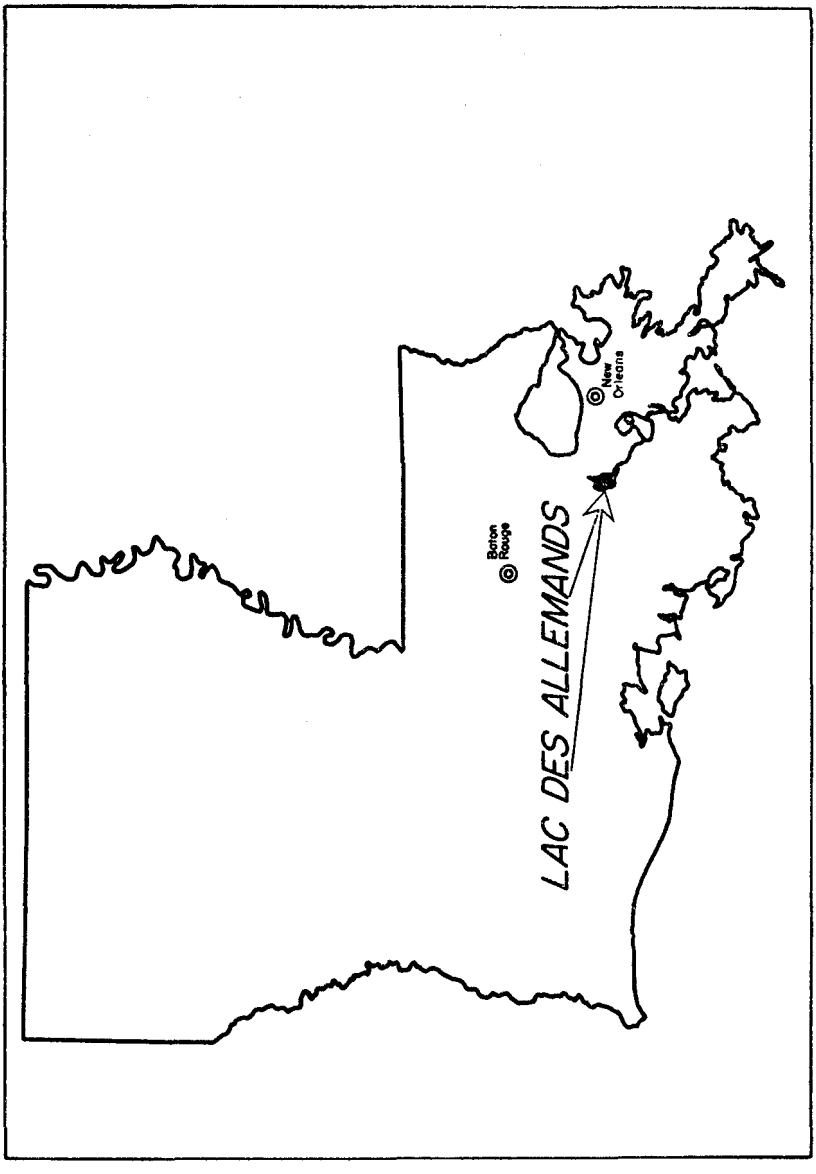

Figure 1.

THE USE OF CANS IN HARVESTING CATFISH

By

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INTRODUCTION

Lac des Allemands is a large natural lake of over 15,000 acres located approximately 40 miles west of New Orleans, Louisiana (Fig. 1). It is a freshwater lake having a shallow basin and is subject to

tidal effects. The margin is marshy and, in places, poorly defined. Salt water intrusion occurs as an effect of hurricanes and storms moving in from the Gulf of Mexico, or during periods of prolonged south winds.

