THE NORTH CAROLINA LARGEMOUTH BASS CATCH SURVEY

SCOTT L. VAN HORN, North Carolina Wildlife Resources Commission, Durham, NC
LARRY J. BIRCHFIELD, Carolina Power and Light Company, New Hill, NC

Abstract: The North Carolina Largemouth Bass Catch Survey was initiated in 1975 to monitor angling success for largemouth bass (*Micropterus salmoides*) in the state's waters. The survey relies heavily on the participation of organized bass fishing clubs and reflects primarily tournament fishing results. Individual participants and clubs are asked to maintain catch records for each trip on a fishing log sheet. At the end of each month, the accumulated statistics are summarized by the participant and reported by body of water on preaddressed summary postcards. All materials are provided by the North Carolina Wildlife Resources Commission. The data are consolidated annually by body of water and season of year. The number of largemouth bass (TL $\geq$ 30 cm) caught per hour fished declined steadily in North Carolina reservoirs from 0.26 in 1977 to 0.18 in 1980. During the same period the catch rate in rivers and streams remained stable at between 0.23 and 0.25 fish per hour.

Proc. Ann. Conf. S.E. Assoc. Fish & Wildl. Agencies 35:453-459

The popularity of fishing for largemouth bass has grown nationally, fueled mostly by the Bass Angler's Sportsman's Society (B.A.S.S.). There are well over 100 bass fishing clubs in North Carolina. Many of these groups participate in numerous tournaments where excellent catch records are maintained. Alexander and Holbrook (1978) recommended using tournament records as a cost effective means of obtaining useful information on largemouth bass fisheries. The North Carolina Wildlife Resources Commission introduced its Largemouth Bass Catch Survey in 1975 to gain access to the catch data generated by the state's bass fishermen. The survey was designed to monitor trends in the angling success of survey participants on individual bodies of water. This paper describes how the North Carolina Largemouth Bass Catch Survey is organized and summarizes catch statistics collected from 1975 through 1980.

This study was completed with the aid of Federal Aid in Fish Restoration funds under the North Carolina Wildlife Resources Commission's Piedmont Fisheries Investigations Project (F23R).

METHODS

The North Carolina Largemouth Bass Catch Survey is conducted statewide. Anglers fishing for largemouth bass are recruited for the survey using personal contacts, new releases, magazine articles, and posters. Special efforts are made to recruit organized bass fishermen, consequently the survey principally reflects the results of bass fishing tournaments. Participants are added or deleted from the survey at any time.

The North Carolina Wildlife Resources Commission provides each participating club or individual with fishing logs (Fig. 1), summary cards (Fig. 2) and an instruction pamphlet. Each participant is assigned a numerical identification code which is printed on the summary cards to facilitate record maintenance. Survey cooperators are asked to maintain a fishing log by making an entry for each fishing trip on the form provided. At the end of each month the participants summarize the information from the fishing log sheets and record the data for each body of water fished on the preaddressed summary postcards. The postcards are returned to the Wildlife Resources Commission where the data are summarized annually. An annual fisherman's report is sent to all survey cooperators to encourage cooperation. Members who return at least one postcard summary for each month of the year are awarded shoulder patches which identify them as 100% cooperators.

RESULTS AND DISCUSSION

Many of the summary postcards are returned to the Wildlife Resources Commission partially completed. The location fished, number of bass caught exceeding the minimum size limit, and the angler hours are reliably reported. Consequently, this paper reports catch rates in numbers of legal size largemouth bass caught per angler hour as reported by the survey participants. Legal sizes for largemouth bass in North Carolina are 30.5 cm (12 in) and longer in the eastern ⅔ of the state and 25.4 cm (10 in) and longer in the mountains.

The value of the Largemouth Bass Catch Survey to fisheries managers is dependent upon the catch statistics representing reliable indices of largemouth bass fishing success on particular bodies of water. If the success of survey participants is an indicator of overall largemouth bass fishing success, then the survey results can be used to make comparisons between bodies of water, or accumulated through time to evaluate trends in angler success. It is not necessary for catch rates of survey participants to be an estimate of the success of all largemouth bass fishermen. However, Alexander and Holbrook (1978) found that bass club records totaling 6000 to 8000 angler hours for each of 3 Tennessee reservoirs produced monthly catch statistics which did not differ significantly ($P < 0.05$) from those obtained by creel surveys on the same reservoirs.

