

FRANK JACKSON RESERVOIR MANAGEMENT REPORT

Spring 2008

Prepared by

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Introduction

Lake Frank Jackson (Figure 1) was impoundment in 1986 on Lightwood Knot Creek as part of Frank Jackson State Park in Covington County, Alabama. Although the lake is listed to be 1,037-acres, the section north of the Highway 331 bridge (approximately one third) is very shallow and difficult to access due to flooded timber. Pertinent characteristics of the lake are listed in Table 1, and a more in-depth description of the reservoir and the species of fish found in Frank Jackson Lake can be found in Newman et al 1988. Fish species stocked into Lake Frank Jackson are listed in Table 2. Lake Frank Jackson was chosen for standardized sampling during FY 2008 according to the procedures specified in the Alabama Reservoir Management Manual (Cook 1999). Creel limits are posted by the state park boat ramp, and the only size restriction is the statewide 9 inch crappie minimum length limit.

Methods

Standardized spring electrofishing was conducted in mid-April according to guidelines set forth in the Alabama Reservoir Management Manual (Cook 1999). Starting points for the sampling sites and a map of the lake are depicted in Figure 1. Total length of all bass and bluegill were measured to the nearest millimeter, and weight was recorded to the nearest gram. Other non-target fish species were listed when observed during sampling (Table 4).

A temperature and dissolved oxygen profile (Figure 6) and a General Reconnaissance Survey (Appendix B) were conducted in August 2008. Personnel with the Alabama Department of Environmental Management also collected water quality data throughout the summer of 2008.

Results and Discussion

Largemouth bass

Two hundred and thirty-seven largemouth bass were collected at a rate of 68 fish per hour in 3.5 hours of effort with a CPE for stock size fish and larger of 53 fish/hr (Table 3). Largemouth bass ranged from 94 mm to 509 mm with a dominant mode at 250 mm. PSD for the 2008 sample was 44, compared to the PSD from the last bass sample in 1999 of 50. Spring RSD values (Gablehouse 1984) were comprised mainly of stock (56%) and quality (30%) size fish (Figure 3 and Table 3), similar to 1999. The RSD-S value was above the 25 to 75 percentile range for all Alabama reservoirs, while RSD-Q and RSD-P values were within the 25 to 75 percentile range (Figure 3). All categories of RSD were similar to the 1999 and 1992 values (Newman et al 1992, Weathers et al 1999), with the exception of the RSD-M of 8 in 1992. Bass were once again found to be in less than optimum condition, with average Wr's for each RSD category 86 or less.

These RSD and Wr values are indicative of a slow growing bass population with a limited forage base. Lake Frank Jackson has an infertile watershed and the lake does not support large populations of forage species. Sunfish and shiners are the main forage species present. The lake also has a great deal of aquatic vegetation along the shallow sections. The catch rate of 68 bass/hour was well below the 135 bass per hour collected in 1999. However, the 2008 collection was much more extensive and gives a more accurate picture of the bass population at Lake Frank Jackson. The size structure of the bass population has remained fairly stable in the 3 samples collected since 1992 (Table 3, Figure 3).

Bluegill sunfish

One hundred bluegill were collected at a rate of 47 per hour, well below the lake average CPE of 114 bluegill per hour (Table 3). As with the bass sampling, this decrease in catch rates is probably due to a more extensive sampling effort over the entire lake rather than a reduction in the bluegill population. The bluegill collected were mostly small, with an RSD-S of 91 and RSD-Q of 9. Bluegill conditions ranged from 90 for RSD-S to 93 for RSD-Q.

Water Quality

The temperature/dissolved oxygen profile conducted in August found the lake strongly stratified, with oxygen levels near 5 ppm until depths below 3 meters, at which point the oxygen fell out very quickly (Figure 6). ADEM personnel recorded dissolved oxygen levels below 5 ppm all the way to the surface in their July profile. As mentioned previously, a large portion of this lake is very shallow with a huge amount of organic material. This is probably why anglers often complain that they can not catch fish in this lake in the summer very well. At this time there have not been any reports of fish kills from this lake.

