

A COMPARATIVE STUDY OF TWO CATFISH BASKET BAITS *

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Raleigh, N. C.
1962

ABSTRACT

A study comparing pressed cottonseed cake with fresh cut fish as baits for catfish baskets was conducted at High Rock Reservoir in Piedmont North Carolina. The average weight of catfish taken in cut-fish baited baskets was 0.29 lb. while those taken in cake-baited baskets averaged only 0.14 lb. Catch per basket-day in cut-fish baited baskets was: catfish, 1.170 lb.; carp, 0.009 lb.; crappie, 0.025 lb.; sunfish, 0.001 lb.; and miscellaneous fishes, 0.003 lb. Comparable data from cottonseed cake-baited baskets were: catfish, 1.135 lb.; carp, 0.405 lb.; crappie, 0.080 lb.; sunfish, 0.002 lb.; and miscellaneous fishes, 0.002 lb.

The total weights of catfish caught by the two baits differed by only 3 percent. Cake-baited baskets caught carp while fish-baited baskets caught very few. Cake-baited baskets also caught more crappie and sunfish than fish-baited baskets.

INTRODUCTION

Present North Carolina fishing regulations prohibit the use of cottonseed cake as bait for catfish baskets. The experiment described in this paper was conducted to test the validity of such regulations in Piedmont reservoirs. Basket fishing is popular among commercial fishermen and among sportsmen who desire an occasional catfish stew. Concurrently, basket fishing makes available more of a fishery that is not adequately utilized. Therefore, the current regulations restricting basket bait to fish scraps do not seem plausible in areas such as the Piedmont reservoirs where fish scraps are not readily available.

The regulation in question is the result of work conducted in coastal streams of North Carolina (Dickson)¹. The question of its applicability in Piedmont reservoirs resulted in this experiment which was designed to:

1. Test the effectiveness of pressed cottonseed cake as compared with fish scraps as bait for catfish baskets.
2. Test the catch composition of each type bait with particular emphasis on the number and species of game fish taken.

EXPERIMENTAL PROCEDURE

Briefly the procedure was to fish a series of standard type catfish baskets according to methods used by local fishermen but in a way that the objectives of the experiment could be met.

Baskets used in the experiment were 4 feet long and 70 inches in circumference. They were constructed of 14 gauge, 1 inch mesh, welded wire. The funnels were of the same material. The outer funnel had a 10 to 12 inch opening and the inner funnel a six inch opening fitted with a woven nylon sleeve which tapered to a six inch slot. The sleeve was held in place with nylon cord. A wire door in the side of the basket was held shut with nylon cord. Twenty-eight feet of wire (at forty cents per foot) and one spool of nylon cord (at \$1.50 per spool) will make two baskets. Total cost is \$6.35 each, excluding labor.

Eight baskets were used in the experiment. In order to reduce bias, the baskets were set in pairs 50 to 100 feet apart. This distance was intended to minimize the effect of one bait attracting fish to the other basket while insuring the same type habitat for each pair. Settings were kept constant by attaching each pair of baskets to a pole with nylon rope. One basket of each pair was

* This study was financed, in part, by North Carolina Federal Aid in Fish Restoration Project F-10-R.

¹ Dickson, Arthur W., *Fish Management Investigations of Coastal Streams. Project Completion Report, Federal Aid in Fish Restoration Project F-2-R, North Carolina Wildlife Resources Commission, Raleigh, N. C. 178 pages. (1955)*

baited with fish, the other with pressed cottonseed cake, and their relative position alternated in different sets. All baskets faced downstream.

Baskets in pairs were baited simultaneously. Bait for the fish-baited baskets was supplied by a local fish market and by carp and quillback caught in gill nets and in the baskets. Rough fish collected in rotenone samples were also used.

Commercial cottonseed cake is available in two types. One type of inferior quality contains the husk of the cottonseed and disintegrates rapidly in water. The other type does not contain the husk and will stay in the basket much longer. The latter type was used exclusively in the experiment.

The project started November 21, 1957 and was completed November 23, 1958. Data was recorded on daily catch cards. Species, number, and weight were recorded for each type bait. Air and water temperatures were also recorded from January 3, 1958 until the end of the experiment.

RESULTS AND DISCUSSION

The baskets were fished 156 times during the 368-day period in which they were set. A total of 1,472 trap days for each type bait produced 6,341 fish weighing 1,778.3 lb. for fish-baited baskets and 13,611 fish weighing 2,346.5 lb. for cake-baited baskets (Table I).

