The Impact of Daily Creel Limits on Sport Fish Harvest in Georgia

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Abstract: Completed-trip information was analyzed from 6 access-type creel census surveys in Georgia to evaluate the impact of statewide creel limits on restricting sport fish harvest. Interview data from 3 river surveys (1988) and 3 reservoir surveys (1 in 1985 and 2 in 1988) were analyzed to determine what percent of anglers caught the daily limit for largemouth bass (*Micropterus salmoides*), crappie (*Pomoxis* spp.), and sunfish, and to determine what percent of anglers would be affected by various daily creel limits for these species and for catfish (*Ictalurus* spp.), which currently have no creel limit. Results indicated that current Georgia daily creel limits do not significantly reduce sport fish harvest, as harvests of <1% of anglers approached the creel limits for the 3 groups of fish studied. Access-type creel surveys can be of great value in monitoring or predicting the impact of altered creel limits of anglers as well as on fish populations.

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The results of creel surveys in Georgia are typically used by fishery managers to assess the status of sport fish populations and trends in fish harvest, both in numbers and sizes. Based on conversations with many fisheries managers and the general paucity of published literature dealing with this topic (exceptions include Hoopes 1991, Redmond 1974), it does not appear that this creel information is commonly used to assess the impacts of daily creel limits on fish harvest or to determine how many anglers would likely be affected if creel limits were changed. Such information could be used to allay or substantiate the fears of administrators who are reluctant to approve more restrictive creel limits if large numbers of constituents will be affected by, and thus may not support, these actions. This statewide study of completed-trip access creel survey information from 3 reservoirs and 3 rivers in Georgia was undertaken to determine: 1) to what extent current creel limits restrict the harvest of sport fish in Georgia, 2) what statewide creel limits would be necessary to affect a significant number of anglers currently fishing for or harvesting selected sport fish species, and 3) what statewide creel limits would be

necessary to impart a significant reduction in the current sportfish harvest from public waters. Many state fisheries biologists, technicians, and creel clerks contributed to the data base upon which this study is founded, and I wish to thank them for this vital contribution.

Methods

Data from individual fishing party interviews were compiled from 6 bodies of water where access creel surveys have recently been conducted. These 6 water bodies are widely distributed within the state, and are thought to be representative of the varied public fishing opportunities available across Georgia. The Altamaha and Savannah rivers are relatively large warmwater rivers in the southeastern part of the state, whereas the section of the Chattahoochee River studied is a moderate-sized 'cool' tailwater environment in the metropolitan Atlanta area, much of which is contained within the Chattahoochee River National Recreation Area. Lake Walter F. George (18,300 ha) and Carters Reservoir (1,300 ha) are U.S. Army Corps of Engineer impoundments in the southwestern and northwestern parts of the state, respectively. Lake Juliette is a 1,500-ha cooling reservoir owned by the Georgia Power Company in the center of the state which is managed by the Game and Fish Division as a public fishing area.

Individual creel surveys lasted from 9 to 12 months, typically 10 days sampled during a 2-week period. All except the Carters Reservoir survey, which was carried out in 1985, were conducted in 1988. Interviews were used in the analysis if the interviewed fishing party had either creeled or had been fishing for largemouth bass, crappie, sunfish, or catfish. Because harvest data is obtained at the 'fishing party' level only in Georgia creel surveys, the only 'individual' level data which were utilized were from anglers who reported fishing alone (15% of all anglers in this study). To determine whether or not there was a difference in catch rates between solitary anglers and party anglers, analyses of 961 bass anglers and 867 crappie anglers from Lake Walter F. George (a portion of the interviews utilized in this study) were conducted. The results revealed that anglers fishing by themselves either harvested less fish than party anglers (bass), or the same number of fish as party anglers (crappie).

Personal conversations with Georgia law enforcement officers indicate that it is extremely rare for 1 individual within a fishing party to be issued a citation for having over the possession limit, if the cumulative individual limits of the party have not been exceeded (i.e., no individuals claim to have caught over the creel limit if the 'party' limit has not been exceeded). Thus, the fishing party creel was divided equally among the individuals in the party. For example, if a fishing party of 3 had creeled 10 bass, the data were analyzed as if each angler had creeled 3.3 bass each. All individual catches were rounded to the nearest whole number (e.g. 3.3 was rounded to 3) for further analyses. Sunfish included all centrarchids except black bass and crappie, whereas catfish encompassed all ictalurids, including bullhead species.

Results

Survey Summary

The results of the completed-trip creel information from these bodies of water indicate that few anglers catch *and* keep limits or near-limits of fish. Without exception, analyses of creel information from these 6 water bodies led to the conclusion that <1% of anglers were catching and harvesting daily creel limits of largemouth bass, crappie, and sunfish. In the following discussions, the word 'creeled' implies fish have been harvested.

