Management Application of Angler Recognition Program Data

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Abstract: Information from applications to 2 angler recognition programs administered by the Texas Parks and Wildlife Department were analyzed to determine changes in the number and weight of fish submitted each year. Frequent increases in largemouth bass (*Micropterus salmoides*) (5 in a 6-year time span), striped bass (*Morone saxatilis*) (9 in a 14-year time span), and hybrid striped bass (*M. chrysops* ♂ X *M. saxatilis* ♀) (7 in 8-year time span) state records were documented. Significant annual increases in mean weight of largemouth bass (4.0 kg in 1974 to >5.0 kg in 1986 and 1987) and smallmouth bass (*M. dolomieui*) (2.16 kg in 1979 to 2.63 kg in 1987) certified for Big Fish Awards were recorded. Increases in size of largemouth bass and striped bass certified were directly related to stocking programs. Despite limited participation in Texas angler recognition programs, data indicate fishing quality has improved for largemouth bass, smallmouth bass, striped bass and hybrid striped bass as a result of stocking.

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An angler recognition program, as defined by Quinn (1987), is a program which gives awards (certificate, pin, patch, etc.) to anglers who submit official affidavits for the catch of large fish. Primary objectives of such a program are to increase fishing interest and enthusiasm, provide a positive element of public relations, and yield information about the catch of large fish. Quinn (1987) reported that 31 state agencies administer such programs, but few use the results except for public relations.

The Texas Parks and Wildlife Department has administered 2 angler recognition

programs, Texas State Fish Records (TSR) and Big Fish Awards (BFA), since 1970 and 1974, respectively. Biologists have used state record data to document the occurrence of rare species (Cordova 1986), aid in documentation of the range and magnitude of historical fisheries (Matlock and Osburn 1987), and determine maximum total length and age (Matlock 1987).

Quinn (1987) pointed out the potential value of angler recognition program data as an aid in evaluation of fisheries management activities. He recommended critical analysis of angler recognition program data and advocated its use as an indicator of fishing quality. Anderson (1975) and Weithman and Anderson (1978) identified the importance of trophy fish in the appraisal of fishing quality. Their results suggest fish of trophy size are a very important part of the fisheries resource. However, trophy fish are rare and it is difficult to obtain adequate information to evaluate this segment of the fish community. If production of large individuals is an objective of fishery management programs, then a technique for obtaining information about large fish is needed. The objective of this report is to summarize information collected from the TSR and BFA programs and discuss their value as a fisheries assessment tool.

Methods

Information from all TSR and BFA applications certified since 1970 and 1974, respectively, was analyzed. Data were tabulated by species, weight, date of capture, and water body. Simple linear regression was used to determine if mean weight increased over time for all species which had >30 BFA applications submitted. To enable inferences regarding the impact of various stocking programs, stocking results were correlated (SAS Inst. Inc. 1988) with information obtained from Big Fish Awards. Simple correlation was used to relate the number of BFA applications by reservoir for >4.5-kg largemouth bass to the percentage of largemouth bass containing Florida largemouth bass (*M. s. floridanus*) alleles as determined by electrophoresis (Kulzer et al. 1985). Maximum weight of striped bass for each reservoir for which BFA were submitted was correlated with years since initial stocking.

Results and Discussion

State records have been established for 156 different species since the beginning of the program in 1970. During the 1970–87 period, 423 individual state record applications from 60 different water bodies were certified. Most applications (71%) were from salt water. For freshwater species, records for striped bass and its hybrid with white bass were broken 8 and 7 times, respectively. The record for largemouth bass has been broken 5 times since 1981 (Table 1).

BFA were given to 512 anglers during the 1974–87 period. Awards for 25 different species from 105 different water bodies were certified. Most of the awards (95%) were for freshwater species with 287 for largemouth bass, 44 for striped bass, 33 for hybrid striped bass, and 40 for smallmouth bass.

Table 1. Texas largemouth bass state records, 1943–1986.

Date	Weight (kg)	Genetic identification[a]
16 Jan 43	6.12	NLMB
2 Feb 80	6.39	FLMB
10 Jan 81	6.45	F_1
7 Feb 81	7.03	F_1
16 Feb 86	7.67	FLMB
26 Nov 86	8.02	UNKNOWN

[a]NLMB = northern largemouth bass.
FLMB = Florida largemouth bass.
F_1 = first generation intergrade.