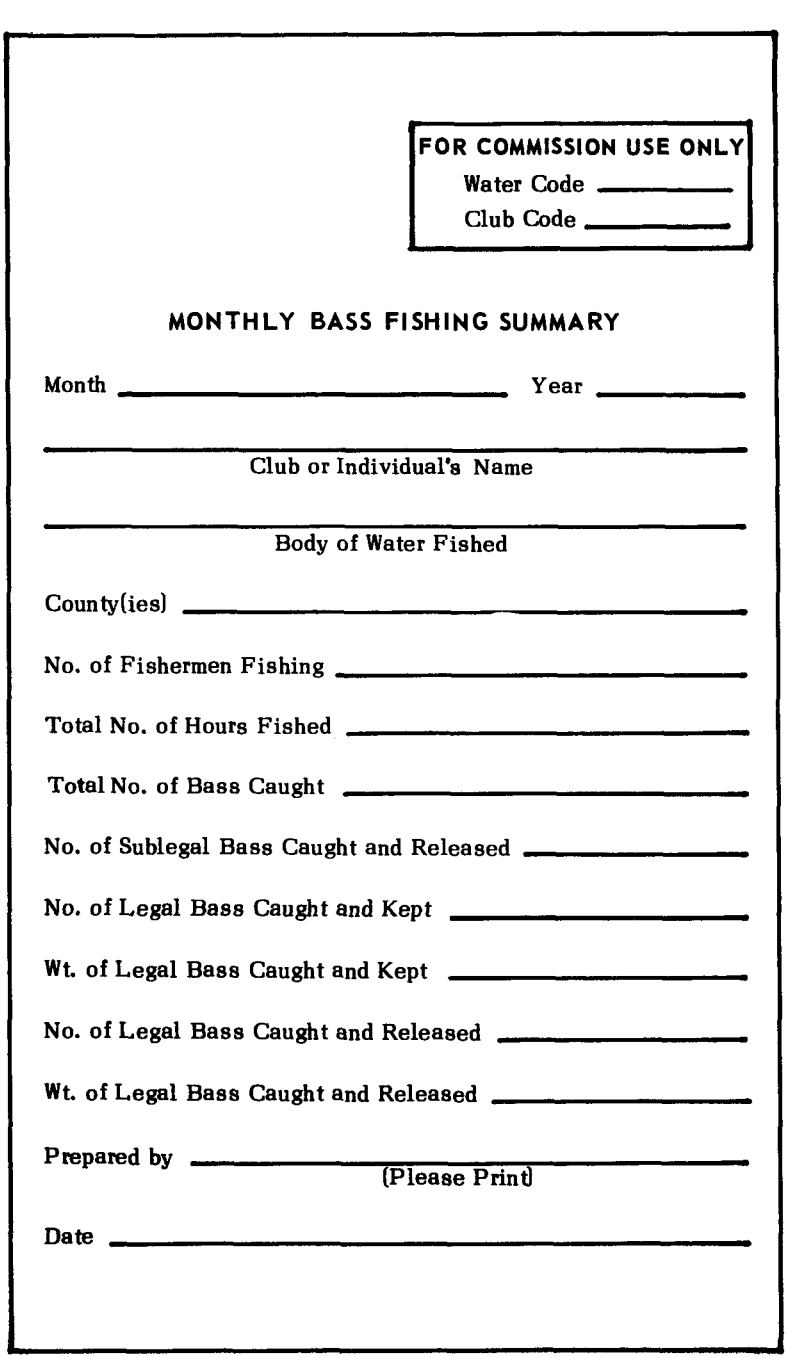
A maximum of 18,072 angler hours was reported to the Largemouth Bass Catch Survey for 1 body of water in a 1-year sampling period. An average of 3251 hours (range 358 - 10,843 hours) was reported for each of the 10 popular reservoirs and 2034 hours (range 424 - 6608 hours) for each of 10 popular rivers during the 1980 survey year.

Table 1 presents examples of participation and catch statistics reported on 12 North Carolina waters popular among survey participants. Correlation analysis of years and catch rates indicated that significant ($P < 0.05$) declines in angler success occurred on Gaston Reservoir and Lake Wylie. Apparent declines, though not significant ($P \leq 0.05$), occurred on other waters presented in Table 1, most notably Badin Lake, Kerr Reservoir, Lake Hickory and the Roanoke River.

