

BEAVER DAM LAKE
Kosciusko County
2005 Fish Management Report

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EXECUTIVE SUMMARY

- A largemouth bass population estimate was conducted on Beaver Dam Lake once a week from May 3 to 23, 2005. A general lake survey was completed on Beaver Dam Lake from June 13 to 14, 2005. During this survey, water chemistry data was also collected. Two aquatic vegetation surveys were conducted on May 23 and July 25, 2005. In addition, a creel survey was conducted on this lake from April 18 to September 28, 2005.
- The Secchi disk reading was 3 ft on May 23 and 2.75 ft on July 25 and dissolved oxygen concentrations were not adequate for fish survival below 10 ft on June 13th. Submersed vegetation was found to a maximum depth of 11.5 ft on May 23 and 5.5 ft on July 25. Eurasian watermilfoil dominated the plant population in the spring vegetation survey, but coontail dominated the vegetation community in late summer.
- A total of 987 largemouth bass were collected while night electrofishing in May to calculate a population estimate. Overall, 23 bass of any size per acre and 20 stock-size bass per acre were estimated.
- A total of 1,445 fish, representing 18 species and 1 hybrid sunfish, was collected during the general survey. Bluegill ranked first by number and weight, followed by largemouth bass and yellow perch. Largemouth bass PSD was 70, representing a slightly overbalanced population. The RSD-14 was 48 with some fish reaching 14.0 in TL by age 4. Bluegill PSD was 17, which is unbalanced, but grew fast and reached 6.0 in TL by age 3.
- A total of 696 parties of anglers was interviewed on Beaver Dam Lake during this creel survey, which included 1,090 individuals. Beaver Dam Lake anglers primarily preferred fishing for largemouth bass (45%), bluegill (39%), or both bass and bluegill (12%). Sixty-nine largemouth bass (mean length, 15.2 in; length range, 14.0 to 18.0 in) and 743 bluegill (mean length, 7.3 in; length range, 4.0 to 9.0 in) were primarily harvested by boat anglers. Most fish reported for catch-and-release were largemouth bass under 14 in (905 fish). Beaver Dam Lake consistently had the greatest number of anglers per hour in the month of July and the lowest number in April.
- Of the fishing parties that were interviewed, 74% were from Kosciusko County. Eighty-five percent of the interviewed anglers believed that the overall quality of fishing was staying the same, while 6% believed it to be improving and 9% thought that the fishing quality was declining. When anglers were asked if they were satisfied with their fishing experience on the day they were interviewed, 92% said they were satisfied and 8% said they were not.
- In Beaver Dam Lake, the DFW should maintain a 14-in minimum size limit on largemouth bass, implement limits on bluegill catches, and continue to control Eurasian watermilfoil.

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INTRODUCTION

Beaver Dam Lake is a 146.5-acre natural lake located in southwest Kosciusko County. The 2.4-square mile watershed of this lake is primarily used for agriculture and all but a small portion of the west shore is developed for residential use. The maximum and average depths of this lake are 61 and 26 feet, respectively. A state-owned public access is located on the east shore on County Road 725 West.

Beaver Dam Lake has been the recipient of several management efforts in the past, in an attempt to make this lake more usable for residents and anglers. A partial fish eradication was conducted in 1966 to improve the bluegill population. Tiger muskie fingerlings were stocked in 1981 without survival success. In 1986, the largemouth bass 14-in minimum size limit went into effect, and largemouth bass evaluations were conducted between 1984 and 1989 to evaluate the size limit effects. In addition, this lake was infested with Eurasian watermilfoil that needed annual herbicide applications for control. Eight general surveys were conducted between 1971 and 2005 (Table 1). We surveyed Beaver Dam Lake in 2005 in order to monitor trends in the fish population, vegetation community, and possible effects of herbicide treatments on Eurasian watermilfoil.

METHODS

Largemouth bass population estimation

A largemouth bass population evaluation was conducted on Beaver Dam Lake during May as part of DFW Work Plan 202068. Largemouth bass were collected by night electrofishing once per week from May 3 to 23, 2005 and marked with a left pelvic fin clip. Additionally, largemouth bass were aged and an age-length key was created for largemouth bass captured during this survey (Anderson and Neumann 1996; DeVries and Frie 1996). A Schnabel estimator was used to calculate a population estimate (N) for largemouth bass

$$N = \frac{\left(\sum C_t M \right)}{\left(\sum R_t + 1 \right)},$$

where C is the number of captured bass, M is the number of marked bass, and R is the number of recaptured bass. Confidence intervals were calculated using normal approximation,

$$\frac{1}{N} \pm t_{\alpha} \times SE,$$

which is different from the default of Poisson distribution in the calculation worksheet, because more than 50 bass were recaptured during the survey. The value t_{α} is from a t-table for (100- α)% confidence limits and

$$SE = V\left(\frac{1}{N}\right) = \frac{\sum R_t}{\left(\sum C_t M_t\right)^2}.$$

Annual mortality was estimated using Heincke's method

$$A = \frac{n_0}{N},$$

where n_0 is the number of fish in the youngest age class being considered (i.e., the earliest age class where fish are fully recruited to the gear), N is the sum of all fish being considered (i.e., the sum of all fish from the youngest, fully recruited age class to the oldest age class captured), and A is annual mortality. Standard error is calculated by

$$S_A = \frac{[A(1-A)]}{N},$$

where A is annual mortality and N is the sum of all fish being considered, as stated above. Since this method does not rely on the accurate aging of older fish, this is a safer, more robust method for calculating annual mortality of a population.

