

KEE WCC  
HEN \_\_\_\_\_  
BDB TDI  
BTB \_\_\_\_\_  
CBB \_\_\_\_\_  
Return \_\_\_\_\_  
PB

**PERFORMANCE REPORT**

**RESEARCH AND SURVEYS**



**FEDERAL AID GRANT NO. F-50-R-4**

**FISH RESEARCH FOR OKLAHOMA WATERS**

**PROJECT NO. 1**

**EVALUATION OF GENETIC STATUS OF  
OKLAHOMA LARGEMOUTH BASS POPULATIONS**

**MARCH 1, 1997 through FEBRUARY 28, 1998**

## PERFORMANCE REPORT

State: Oklahoma

Grant Number: F-50-R-4

Grant Title: Fish Research for Oklahoma Waters

Project Number: 1

Project Title: Evaluation of Genetic Status of Oklahoma Largemouth Bass Populations

Contract Period: From: March 1, 1997 To: Feb. 28, 1998

Project Objectives: To evaluate the genetic impact of Florida largemouth bass introductions in 20 Oklahoma lakes by stocking each lake for three years and measuring the contribution of stocked fish to each year class for six years, identify the phenotypes of angler caught bass over 8 pounds from public waters to determine the contribution Florida largemouth bass stockings are making to the production of trophy fish.

I. Project Segment Objectives: To conduct fall electrofishing in Lake Bixhoma, collecting 40 age-0 bass; collect liver and scale samples from trophy bass saved by cooperating taxidermists; determine phenotypes of all samples.

II. Summary of Progress:

### Trophy Bass

Tissue and scale samples taken by taxidermists from 21 trophy largemouth bass (3.2-5.6 kg) caught by anglers in 1997 from 9 different public waters were analyzed (Table 1). No northern phenotypes (NLMB) were found among the trophy fish. Florida phenotypes (FLMB) made up 14% of the samples, F1 intergrades made up 76% and Fx intergrades made up the remaining 10% of the samples. Ages of these bass (determined from scales) ranged from 8 to 11 years. Anglers and taxidermists will be notified of these results.

### Experimental Stockings

No experimental FLMB stockings were made in 1996 or 1997. Fall electrofishing to determine introgression of Florida alleles from FLMB advanced fry (~20 mm) stockings in 1991, 1993 and 1994 was conducted on Bixhoma Lake (Table 2). Three years after the last stocking, the 1997 year class consisted of 7.5% FLMB, 30% F1 and 35% Fx phenotypes. Northern phenotypes made up 27.5% of the sample. This contrasts with 1997 sampling which showed no northern phenotypes among the age-0 fish collected.

The long-term success of experimental FLMB stockings was confirmed (anecdotally) in 1997 with reports of two bass that anglers caught from Taft Lake that weighed over 4.54 kg each. Taft Lake had not received FLMB prior to the 1987 experimental stockings and had no history of producing trophy-class bass.

### III. Conclusions, Evaluations, and Recommendations:

The number of trophy bass samples collected from cooperating taxidermists in 1997 declined sharply from previous years. Submissions had averaged over 75 per year from 1988 through 1995, then declined to 46 in 1996 and to only 21 in 1997. The decline in samples from traditional trophy bass producers such as lakes Sardis and the Duncan city lakes continued. McGee Creek Lake, the state's top trophy bass producing lake, provided only five samples in 1997. Only five taxidermists saved samples in 1997. Some taxidermists forgot to save samples while others simply received fewer trophy bass in 1997 than in previous years. Cooperators said their customers blamed poor weather during the spring trophy bass fishing season and increased release rates of large fish for the decline in trophy samples.

Florida allele introgression into the Bixhoma Lake bass population (72% of the sample contained FLMB alleles) declined from 100% in 1996 and 86% in 1995. This decline could indicate the beginning of an actual reduction in Florida alleles in the system or that there was a sampling bias associated with non-random distribution of age-0 fish carrying Florida alleles.

