EXPERIMENTS WITH WHITE CATFISH AS A SPORT FISH

E. E. PRATHER

Zoology-Entomology Department Series
Fisheries No. 2

AGRICULTURAL EXPERIMENT STATION
AUBURN UNIVERSITY

E. V. Smith, Director June 1965 Auburn, Alabama

EXPERIMENTS WITH WHITE CATFISH AS A SPORT FISH

E. E. PRATHER*

INTRODUCTION

The range of white catfish, Ictalurus catus (Linnaeus), was originally the Atlantic Coastal areas of the United States from Delaware to Florida. However, it has been introduced into many parts of the Middle West and even into Nevada and California (La Rivers, 1962). It has successfully adapted to a variety of different habitats, but appears to prefer slow or standing waters, either fresh or brackish. This species has supported a commercial fishery in several areas, and in addition, it has provided considerable sport fishing in certain large reservoirs where it was abundant (McCammon and LaFaunce, 1961; McCammon and Seeley, 1961; Pelgen, 1954; Stevens, 1959). However, there are few data relating to the value of the white catfish as a sport fish for smaller ponds and lakes.

The white catfish was used in experiments at the Auburn University Agricultural Experiment Station in 1958, and Prather and Swingle reported results on production and spawning in ponds (1960). It spawned readily in ponds, responded favorably to supplemental feeding, and gave high production per acre. Quality of the meat was considered equal to that of channel catfish. Therefore, it appeared to be a promising species that warranted further testing to determine its value as a sport fish for ponds.

EXPERIMENTS AT DIFFERENT RATES OF STOCKING

Rate of 2,000 white catfish per acre. In the first experiment, a 2.5-acre pond was stocked per acre January 26, 1962, with 1,000 fathead minnows, January 31 with 2,000 white catfish fingerlings (3 to 6 inches in length),

---

*Associate Professor, Auburn University Agricultural Experiment Station.

Supported jointly by funds from Auburn University Agricultural Experiment Station and by Alabama Department of Conservation Dingel-Johnson Project F-10-R.

and May 17 with 100 largemouth bass fingerlings. No fertilizer was used, but the fish were fed Auburn No. 2 pellets daily except Sundays at rates varying from 1.6 pounds to 30.0 pounds per acre from February 5 to November 10. A total of 3,370 pounds of feed was used per acre during this period.

Seining during the summer showed that the pond had become contaminated with green sunfish, but the bass kept them from becoming too numerous. The white catfish grew at a satisfactory rate; samples averaged 0.56 pound by July 15, with the largest ones weighing 0.8 pound.

The pond was opened to public fishing daily except Sunday from July 16 to October 22, 1962. Fishing permits were $1 each with a limit of 5 white catfish and/or bass per permit. Fishermen found the white catfish difficult to catch, and poor fishing success combined with small size of the fish failed to attract many fishermen. It should be noted, however, that an adjacent pond containing channel catfish and bass, averaging between 1 and 2 pounds each, was also open to fishing at the same time. Most fishermen preferred to fish the latter pond where fishing success was better and the fish were larger.

Thus, fishing effort for the white catfish was low. During the entire fishing period on a per acre basis, 54 fishermen caught only 86 white catfish weighing 49.8 pounds, 16 bass weighing 3.1 pounds, plus 1.4 pounds of miscellaneous fish. On the average, 3.1 hours were required to catch each white catfish and 5.3 hours to catch one pound of white catfish.

Because of the poor fishing and difficulty in catching many of the white catfish by seining, it was feared that their survival was low. Therefore, the pond was drained November 15, 1962, to determine what fish remained. A total of 1,642 white catfish weighing 1,411.5 pounds was recovered per acre, indicating a survival of 86.4 per cent including the catch. Therefore, excessive mortality was not an important problem in this pond. It is believed

that small size of the catfish was one of the reasons for poor fishing success, and it certainly contributed to the low fishing effort. In addition, better fishing and larger fish in the adjacent pond contributed to low fishing effort for the white catfish.

Rate of 3,000 white catfish per acre. In the second experiment, the same 2.5-acre pond was stocked per acre with 3,000 white catfish fingerlings plus 1,000 fathead minnows February 20, 1963, with 100 largemouth bass fingerlings April 15, and with 742 Nile tilapia, Tilapia nilotica July 17. The pond was fertilized once, April 16, with superphosphate only. Auburn No. 2 pellets were fed daily except Sundays at rates of 2 to 25 pounds per acre per day from February 25 to November 5, 1963. Samples of the catfish were obtained by seining at monthly intervals. Feeding rate was increased by approximately 5 pounds per acre per day each month until the maximum rate was reached during September. Feeding was resumed February 13, 1964, at a maintenance level of 2 pounds per acre per day; the daily acre rate was increased to 25 pounds March 16 - August 8, and reduced to 16 pounds from August 10 - September 19. A total of 6,357 pounds was fed per acre during both years. Samples of catfish were also checked periodically for parasites but no difficulty was encountered. Plankton blooms of Microcystis became objectionably heavy during July 1963, but were thinned adequately by 4 weekly treatments each consisting of 0.8 pound copper sulfate per acre. The chemical was placed in a cloth bag and staked just under the surface where wave action slowly dispersed it throughout the pond.