General survey

The Beaver Dam Lake general survey was conducted from June 13 to 14, 2005 as part of DFW Work Plan 204755 that covers general fisheries surveys of natural lakes. Some physical and chemical characteristics of the water were measured in the deepest area of the lake (Indiana Division of Fish and Wildlife 2001). Submersed aquatic vegetation was sampled on May 23 and July 25, 2005 using guidelines written by Pearson (2004). A global positioning system (GPS) device was used to record the location of the limnological data collection site, aquatic vegetation sample sites, and fish collection sites.

Fish were collected by pulsed D.C. electrofishing the shoreline at night with two dippers for 1 h at 4 different locations (15-minute stations). Three trap nets and four experimental-mesh gill nets were also fished overnight. All fish collected were measured to the nearest 0.1 in TL and weighed in the field to the nearest 0.01 lb.

Fish scale samples were taken from bluegill, largemouth bass, yellow perch, and black crappie for age and growth analysis. Proportional stock density (PSD) and relative stock density (RSD) were calculated for bluegill, largemouth bass, yellow perch and black crappie (Anderson and Neumann 1996). Additionally, an age-length key was created for bluegill captured during this general survey.

Creel survey

Beaver Dam Lake has public access at one location and private access from many private homes with piers along the lakeshore. Because this lake has limited public access and a relatively large amount of private access, a roving-access creel survey was conducted from April 18 to September 28, 2005. The survey was conducted using stratified random sampling where the 15 h weekend and weekdays were split between 2 periods, each lasting 7.5 h. In each hour, the creel clerk counted shore and boat anglers and conducted interviews. Each angler was asked about their fishing preference, number and species of fish harvested and caught and released, county of residence, whether they thought the fishery was improving, staying the same, or declining, and whether or not they were satisfied with their fishing experience. Our primary interest from this creel survey was to determine the impacts of angler harvest on largemouth bass with a minimum length limit of 14 in. This survey combined with the data from the population estimate should enable us to determine whether the current regulation is suitable for the largemouth bass population in this lake.

RESULTS

Largemouth bass population estimation

A total of 987 largemouth bass was captured during the weekly electrofishing surveys. The number of bass, regardless of size, estimated from the survey was 3,380 fish (95% confidence interval = 2,902 to 4,046 fish; Table 2). The population of stock-size bass was estimated at 2,861 fish (95% confidence interval = 2,445 to 3,447 individuals). This translates to 23 bass of any size per acre and 20 stock-size bass per acre. The largemouth bass PSD at this time was 70 and the RSD-14 was 48. According to the back-calculated data, growth for ages 1 through 4 were approximately the same as the growth observed during the 2002 general survey (Figure 1). For age 5 however, bass in the 2005 survey seemed to grow slightly faster than those in the 2002 survey, and reached harvestable size in that year. Older age classes could not be

compared because they were not collected in the 2002 survey. The overall mean length for bass in this survey was 11 in (Table 3). Mean length-at-age data from the age-length key indicated that largemouth bass reached 14 in (i.e. harvestable size) during their 5th year of growth (Table 4). The estimated annual mortality rate for this population was 0.54 (standard error = 0.0003).

General survey

Beaver Dam Lake was at normal pool. On June 13th, dissolved oxygen concentrations were not adequate for fish survival below 10 ft and Secchi depth was 4 ft. The thermocline was located between 8 and 12 ft.

The Secchi disk reading was 3 ft on May 23 and 2.75 ft on July 25. Submersed vegetation was found to a maximum depth of 11.5 ft on May 23 and 5.5 ft on July 25 (Table 5). In 60 sites sampled, Eurasian watermilfoil (37%) dominated the vegetation population on May 23, and Pithophora algae were found at 48% of the sampled sites in the lake. Northern watermilfoil (3%), coontail (3%), and slender naiad (2%) were also present in the lake. Eurasian watermilfoil was treated with Renovate 3 in June. On the July 25 vegetation survey, in 60 sampled sites, coontail (17%) dominated the plant community and chara (2%) and slender naiad (2%) were also present.

A total of 1,445 fish, representing 18 species and 1 hybrid sunfish, was collected during this survey. Total weight of the fish sample was approximately 365 lbs. Species collected in past surveys, but not in this survey, include lake chubsucker, silver redhorse, grass pickerel, green sunfish, redear sunfish, black bullhead, Johnny darter, spotted sucker, northern hogsucker, and white bass. By number, bluegill ranked first, largemouth bass ranked second, and yellow perch ranked third in the survey sample. By weight, largemouth bass ranked first followed by gizzard shad and spotted gar.

A total of 940 bluegill was sampled that weighed 39.51 lbs. They ranged in length from 1.7 to 8.1 in TL. Relative abundance by number and weight were 65.1% and 10.8%, respectively. The electrofishing, gill net, and trap net catch rates were 355 fish/h, 1.3 fish/lift, and 16.8 fish/lift, respectively. The bluegill PSD was 17. The bluegill RSD-8 was 0. Growth of bluegill collected during this survey was similar to that of bluegill captured in the 2002 survey for all ages (Figure 2). Overall mean length of bluegill was 4.4 in (Table 4). Mean length-at-age data from the age-length key indicated bluegill reached 6 in (i.e. quality size) between their 2nd and 3rd year of growth (Table 6). Estimated annual mortality was 0.65 (standard error = 0.0007).