Summary

The lower catch rates for bass and bluegill compared with the lake averages may have been due to cool, windy weather, and the fact that a much larger portion of the lake was sampled than in previous years. We feel this sample accurately reflects that this sportfish population is growing and reproducing in proportion to the relative fertility of the watershed, and is negatively impacted by a large population of competitive species (Table 4). The bass population is mainly small and slow growing, with very few fish reaching RSD-M sizes. The most beneficial actions

that would improve the quality of the bass population would be a higher harvest rate of small bass by anglers, and harvest of other predatory species such as gar, bowfin, and chain pickerel. The only fish species for supplemental stocking which would directly benefit this fishery would be harvestable size channel catfish. Previous catfish collections and discussions with anglers and park personnel indicate that catfish are very popular with the local anglers, but few small catfish are caught due to limited recruitment. Previous catfish stockings were very well received, with anglers reporting good catches throughout the summer. This lake is scheduled to be sampled again in 2013. We recommend stocking 20 channel catfish per acre in FY 2012, then conducting an access creel survey during the spring of 2013 to evaluate the effectiveness of this stocking, as well as collect basic creel survey information.

Conclusions

1. The largemouth bass population consists mainly of small, slow growing fish mainly due to the infertility of the watershed and the competition from other predatory species.
2. No size restrictions are recommended at this time; however, anglers should be encouraged to harvest smaller bass to improve the overall quality of the bass population.
3. Anglers should also be encouraged to harvest other predatory species.
4. The bluegill population also consists mainly of small, slow growing fish due to the infertility of the watershed and competition from other species.
5. Due to low recruitment of channel catfish, this lake would benefit from stocking 10 to 20 channel catfish per acre every 3 to 5 years.
6. No changes in the creel or size limits are needed at this time.

References

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- Welch, P.S. 1948. *Limnological Methods*. McGraw-Hill. Pp. 93-94.

APPENDIX A

TABLES AND FIGURES

LAKE FRANK JACKSON

SPRING 2008

Table 1. Lake Frank Jackson morphometric, physical, and chemical characteristics for 2008.

Surface area	1,037 acres
Drainage area	74 sq. mi.
Full pool elevation	238 feet-msl
Mean annual fluxuation	3 feet
Shoreline distance	13 miles
Shoreline development index	2.9 (Welch 1948)
Mean depth	8 feet
Maximum depth	23 feet
Outlet depth	6 feet
Growing season	249 frost free days (Jenkins 1967)
Date of impoundment	1986
Drainage	Yellow River Basin

Table 2. Fish stockings in Lake Frank Jackson, 1987-2008.

Species	Year	No/Ac	Size (in)	Total
Florida Largemouth Bass	1987	27.2	3	28,200
Bluegill Sunfish	1992	16.7	1 - 3	17,360
Hybrid Striped Bass	1999	9.9	1	10,245
Hybrid Striped Bass	2005	10.0	1	10,400
Channel Catfish	2003	4.8	3-9	5,000
Channel Catfish	2008	10.3	7-10	10,645

Table 3. Relative stock density (RSD), catch per effort (CPE), and relative weight (Wr) of target species in Lake Frank Jackson.

