AN EVALUATION OF YO-YO FISHING[1]

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ABSTRACT

In Louisiana, the yo-yo fishing method has been a controversial fishing method. The yo-yo is an automatic spring loaded device equipped with a hook and when triggered by a fish will automatically set the hook and play the fish.

During this project, 9,203 yo-yos were fished. The average success was 0.161 fish per effort. Approximately 21% of the yo-yos fished were tripped but caught no fish. There was little difference between day and night fishing successes. The devices were fished most efficiently during February and March. Best depths for fishing were between three and four feet. The use of sinkers greatly reduces the effectiveness of yo-yos.

Based upon data gathered during this project, the yo-yo is not so efficient as popularly imagined to be and, there is no evidence that it should not be a legal fishing device.

INTRODUCTION

The yo-yo (Fig. 1) is a spring loaded device that contains several feet of line housed on a reel that, when cocked and then tripped by a fish, will, theoretically, set the hook and play the fish until the victim becomes exhausted. The name yo-yo is applied because the action of the device resembles that of a toy yo-yo. To set the yo-yo for action, line is stripped from the spool so that the hook is placed at a desired depth in the water. This compresses the spring which powers the reel. Following a strike or sudden release of tension on the spring, the spool will wind in the line. The device will play a fish, alternately yielding line as the fish fights and retrieving line as the fish tires. The constant tension of the reel will eventually exhaust even a very large fish (Fig. 2). Unless the yo-yo is positioned at the proper height, it has a tendency to jerk smaller fish out of the water and leave them suspended above the surface (Fig. 3). This tendency can be reduced by placing the reel fairly close to the water's surface, by placing lead sinkers so that the reel will stop short of pulling a small fish from the water and/or by adjusting the spring tension on those yo-yos that are adjustable.

Although this fishing method is relatively new, in Louisiana it has been a controversial subject. Fishing with this device is now legal in Louisiana, although it has, in the past, been outlawed by the state legislature. In March 1965, Posey initiated a project to determine the efficiency of yo-yos in anticipation that the state legislature might again question this method of fishing. Our paper presents the accumulation of all the data gathered by Fisheries personnel working on the yo-yo project, including that collected and used by Posey in preparing his preliminary report.

Opponents of this fishing method claim that this is an unsportsmanlike method of fishing, that it catches too many large fish, or it catches too many game fish, that it leaves fish suspended in mid air, and that yo-yos are a safety hazard.

Proponents of this method assert that it is an exciting sport and no different than the fishing of set hooks or trotlines. They feel it is an effective way to catch large bass and crappie that would not be caught by ordinary methods.

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Figure 1.

Initially it was thought that the use of yo-yos was fairly well restricted to north Louisiana, east Texas, west Mississippi and south Arkansas. Correspondence with manufacturers indicates heavy sales also occur in north Arkansas, west Tennessee, all of Texas and all of Oklahoma. Manufacturers also sell in a smaller volume to independent jobbers in Florida, Georgia, Kentucky, Virginia, Alabama, South Carolina, Illinois, Kansas, New Mexico, Iowa, Ohio, California and Colorado.

PROCEDURES

Fisheries biologists in all areas of Louisiana were instructed to obtain yo-yos, to fish them with a variety of baits, night and day, at various depths, in all types of water and to vary the time intervals of checking the catch. All were instructed to use 2/0 hooks.

Figure 2.

RESULTS AND DISCUSSION

Personnel assigned to this project fished 9,203 yo-yos a total of 56,737 yo-yo hours. A yo-yo hour (Posey, 1965) is one device fished for a period of one hour. A total of 1,483 fish and five turtles were harvested. The average success per effort was 0.161 fish or 0.026 fish per yo-yo hour. We feel catch per effort has a more significant meaning in this study than does the yo-yo hour because the number of hours between visits to the individual yo-yo is not necessarily the same number of hours the device's hook is in the water. In order that yo-yo efficiency might be compared to other gear efficiency reports, we did record the catch per yo-yo hour throughout this report. Game fish composed 35.1% of the total catch and catfish species 62.0% of the total catch. The catch by species and size is given in Table I. Of the total catch, 87.6% of the fish were considered to be of available size, 11.1% were intermediate size, and 1.2% were fingerlings. The largest fish we caught was an 8.0 pound longnose gar.

Figure 3.