A total of 124 largemouth bass was sampled that weighed 83.55 lbs. They ranged in length from 3.2 to 16.0 in TL. Relative abundance by number and weight were 8.6% and 22.9%, respectively. The electrofishing, gill net, and trap net catch rates were 108 fish/h, 5 fish/lift, 0.3 fish/lift, respectively. The largemouth bass PSD was 45 and RSD-14 was 12. Scales were not collected from largemouth bass during the general survey because they were collected during the population estimate survey in May.

A total of 98 yellow perch was sampled that weighed 17.61 lbs. They ranged in length from 1.3 to 11.8 in TL. Relative abundance by number and weight were 6.8% and 4.8%, respectively. The electrofishing, gill net, and trap net catch rates were 56 fish/h, 9.7 fish/lift, 3.3 fish/lift. The yellow perch PSD was 4. Back-calculated lengths indicated yellow perch reached 8 in (i.e. quality size) between their 4th and 5th year of growth.

A total of 29 black crappie was sampled that weighed 4.94 lbs. They ranked eighth in abundance by number and weight. They ranged in length from 3.0 to 11.1 in TL. Relative abundance by number and weight were 2.0% and 1.4%, respectively. The electrofishing, gill net, and trap net catch rates were 0 fish/h, 5 fish/lift, 3.5 fish/lift. The black crappie PSD was not calculated since none were captured during electrofishing. Back-calculated lengths indicated black crappie reached 8 in (i.e. quality size) between ages 3 and 4.

Gizzard shad and carp were also captured during the general survey. Shad ranked fourth by number (N = 79) and second by weight (66.94 lbs). Four carp were captured and ranked sixth by weight.

Creel survey

A total of 696 parties of anglers was interviewed on Beaver Dam Lake during this creel survey, which included 1,090 individuals. On weekdays, 626 individual anglers were interviewed, compared to 464 individuals on weekends. The average trip for boat and shore anglers was 2.6 h and 1.6 h, respectively, and the total average trip overall was 2.2 h. Weekdays had slightly more fishing pressure (4,040 h) than weekends (3780 h). Total fishing pressure was over 7,800 h. The month with the highest amount of fishing pressure, July, had almost 2,200 hours of fishing, which translates into approximately 15 h/acre of fishing. Overall, fishing pressure for the six-month creel survey was 54 h/acre.

Beaver Dam Lake anglers primarily preferred fishing for largemouth bass (45%), bluegill (39%), or both bass and bluegill (12%). Other species preferred by some anglers were negligible

and included yellow perch, crappie, redear sunfish, channel catfish, or anything that would bite. The creel clerk measured 69 largemouth bass (mean length, 15.2 in; length range, 14.0 to 18.0 in) that were primarily harvested in May, June, and July by boat anglers at a rate of 0.08 fish/trip-h by bass anglers, 0.02 fish/trip-h by bluegill anglers, and 0.01 fish/trip-h by anglers fishing for both bass and bluegill. This expanded into a total harvest of 236 bass. In contrast, a total of 743 bluegill (mean length, 7.3 in; length range, 4.0 to 9.0 in) was primarily harvested by boat anglers at a rate of 0.24 fish/trip-h by bluegill anglers and 1.33 fish/trip-h by anglers fishing for both bass and bluegill. This expanded into a total harvest of 2,465 bluegill overall. Other fish harvested included yellow perch (37 fish; mean length, 7.5 in; length range, 5.0 to 10.5 in), redear sunfish (7 fish; mean length, 6.5 in; length range, 5.5 to 7.5 in), channel catfish (5 fish; range, 18.5 to 24.5 in), warmouth (3 fish; range, 7.0 to 7.5 in), and crappie (1 fish; length, 11 in). Overall, the total expanded harvest of fish from Beaver Dam Lake was 2,853, which translates to a total of 0.36 fish/h.

The majority of the fish reported released after being captured were largemouth bass under 14 in TL (905 fish). These bass were captured at a rate of 1.14 fish/trip-h by bass anglers, 0.38 fish/trip-h by bluegill anglers, and 0.05 by anglers fishing for both bass and bluegill. The number of largemouth bass greater than 14 in that were reported captured and then released was 251. These bass were captured at a rate of 0.32 fish/trip-h for bass anglers, 0.10 fish/trip-h for bluegill anglers, and 0.01 fish/trip-h for anglers fishing for both largemouth bass and bluegill. The other 954 fish that were reported captured and released were primarily bluegill and yellow perch. In total, the expanded catch-and-release of largemouth bass less than 14 in TL was 2,988, whereas the catch-and-release of bass greater than 14 in TL was 802. There was an observed total of 2,110 fish captured and released and an expanded catch-and-release total of 7,165 fish.