The pond was opened to public fishing September 24, 1963; by December 5 fishing success had declined because of cold weather and the pond was closed. Fishing was opened again March 16, 1964, and continued through September 16. The charge for fishing permits was $1 each with limits of 5 catfish and/or

bass per permit. An additional 5 fish could be caught on each permit by paying 30 cents for each fish.

The catch per acre is given by months in Table 1. Fishing success was good during the first month, but declined as the weather became colder in the fall. Fishing remained poor when the pond was reopened in March, improved during April, was only fair in May, good in June, and excellent in July. A total of 55.8 per cent of all catfish caught was removed during July and 19.2 per cent was caught during August.

On a per acre basis, 663 fishermen caught 1,359 white catfish weighing 1,703.2 pounds, 49 bass weighing 27.3 pounds, 69 tilapia weighing 25.0 pounds plus 5.6 pounds of miscellaneous fish, or a total of 1,761.1 pounds. Fishermen caught 45.3 per cent of the catfish stocked, and 32.4 per cent was recovered when the pond was drained September 29, giving a recovery of 77.7 per cent of the total number stocked. There were 935.6 pounds white catfish, 31.8 pounds bass, 62.0 pounds fatheads, plus 63.5 pounds miscellaneous fish recovered per acre on draining; total production was 2,854.0 pounds per acre including the catch. The white catfish reproduced during 1964 but only 200 fingerlings per acre were present when the pond was drained.

Rates of 1,600 channel catfish plus 400 white catfish per acre. In the third experiment, a 22-acre pond was stocked per acre with 1,600 channel catfish fingerlings March 1, 1963, with 400 white catfish fingerlings and 1,000 fathead minnows March 5, with 100 largemouth bass fingerlings April 15, and with 1,000 Java tilapia fingerlings July 1. This pond received only two applications of triple superphosphate in March and April. Auburn No. 2 pellets were fed daily except Sunday at rates per acre of 2 pounds, March 4 - April 1; 5 pounds, April 2 - May 6; 10 pounds, May 7 - June 1; 15 pounds, June 3 - August 3; 20 pounds, August 5 - August 21; 25 pounds, August 22 - September 28;

Table 1. Number of Fishermen and Catch per Acre

Date	Fisher-men	White catfish		Bass		Tilapia		Misc.	Total
	No.	No.	Lb.	No.	Lb.	No.	Lb.	Lb.	Lb.
1963									
Sept.	18.0	58.8	46.5	12.8	7.8	48	18.2	0.2	72.7
Oct.	55.2	86.8	79.6	21.6	12.5	21	6.8	0.2	99.1
Nov.	8.8	8.0	9.0	0.8	0.4			0	9.4
Dec.	0	0	0	0	0			0	0
1964									
March	10.0	12.0	11.7	0.8	0.6			0.2	12.5
April	12.4	26.8	30.8	0.4	0.2			0	31.0
May	18.4	25.6	33.9	1.6	0.8			0.4	35.1
June	51.2	109.2	152.2	0.4	0.2			0.7	153.1
July	300.4	742.4	950.0	0.4	0.2			2.8	953.0
Aug.	149.2	241.6	324.6	3.6	1.2			1.1	326.9
Sept.	39.2	48.0	64.9	6.8	3.4			0	68.3
Totals	662.8	1,359.2	1,703.2	49.2	27.3	69	25.0	5.6	1,761.1

18.2 pounds, September 30 - October 12; 13.6 pounds, October 14 - November 2; 9.1 pounds, November 4 - 7; and 4.5 pounds November 8 - December 30. In 1964, the daily feeding rates per acre used were; 4.5 pounds, January 6 - 25; 5 pounds, March 16 - 21; 10 pounds, March 23 - July 4; 8 pounds, July 6 - September 5; and 5 pounds, September 8 - September 16. A total of 4,164.9 pounds per acre was used during the entire experiment.

Examination of a sample of channel catfish May 20, 1963 revealed that an infestation of gill flukes was present on the channel catfish and a pond treatment with 10 ppm formalin was applied to control this parasite. The formalin killed part of the plankton, which upon decomposition decreased the oxygen concentration in the water. On May 23, the dissolved oxygen decreased to a low of 1.1 ppm at the 4 foot level, but it never went low enough to kill fish.

The pond was opened to public fishing September 6 - December 4, 1963, and March 16 - September 16, 1964. Permits were sold at $1 each and entitled the fisherman to a limit of 5 catfish and/or bass with extra fish costing 30 cents each. Boats were also available at $1 each. The number of fishermen and catch per acre are given by months in Table 2. One of the objectives in this experiment was to compare fishing success for these two species of catfish when stocked in a ratio of 4 channel catfish to 1 white catfish, with a total of 2,000 per acre. On an acre basis, 559 fishermen caught a total of 1,340.6 pounds, consisting of 981.3 pounds channel catfish, 264.2 pounds white catfish, 44.4 pounds bass, 37.7 pounds tilapia, and 13.0 pounds miscellaneous fish. The total catch by fishermen in this pond was about the same as that obtained in previous experiments where 2,000 channel catfish were stocked per acre and fed at similar rates (Prather, 1959). Fishermen caught 5 channel catfish for each white catfish, although the stocking ratio was 4:1.

