Voluntary Release of Largemouth Bass by Florida Anglers

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Abstract: Angler survey data indicated that voluntary release rates for largemouth bass (*Micropterus salmoides*) ranged from 8% to 85% for 11 Florida lakes surveyed during 1989 with a mean of 40%. Nine lakes surveyed during the past decade showed an increase in voluntary release, indicating the practice may be becoming more popular. Lake Tarpon anglers released 85% of their bass catch, and 97% of those anglers stated conservation was the reason for not keeping fish. No harvest of bass <30 cm was documented at Lake Tarpon, which supports the notion that in Florida most anglers release smaller bass. However, the level of release of quality-size bass at Lake Tarpon was unprecedented. A major factor in this unusual occurrence was the lake's highly-urbanized location.

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Catching and releasing sportfish that are legal to harvest is becoming a popular practice with anglers throughout the nation (Graff 1987). The outdoor media and organized fishing clubs have been promoting voluntary release in Florida; however, the extent of the practice has not been documented. Voluntary catch-and-release can have significant effects on fish populations and management objectives (Clark 1983, Eder 1984). Knowledge of anglers' catch-and-release practices is necessary to develop management strategies. The purpose of this paper is to document voluntary release rates for bass in various lakes throughout Florida. Additional information on angler behavior is presented from Lake Tarpon, located in the highly-urbanized Tampa Bay metropolitan area.

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Methods

Angler surveys were implemented at Lake Tarpon from March through June 1989 and September 1989 through June 1990 to quantify sportfishing harvest, effort and success, as well as angler behavior and attitudes regarding catch-and-release of largemouth bass. A stratified random sample 2-stage probability creel survey design was utilized (Nielsen and Johnson 1983). Computer-generated 2-week time periods were established, each with 3 randomly selected weekday surveys and 2 weekend surveys. Each survey was divided into 3 4-hour time periods: morning (0800–1200 hours), midday and late afternoon (1201–1600 hours) and late afternoon (1601–2000 hours). Time periods were assigned a non-uniform probability value based on preliminary angler count surveys. At the mid-point of each survey, all anglers on the lake were counted.

Anglers interviewed by a roving clerk were asked for the following information: domicile, affiliation with organized fishing clubs, primary species sought, number caught/kept or released, and duration of angling effort. Largemouth bass anglers who caught and released fish were asked to explain their reasons for the practice. Responses were recorded in 1 of the following best-fit categories: conservation of the resource/prevent overfishing, health precautions (e.g., fear of toxic contamination), not wanting to bother with keeping catch, or questionable legality of keeping certain-sized fish. Sizes of bass catch observed by the clerk and angler recollection of released fish were recorded in estimated weight categories: <0.5 kg, 0.5–1.4 kg, 1.5–2.7 kg, or >2.7 kg. Estimated weights were used to evaluate size range of bass catch because it was determined that most anglers evaluated catch by weight instead of length.

Data for harvest, effort and success were analyzed using the Cooperative Game and Fish Statistics Project program, created by North Carolina State University and adapted for in-house microcomputer use (S. Hardin, unpubl. rep., Fla. Game and Fresh Water Fish Comm., Tallahassee 1986). Angler survey data collected from 10 other Florida lakes both in 1989 and in previous years ranging from 1977 to 1988 (Table 1) were analyzed to determine percent bass catch released. Survey designs and analyses were similar to those employed at Lake Tarpon; therefore, data comparisons were valid (S. Hardin, pers. commun.). Percentages of bass released for all lakes (Table 1) were obtained by averaging quarterly (12-week) estimates with relative standard errors below 20% (Nielsen and Johnson 1983). All lakes in this study had reputations as good sportfisheries and were under statewide regulations of a 10-bass daily limit with no size restrictions.

Results and Discussion

Voluntary release of bass ranged from 8% to 85% of total catch in 11 lakes surveyed during 1989 (Table 1). Mean and median percent released were 40% and 37%, respectively. Lake Tarpon anglers practiced the highest rate of catch-and-release at 85%. Percent released data from 9 lakes sampled 1 to 14 years prior to

Table 1. Angler release of largemouth bass reported during creel surveys in 11 Florida Lakes.