Largemouth Bass

The statewide creel limit for largemouth bass in Georgia is 10 fish. Of 2,089 anglers who were either fishing for or who had creeled largemouth bass, only 15 (0.7%) had creeled a limit of 10 fish. Only one of the 15 anglers had exceeded the limit (a person fishing alone), and had 11 fish in his possession. Four of the 6 creel surveys encountered no limit catches, while the other 2 had 0.1% (Lake Juliette) and 1.8% (Lake W.F. George) of the anglers with limit catches. The statewide creel limit for largemouth bass would have to be reduced on the average to 3 fish before it would affect >5% of the anglers on these water bodies (Table 1).

Crappie

The statewide creel limit for crappie (black and white combined) in Georgia at the time of these surveys was 50 fish. Of the 1,342 anglers who were either fishing

Table 1. Proportion of largemouth bass, crappie, sunfish, and catfish anglers[a] who would be impacted by various reduced daily creel limits. The values given are the weighted averages based on the number of interviews for the 6 bodies of water being examined. Current creel limits are 10 for largemouth bass, 30 for crappie, and 50 for sunfish. There is no current creel limit for catfish.

Species	Proportion of anglers[b] impacted by this creel limit					
	2 fish	3 fish	4 fish	5 fish	6 fish	7 fish
Largemouth bass	12% (2–21%)	8% (0–14%)	4% (0–8%)	2% (0–5%)	2% (0–3%)	1% (0–3%)
	5 fish	10 fish	15 fish	20 fish	25 fish	30 fish
Crappie	21% (0–28%)	9% (0–14%)	5% (0–7%)	2% (0–3%)	1% (0–2%)	0.8% (0–1%)
Sunfish	35% (12–45%)	14% (4–23%)	6% (0–14%)	3% (0–6%)	2% (0–5%)	1% (0–3%)
Catfish	19% (2–31%)	6% (0–15%)	2% (0–8%)	1% (0–3%)	0.7% (0–2%)	0.1% (0–1%)

[a]An angler is defined as one who either fishes for or who creels the specific species or taxa.
[b]The proportion of anglers is based on a weighted mean from the 6 bodies of water studied. The numbers in parentheses represent the range of values noted for the 6 water bodies.

for or who had creeled crappie, only 2 (0.2%) had creeled or exceeded a limit of 50 fish. Only 5 anglers (0.4%) had creeled more than 30 fish on any of the water bodies.

In 1989, Georgia's statewide creel limit for crappie was reduced to 30 fish. The creel limit would have to be further reduced on the average to 15 fish before it would affect 5% of the crappie anglers (Table 1).

Sunfish

The statewide creel limit for sunfish in Georgia is 50 fish. Of the 1,955 anglers who were either fishing for or who had creeled sunfish, only 2 (0.1%) had creeled a limit of 50 fish. Only 15 anglers (0.8%) had creeled in excess of 30 fish. The creel limit for sunfish would have to be reduced to nearly 15 fish before it would affect 5% of the anglers on these water bodies (Table 1).

Catfish

There is no statewide creel limit for catfish in Georgia. Of the 797 anglers who were either fishing for or who had caught catfish, only 1 person (0.12%) had creeled >30 fish. The creel limit for catfish would have to be set at 11 fish before it would affect 5% of the anglers on these water bodies (Table 1).

Discussion

There are undoubtedly other water bodies and other years on these 6 bodies of water when creel limits for these taxa are exceeded more often, but I believe that these results represent commonly encountered creel situations in Georgia. In all cases it appears true that a rather small percentage of the anglers (approximately 7% to 15%) creel a majority (>50%) of the fish (inferred from Table 1).

A slightly higher percentage of bass anglers would exhibit limit catches to creel clerks if catch-and-release were not such a widely practiced phenomenon. Information from 756 bass tournaments held in Georgia in 1988 yielded an average of 3.2% of participants catching and reporting limits of black bass at weigh-in (Dr. Carl Quertermus (pers. commun.,). Most of these tournaments were conducted by small clubs that maintain tournament creel limits identical to state creel limits.

Despite the fact that only approximately 2% of the bass anglers would be affected statewide if the creel limit for largemouth bass were reduced to 5 fish, the overall potential reduction in the harvest of bass from such a regulation change would be 19% (the proportion of all the bass >5 creeled by individual anglers to the total number of bass creeled) (Tables 1, 2). Similar results have been found in other states. Hoopes (1991) found that only 2.5% of the smallmouth bass harvested in Pennsylvania would be saved by a reduction in the daily creel from 6 to 4 fish. Only 10% of the bass creeled during the first 4 days after Little Dixie Lake, Missouri, was opened to fishing would have been saved if the bass creel limit had been 4 fish instead of 10 (Redmond 1974). Obviously, such savings or reductions in harvest would not be realized if more anglers began fishing, or poorer anglers creeled more fish as a result of this reduced harvest by the anglers who are currently more successful.

