

During the fall of 1968, Virginia received 10,000 eyed coho salmon eggs from the Bureau of Sport Fish and Wildlife in Oregon. Approximately 90 percent of the eggs hatched. Young fish were raised in the same manner as trout and were fed a regular trout diet. During the year prior to stocking, the fish were kept in wooden troughs due to lack of pond space. No significant problems were encountered in raising them; in fact, they were nearly as easy to raise as rainbow trout. Total mortality from the eyed egg stage to the age of one year was approximately 26 percent.

In November, 1969, 7,400 coho salmon were stocked in two, two-story reservoirs. A total of 4,400 salmon were stocked in 20,000 acre Smith Mountain Reservoir and 3,000 in 2,800 acre Philpott Reservoir. Both reservoirs contain forage fish. Smith Mountain Lake contains an abundance of gizzard shad and lesser numbers of alewives and threadfin shad, while Philpott has only a small population of alewives. Approximately 100 verified returns have been received from both reservoirs, with most coming from Smith Mountain. Fish harvested ranged from about three to six pounds and averaged about four pounds. The cohos appeared to be somewhat more difficult to catch than were rainbow but appeared to achieve better growth.

Virginia has no immediate plans to continue the coho salmon program at the present time, due to lack of habitat. The Appalachian Power Company is presently awaiting a permit from the Federal Power Commission to begin construction of a two reservoir pump storage complex on the upper New River in Virginia and North Carolina. The upper reservoir will contain about 19,000 surface acres, will be deep, and will be located at an elevation of about 2,600 feet above sea level. Thus, a considerable amount of trout water will probably be present in the reservoir. When this reservoir becomes a reality, we will probably give serious thought to further work with the coho salmon.

TROUT RELEASE METHODS IN DALE HOLLOW RESERVOIR, TENNESSEE

Hal Boles  
Bureau of Sport Fisheries and Wildlife

Dale Hollow Reservoir is 27,000 acres and has 620 miles of shoreline. Two main arms form the reservoir by the Obey and Wolf Rivers with about 45 miles of water backed by the dam.

Stocking methods have included different sizes of trout ranging from 2.5 to 10 inches.

Most of the fish up to 7 inches have been stocked with a 16-foot surplus assault craft modified with tanks holding about 500 gallons of water. About 500 pounds of trout were usually carried. The fish were dispersed throughout the mid-channel in hopes of decreasing predation.

Some lots of trout were stocked directly from the hatchery truck which was carried throughout the reservoir on a Corp of Engineers barge.

Until 1969 all trout were stocked in the fall, winter or spring months when the lake temperatures were below 65 degrees and uniformly distributed vertically.

In the summer of 1969, 170,000 6-inch and 300,000 4½-inch trout were stocked below the upper limit of the thermocline.

Almost 27,000 pounds were stocked from July 18 to September 28. After modification of a surplus hatchery truck tank failed to hold the required pressure for subepilimnion stocking, a 220-gallon water tank was modified to maintain pressure comparable to the depth at which the trout were released. Irrigation pipe (5") was used to carry the fish down.

At 50 feet the pressure necessary was 21 pounds. About 200 or 300 pounds of trout were acclimated in the tank for each release. They were held for 20 minutes with an increase of about one pound per minute.

Oxygen was administered as demanded and was difficult to hold at a uniform level.

A sealed beam light was also beneficial in keeping the fish calm.

Air pressure was released through carbon stones to supplement the oxygen supply.

The tank located about 35 feet above the water level gave too much head pressure causing many of the fish to become decompressed before release.

The tank was then moved to near the water's edge and an additional air storage tank was used to maintain pressure during release.

Underwater observations and vertical gill nets set near the planting site revealed that most of the trout stayed below the upper limit of the thermocline.

Vertical gill nets located 1 mile and 5 miles from the stocking site revealed these trout as late as October. Since then none have been caught.

In the fall of 1969, 9-inch trout were stocked by conventional tank trucks with a quick release valve and flex-pipe. About 14 percent of this group has been caught.

In June 1970 50,000 6-inch trout were released at the 18-foot level at 70 degrees which was the upper limit of the thermocline. This was done directly from the tank truck using 60 feet of irrigation pipe. The lake's surface temperature at this time was 78 degrees. The fish were tempered an hour and observations under water revealed that the trout stayed below the level of release. Some of these trout are now large enough to enter the catch.