Table 2 shows the number of fisherman hours reported annually since 1975 for 4 types of water. Reservoirs included all waters exceeding 400 hectares total area. Small lakes included waters between 20 hectares and 400 hectares. Ponds were those waters less than 20 hectares.

(1) DATE(S)	(2) FISHERMAN'S NAME	(3) BODY OF WATER FISHED	(4) COUNTY(IES)	(5) TOTAL HOURS FISHED	(6) TOTAL NUMBER BASS CAUGHT	(7) NUMBER SUBLEGAL BASS CAUGHT & RELEASED	(8) NUMBER AND WEIGHT OF LEGAL BASS CAUGHT AND KEPT			(9) NUMBER AND WEIGHT OF LEGAL BASS CAUGHT AND RELEASED		
							NO.	POUNDS	OUNCES	NO.	POUNDS	OUNCES

Fig. 1. Fishing log sheet issued to Largemouth Bass Catch Survey participants for keeping catch records of each angling trip.


FOR COMMISSION USE ONLY
Water Code _____
Club Code _____

MONTHLY BASS FISHING SUMMARY

Month _____ Year _____

_____
Club or Individual's Name

_____
Body of Water Fished

County(ies) _____

No. of Fishermen Fishing _____

Total No. of Hours Fished _____

Total No. of Bass Caught _____

No. of Sublegal Bass Caught and Released _____

No. of Legal Bass Caught and Kept _____

Wt. of Legal Bass Caught and Kept _____

No. of Legal Bass Caught and Released _____

Wt. of Legal Bass Caught and Released _____

Prepared by _____
(Please Print)

Date _____

Fig. 2. Summary postcard used by Largemouth Bass Catch Survey participants to report total monthly catch records by body of water.

Table 1. Angler hours reported and number of legal size largemouth bass caught per hour fished from 12 North Carolina waters.

	1977		1978		1979		1980	
Body of water	Man-hours	Catch rate	Man-hours	Catch rate	Man-hours	Catch rate	Man-hours	Catch rate
Badin Lake	2,827	0.21	3,503	0.18	1,740	0.21	1,594	0.12
Gaston Reservoir	18,072	0.26	6,521	0.22	4,849	0.15	4,969	0.12
High Rock Lake	6,088	0.22	3,742	0.28	4,003	0.23	2,943	0.23
Kerr Reservoir	11,880	0.26	11,534	0.21	9,926	0.24	11,017	0.18
Lake Hickory	4,195	0.26	4,019	0.22	2,922	0.25	2,602	0.20
Lake Norman	5,687	0.33	6,245	0.29	4,022	0.26	3,442	0.31
Lake Wylie	4,046	0.41	5,163	0.28	4,308	0.26	3,342	0.17
Cape Fear River	880	0.18	1,470	0.22	1,670	0.26	490	0.21
Chowan River	2,878	0.31	9,380	0.28	5,653	0.28	6,608	0.29
Neuse River	1,005	0.24	2,032	0.16	1,006	0.29	2,142	0.26
Pamlico River	2,825	0.21	1,504	0.27	4,951	0.26	2,089	0.27
Roanoke River	1,716	0.30	2,465	0.22	1,635	0.20	2,877	0.20

Table 2. Angler hours submitted to the largemouth bass catch survey since 1975.

Body of water	Hours fished					
	1975	1976	1977	1978	1979	1980
Sounds and bays	24	150	1,052	1,502	1,468	1,071
Reservoirs	8,285	23,344	63,761	50,762	42,703	38,435
Small lakes	875	183	2,575	2,081	2,204	2,467
Ponds	473	298	1,775	1,358	788	655
Rivers and streams	2,853	3,966	16,693	24,262	22,777	22,403
Totals	12,510	27,941	85,856	79,965	69,940	65,031

Data collection did not begin until the 2nd half of 1975 and only 12,510 fisherman hours were included in the survey that year. The North Carolina B.A.S.S. Federation joined the survey in 1977 and required members to submit a minimum of 5 summary cards annually. The survey reached a peak of 85,856 reported angler hours that year. Participation in the survey has declined since then, most notably with reservoir reporting.