Of the 4 species with sufficient samples to test for changes in mean weight over years, slopes of regression lines were significant for largemouth bass ($P < 0.0001$) and smallmouth bass ($P = 0.043$). Mean weight of largemouth bass submitted for BFA increased from 4.0 kg in 1974 to >5.0 kg in 1986 and 1987 (Fig. 1). Mean weight of smallmouth bass increased from 2.16 kg in 1979 to 2.63 kg in 1987. Significant positive correlation ($N = 43$, $r = 0.53517$, $P = 0.0002$) was found between the number of largemouth bass submitted to BFA >4.5 kg and the percent of fish containing the Florida largemouth bass allozymes. A positive correlation was also determined for the maximum weight of striped bass submitted to Big Fish Awards and years since initial stocking of the species ($N = 9$, $r = 0.64700$, $P = 0.059$).

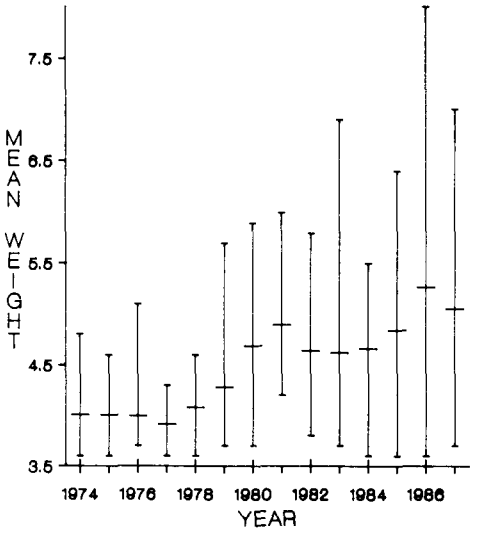

Figure 1. Mean weight (kg) and ranges of largemouth bass certified for Big Fish Awards, Texas, 1974–1987.

Increased occurrence of trophy fish in angler recognition programs can aid in documenting the success of management activities which have objectives to increase the size of fish available to anglers. An example of this in Texas is the Florida largemouth bass stocking program initiated in 1972. One objective of this program was to increase the catch of trophy largemouth bass. Data from TSR indicate that the objective is being met. The largemouth bass Texas state record, which had remained for 37 years, was broken 5 times during a 6-year period after the introduction of Florida largemouth bass. This is similar to results from California, where their state record increased from 6.78 kg in 1968 to 9.50 kg in 1973 and was broken for 5 consecutive years (Prorok 1984).

In addition to increases in weight of state record largemouth bass, number and mean weight of largemouth bass certified through the BFA have increased over time. Prior to the introduction of Florida largemouth bass, catches of fish $\geq$4.5 kg were rarely reported by Texas anglers. BFA applications were certified for only 8 bass >4.5 kg from 1974 through 1978. From 1979 through 1987, 123 BFA applications for largemouth bass >4.5 kg were reported. The number of reservoirs yielding bass eligible for BFA certification increased from 2 in 1974 to 19 in 1987 with reservoirs containing higher percentages of the Florida largemouth bass alleles typically producing more eligible fish.

Increased certification of trophy smallmouth bass, striped bass, and hybrid striped bass can be directly related to initial stocking of the species into inland waters in 1974, 1967, and 1972 respectively, and subsequent stockings in an increasing number of reservoirs. Fish stocked in the earlier years have had time to achieve large size and increased stockings have given more anglers the opportunity to catch large fish. Although mean weight of striped bass reported in BFA did not significantly increase over years, maximum weight increased.

For angler recognition programs to provide enough information to allow meaningful inferences for other species, interest among anglers must be increased. Numbers of applications for saltwater and other freshwater species besides largemouth bass, smallmouth bass, striped bass, and hybrid striped bass were insufficient for reliable analysis. Quinn (1987) reported the norm for angler recognition programs in the United States is several hundred applications per year with a 1-year high of 3,600 submitted to the Virginia Citation Program. He indicated that through careful selection of standards and publicity a popular program can be established. Angler participation in the Texas programs has been low. Recent efforts, such as the Lone Star Lunker Program, Catch and Release Program (TPWD 1988), and the newly instituted Water Body Record Certification Program were designed to increase awareness of, and participation in, the Texas angler recognition programs.

The main purpose of angler recognition programs should continue to be public relations. Recognizing exceptional catches can help increase angler enjoyment of the fishing experience. If properly promoted, these programs can also provide information which can be used as an indication of fishing quality.

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