Beaver Dam Lake had the greatest number of anglers per hour in the month of July and the lowest number in April. The total number of anglers interviewed in July was 316, whereas in April, only 18 anglers were interviewed. According to the observed and expanded totals, most largemouth bass were harvested in May (14 fish and 63 fish, respectively), June (24 fish and 61 fish, respectively), and July (15 fish and 54 fish, respectively), and most bluegill were harvested in July (238 fish and 854 fish, respectively) and August (299 fish and 828 fish, respectively). The majority of largemouth bass caught and released under 14 in TL were captured in June (400 fish; expanded = 994 fish). Similarly, June (96 fish) and July (65 fish) had the highest catch-

and-release of all months for largemouth bass over 14 in TL (expanded = 219 and 255 fish, respectively).

Of the anglers that were interviewed on Beaver Dam Lake, 74% were from Kosciusko County. Eighty-five percent of the interviewed anglers believed that the overall quality of fishing on Beaver Dam Lake was staying the same, while 6% believed it to be improving and 9% thought that the fishing quality was declining. These percentages were evenly distributed between largemouth bass, bluegill, and bass/bluegill anglers, meaning that no group was different in what they thought of the quality of fishing in the lake. Anglers who thought that fishing was declining were asked why and some responded that too much vegetation was removed from the lake. When anglers were asked if they were satisfied with their fishing experience on the day they were interviewed, 92% said they were satisfied and 8% said they were not. These percentages were similar no matter the fishing preference of the angler. One of the reasons most often noted for lack of satisfaction with fishing was that either no fish were caught or no fish that were large enough to keep were captured.

DISCUSSION

Water quality in Beaver Dam Lake was relatively poor since the dissolved oxygen was not high enough below 10 ft to support fish. This lake has been classified as eutrophic based on the Indiana Trophic Status Index (Indiana Department of Environmental Management 2005). The submersed aquatic vegetation community of Beaver Dam Lake was dominated by Eurasian watermilfoil, similar to what has been found in previous years. However, out of all of the points sampled around this lake, only about half of them had any plants at all. Since vegetation sampling has only just begun in the last three years, there is no way to know what the frequency of native vegetation was in the lake or the amount of coverage that there was in the past. If native vegetation does not cover more area in the lake, it may be more beneficial to the largemouth bass and bluegill fishery to allow less aggressive treatment of Eurasian watermilfoil and allow some of this exotic species to provide habitat for these fish. While it is known that exotic vegetation is not the highest quality habitat for fish species, it is better than not having any suitable vegetation available in the lake.

Largemouth bass and bluegill continue to dominate the fishery at Beaver Dam Lake similar to what was observed during the 2002 survey. In addition, numbers of yellow perch have

increased above that of gizzard shad. Gizzard shad were collected in greater number during the surveys in the 1990's, but since then, their numbers have declined. Overall, the quality of the largemouth bass fishery is very good based on the relatively high PSD (45) and RSD-14 (12). These fish have similar growth to that observed in the 2002 survey and when compared to the creel data, it is obvious that relatively few bass are harvested compared to the number that are captured and released. In contrast, bluegill have good growth, similar to that in 2002, but a relatively low PSD (17) and the reason for this may be reflected in the high number of bluegill that were harvested in 2005. Many more bluegill were harvested than largemouth bass and it may be that once bluegill reach a suitable size, they are immediately harvested by anglers. With this in mind, placing a creel or minimum size limit on bluegill in this lake may be a good management option.

Based upon data from the U.S. Department of the Interior, Fish and Wildlife Service and U.S. Department of Commerce, U.S. Census Bureau (2004), anglers in Indiana spent an average of \$50 for each day of fishing. Expenditures included food, lodging, transportation, equipment, licenses, and other fishing related items. Using this cost estimated per day of fishing, the estimated economic value of the Beaver Dam Lake fishery from May to September 2003 was \$178,592.

RECOMMENDATIONS

- The DFW should maintain the 14-inch minimum size limit on largemouth bass at Beaver Dam Lake.
- The DFW should begin to investigate options for better managing the bluegill fishery in Beaver Dam Lake, such as implementing a bag or minimum size limit.
- Eurasian watermilfoil should continue to be controlled as necessary, but disallow any large-scale treatment of natives beyond the 625 ft² allowed by the vegetation rules.

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Table 1. Fish species and number of individuals captured in general surveys from 1971 through 2005.

Species	1971	1977	1982	1983	1992	1994	2002	2005
Bluegill	399	166	699	715	365	1413	791	940
Largemouth bass	289	116	23	36	103	127	210	124
Yellow perch	128	51	134	94	77	3	186	98
Black crappie	27	92	859	587	15		10	29
Brook silverside	10	1			8	11	127	38
Gizzard shad	85	148	23	160	220	703	67	79
Spotted gar		6		2	18	17	37	37
White sucker	12	47	34	29	19		18	41
Pumpkinseed	3	7	32	125	16	14	18	25
Common carp	82	31	14	4	4	5	11	4
Longear sunfish	38	12	56	15	4		9	5
Warmouth	11	14	3	6	5	2	9	7
Bowfin	1	6	3	1	3	1	4	1
Yellow bullhead	4	7	3	5	1	1	4	6
Brown bullhead	19	38	10	13	2	1	3	2
Redear sunfish	1	10					1	
Northern hog sucker							1	
Johnny darter					1		1	
Golden shiner	8	179	94	322	43	9	1	6
Channel catfish		1					1	2
Green sunfish							1	
Hybrid sunfish			8					1
Black bullhead			3		2			
Lake chubsucker	4	1			1			
Spotted sucker		1						
White bass	1							
Grass pickerel	1							
Total	1123	934	1998	2114	907	2307	1510	1445