Table 2. Proportion of largemouth bass, crappie, sunfish, and catfish which might be saved from harvest by various creel (bag) limits. Current creel limits are 10 for largemouth bass, 30 for crappie, and 50 for sunfish. There is no current creel limit for catfish.

Species	Proportion of fish[a] potentially saved[b] by this creel limit					
	2 fish	3 fish	4 fish	5 fish	6 fish	7 fish
Largemouth bass	56% (11–75%)	42% (0–56%)	30% (0–40%)	19% (0–28%)	15% (0–23%)	12% (0–19%)
	5 fish	10 fish	15 fish	20 fish	25 fish	30 fish
Crappie	73% (0–78%)	45% (0–53%)	29% (0–35%)	16% (0–24%	10% (0–16%)	0%
Sunfish	74% (46–90%)	47% (22–66%)	27% (0–45%)	15% (0–27%)	11% (0–27%)	6% (0–19%)
Catfish	56% (10–75%)	29% (0–52%)	15% (0–31%)	9% (0–16%)	6% (0–14%)	1% (0–5%)

[a]The proportion of fish is based on a weighted mean derived from relevant angler interviews from the 6 bodies of water studied. The numbers in parentheses represent the range of values noted for these water bodies.

[b]A fishery manager may wish to assume that all fish not harvested due to the institution of a more restrictive creel limit are saved or stockpiled. In reality, many of these fish may die of natural mortality or be quickly caught by other anglers and the resultant sport fish population will not increase as much as had been anticipated.

In the case of crappie, if the statewide creel limit were lowered to 20 fish, this would impact only 2% of crappie anglers and could result in a 16% reduction in the harvest of crappie (Tables 1, 2). A reduction of the daily creel limit for crappie to 15 fish would impact 5% of crappie anglers and could result in a 29% reduction in crappie harvest.

The status with respect to sunfish is very similar to that of crappie. If the statewide creel limit were lowered to 20 fish, it would impact 3% of the anglers and result in a 15% potential reduction in the harvest of sunfish (Tables 1, 2).

In the case of catfish, for which there is no current creel limit, a statewide creel limit of 30 catfish would impact only 0.1% of the catfish sport anglers, and would result in a potential harvest reduction of only 1% (Tables 1, 2). A creel limit of 20 catfish would affect 1.1% of catfish anglers and could result in a reduction in catfish harvest of 9%. There is a considerable commercial basket and trotline fishery in Georgia, however, which may well reap the benefits of any savings from a creel limit placed solely on sport anglers.

Summary and Management Implications

Completed-trip information collected from access creel surveys can yield valuable information to: 1) fishery biologists seeking to determine the impact of a current fishing regulation on a fish population; 2) fishery managers seeking to recommend a creel limit regulation change; and 3) fishery administrators who have to defend such a change to their constituents. In this study, <1% of anglers fishing for largemouth bass, crappie, or sunfish in 3 rivers and 3 lakes in Georgia harvested at

or near the creel limits for those species (10 fish, 50 fish, and 50 fish, respectively). Therefore, the impact of current creel limits on sport fish populations is minimal. Despite the fact that no creel limit currently exists for catfish anglers, only approximately 1% of the trips by persons fishing for or catching catfish resulted in a creel of more than 20 catfish.

Statewide reductions in the current harvest of largemouth bass, crappie, and sunfish of 10% to 15% could be achieved with creel limits of 7, 25, and 25 fish, respectively, for these 3 taxa. Statewide reductions in harvest of 20% to 30%, however, would require creel limits of approximately 4, 15, and 15 bass, crappie, and sunfish, respectively. A creel limit of 15 to 20 catfish would result in a reduction in the sport angler harvest of 10% to 15%. Such a creel limit may have little effect, however, if commercial basket and trotline fishing were allowed to continue with no limits on the number of fish taken from public waters. Greater long-term reductions in harvest than those quoted here may be possible through the institution of more restrictive creel limits on individual water bodies with consistently good (as measured by high harvest rates) fisheries. At that point, the question for fisheries biologists becomes "how much of the reduced harvest is actually stockpiled in the lake or stream for redistribution to anglers or to be caught at a larger size, and what proportion die of natural mortality before any intended effect can be achieved?" Changes in fish population structures, mortality rates, and harvest rates could be quantified to judge the effects of such daily creel limit reductions.

Literature Cited

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