Attended and Unattended Yo-yo Fishing Catch and Mortality

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Abstract: Yo-yo catch and mortality of caught fish were evaluated at Caddo Lake, Texas, using attended (checked at least once each hour) and unattended fishing techniques. A total of 400 yo-yos (200 attended and 200 unattended) were fished 3,991.75 hours during February and March. Ten species were caught; black crappie (*Pomoxis nigromaculatus*) and yellow bullhead (*Ictalurus natalis*) comprised 54% and 20% of the catch, respectively. Catch rates were significantly higher for attended sets (0.12 fish/yo-yo hour) than unattended sets (0.03 fish/yo-yo hour). Unattended sets resulted in high mortality (85% of all fish caught) while no mortality resulted from attended sets.

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A yo-yo is a spring loaded reeling device containing several meters of line. It is tied to structure over water and set to fish a baited hook. Line is pulled from the reel and a trigger is set holding the bait at a desired depth. When a fish takes the bait, the trigger is released which sets the hook. The reel then maintains tension on the line until a fisherman removes the catch.

Little documented information exists concerning yo-yo use and catch. Davidson et al. (1967) reported yo-yos are most popular in the southeastern United States, caught a wide variety of fishes, were most successful during February and March, and were slightly more successful at night. They stated experienced yo-yo anglers continuously tend their yo-yos while inexperienced anglers often leave their yo-yos unattended. They also reported yo-yos left unattended would kill fish by pulling them from the water, but did not determine the extent of this mortality. Concern over mortality of illegal-size fish prompted an investigation into yo-yo use and catch in Texas (Prentice and Schlagenhaft 1987). They evaluated mortality and catch during April, after the peak yo-yo fishing season, using attended and unattended fishing techniques. They reported 81% mortality of fish caught with unattended gear and

24% mortality with attended gear. Following their investigation, yo-yo use was banned in Texas.

This study was designed to evaluate yo-yo catch and mortality during the peak yo-yo fishing season (February and March). Specific objectives were to determine species caught, catch rate, mortality, and size range of caught fish using attended and unattended fishing techniques.

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Methods

Caddo Lake is a natural lake in northeastern Texas and northwestern Louisiana on Big Cypress Bayou. The 10,500-ha lake has a drainage area of 7,106 km^2 and an average depth of approximately 1.8 m.

Four hundred individual yo-yos (200 attended and 200 unattended) were fished a total of 3,991.75 hours during February (3 nights) and March (2 nights) at 3 areas (1 or 2 areas per night). Areas were selected to represent habitats commonly fished by yo-yo anglers. These areas contained numerous bald cypress (*Taxodium distichum*) on which yo-yos were attached. At each area sampled, 25 yo-yos were set at dusk and attended at least once each hour (including removal of caught fish and rebaiting for continued fishing) until approximately midnight (attended), and 25 yo-yos were set at dusk and retrieved at dawn (unattended).

Hooks (size 1/0, gold) were baited with minnows (*Notropis* sp.). Baits were fished between 0.2 and 1.5 m deep. Catch (species and total length), hours fished, and condition (dead or alive) of caught fish were recorded for each yo-yo. Hours fished were recorded as total time between yo-yo set and retrieval. Catch rates were calculated as fish/yo-yo hour. Common names of fishes and plants were in accordance with Robins et al. (1980) and Fassett (1940), respectively.

Differences between catch rates for attended and unattended fishing techniques were tested using the approximate t-test (SAS 1985) due to unequal variances.

Results and Discussion

Ten species totaling 237 fish were caught. Black crappie (*Pomoxis nigromaculatus*) and yellow bullhead (*Ictalurus natalis*) comprised 54.0% and 20.2% of the total catch, respectively (Table 1). Davidson et al. (1967) and Prentice and Schlagenhaft (1987) reported similar results; black crappie and yellow bullhead comprised a high percentage of the yo-yo catch in Louisiana and Texas.

Overall catch rate was 0.06 fish/yo-yo hour. Catch rates were significantly greater ($P < 0.05$) for attended sets (0.12 fish/yo-yo hour) than unattended sets (0.03 fish/yo-yo hour). Davidson et al. (1967) and Prentice and Schlagenhaft (1987)

Table 1. Catch and mortality data for fish collected with yo-yos using attended (1,094.75 hours fished) and unattended (2,897.0 hours fished) fishing techniques, Caddo Lake, Texas, February and March 1988. Common names of fishes are according to Robins et al. (1980).

Species	*N* caught	Size range (mm)	% of catch	*N*/hour	% mortality
		Attended			
Chain pickerel	1	450	0.7	0.001	0
Yellow bullhead	24	215–374	17.3	0.030	0
White bass	14	218–340	10.1	0.012	0
Yellow bass	6	165–245	4.3	0.006	0
Warmouth	4	193–240	2.8	0.003	0
Largemouth bass	2	408–525	1.4	0.002	0
White crappie	7	199–345	5.0	0.010	0
Black crappie	79	180–330	57.1	0.070	0
Freshwater drum	1	440	0.7	0.001	0
All species	138	165–525	100.0	0.120	0
		Unattended			
Yellow bullhead	24	205–360	24.2	0.009	58
Channel catfish	3	320–385	3.0	0.001	33
White bass	4	315–390	4.0	0.002	100
Yellow bass	8	213–265	8.0	0.003	100
Largemouth bass	5	308–425	5.0	0.002	80
White crappie	5	260–345	5.0	0.002	100
Black crappie	49	205–370	49.4	0.010	98
Freshwater drum	1	383	1.0	<0.001	0
All species	99	205–425	100.0	0.030	85

reported overall catch rates of 0.03 fish/yo-yo hour in Louisiana and 0.02 fish/yo-yo hour in Texas, respectively. Although overall catch rates (fish/yo-yo hour) appear low, the total catch per angler hour may be higher because each angler can fish several yo-yos simultaneously. Davidson et al. (1967) reported each angler will usually fish between 30 and 45 yo-yos. A catch rate of 0.12 fish/yo-yo hour (as observed during attended yo-yo fishing) would result in an overall catch rate of 3.6–5.4 fish/hour. These catch rates per angler are up to 20 times higher than the statewide harvest rate (0.26 fish/hour) for rod and reel fishermen in Texas during March–May 1987. (W. B. Dolman, Texas Parks and Wildl. Dep., Austin, pers. commun.).

No mortality resulted from attended yo-yo fishing (Table 1). Total mortality was 85% for fish caught with unattended sets. Mortality was highest for white bass (*Morone chrysops*), yellow bass (*Morone mississippiensis*), black crappie, white crappie (*Pomoxis annularis*), and largemouth bass (*Micropterus salmoides*) (Table 1). Several Texas reservoirs (not including Caddo Lake) maintain 25.4-cm minimum length limits for crappie and most maintain 35.6-cm minimum length limits for largemouth bass. Fifteen percent of black crappie and 57% of largemouth bass were < 25.4 cm and < 35.6 cm, respectively. Mortality of fish within these size ranges for unattended sets was 66% for black crappie and 100% for largemouth bass.

Conclusions

In Caddo Lake, yo-yos catch a variety of fish species and are particularly effective for black crappie. Yo-yo anglers can be more efficient at harvesting fish than rod and reel anglers depending upon the number of yo-yos fished. In addition, high catch rates combined with high mortality using unattended sets could increase mortality of fish within protected size ranges. This mortality, however, would be reduced by requiring yo-yos be attended at least every hour.

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