Lac des Allemands supports an extensive commercial fishery. In 1964 over 2.5 million pounds of catfish were bought by wholesale fish buyers. The lake has been closed to all forms of commercial fishing, except trotlines, for a number of years. During certain periods each year, primarily the spawning season, catfish could not be taken in any quantity with trotlines. As a result, a unique method of harvesting catfish has evolved. Several years ago some boys swimming in the bayou noticed that channel catfish were found in tires and buckets raised from the bottom of the lake. Commercial fishermen quickly saw the possibilities and soon were actively engaged in "can-fishing." This method utilizes old cans, buckets, and barrels having the mouth or opening bent so as to be almost closed. An opening large enough to permit entrance of a catfish is fashioned at one side of the mouth. Cans are placed in selected locations in a line of 10 to 50 or more. Generally, the location is unmarked and the fisherman must rely upon memory to relocate his cans. Most fishermen enter the water near the first can in a series and feel around until the leading can is located. He quickly clamps his hand over the opening, trapping any fish inside. The fish is removed by hand or poured into a dip net held by a helper.

The use of cans for harvesting catfish soon became a controversial matter. It was an illegal practice and it was the opinion of many that catfish sought out the cans as potential spawning sites. Removal of brood fish and destruction of eggs and fry were wasteful acts which would ruin the catfishing industry, according to one school of thought. Others countered that increased spawning facilities were provided since many cans were lost to storms and changing currents. This group contended that catfish production was increased by "can fishing."

The Louisiana Wildlife and Fisheries Commission first became aware of can-fishing in 1961. After a preliminary investigation it was decided to determine the impact of continued use of these devices in Lac des Allemands. A project to determine the efficiency, selectivity, and effect upon production of can-fishing was initiated in 1963. This project was completed in 1965, and results are herein reported. Actual study periods were May 8 to June 13, 1963, and May 17 to June 18, 1965.

On June 2, 1965, the Louisiana legislature passed House Concurrent Resolution No. 172. This, in effect, made use of cans and slat traps legal in Lac des Allemands.

PROCEDURE

Approximately 80 grease cans were obtained for use in this study. These ranged from 5 to 15 gallons in capacity; most were the 5-gallon size. The mouth of each can was bent together. An opening of sufficient size to permit catfish to enter was formed on one side of the bent can mouth (Fig. 2). Holes were punched into the sides to allow easy drainage of water when the cans were raised. The cans were then burned to remove grease or other objectionable material.

After the cans were ready for use, a suitable location for testing was sought. A hard bottom in 2.5′ to 4.0′ of water is a preferable site because, in some areas of the lake, shifting currents rapidly cover cans with silt.

Cans were fished at a number of points in Lac des Allemands and Two Oaks Bay, a widened portion of Bayou des Allemands. The cans were usually set out in series of 10 to 25 in a straight line. Two methods of running and setting were tried and a third method was observed. In the first method, cans were tied together in series with a light cord. The beginning of the series was marked. It was thought that this might remove the necessity of getting into the water. However, current action tended to pull the cans apart, thereby