Largemouth Bass																								
Year	Gear	Number		SUBSTOCK			RSD-S				RSD-Q				RSD-P				RSD-M				TOTAL	
		Samples	Effort	no.	cpe	ratio	no.	cpe	pct.	Wr	no.	cpe	pct.	Wr	no.	cpe	pct.	Wr	no.	cpe	pct.	Wr	no.	cpe
1992	E	4	0.68	19	27.9	38	26	38.2	52	79	10	14.7	20	89	10	14.7	20	87	4	5.9	8	94	69	101.5
1999	E	4	1.16	55	47.5	54	50	43.1	50	86	30	25.9	30	86	20	17.2	20	83	1	0.8	1	81	156	134.5
2008	E	7	3.50	52	14.9	28	103	29.4	56	86	55	15.7	30	85	27	7.7	15	85	0	0.0	0		237	68.0
LAKE AVERAGE				30.1	40		36.9	52	84		18.8	27	87		13.2	18	85		2.2	3	88		101.3	

Bluegill																								
Year	Gear	Number		SUBSTOCK			RSD-S				RSD-Q				RSD-P				RSD-M				TOTAL	
		Samples	Effort	no.	cpe	ratio	no.	cpe	pct.	Wr	no.	cpe	pct.	Wr	no.	cpe	pct.	Wr	no.	cpe	pct.	Wr	no.	cpe
1992	E	4	0.35	6	17.1	12	30	85.7	60		20	57.1	40										56	160.0
1999	E	4	0.74				97	131.1	97	92	3	4.1	3	89									100	135.1
2008	E	5	2.13				91	42.7	91	90	9	4.2	9	93									100	46.9
LAKE AVERAGE							86.5	83	91		21.8	17	91										114.0	



Figure 1. Map of Lake Frank Jackson with starting point of electrofishing sampling locations indicated by yellow circles.