Of our total fishing efforts, 62.8% were at night and 74.5% of the total catch was harvested at that time. The average catch at night was 0.191 fish per effort (0.027 fish/yo-yo hour), but during the daylight hours the average dropped to 0.109 fish per effort (0.022 fish/yo-yo hour). This indicates that night fishing of yo-yos is slightly more successful than day fishing.

Most yo-yo fishermen use only shiners or minnows for bait. During this study, a variety of baits were used in order to determine the effectiveness of the various baits with these devices. Upon analyzing our data, we found that our best catch per effort (0.343) resulted when baits were used in combinations. Separate records, however, were not kept on each individual yo-yo so there was no way to distinguish what bait was fished on a particular yo-yo. This made it necessary to lump some baits under the title "combinations." Hooks baited with catalpa worms had the second highest catch per effort (0.232). Minnows and shiners, the baits most commonly used, caught the most fish but were third in catch per effort (0.174). The results are given in Table II.

Since yo-yos are fished primarily during the winter months, a summation by months of fishing activities is given in Table III. Data show that February has the best catch per effort (0.311) and that Marsh is second with a catch rate of 0.240 fish per effort.

Depth also seems to be important. Yo-yos fished at a depth of 3.1 to 4.0 feet had a catch per effort (0.261) that was significantly higher than the 0.0-1.0 foot depth generally fished by yo-yo enthusiasts. That depth most commonly fished did, however, have the second highest catch rate per effort (0.191), Table IV.

A yo-yo fisherman fishes primarily for crappie and bass. He will generally fish during the months of December, January, February and, possibly, the early part of March. His bait will probably be shiners or minnows, and the bait will probably be fished between 0.2 and eight inches below the surface—seldom, if ever, below 18 inches. One

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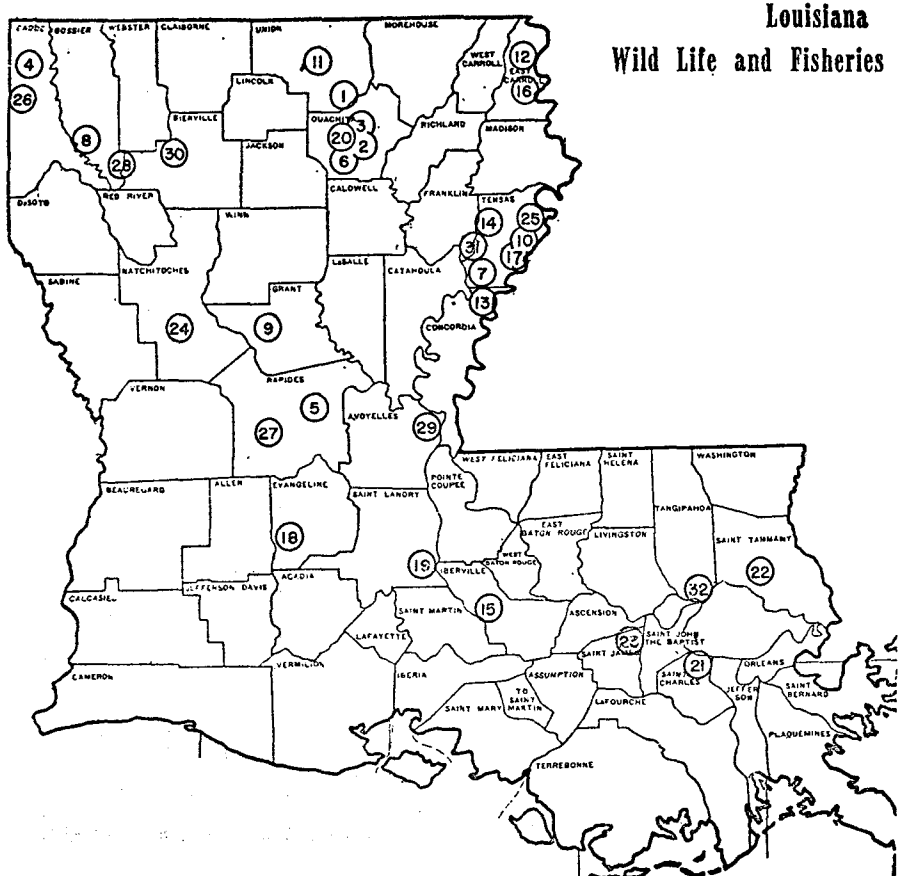