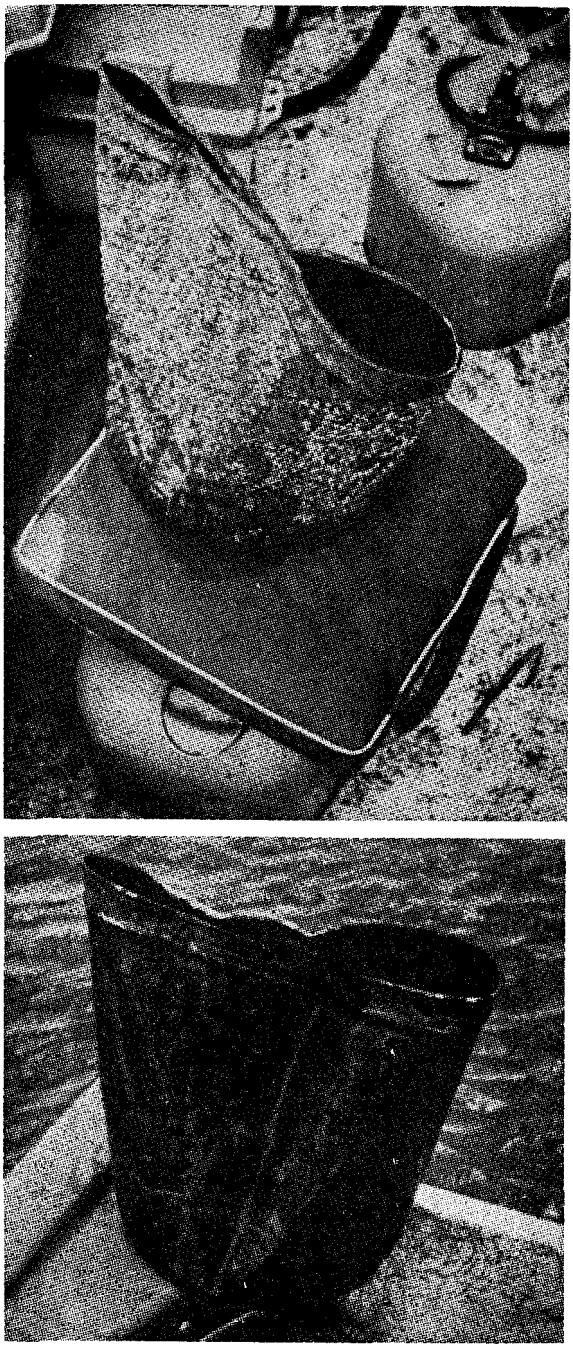

Figure 2.

tightening the connecting line. When the first can was raised the subsequent disturbance of succeeding cans appeared to frighten fish from them. This method was soon discontinued.

The method observed but not used was the trotline approach. A long line was tied between two stakes and drop lines were attached at appropriate intervals. Cans were secured to each drop line. While this method was better than the previous one, it also had several disadventages. These were: difficulty in proper positioning of cans, disturbance and escape of fish upon raising the cans, and the possibility of their being lost to other fishermen.

The method finally adopted required that one man get into the water while another handled the boat. When a satisfactory area had been found, cans were placed on the bottom in a straight line two paces apart. They were set in an upright position. We quickly learned that cans were much more likely to capture fish when placed upright than when lying on their sides. The positions of the cans were unmarked, a precaution taken to prevent molestation by other can fishermen. Two bearings were taken on distant objects to assist in relocating the string of cans.

When checking the cans, the diver would go overboard and feel around with his feet until the first can was located. His companion in the boat maintained it in the proper position and handled the dip net. Upon locating the first can, the diver submerged, if necessary, and clamped his hand over the opening in the mouth of the can. The can was then slowly lifted clear of the water and its contents, if any, were poured into the waiting dip net. After some experience, the diver could ascertain the presence of a fish without lifting the can clear of the water. This method proved most satisfactory for our purposes and was used throughout the project. This same technique is used by most of the commercial fishermen on Lac des Allemands.

In this study we recored catch per unit of effort, incidence of eggs or fry, length-weight data, and degree of sexual development. In conjunction with another study some catfish were tagged and released.

We checked the catch at varying intervals. Some cans were raised every 24 hours, others at two, three, four, five and ten-day intervals. It was thought that the possibility of finding eggs or fry would increase in the cans remaining undisturbed for longer periods.

RESULTS

We are reporting the catch per unit of effort as "catch per can-day" and "catch per set." A can-day is one can fished for a 24-hour period. A set is one can fished until raised and checked, irregardless of time interval involved. While catch per set might be more meaningful in some cases, catch per can-day allows ready comparison to other gear research work of this type. Combined results from can fishing in all areas of Lac des Allemands reflect a total fishing effort of 2,819 can-days. Total catch was 721 catfish, thus yielding a success ratio of .256 fish per can-day (Table 1). Of the 721 catfish captured, five were flathead catfish, the remainder channel catfish. One warmouth and one American eel were caught. This gear is very selective.

Catch per can-day and per set by elapsed time are given in Table 2. Cans checked on 48 hr. (2 day) intervals gave the best overall results. Cans fished for 120 hours (5 days) without disturbance caught more fish per set (1.125) but catch per can-day was low.

Multiple catches in a single can were fairly common. At the 48-hour and 72-hour intervals, two catfish were found in more cans containing fish than were single catfish. On two separate occasions three fish were captured in a single can (Table 2).

Length distribution and sex ratios by time intervals are shown in Table 3. The largest fish were captured on 120-hour (5-day) sets. Sex ratios proved to be remarkably equal. We had anticipated a preponderance of males.

All fish examined in this study were found to be sexually ma-

ture. Ripe females 8.0" in total length were encountered. In a can raised by commercial fishermen a 6.5" male was found with fry.