1971 effort: gill net = 24 lifts (16 vertical and 8 experimental), AC electrofishing = 4 hrs

1977 effort: gill net = 12 lifts, trap net = 8 lifts, AC electrofishing = 2.5 hrs

1982 effort: gill net = 5.4 lifts, trap net = 5.6 lifts, AC electrofishing = 1 hr

1983 effort: gill net = 6 lifts, trap nets = 6 lifts; AC electrofishing = 1.03 hrs

1992 effort: gill net = 6 lifts, trap net = 6 lifts, DC electrofishing = 1 hr; PSDs calculated using only electrofishing data

1994 effort: DC electrofishing = 2.54 hrs; PSDs calculated using only electrofishing data

2002 effort: gill net = 6 lifts, trap net = 6 lifts, DC electrofishing = 1 hr; PSDs calculated using only electrofishing data

2005 effort: gill net = 4 lifts, trap net = 4 lifts, DC electrofishing = 1 hr; PSDs calculated using only electrofishing data

Table 2. Largemouth bass population estimate results for all bass and stock-size bass in Beaver Dam Lake in May 2005.

LAKE: Beaver Dam		YEAR:		2005 SIZE: All Bass						
CATCH	MARKED	RECAPTURES	C*M	POPULATION	SE	SE %	95% LOW	95% HIGH	90% LOW	90% HIGH
173	0	0								
339	173	15	58647	3665	916	25	2369	6459	2493	5683
345	497	54	171465	3287	393	12	2635	4221	2716	4029
317	788	72	249796	3380	284	8.4	2886	4014	2952	3894
SAMPLING RESULTS										
TOTAL RECAPTURES:		141								
CATCH WITH RECAPS:		1174								
CATCH W/O RECAPS:		1033								
PERCENT CAPTURED:		30.60%								
NIGHTLY EFFICIENCY:		5.80%								

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LAKE: Beaver Dam		YEAR:		2005 SIZE: >=Stock-size Bass						
CATCH	MARKED	RECAPTURES	C*M	POPULATION	SE	SE %	95% LOW	95% HIGH	90% LOW	90% HIGH
151	0	0								
319	151	14	48169	3211	829	25.8	2049	5783	2159	5055
301	456	50	137256	2853	354	12.4	2269	3700	2341	3524
276	707	68	195132	2861	248	8.7	2431	3419	2488	3312
SAMPLING RESULTS										
TOTAL RECAPTURES:		132								
CATCH WITH RECAPS:		1047								
CATCH W/O RECAPS:		915								
PERCENT CAPTURED:		32.00%								
NIGHTLY EFFICIENCY:		6.10%								

Table 3. Age-length key for largemouth bass captured using night electrofishing on Beaver Dam Lake in May 2005.

Length group	# in sample	Number (age) in subsample	age 1	age 2	age 3	age 4	age 5	age 6	age 7	age 8	age 9	age 10
3.5	5	3 (1)	5									
4.0	7	4 (1)	7									
4.5	9	5 (1)	9									
5.0	10	3 (1), 1 (2)	8	3								
5.5	15	5 (1), 2 (2)	11	4								
6.0	10	2 (1), 1 (2)	7	3								
6.5	7	4 (2)		7								
7.0	22	5 (2), 1 (3)		18	4							
7.5	33	10 (2)		33								
8.0	43	7 (2), 1 (3)		38	5							
8.5	31	11 (2), 1 (3)		28	3							
9.0	17	3 (2), 2 (3)		10	7							
9.5	38	7 (3), 1 (5)			33		5					
10.0	86	5 (3), 1 (4)			72	14						
10.5	117	4 (3), 2 (4)			78	39						
11.0	103	3 (3), 1 (4)			77	26						
11.5	83	4 (3), 2 (4)			55	28						
12.0	59	4 (3), 2 (4)			39	20						
12.5	63	6(3), 4 (4)			38	25						
13.0	59	4 (3), 8 (4), 1 (5)			18	36	5					
13.5	70	4 (3), 5 (4), 1 (5)			28	35	7					
14.0	26	2 (4), 5 (5), 4 (6), 1 (7)				4	11	9	2			
14.5	40	2 (4), 12 (5), 4 (6), 2 (7), 1 (8)				4	23	8	4	2		
15.0	35	1 (4), 4 (5), 4 (6), 5 (7), 2 (8)				2	9	9	11	4		
15.5	14	5 (6), 5 (7), 1 (8)						6	6	1		
16.0	14	2 (5), 5 (6), 3 (7), 2 (8), 1 (9)					2	5	3	2	1	
16.5	7	1 (6), 4 (7), 1 (8)						1	5	1		
17.0	3	1 (6), 1 (7), 1 (8)						1	1	1		
17.5	5	1 (7), 2 (8)							2	3		
19.0	2	1 (8), 1 (10)								1		1
Total			46	145	457	233	61	39	34	16	1	1

Table 4. Mean length-at-age and its associated variance for largemouth bass captured for the population estimate in May 2005 and bluegill collected for the general survey on Beaver Dam Lake in June 2005.