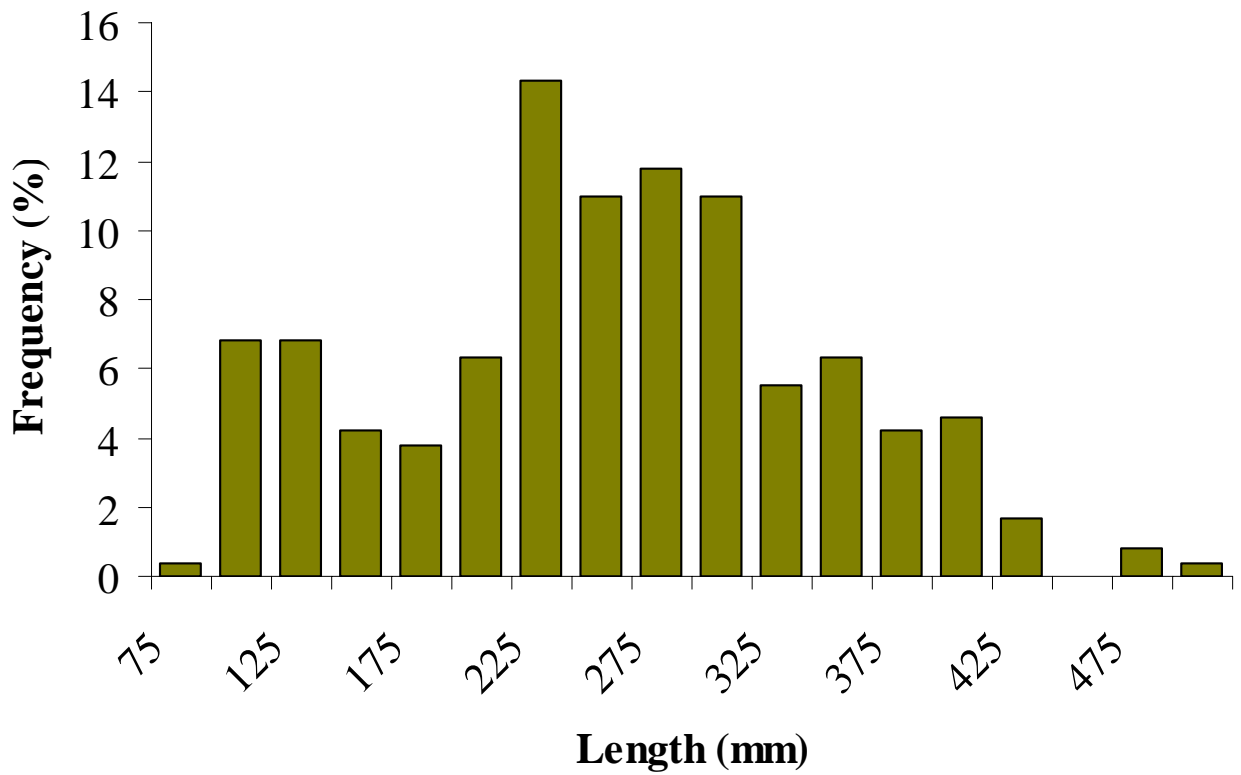


Figure 2. Length at age frequency for largemouth bass (N = 237) collected during spring electrofishing from Lake Frank Jackson, April 2008.

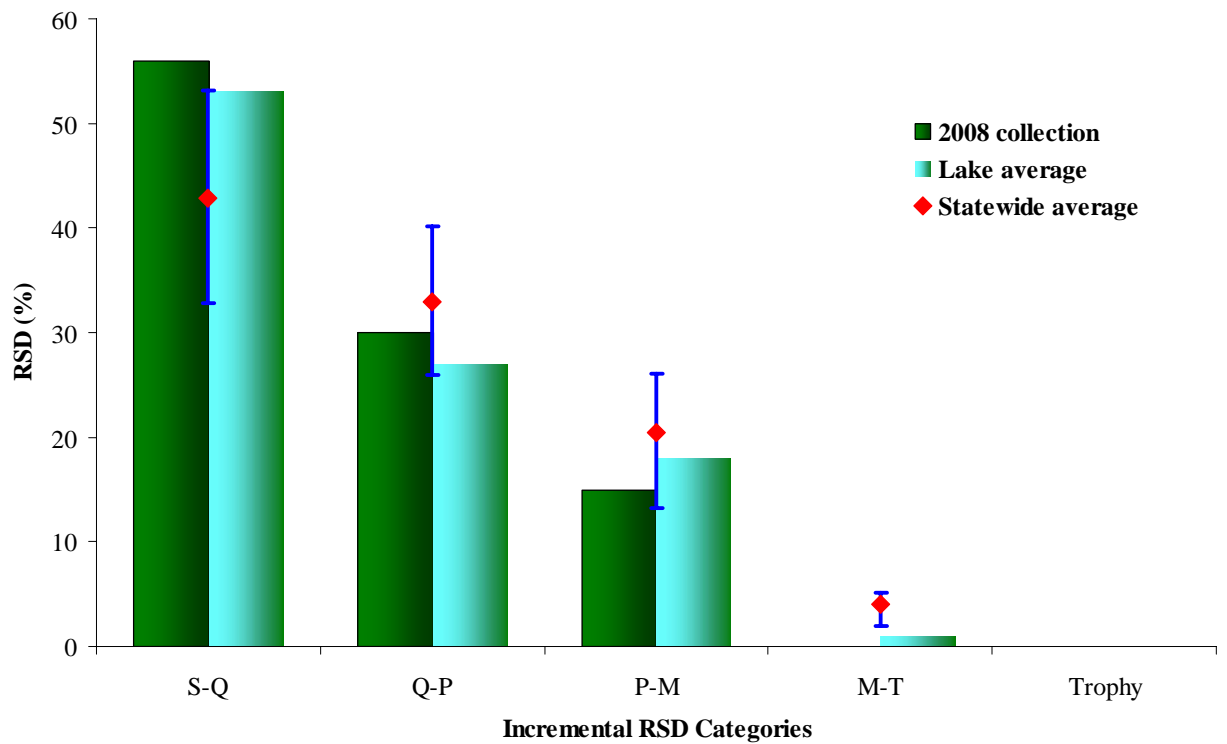


Figure 3. Relative stock density (RSD) of largemouth bass (N=237) at Lake Frank Jackson, spring 2008. I-Beams represent the 25th and 75th percentile of RSD values of largemouth bass, statewide.