Each can was carefully examined for presence of eggs or fry. Some eggs were found at all time intervals, fry only at 72 hours and 240 hours (Table 4). The presence of eggs increased in proportion with length of time in which the can remained undisturbed. Cans checked on 10-day intervals had eggs in 66.7% of the total. The holes punched into the sides of the cans to facilitate drainage possibly allowed fry to escape. Some may have been missed because of this factor.

DISCUSSION

Most of the commercial fishermen on Lac des Allemands use the method which we adopted. They fish from 200 to 1,000 cans at a time. A few use the "trotline" method of can fishing. Cans are moved about to cope with changing conditions and to improve catch rate. Generally, they do not check a series of cans before a 48-hour interval. Many prefer to raise them every four or five days, because more of the fish are of marketable size. Louisiana has a 14" minimum length on channel catfish.

As previously indicated the choice of bottom type in placing the cans seems to be important. When shifting currents deposited silt on previously hard bottoms, catch rates dropped rapidly. Depth does not seem to be as critical a factor as bottom type. Most cans were fished in water ranging from 2.5 to 5.0 feet in depth. Areas deeper than four feet pose a problem in proper positioning and raising cans. We learned that cans set in an upright position were much more effective than those lying on their sides.

Cans proved to be comparable to 1.0" and 1.5" mesh hoop nets and slat traps in rate of catch. Davis and Posey, 1959, reported that hoop nets caught .263 commercial fish per net-day; Posey and Schafer, 1964, reported that slat traps captured .238 fish per trap-day; and this study showed that cans caught .256 catfish per can-day. Cans are seasonal gear, used primarily during spawning season, from April through September, and the total catch would not be comparable.

No attempt has been made to compare the success of can fishing with that of trotlines in Lac des Allemands. The use of cans during periods of poor hook and line catches has allowed the fishermen to earn a steady income. With the legalization of this gear the total annual harvest should increase. Some fishermen were reluctant to use cans when they were illegal and, therefore, were unemployed during the catfish spawning season. Many of these will return to full-time fishing.

Our data indicates that cans checked on 48-hour intervals caught more fish per can-day than any other interval. Usually two fish would be found in a can when raised at 48 or 72 hours. Although the cans fished 120 hours caught 1.125 fish per set, 2.5 times as many cans would be needed to provide a daily harvest. If an unlimited number of cans were available, the 120-hour period would be most desirable, since the harvested fish were larger at this interval. However, more eggs are destroyed at this frequency of raising.

As indicated previously, all channel catfish examined were sexually mature. The smallest fish taken was a 6.5" total length female. The largest was a 19.0" total length male. All five of the flathead catfish were immature. The average of all fish caught was 11.71" total length.

Therefore, most of the fish captured in this study were under the minimum commercial length. Due to the size of these fish, we have reason to believe fish are overcrowded and somewhat stunted. Age and growth studies have been initiated.

We had expected the majority of fish captured in cans to be males. We assumed that males would sweep out the cans, induce a female to deposit eggs therein, then drive her out and guard the eggs. However, 51.57% of all fish examined were females. At times two females would be found in a single can. Lone females and spent females were found frequently. On 24-hour sets 57% of all fish captured were females. This trend reversed as the time interval increased with females making up 40% of the total at 240 hours. This raises some

question as to why females enter the cans and linger, especially those found without males in the 24-hour check. Spent females were found in cans that did not contain eggs.

Eggs were found in some cans at all time intervals. However, they did not reach an appreciable level until the 5-day period, where 25% of the cans contained eggs. Data on fry is inconclusive. We observed some fry escaping through drain holes as the cans were raised.

The primary objection to the use of cans was concerned with removal of brood fish and destruction of eggs and fry. We do not consider this to be detrimental in this lake since production figures indicate that harvest of catfish has been increasing steadily since can-fishing developed. Many cans are lost and therefore, furnish spawning sites. Some fishermen do not fish cans during the peak spawning period because they want some of the fish to be available for reproduction. These cans are then available for nesting sites.

We noticed that the presence of a crab within or on a can was a sure indication that no catfish were present. We are at a loss for an explanation. Shrimp were frequently found in the same can with catfish.