Figure 4

Yo-yo Study Areas

1.	Bayou D'Arbonne	Union Parish
2.	Bayou DeSiard	Ouachita Parish
3.	Black Bayou	Ouachita Parish
4.	Black Bayou Lake	Caddo Parish
5.	Cedar Lake	Rapides Parish
6.	Cheniere Lake	Ouachita Parish
7.	Choctaw Bayou	Tensas Parish
8.	Flag Lake	Bossier Parish
9.	Iatt Lake	Grant Parish
10.	Lake Bruin	Tensas Parish
11.	Lake D'Arbonne	Union Parish
12.	Lake Providence	East Carroll Parish
13.	Lake St. John	Concordia Parish
14.	Saddletree Lake	Tensas Parish
15.	South Ramah Pits	Iberville Parish
16.	Stump hole	East Carroll Parish
17.	Clark's Bayou	Tensas Parish
18.	Cozan Lake	Evangeline Parish
19.	Old Bayou Courtableau Cutoff	St. Landry Parish
20.	Hanna's Run	Ouachita Parish
21.	St. Charles Parish Canal	St. Charles Parish
22.	Bogue Falaya River	St. Tammany Parish
23.	Blind River	St. James Parish
24.	Cane River Lake	Natchitoches Parish
25.	Lake St. Joseph	Tensas Parish
26.	Caddo Lake	Caddo Parish
27.	Clear Lake	Rapides Parish
28.	Lake Bistineau	Webster, Bienville & Bossier Parishes
29.	Grand Lake	Avoyelles Parish
30.	Kepler Lake	Bienville Parish
31.	Tensas River	Tensas Parish
32.	Stinking Bayou	Tangipahoa Parish

TABLE I

YO-YO CATCH BY SPECIES AND SIZE

Species	Fish of Available Size		Intermediate		Fingerlings	
	Minimum Length	Number	Range In Length	Number	Max. Length	Number
Predatory Game Fish						
Largemouth bass	9.0	57	5.0- 8.9	6	4.9	0
White crappie	7.0	12	5.0- 6.9	1	4.9	0
Black crappie	7.0	269	5.0- 6.9	84	4.9	16
Yellow bass	6.0	9	4.0- 5.9	0	3.9	0
White bass	7.0	4	5.0- 6.9	0	4.9	0
Chain pickeral	12.0	12	6.0- 11.9	1	5.9	0
Total		363		92		16
Non-Predatory Game Fish						
Bluegill	5.0	13	3.0- 4.9	0	2.9	0
Redear sunfish	5.0	1	3.0- 4.9	0	2.9	0
Warmouth	5.0	32	3.0- 4.9	3	2.9	0
Croaker	5.0	1	3.0- 4.9	0	2.9	0
Total		47		3		0
Non-Predatory Food Fish						
Freshwater Drum	10.0	11	5.0- 9.9	0	4.9	0
Yellow bullhead	7.0	296	5.0- 6.9	21	4.9	1
Black bullhead	7.0	141	5.0- 6.9	2	4.9	0
Brown bullhead	7.0	116	5.0- 6.9	0	4.9	0
Total		564		23		1
Predatory Food Fish						
Channel catfish	10.0	273	5.0- 9.9	31	4.9	0
Blue catfish	10.0	32	5.0- 9.9	3	4.9	0
Flathead catfish	10.0	4	5.0- 9.9	0	4.9	0
Alligator gar	24.0	0	7.0-23.9	1	6.9	0
Longnose gar	26.0	1	7.0-23.9	1	6.9	0
Shortnose gar	24.0	0	7.0-23.9	4	6.9	0
Spotted gar	24.0	3	7.0-23.9	9	6.9	0
Bowfin	14.0	11	5.0-13.9	0	4.9	0
Total		324		49		0
Miscellaneous						
American eel		1				
Turtles		5				
Total		6				

man will usually fish between 30 and 45 yo-yos. If two men are fishing together, between 85 and 100 yo-yos may be fished. An experienced yo-yo fisherman will continually tend his yo-yos until he takes them up. By tending, we mean checking the yo-yos, removing fish, replacing bait and resetting tripped yo-yos. Novice yo-yo fishermen tend to set their yo-yos out, check them a few times and leave them untended for the remainder of the night.

Fishermen leaving boat docks shortly before or at daybreak often see a number of the fish caught on these untended yo-yos. The chances are that only those yo-yos with fish on them will be noticed while the majority of those devices without fish will escape detection. This tends to give the impression that yo-yos are much more effective than they really are.