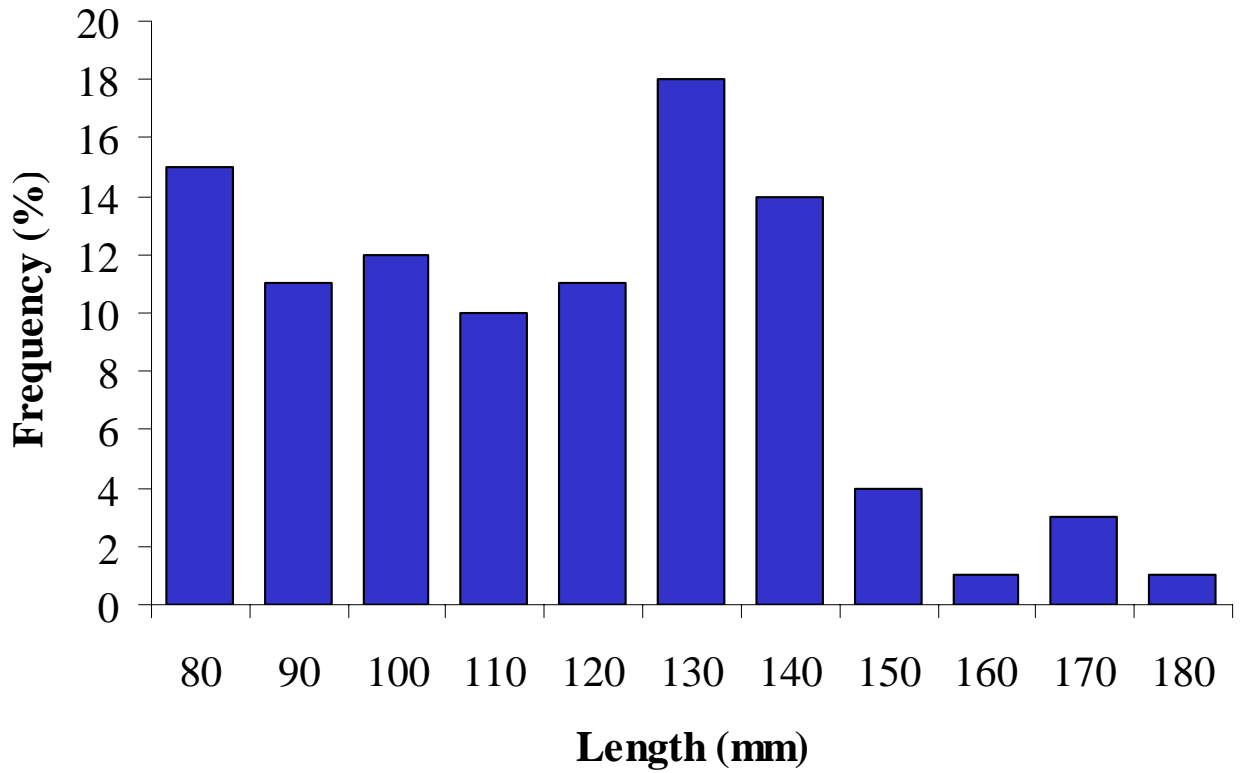


Figure 4. Length at age frequency for bluegill (N = 100) collected during spring electrofishing from Lake Frank Jackson, April 2008.