Lake	Size (ha)	Dates surveyed	% of Bass catch released[a]
Tarpon	1,000	1989–1990	85
Tohopekaliga	7,612	1989	63
		1977–1987	28
Okeechobee	181,303	1989	51
		1986–1988	33
Jackson	1,620	1989–1990	38
		1978–1987	34
Harris	5,580	1989	37
		1983–1988	27
Poinsett	1,754	1989	37
		1978–1987	36
Griffin	6,680	1989	35
		1978–1988	25
Washington	1,930	1989	34
		1979–1987	35
Kissimmee	14,143	1989	33
		1985–1988	25
		1975–1984	18
Istokpoga	10,900	1989	20
Rowell	147	1989	8
		1988	24

[a]Average of quarterly estimates.

1989 averaged 29%. Voluntary release of bass in these lakes averaged 37% in 1989, a 28% increase from previous years. Release rates at Lake Tohopekaliga increased steadily ($r^2 = 0.80$) from 1977 through 1989 (Moyer et al. 1990). This suggests that catch-and-release has increased throughout the state.

High voluntary release of bass by Lake Tarpon anglers was attributed to strong conservation attitudes of bass anglers. Most bass anglers (97%) cited conservation and prevention of overharvest as their reason for catch-and-release. Health concerns (1%), uncertainty of legal take (1%), and not wanting to bother with catch (1%) were expressed by the remainder. Documentation of high levels of mercury in bass from many Florida lakes generated tremendous public and media interest in recent years (Ware et al. 1990). However, health concerns were not a factor for voluntary release of bass at Lake Tarpon.

Lake Tarpon was the site for many bass tournaments that practiced live release. Most organized fishing clubs in Florida strongly advocate catch-and-release (P. Chapman, pers. commun.). Of bass fishermen interviewed at Lake Tarpon, 26% were members of fishing clubs, compared to 13% for bass anglers statewide (Hardin et al. 1987). Non-club fishermen at Lake Tarpon practiced equivalent levels of catch-and-release as club fishermen. The influence of club philosophies on non-club fishermen behavior was not determined.

Sizes of bass released and kept is important when evaluating effects of voluntary

release. Release of small bass (<30 cm) has been a common practice in many Florida Lakes (S. Hardin, unpubl. data). For example, in Lake Tohopekaliga from 1977 through 1984, bass anglers released 80% of bass caught that were <30 cm in length. During that same period, anglers released 28% of the total bass catch (Table 1). In 1989, release of small bass at lakes Tohopekaliga and Kissimmee were 89% and 93%, respectively; while total release rates were 63% and 33%, respectively (Moyer et al. 1990). A 1987 survey of licensed Florida fishermen determined that 58% incorrectly believed that there was a statewide size limit regulation for bass (Hardin et al. 1987). No harvest of smaller bass (0.5 kg or 30 cm) was documented at Lake Tarpon (Fig. 1), which supports the trend observed in other Florida lakes of an "angler-imposed, 30-cm minimum size limit." This practice may impact some fisheries by creating an over-abundance of small bass. Lake Tarpon anglers released 80% of the catch of quality-size bass (>0.5 kg). Released-to-kept ratio for bass above 2.7 kg was 5 to 1 (Fig. 1).

Fishing pressure was relatively high during the survey with total effort averaging 152 hours/ha/year of which 70% was directed toward bass. Anglers experienced fair success with an overall rate of 0.36 bass/hour. In Florida, a desirable bass fishery exhibits a creel-generated success rate of at least 0.50 bass/hour (S. Hardin, unpubl. data). Mean bass catch (42 fish/ha/year) was high, but since most bass were released, harvest was low (7 bass/ha/year). Florida's climate allows for favorable fishing conditions throughout the year. Effort for bass was high during all seasons with peak pressure from February through March (Fig. 2). Bass fishing success rates showed no consistent relationship with effort. Highest success was recorded during late spring and early summer (Fig. 2).