On some lakes where there is a lack of limbs or trees from which to attach the device, fishermen sometime stretch a line or wire about three feet above the water surface from one tree or pole to another. Yo-yos are placed at intervals along the line. On a properly tended line, this is quite satisfactory; however, some thoughtless fishermen leave their lines untended for varying lengths of time. With the idea

TABLE II

YO-YO BAIT ANALYSIS

BAIT	Yo-Yo Efforts	No. of Fish Per Effort	Yo-Yo Hours	No. of Fish Per Yo-Yo hr.	Fish Caught	Game Fish	Food Fish	Ratio Game/Food Fish
Crayfish	899	.076	4480	.015	69	12	56	1 - 4.7
Bloodbait	798	.053	7069	.006	43	1	42	1 - 42
Earthworms	880	.159	5432	.025	140	10	130	1 - 13
Bowfin Fingerlings	108	0	252	0	0	0	0	0 - 0
Shad	36	.027	72	.013	1	0	1	0 - 1
Catnip*	72	.069	180	.027	5	0	5	0 - 5
Crickets	515	.120	4762.5	.013	62	7	55	1 - 7.9
Shrimp	216	.060	360	.036	13	0	13	0 - 13
Catalpa worms	86	.232	731	.027	20	2	18	1 - 9
Liver	292	.065	957	.019	19	0	19	0 - 19
Cheese	434	.133	1998	.029	58	0	58	0 - 58
Minnows & Siners	3667	.174	20510	.031	640	278	363	1 - 1.3
Combinations**	1200	.343	9933.5	.041	412	211	201	1 - 1

* A commercial dough type bait

** Cheese and soap
Minnows and crayfish
Worms and shiners
Catalpa worms and shiners

TABLE III

YO-YO RESULTS BY MONTHS FISHED

Month	Number Efforts	Average Per Effort	Yo-Yo Hour	Average Per Yo-Yo Hr.	Total Fish	Game Fish	Food Fish
January	324	0.148	1610	.030	48	22	26
February	813	.311	5777.5	.044	253	170	83
March	1783	.240	13366	.032	428	221	207
April	4044	.124	24239	.021	502	64	438
May	710	.097	2673	.026	69	7	62
October	762	.137	2254	.017	105	5	100
November	181	.182	809	.048	33	2	31
December	60	.100	195	.037	6	1	5

TABLE IV

YO-YO RESULTS BY DEPTH FISHED

Depth Fished	Number Efforts	Average Per Effort	Yo-Yo Hour	Average Per Yo-Yo Hr.	Total Fish	Game Fish	Food Fish
0 - 1.0'	1598	.190	9579.5	.031	305	162	143
1.1 - 2.0'	1529	.134	7165	.028	206	73	133
2.1 - 3.0'	2948	.150	16951.5	.026	443	82	361
3.1 - 4.0'	1461	.261	11050	.034	382	157	225
4.1 - 5.0'	613	.097	2699	.022	60	7	53
5.1 -	528	.075	4484	.008	40	11	29

of returning and fishing later during the week, some yo-yo fishermen remove their yo-yos but allow the stretched line or wire to remain. These are definite safety hazards and must be prevented. The thoughtlessness of a few fishermen has created much of the controversy involved with yo-yo fishing methods.

Posey (1965) under a column entitled "Condition of Fish" indicated that 67.5% of the Game Fish and 89.2% of the Food Fish were alive when taken off the yo-yos. He had harvested 418 fish at that time. As the project progressed and more individuals became involved, the "Condition of Fish" was often listed as good, poor, fat, ripe, spent, etc., instead of the intended alive or dead classification. Therefore, it became impossible to give an accurate estimate of the mortality that could be attributed to the yo-yo itself. Sportfishermen who fish yo-yos maintain that if one's yo-yos are properly visited and checked nearly all captured fish may be taken alive.

Lead sinkers are commonly used by yo-yo fishermen, especially on windy nights or days. Fishermen feel that even though the lead cuts down the action of the bait, sinkers help prevent the wind or wave action from tripping the yo-yo. We occasionally used sinkers. Data collected during this project indicate that catch per effort was significantly lowered when sinkers were used. When yo-yos were fished without using sinkers the catch per effort was 0.159 fish, and when sinkers were used the catch dropped drastically to 0.097 fish per effort. The catch of game fish plunged from 0.060 fish per effort without sinkers to 0.016 fish per effort with sinkers. The catch of food fish exhibited less of a change, 0.099 fish per effort without sinkers and 0.080 fish per effort with sinkers.