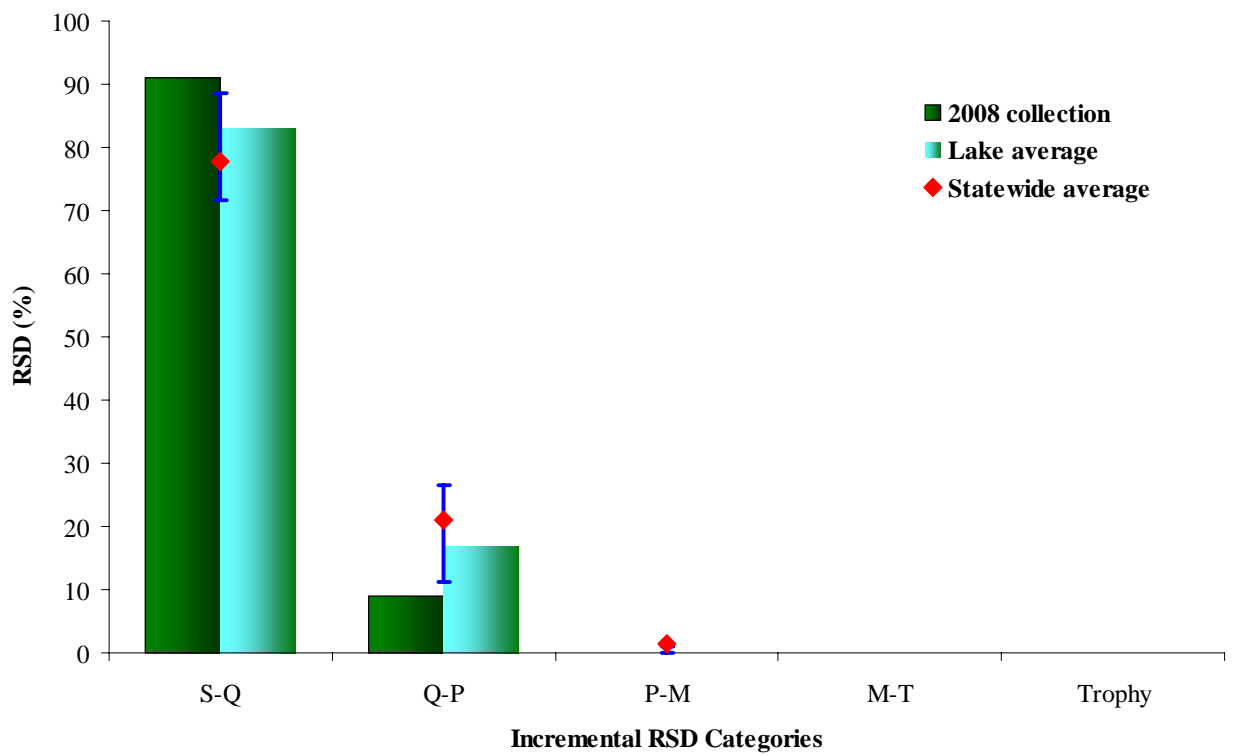


Figure 5. Relative stock density (RSD) of bluegill sunfish (N=100) at Lake Frank Jackson, spring 2008. I-Beams represent the statewide 25th and 75th percentile of RSD values for bluegill sunfish.