Of interest also is the absence of blue catfish in the catch. Lac des Allemands has an excellent blue catfish population but none were captured during the study periods.

CONCLUSION

We have determined that cans are extremely selective, capturing channel catfish almost exclusively. Most of the fish taken are under the 14.0" minimum legal length. Although seasonal, the cans are efficient during the time they are used.

All fish examined were sexually mature. Females slightly outnumbered males in total catch. Eggs are not found in significant

TABLE I

TOTAL RESULTS OF CAN FISHING

Species	Total No.	Average Length (Inches)
Channel catfish	716	11.71
Flathead catfish	5	9.70
TOTAL	721	
Total can-days fished	2819*	
Total number of sets	1460**	
Number captured per can-day	.256	
Number captured per set	.494	

* A "can-day" is one can fished for a period of 24 hours.
** A "set" is one can fished until raised and checked, regardless of time interval involved.
*** Common names follow the recommended common names of Bailey et al., American Fish Society Special Publication No. 2, 2nd edition.

TABLE II

FISHING SUCCESS BY TIME INTERVALS

	FISHING EFFORT					NUMBER OF CANS THAT			
TIME	CAN-DAYS	NO. OF SETS	NO. CAUGHT	NO./SET	NO./CAN-DAY	CAUGHT NONE	CAUGHT ONE FISH	CAUGHT TWO FISH	CAUGHT THREE FISH
24 hours	741	741	244	.329	.329	554	118	67	2
48 hours	608	304	219	.720	.360	166	51	87	0
72 hours	702	234	158	.675	.225	131	45	58	0
96 hours	668	167	81	.485	.120	108	31	28	0
120 hours	40	8	9	1.125	.225	1	5	2	0
240 hours	60	6	5	.833	.083	1	5	0	0

TABLE III

LENGTH DISTRIBUTION AND SEX RATIOS BY TIME INTERVAL OF CHANNEL CATFISH CAPTURED IN CANS

	MINIMUM LENGTH INCHES		MAXIMUM LENGTH INCHES		AVERAGE LENGTH			SEX RATIOS	
	Female	Male	Female	Male	Female	Male	Both	Female	Male
24 hr. sets	7.5	7.0	18.0	18.0	11.23	11.69	11.43	57%	43%
48 hr. sets	7.0	7.5	18.5	18.0	11.46	11.39	11.42	50%	50%
72 hr. sets	6.5	7.0	17.5	19.0	11.88	11.75	11.82	50%	50%
96 hr. sets	8.5	8.5	17.0	19.0	12.74	12.77	12.75	44%	56%
120 hr. sets	14.5	16.0	16.0	18.0	15.13	17.20	16.28	44%	56%
240 hr. sets	8.5	9.0	10.0	10.5	9.25	9.67	9.50	40%	60%

TABLE IV

OCCURRENCE OF EGGS OR FRY BY TIME INTERVAL

Time	No. of Sets	Occurrence of		Per Cent Occurrence Per Set	
		Eggs	Fry	Eggs	Fry
24 hours	741	4	0	0.50%	0.00%
48 hours	304	6	0	2.00%	0.00%
72 hours	234	20	1	8.50%	0.04%
96 hours	167	17	0	10.20%	0.00%
120 hours	8	2	0	25.00%	0.00%
240 hours	6	4	1	66.67%	16.67%

quantities until the cans have remained undisturbed for five or more days.

Production in Lac des Allemands has been increasing since can fishing became common. We conclude that the use of these devices is not detrimental in this lake.

LITERATURE CITED

Bailey, E. M., et al., 1960. A list of common and scientific names of fishes from the United States and Canada. American Fish. Soc. Special Publication No. 2, 2nd ed. 102 pp.

Davis, James and Lloyd Posey, Jr., 1959. Relative selectivity of freshwater commercial fishing devices used in Louisiana. Louisiana Wildlife and Fisheries Commission. A Dingell-Johnson Project.

Posey, Lloyd and Harry Schafer, 1964. Evaluation of slat traps as commercial fishing gear in Louisiana. Proc. of the Eighteenth Annual Conf. S. E. Assoc. of Game and Fish Commissioners (In Press).