Even with a headlight yo-yos are not easily seen at night. We marked ours with reflecto tape, painted them fluorescent orange, left them their natural color or painted them solid white. Some believed those painted solid white were easier to find than any of the others.

In evaluating data we considered the number of yo-yos that were tripped but which caught no fish. If all yo-yos had been properly tended some of those listed as "tripped without catching" probably could have been listed in the "total fish caught" column. Once tripped, a yo-yo cannot be considered as "fishing"; therefore, the validity of using yo-yo hours as a reporting method is questionable. This is why we feel that the catch per effort has a greater significance than does catch per yo-yo hour. Undoubtedly, we missed some fish that were caught and managed to get loose; however, a sudden gust of wind could also cause the device to be tripped. On many occasions gar and small sunfish probably tripped yo-yos and were not caught. White and yellow bass with their habit of smashing at a bait or shiner undoubtedly tripped many yo-yos. Slightly over 21% of the yo-yos fished during this project were listed as "tripped without catching."

Retail prices of yo-yos vary from $.50 to $1.50 each and are dependent upon the type device, the area of the state and the retail dealer. The cost per device is considerably more expensive than the cost of a set hook and the cost per "line of yo-yos" is more expensive than a trotline. The cost probably limits the participation in this sport.

SUMMARY

Data from this project indicate that yo-yos have a success per effort of 16.1%. Approximately 21.1% of the yo-yos being fished may be expected to be tripped without catching fish. Yo-yos catch both game and food fish although the ratio is about two food fish species to each game fish species harvested.

There is only a slight variation in the success of day and night fishing. Our data indicate that the best months for fishing yo-yos are February and March and the best depths are the 3.1-4.0 feet and 0-1.0 foot depths. If yo-yos are properly checked and tended most of the captured fish can be harvested alive. The use of sinkers drastically and adversely affects the success rate.

CONCLUSION

The yo-yo is not nearly so effective as popularly imagined to be. At the present time, we cannot foresee this automatic type fishing device replacing either the set hook or trotline in popularity. Based upon data gathered during this project, there is no reason why this device should not continue to be a legal fishing tool.

ACKNOWLEDGMENTS

Thanks are due to the personnel of the Fisheries Section, Louisiana Wild Life and Fisheries Commission and to Mr. Melvin O. Lantz, sportsfisherman, for their assistance in gathering data.

The authors wish to express their gratitude to Mr. A. P. White, Jr., who so graciously furnished samples of the fishing device and a list of areas in which the greatest volume of yo-yo sales occur.

LITERATURE CITED

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COMMERCIAL FISHING COSTS AT OAHE RESERVOIR, SOUTH DAKOTA

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INTRODUCTION

In connection with the Bureau of Commercial Fisheries biological and exploratory fishing investigations at Oahe Reservoir, an opportunity arose in 1965 and 1966 to collect data on fishing costs incurred by commerical fishermen operating at the reservoir. This information was developed principally for background use in the Bureau's survey of commercial fishing for the Missouri Basin Comprehensive Study and for individual reservoir project review activities associated with pre-construction evaluation of commercial fishery potentials.

The purpose of this paper is to present an analysis of two seasons' fishing costs for full-time fishermen operating on Oahe out of Mobridge, South Dakota. To the extent that gear and fishing methods used are similar to other commercial reservoir fisheries, the data presented here may be applicable in other areas of the Midwestern U. S.

THE FISHERY

Oahe Reservoir is a flood control impoundment on the Missouri River mainstem. Construction on the dam, located near Pierre, South Dakota, was begun in 1948 and closure effected in 1958. Insofar as the fish populations are directly related to impounded waters, 1959 is considered the first year of impoundment. When the reservoir is filled to normal levels the conservation pool will total 313,000 surface acres. Through the spring of 1967 the maximum pool reached was approximately 280,000 acres. At maximum operating pool the reservoir will extend 230 miles upstream to Bismarck, North Dakota.

Commercial fishing at Oahe was initiated in July of 1964 and landings totaled 335,575 pounds the first season. The catch increased to 665,700 pounds in 1965 and then dropped to approximately 460,000 pounds (preliminary estimate) in 1966. The fishery is operated on a contract basis with the South Dakota Game, Fish and Parks Depart-