Largemouth bass			Bluegill		
Age	Mean length (in)	Variance	Age	Mean length (in)	Variance
1	4.8	0.641	1	2.3	0.094
2	7.7	0.750	2	4.0	0.327
3	11.0	1.538	3	6.5	0.228
4	12.0	1.550	4	7.4	0.222
5	13.9	2.090	5	7.8	0.062
6	15.0	0.637			
7	15.5	0.784			
8	14.9	16.791			
9	16.0	0.000			
10	19.0	0.000			

Table 5. Submersed aquatic vegetation scores for each species found in Beaver Dam Lake on May 23 and July 25, 2005.

Beaver Dam Lake, Kosciusko County

Date 5/23/2005
 Secchi depth (ft) 3
 Max plant depth (ft) 11.5

Species	Rake score					# sites w/ vegetation	% sites w/ vegetation
	1	2	3	4	5		
Overall	20	1	1	0	0	22	37
Eurasian watermilfoil	16	1	1	0	0	18	30
Coontail	2	0	0	0	0	2	3
Slender naiad	1	0	0	0	0	1	2
Northern watermilfoil	2	0	0	0	0	2	3
Unknown pondweed	1	0	0	0	0	1	2
Filamentous algae	29	0	0	0	0	29	48

Date 7/25/2005
 Secchi depth (ft) 2.75
 Max plant depth (ft) 5.5

Species	Rake score					# sites w/ vegetation	% sites w/ vegetation
	1	2	3	4	5		
Overall	13	1	0	0	0	14	23
Chara	1	0	0	0	0	1	2
Coontail	9	1	0	0	0	10	17
Slender naiad	1	0	0	0	0	1	2
Filamentous algae	14	0	0	0	0	14	23

Table 6. Age-length key for bluegill captured during the general survey on Beaver Dam Lake on June 13 and 14, 2005.

Length group	# in sample	# (age) in subsample	age 1	age 2	age 3	age 4	age 5
1.5	2	2 (1)	2				
2.0	42	9 (1)	42				
2.5	57	9 (1), 1 (2)	51	6			
3.0	10	5 (1), 6 (2)	5	5			
3.5	62	11 (2)		62			
4.0	74	10 (2)		74			
4.5	43	9 (2)		43			
5.0	19	8 (2)		19			
5.5	7	2 (2), 4 (3)		2	5		
6.0	17	8 (3)			17		
6.5	31	9 (3), 1 (4)			28	3	
7.0	29	7 (3), 3 (4)			20	9	
7.5	18	1 (3), 6 (4), 1 (5)			2	14	2
8.0	15	4 (4), 2 (5)				10	5
Total			100	211	72	35	7