During the past decade, Lake Tarpon's sportfishery has expanded and in 1989, sportfish population size and structure were indicative of a desirable fishery (Champeau et al. 1990). An improved sportfishery along with a rapidly growing urban population have made Lake Tarpon an extremely popular lake. The lake attracts

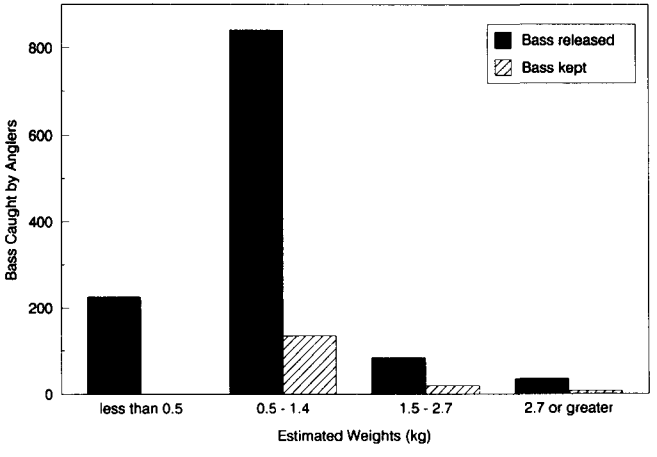

Figure 1. Estimated weights of largemouth bass caught by anglers at Lake Tarpon, 1989–90.

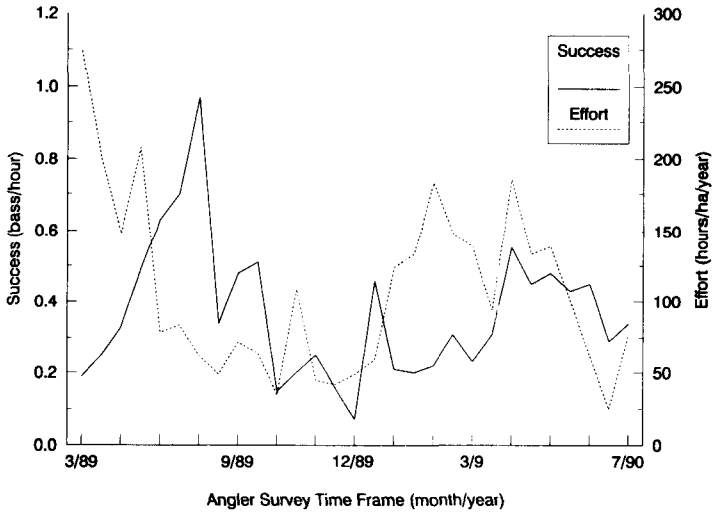

Figure 2. Angling effort and success estimates for largemouth bass at Lake Tarpon, 1989–90.

anglers from other counties and states; 33% of anglers interviewed were not county residents. Pinellas County is the most densely-populated in the state and the Tampa Bay metropolitan area currently exceeds 1.5 million people (Fla. Stat. Abstr. 1989). We believe the urban location of this fishery was the primary factor for the unusually high level of voluntary release. Anglers residing near this area are likely to be more informed and influenced by the outdoor media.

Increased voluntary release of bass possibly indicates a greater awareness toward conservative fishing practices in Florida. Surveys of licensed anglers during 1977 indicated that 45% felt that fishing quality had declined, 17% of which believed overfishing was a major factor (King and Thompson 1977). A similar survey in 1987 indicated that 56% of the fishermen felt fishing quality had declined since 1977; and overfishing was blamed by 36% (Hardin et al. 1987). The most recent survey conducted during 1989 determined that 47% felt overfishing was harming Florida's bass fisheries (Rayburn 1989). It is clear that an increasing percentage of the angling public believes fishing quality has declined and overharvest of bass is a major cause.

Many areas in Florida are becoming rapidly urbanized. If voluntary release is an artifact of urbanization as indicated at Lake Tarpon, this practice may further increase. Management implications of high voluntary release need to be identified and addressed. Educational programs to reduce hooking mortality have been recently implemented in Florida and should continue. Traditional creel designs should be modified to accurately record and express total catch and percent live-released. Clark (1983) determined that release rates >10% changed the interpretation of conventional creel survey estimates of catch and fishing mortality. Simply counting harvested bass will not provide accurate success estimates that managers use to

evaluate fishing quality. Accurate estimates of sizes of bass caught (kept and released) must be made. Error may be reduced if anglers can be encouraged to record length and/or weight of their catch while fishing. Integration of creel survey data with information concerning angler attitudes, behaviors, and perceptions of fishing quality are necessary when developing management plans.

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