Table 3 shows the catch of legal size bass per angler hour computed annually for each type of water since 1975. Reporting on sounds and bays, small lakes, and ponds has been low every year, primarily because they are not favored tournament sites. Consequently, the accumulated catch data may not be suitable for comparisons by types of water, among individual water bodies, or years.

Table 3. Number of legal size largemouth bass caught per angler hour for 6 years of the bass catch survey.

Body of water	1975[a]	1976[a]	1977	1978	1979	1980
Sounds and bays		0.28	0.40	0.32	0.25	0.28
Reservoirs	0.31	0.19	0.26	0.24	0.22	0.18
Small lakes	0.17	0.55	0.20	0.25	0.18	0.13
Ponds	0.36	0.58	0.45	0.40	0.46	0.60
Rivers and streams	0.35	0.29	0.23	0.25	0.25	0.25

[a] Limited data.

The most data have been accumulated on reservoirs and rivers and streams, particularly since 1977. Average catch rates in reservoirs as reported to the survey have declined steadily from 0.26 fish per hour in 1977 to 0.18 fish per hour in 1980. Correlation analysis indicates that the decline is not significant ($P < 0.05$) however. Catch rates on rivers and streams have remained stable at approximately 0.25 fish per hour.

Dr. Carl Quertermus of the Georgia B.A.S.S. Federation has compiled the catch statistics of bass tournaments conducted by Federation affiliated clubs in Georgia since 1976. Dr. Quertermus reports (personal communication) tournament catch rates of 0.26 bass per angler hour 1976 - 1977, 0.21 bass per hour in 1978, and 0.22 bass per hour in 1979. Only largemouth bass 30.5 cm (12 in) or longer were included in the summary. Total anglers hours were 50,273 in 1976 - 1977, 55,529 in 1978 and 61,156 in 1979.

In a similar study using West Virginia bass club tournaments, Jernejcic and Courtney (1980) reported catch rates for all black bass (TL $\geq$ 30.5 cm). In 1979, 19,798 tournament hours were reported on West Virginia rivers and the mean catch rate was 0.08 fish per hour. On reservoirs, 6993 tournament hours were reported and the catch rate was 0.05 bass per hour. Both figures are much lower than those reported in Georgia and North Carolina.

The data most often absent, or estimated, on the summary cards are the number of sublegal bass caught and the weight of fish exceeding minimum size limit. The latter was particularly true for fish caught and released on the water. Tournament data usually provide accurate weight information on all bass returned to the weigh-in site. The weights of fish caught outside of tournaments were usually estimated.

Participation in the survey is voluntary, therefore nonreporting of unsuccessful trips may also bias catch statistics. Tournament fishing data assure that the survey will have a record of each angler's catch, successful or otherwise.

Some data submitted to the survey may be fabricated to meet North Carolina B.A.S.S. Federation's minimum cooperation standards, or to qualify for the 100% participation patches. To reduce this potential bias, survey participants are not required to fish in order to submit a card. A summary card reporting that no fishing occurred during the month is accepted towards minimum participation requirements.

A small percentage of smallmouth bass and spotted bass are included in the catch statistics reported to the survey. The numbers of these fish are small because the range of both species within the state is restricted and these waters are not generally popular with the survey participants.

The prinicpal advantage of the Largemouth Bass Catch Survey is that largemouth bass catch statistics for a select group of anglers can be obtained for many bodies of water at a low cost. The angling success of the survey participants should function as an index of the success of all bass anglers when a sufficient number of angler hours have been obtained. The costs of procuring similar data by creel survey methods are much higher. Low operating costs makes it possible to obtain data over a period of years, giving fishery managers an opportunity to examine trends in angler success for particular waters or groups of waters. Such a tool should be helpful in allocating management efforts and resources. Another benefit of the survey in North Carolina has been the development of better communications between organized bass fishermen and the Wildlife Resources Commission. The state's largemouth bass fisheries should benefit from the cooperation between fisheries managers and users of the aquatic resource.

LITERATURE CITED

Alexander, C. M., and J. A. Holbrook, II. 1978. Comparison of bass club records with creel censuses. Proc. Ann. Conf. S.E. Assoc. Fish and Wildl. Agencies 32:446-448.

Jernejcic, F., and D. Courtney. 1980. Summary of bass fishing tournaments on West Virginia waters in 1979. W. Va. Dept. Nat. Res. 17pp.