Last fall 50,000 10-inch trout were released by truck at five locations. Each group was tagged and migratory tendencies are being studied.

#### OHRID TROUT (SALMO LETNICA)

Danny M. Regan  
Bureau of Sport Fisheries and Wildlife

The first Ohrid trout eggs in the United States were obtained from Yugoslavia in March 1965. The Yugoslavian Government had obtained the eggs from the winter spawning race in Lake Ohrid. Disposition of the 98,000 eggs that were received was as follows: Lanesboro State Fish Hatchery, Minnesota Department of Conservation 60,000 and Manchester National Fish Hatchery, Iowa, 38,000.

The history of this lot of fish at the Manchester National Fish Hatchery coincides with what you would expect from a wild brood stock. The percent hatch, growth rate, and survival were much less than that obtained from hatchery brood stocks of other Salmonids. Survival from the eyed egg to fish approximately five months old was 21% at the Manchester National Fish Hatchery. The growth rate at Manchester was approximately .28 inches per month at a water temperature of 50°F.

The first eggs were obtained from this lot of fish in February 1969. Percent eye-up on these eggs was approximately 48%. The major difficulty encountered in spawning was an excessive mortality of males.

A disease problem was diagnosed at the Manchester National Fish Hatchery after obtaining eggs from the lot of fish in 1970. The disinfection of the hatchery necessitated removal of all fish.

The Erwin National Fish Hatchery, Tennessee, had received 44,000 eggs from the 1970 spawn at Manchester. Performance of this lot of fish has been

much better than the original lot received from Yugoslavia. A 72.7% hatch was obtained and the initial inventory survival was 70.3%.

Approximately 2,000 fish are being held at Erwin for a future brood stock. These fish are seven inches long at this time and we hope to obtain the first F<sub>2</sub> generation in 1973.

The potential for utilizing the Ohrid trout as a management tool has not been successfully demonstrated. Therefore, a concentrated effort should be made to develop a study that will provide the information necessary to utilize any fish that can be made available in the future.

COORDINATING GUIDELINES FOR PROTECTING STREAM  
FISHERIES DURING LOGGING OPERATIONS

Monte Seehorn  
U. S. Forest Service

Timber operations, whether they consist of a light thinning or a complete removal (clearcut) of overstory and understory vegetation, can and often do create severe impacts upon fishery resources. These impacts can be significantly reduced by modifying logging methods.

Following are coordination measures or information that should be considered when setting up timber operations:

1. Method of logging.
  - a. Animal logging.
  - b. Tractor logging.
  - c. Cable skidding.
    - (1) Ground skidding.
    - (2) High-lead skidding.
    - (3) Skyline systems.
    - (4) Balloon logging.
2. Proper road location and construction (culverts, bridges, etc.).
3. Proper location of log landings and mill sets.
4. Leave buffer strips as needed along streams.
5. Reduce length (time) of operation.
6. Stabilize and close all temporary roads. (Waterbar, seed and block as soon as operations cease.)

With proper supervision and incorporation of these coordinating measures, the impact of a complete clearcut can be reduced to less than that created by a light selective thinning under little supervision.

TASMANIAN AND DOMESTIC STRAINS OF RAINBOW TROUT COMPARED IN  
WATAUGA RESERVOIR

Price Wilkins  
Tennessee Game and Fish Commission

A strain of rainbow trout from the McCloud and Russian Rivers (Calif.) was introduced into Australia in 1894. These fish have been preserved as an isolated, disease free strain and eggs are available from Sevrup Fisheries, P. O. Box 726E, Bridport, Tasmania, Australia.

Equal numbers of Sevrup and Wytheville, Virginia strain rainbow have been released in 6,430 acre Watauga Reservoir each year since 1967. Significant advantages of the Sevrup rainbow have been rapid dispersion after stocking and an early conversion to a shad diet. This has resulted in improved growth and much higher survival to the creel for Sevrup as compared to Wytheville.

Replication of this comparison of widely divergent strains will begin in 27,700 acre Dale Hollow Reservoir in fall, 1971.