Table 2. Number of Fishermen and Catch per Acre

Date	Fisher-men	Channel catfish		White catfish		Bass		Java tilapia		Misc.		Total
	No.	No.	Lb.	No.	Lb.	No.	Lb.	No.	Lb.	No.	Lb.	Lb.
1963												
Sept.	86.1	284.2	197.0	42.1	39.5	52.3	26.0	114.2	28.6	0.3	0.1	291.2
Oct.	60.5	140.5	111.5	21.3	22.3	2.8	1.8	31.5	9.0	2.5	0.3	144.9
Nov.	24.6	44.1	36.0	3.5	3.8	0.3	0.2	0.4	0.1	0.2	0	40.1
Dec.	0.3	0.2	0.2	0.1	0.1	0	0	0	0	0	0	0.3
1964												
March	39.5	36.9	33.0	15.4	20.5	4.6	4.7			1.9	1.0	59.2
April	74.7	207.1	184.8	28.9	36.2	2.5	2.6			16.8	3.2	226.8
May	87.0	157.6	162.7	34.9	47.1	0.7	0.7			6.8	3.4	213.9
June	66.0	76.9	97.0	32.7	49.5	3.6	3.6			1.5	2.1	152.2
July	58.4	58.6	90.7	10.6	16.2	1.2	1.3			0.5	1.1	109.3
Aug.	41.5	27.1	45.8	11.3	17.6	3.4	1.8			0.8	1.5	66.7
Sept.	20.3	11.6	22.6	6.3	11.4	3.7	1.7			0.1	0.3	36.0
Totals	558.9	1,044.8	981.3	207.1	264.2	75.1	44.4	146.1	37.7	31.4	13.0	1,340.6

The pond was drained October 22, 1964, and 110 white catfish weighing 143.2 pounds, 84 channel catfish weighing 147.4 pounds, 81 bass weighing 40.4 pounds, 10,843 fatheads weighing 37.5 pounds, plus 90.1 pounds miscellaneous fish were recovered per acre. The white catfish spawned during the spring of 1964, but few young escaped predation since on draining only 14 small white catfish were recovered per acre. The channel catfish apparently did not spawn since no young were recovered.

A total of 76 per cent of the white catfish stocked was accounted for; fishermen caught 52 per cent and 24 per cent was recovered on draining. Fishermen caught 65 per cent of the channel catfish and 5 per cent was recovered on draining, or a total of 70 per cent accounted for.

Effective baits for both white catfish and channel catfish included large pinkworms, chicken and beef liver, catalpa worms, live minnows and cut fish, plus commercially prepared blood and cheese bait. Artificial lures were seldom used and appeared ineffective in these waters that were highly colored with plankton as a result of daily feeding.

CONCLUSIONS

1. The white catfish is more difficult to catch than channel catfish, but it provides good fishing.
2. Although most fishermen agree that the white catfish tastes as good as the channel catfish, a majority prefer the latter since it bites better, fights harder, and gives about 5 per cent higher dressed weight because of smaller head.
3. The presence of white catfish in combination with channel catfish appears desirable and might extend the period of good fishing since they are less readily caught.
4. While white catfish spawned in this combination of species, insufficient young escape predation to maintain good fishing for a long period when heavy fishing effort is exerted.

LITERATURE CITED

La Rivers, Ira. Fishes and Fisheries of Nevada. Nevada State Fish and Game Commission, State Printing Office, Carson City, 782 pp. 1962.

McCammon, George W. and LaFaunce, Don A. Mortality Rates and Movement in the Channel Catfish Population of the Sacramento Valley. Calif. Fish and Game, Vol. 47, No. 1, pp. 5-26. 1961.

McCammon, George W. and Seeley, Charles M. Survival, Mortality, and Movements of White Catfish and Brown Bullheads in Clear Lake, California. Calif. Fish and Game, Vol. 47, No. 3, pp. 237-255. 1961.

Pelgen, David E. Progress Report on the Tagging of White Catfish (Ictalurus catus) in the Sacramento-San Joaquin Delta. Calif. Fish and Game, Vol. 40, No. 3, pp. 313-321. 1954.

Prather, E. E. The Use of Channel Catfish as Sport Fish. Proc. Thirteenth Annual Conf. Southeastern Assoc. Game and Fish Comm. pp. 331-335. 1959.

Prather, E. E. and Swingle, H. S. Preliminary Results on the Production and Spawning of White Catfish in Ponds. Proc. Fourteenth Annual Conf. Southeastern Assoc. Game and Fish Comm. pp. 143-145. 1960.

Stevens, Robert E. The White and Channel Catfishes of the Santee-Cooper Reservoir and Tailrace Sanctuary. Proc. Thirteenth Annual Conf. Southeastern Assoc. Game and Fish Comm. pp. 203-219. 1959.