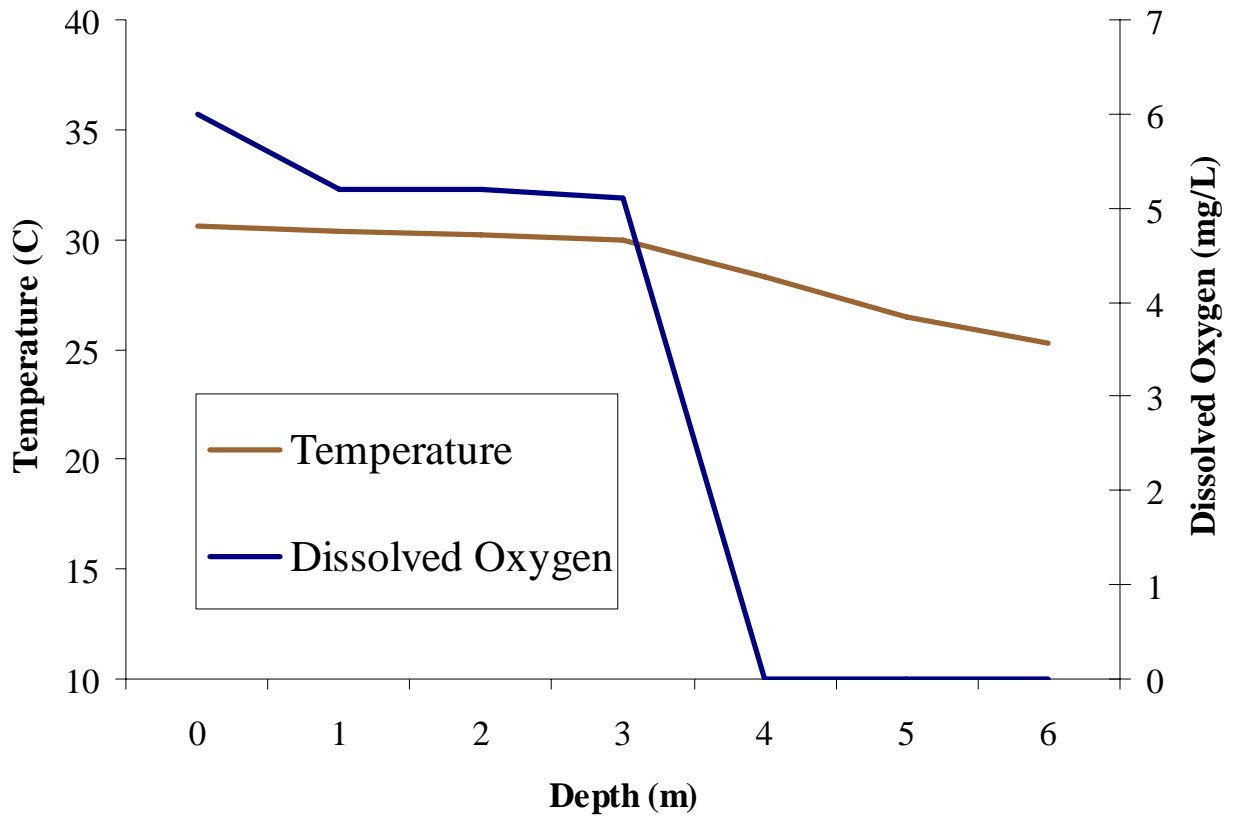


Figure 6. Water temperature and dissolved oxygen for Lake Frank Jackson, August 2008.

Appendix B

General Reconnaissance Survey

GENERAL RECONNAISSANCE SURVEY

DATE: September 1, 2008

1. Reservoir: Lake Frank Jackson
2. Number of free public access areas: 1
3. Number of user fee access areas: 1
4. Wildlife and Freshwater Fisheries boat ramps needing repairs, listed by order of priority.
 - A. None
5. Possible locations of additional access areas: None
6. Tailwater access.
 - A. Anglers have bank access to the tailwater fishery below the dam by a paved road.
7. Summary of observations on tailwater fishery.

This site is very popular with bank or wading anglers for bass, sunfish, and catfish.
8. Fish shelter situation.

A lot of standing timber was flooded when the lake was impounded in 1986, but fish attractors near the park bank area and the walking pier would be very beneficial to anglers.
9. Public relation problems or desires concerning the fishery that need attention.

Many anglers and park personnel reported that catfish stocked in 2008 were well received and have requested that more be stocked in the future. Anglers have complained in the summer about lack of fishing success, but this is probably due to stress from low levels of dissolved oxygen.

10. Areas of nuisance aquatic plants observed during recent sampling.

There was a substantial amount of water lilies, water shield, cattails, torpedo grass, and other emergent vegetation in the shallow areas of the lake. Personnel with State Lakes Crew and District VI Fisheries treated the area around the park, boat landing, and walking bridge with herbicides in August 2008.

11. Shoreline access development.

Shoreline access development is adequate at this time.

12. Description of commercial fisheries.

There are no commercial fisheries at this time.