TABLE I
SPECIES COMPOSITION OF FISH TAKEN IN BASKETS FROM HIGH ROCK LAKE
USING FISH SCRAPS AND COTTONSEED CAKE AS BAIT
DURING THE PERIOD 11/22/57-11/23/58

Species	No.	Fish Scraps				Cottonseed Cake			
		Wt.	% Total	% Total	No.	Wt.	% Total	% Total	
Catfish	5,868	1,722.7	92.54	96.89	12,029	1,670.5	88.38	71.19	
Crappie	423	37.1	6.67	2.09	928	75.0	6.82	3.20	
Sunfish	25	1.1	0.39	0.06	60	2.3	0.44	0.10	
Carp	15	12.9	0.24	0.72	590	596.1	4.33	25.40	
Redhorse	4	2.0	0.06	0.11	..	..	..	..
White perch	3	0.8	0.05	0.04	2	0.2	0.01	0.01	
Yellow perch	2	0.2	0.03	0.01	..	..	..	..
Lg'mouth bass	1	1.5	0.02	0.08	1	1.9	0.01	0.08	
Quillback	..	..	..	..	1	0.5	0.01	0.02
TOTAL	6,341	1,778.3	100.00	100.00	13,611	2,346.5	100.00	100.00	

Cottonseed cake was about twice as effective as fish scraps in taking numbers of fish.

There was a negligible difference in the total weights of catfish taken by the two baits. The difference in number, however, is significant. Catfish (primarily *Ictalurus catus* (Linnaeus)) caught in fish-baited baskets averaged twice the weight (0.29 lb.) of those caught in cake-baited baskets (0.14 lb.).

Over 99 percent of the total catch of both types of bait was made up of catfish, carp, and crappie (Table I). Carp comprised less than one percent of the total weight taken in fish-baited baskets. However, more than 25 percent of the total weight taken in cake-baited baskets was of this species.

Cottonseed cake was twice as effective in taking crappie as was fish scraps (Table II). Sunfish (primarily bluegill and pumpkinseed) were taken with much less frequency than crappie, but the 2 to 1 ratio between cake and fish-baited baskets persists.

Catch of species other than those discussed above was negligible.

During rough fish removal operations on coastal streams of North Carolina, Dickson (*op. cit.*) found that game fish (mostly small pumpkinseed) comprised 16.2 percent of the weight of fish taken in catfish baskets. Further tests indicated that soybean meal and bread caught higher percentages of game fish than did fish scraps.

In the present study, only 2.9 percent of the total weight taken was composed of game fish. Furthermore, 97 percent of the game fish caught consisted of stunted crappie and sunfish which, in the interest of better fish management, should be reduced in number. Although baskets baited with cottonseed cake

TABLE II
CATCH PER BASKET-DAY OF FISH TAKEN IN BASKETS FROM HIGH ROCK LAKE
USING FISH SCRAPS AND COTTONSEED CAKE AS BAIT
DURING THE PERIOD 11/22/57-11/23/58

Species	Fish Scraps		Cottonseed Cake	
	Number	Weight	Number	Weight
Catfish	3.986	1.170	8.172	1.135
Carp	0.010	0.009	0.401	0.405
Crappie	0.287	0.025	0.630	0.051
Sunfish	0.017	0.001	0.041	0.002
Others	0.007	0.003	0.003	0.002
TOTAL	4.307	1.208	9.247	1.595

caught more game fish than baskets baited with fish scraps, neither bait took fish in a manner that was deleterious to the reservoir fishery.

CONCLUSIONS

1. The total weight of catfish caught in baskets baited with cottonseed cake is not materially different from the total weight caught in baskets with fish scraps.
2. Catfish caught in fish-baited baskets averaged about twice the weight of those caught in cake-baited baskets.
3. Cottonseed cake-baited baskets took a considerable number of carp while the carp catch in fish-baited baskets is negligible.
4. Baskets baited with cottonseed cake took about twice as many game fish as baskets baited with fish scraps. The total game fish catch, however, was so small as to be considered harmless to the population.

COMPARATIVE TOXICITY TO BLUEGILL SUNFISH OF GRANULAR AND LIQUID HERBICIDES

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ABSTRACT

The toxicity to bluegill sunfish, *Lepomis macrochirus*, Rafinesque, of granular formulations of ten commercial herbicides is presented. The following chemicals are included: three esters of 2,4-dichlorophenoxyacetic acid; potassium salt of 2-(2,4,5-trichlorophenoxy) propionic acid; disodium salt of 3,6-endoxohexahydrophthalic acid; a mixture of the latter two materials; 2,3,6-trichlorophenylacetic acid; 2-methoxy-3,6-dichlorobenzoic acid; isopropyl n-(3-chlorophenyl) carbamate; and 2,6-dichlorobenzonitrile. The difference in the median tolerance limit of bluegill sunfish to liquid and granular formulations is discussed. Of the ten herbicides tested, most proved less toxic as granular formulations than as liquid formulations. The difference in toxicity as affected by granule size and type is also discussed.

INTRODUCTION

These data are presented as an aid to aquatic biologists in determining the proper herbicides for use on vegetation where a fish kill is undesirable. It further annotates the difference between commercial herbicides as liquid and granular formulations.

The following herbicides are included in this discussion: isooctyl ester, propylene glycol butyl ether esters, and butoxy ethanol ester of 2,4-dichlorophenoxyacetic acid (2,4-D); potassium salt of 2-(2,4,5-trichlorophenoxy) propionic acid (silvex); sodium salt of 2,3,6-trichlorophenylacetic acid (fenac); disodium salt of 3,6-endoxohexahydrophthalic acid (endothal); a mixture of