#### Recommendations

Data from the entire FLMB project (F-39 and F-50) should be analyzed to determine long-term trends in introgression of Florida alleles into Oklahoma bass populations. Statistical analyses should be performed to determine if additional relationships between allele frequency and stocking protocol, physical, chemical and geographical/climatic factors can be determined. Fisheries Division stocking criteria for FLMB should then be revised to incorporate these results.

The amount of information gained from samples collected by cooperating taxidermists has declined to a point where it may not justify the time and effort to administer the program, collect and analyze the samples. Samples from possible state or lake record bass or from recently stocked lakes (e.g. Longmire, Bell Cow, Durant, etc.) should be saved for analysis to provide information required in the FLMB Stocking Criteria. However, taxidermists should not be encouraged to routinely save samples from unremarkable bass from lakes with proven histories of trophy production.

#### IV. Location of Work:

Field work was conducted on Bixhoma Lake. Cooperating taxidermists saved tissue and scale samples from trophy bass statewide. All electrophoretic procedures were performed at the Oklahoma Fishery Research Laboratory.

V. Prepared by: Gene Gilliland

Gene Gilliland, Research Biologist III

VI. Date: May 14, 1998

VII. Approved by: Harold Namminga

Dr. Harold Namminga, Federal Aid Research Coordinator

Table 1. Numbers and phenotypes, by lake, of trophy largemouth bass ( $\geq 3.6$  kg), caught from Oklahoma public waters in 1997 (provided by taxidermists).

| LAKE          | WEIGHT      | NLMB | FLMB | F <sub>1</sub> | F <sub>x</sub> |
|---------------|-------------|------|------|----------------|----------------|
| Carlton       | > 10 lbs.   | 0    | 1    | 0              | 1              |
| Broken Bow    | 8 - 10 lbs. | 0    | 0    | 0              | 1              |
| McGee Creek   | 8 - 10 lbs. | 0    | 1    | 3              | 0              |
|               | > 10 lbs.   | 0    | 0    | 1              | 0              |
| Mountain Lake | 8 - 10 lbs. | 0    | 0    | 2              | 0              |
| Nanah Waiya   | 8 - 10 lbs. | 0    | 0    | 1              | 0              |
| Raymond Gary  | 8 - 10 lbs. | 0    | 0    | 1              | 0              |
|               | > 10 lbs.   | 0    | 0    | 1              | 1              |
| Sardis        | 8 - 10 lbs. | 0    | 0    | 0              | 1              |
|               | > 10 lbs.   | 0    | 0    | 1              | 0              |
| Wayne Wallace | 8 - 10 lbs. | 0    | 1    | 0              | 0              |
|               | > 10 lbs.   | 0    | 0    | 2              | 0              |
| Pine Creek    | 8 - 10 lbs. | 0    | 0    | 2              | 0              |
|               |             | 0    | 3    | 14             | 4              |

Table 2. Phenotypes of largemouth bass collected from Oklahoma lakes stocked with Florida largemouth bass; collection dates; sample size by age group (N); number (#) and percent (%) of NLMB, FLMB, INTLMB (F1, Fx, total intergrades), and bass with any FLMB alleles.

| Date    | Age | N  | NLMB<br>#(%) | FLMB<br>#(%) | INTLMB             |                    |         | ANYFLMB<br>#(%) |
|---------|-----|----|--------------|--------------|--------------------|--------------------|---------|-----------------|
|         |     |    |              |              | #(%)F <sub>1</sub> | #(%)F <sub>x</sub> | #(%)INT |                 |
| Bixhoma |     |    |              |              |                    |                    |         |                 |
| 11/95   | 0   | 40 | 5(13)        | 19(47)       | 13(33)             | 3(7)               | 16(40)  | 35(87)          |
| 11/96   | 0   | 40 | 0(0)         | 25(63)       | 9(23)              | 6(14)              | 15(37)  | 40(100)         |
| 11/97   | 0   | 40 | 11(28)       | 3(8)         | 12(30)             | 14(35)             | 26(65)  | 29(72)          |