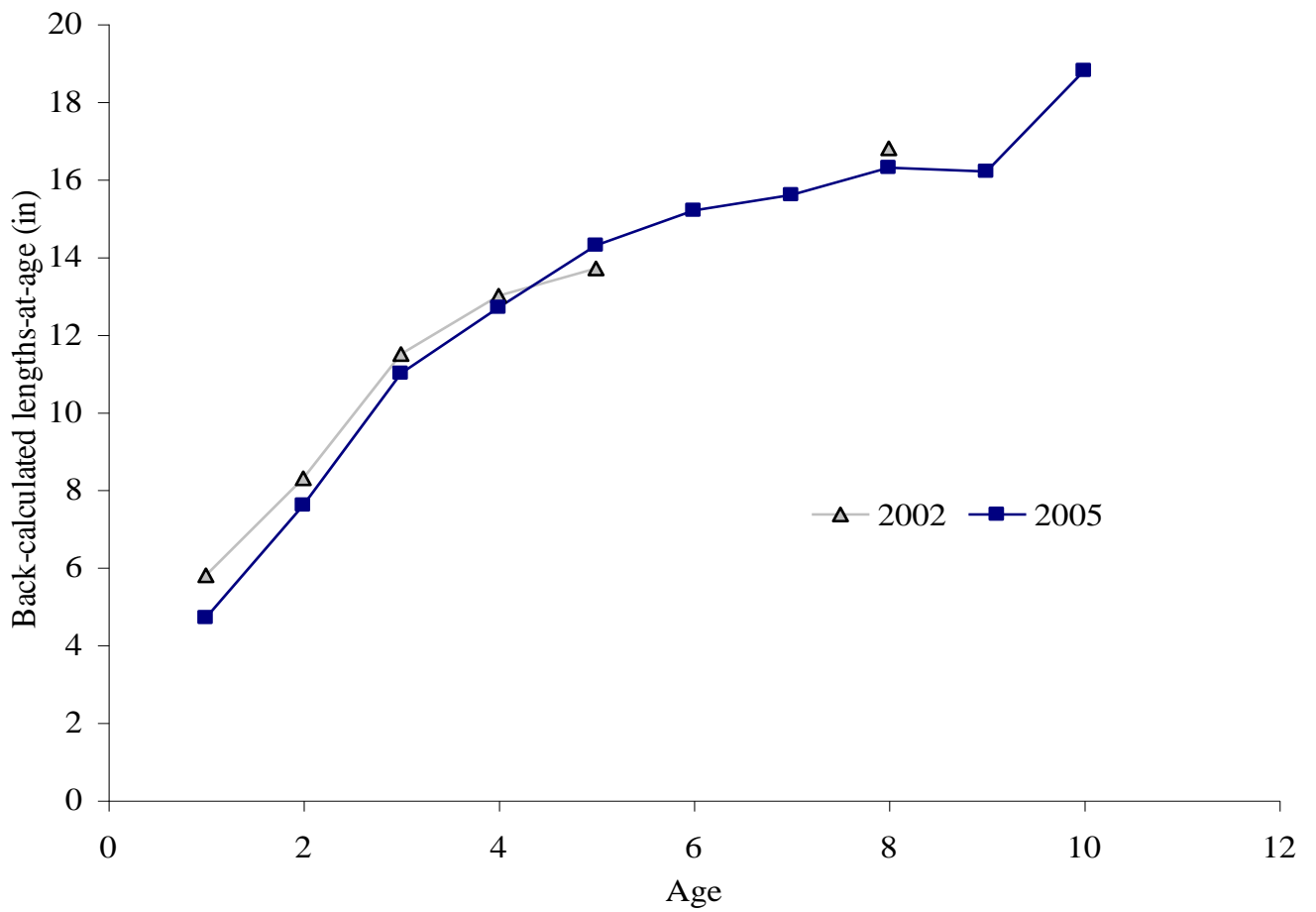


Figure 1. Comparison of largemouth bass growth in 2002 and 2005. The Y-error bars represent the standard deviation around each average length. Average length and standard deviation were not calculated for age groups with less than three samples.

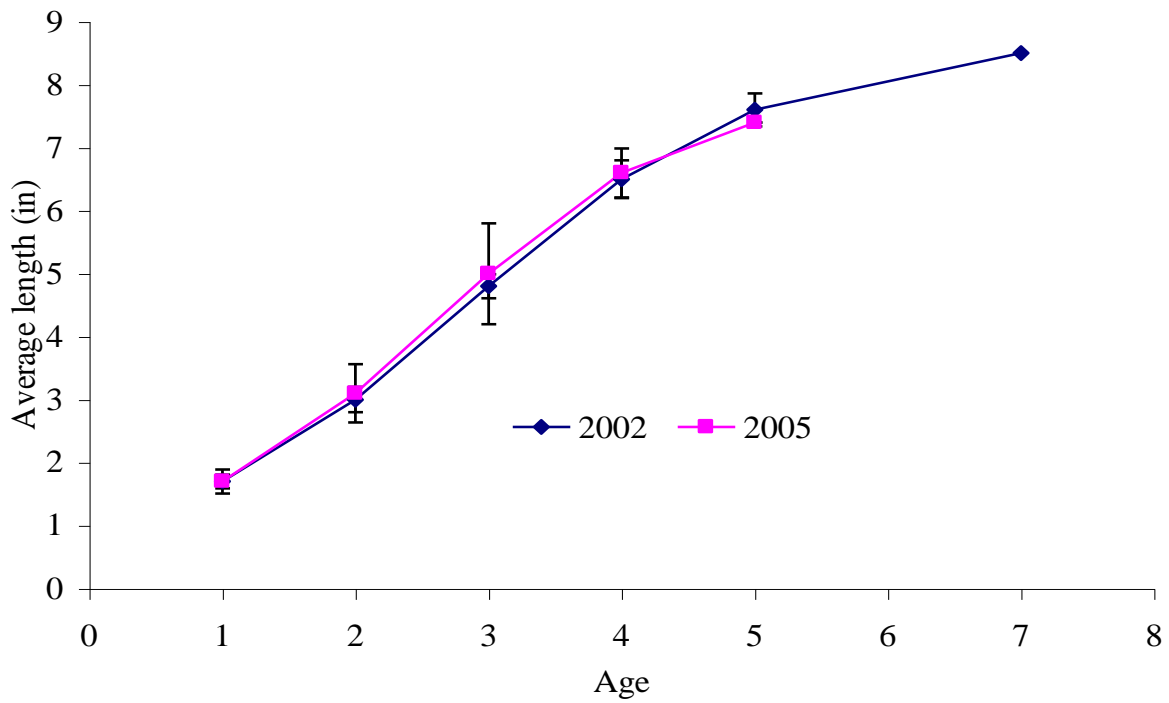


Figure 2. Comparison of bluegill growth in 2002 and 2005. The Y-error bars represent the standard deviation around each average length. Average length and standard deviation were not calculated for age groups with less than three samples.

APPENDIX 1

Lake Pages

LAKE SURVEY REPORT

Type of Survey	<input type="checkbox"/> Initial Survey	<input checked="" type="checkbox"/> Re-Survey
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Lake Name Beaver Dam	County Kosciusko	Date of survey (Month, day, year) 6/13-14/05
Biologists' names Edward R. Braun, Angela C. Benson		Date of survey (Month, day, year)

LOCATION		
Quadrangle Name Silver Lake	Range 5E	Section 33
Township Name 31N	Nearest Town Burket	

ACCESSIBILITY					
State owned public access site East shore off CR 724 West		Privately owned public access site		Other access site	
Surface acres 146.5	Maximum depth 61 ft	Average depth 26 ft	Acre feet 3809	Water level 869 ft	Extreme fluctuations 2 ft
Location of benchmark Southeast corner of lake on County Rd. at outlet					

INLETS		
Name Eaton Ditch	Location Southwest corner	Origin 30N;R5E;S5
Unnamed Ditch	West shore	31N;R53;S32

OUTLETS			
Name Unnamed - to Loon Lake	Location Southeast corner of lake		
Water level control			
POOL	ELEVATION (Feet MSL)	ACRES	Bottom type <input type="checkbox"/> Boulder <input type="checkbox"/> Gravel <input checked="" type="checkbox"/> Sand <input checked="" type="checkbox"/> Muck <input checked="" type="checkbox"/> Clay <input type="checkbox"/> Marl
TOP OF DAM			
TOP OF FLOOD CONTROL POOL			
TOP OF CONSERVATION POOL			
TOP OF MINIMUM POOL			
STREAMBED			

Watershed use Agricultural, including row crops and livestock.
Development of shoreline All but a portion of the west shore is residentially developed.
Previous surveys and investigations 1965, 1971, 1977, 1978, 1982, 1983, 1989, 1992, 1994, 2002

Beaver Dam Lake, 6/13-14/2005

SAMPLING EFFORT						
ELECTROFISHING	Day hours			Night hours		Total hours
	0			1		1
TRAP NETS	Number of traps			Number of Lifts		Total effort
	3			3		3
GILL NETS	Number of nets			Number of Lifts		Total effort
	4			4		4
ROTENONE	Gallons	ppm	Acre Feet Treated		SHORELINE SEINING	Number of 100 Foot Seine Hauls

PHYSICAL AND CHEMICAL CHARACTERISTICS			
Color	Turbidity		Air temperature: F
Green	4 Feet	0 Inches (SECCHI DISK)	
Water chemistry GPS coordinates: N 41.09191954 W -85.97509333			

WATER QUALITY PARAMETERS															
DEPTH (Feet)	Degrees (F)	D.O.	SpC	pH	TDS	D.O.%	Turb.	DEPTH	Degrees (F)	D.O.	SpC	pH	TDS	D.O.%	Turb.
SURFACE	77.5	9.26	0.348	8.92	0.2	115.9	14	52							
2	77.4	9.09	0.348	8.88	0.2	113.5	13.5	54							
4	77.3	8.89	0.348	8.86	0.2	110.9	13.6	56							
6	77.2	8.69	0.348	8.84	0.2	108.4	13.4	58							
8	77.1	8.49	0.35	8.82	0.2	105.8	13	60							
10	68.5	2.3	0.376	7.9	0.2	26.2	20.2	62							
12	61.7	1.22	0.383	7.73	0.3	12.7	26.3	64							
14	59	0.55	0.385	7.63	0.3	5.6	21.2	66							
16	55.6	0	0.387	7.54	0.3	0	20.8	68							
18	53	0	0.386	7.5	0.3	0	20.8	70							
20	50.6	0	0.386	7.49	0.3	0	20.8	72							
22	50.1	0.01	0.386	7.56	0.3	0.1	85.6	74							
24	49.6	0	0.385	7.52	0.3	0	83	76							
26	49.2	0	0.388	7.5	0.3	0	71.3	78							
28	48.9	0	0.389	7.5	0.3	0	67.2	80							
30	48.7	0	0.391	7.49	0.3	0	64.5	82							
32	48.5	0	0.392	7.46	0.3	0	62.5	84							
34	48.2	0	0.393	7.46	0.3	0	62.1	86							
36	48.1	0	0.395	7.45	0.3	0	63.1	88							
38	47.9	0	0.396	7.44	0.3	0	61.4	90							
40	47.7	0	0.397	7.42	0.3	0	58.6	92							
42	47.6	0	0.397	7.41	0.3	0	55.4	94							
44	47.4	0	0.399	7.43	0.3	0	30.4	96							
46	47.1	0	0.402	7.41	0.3	0	26.8	98							
48	46.9	0	0.404	7.38	0.3	0	24.9	100							
50															

Occurrence and Abundance of Submersed Aquatic Plants in Beaver Dam Lake

Date: 5/23/05	Littoral sites with plants: 22	Species diversity: 0.42
Littoral depth (ft): 11.5	Number of species: 5	Native diversity: 0.72
Littoral sites: 60	Maximum species/site: 2	Rake diversity: 0.40
Total sites: 60	Mean number species/site: 0.05	Native rake diversity: 0.10
Secchi (ft): 3.0	Mean native species/site: 0.01	Mean rake score: 0.42

Common Name	Site frequency	Relative density	Mean density	Dominance
Coontail	3.33	0.03	1.00	0.67
Slender naiad	1.67	0.02	1.00	0.33
Northern watermilfoil	3.33	0.03	1.00	0.67
Unknown pondweed	1.67	0.02	1.00	0.33
Eurasian watermilfoil	30.00	0.35	1.17	7.00
Filamentous Algae	48.3			

Other Observed Plants: spatterdock, spike rush

Occurrence and Abundance of Submersed Aquatic Plants in Beaver Dam Lake

Date: 7/25/05	Littoral sites with plants: 12	Species diversity: 0.29
Littoral depth (ft): 5.5	Number of species: 3	Native diversity: 0.29
Littoral sites: 46	Maximum species/site: 1	Rake diversity: 0.20
Total sites: 60	Mean number species/site: 0.02	Native rake diversity: 0.20
Secchi: 2.8	Mean native species/site: 0.02	Mean rake score: 0.25

Common Name	Site frequency	Relative density	Mean density	Dominance
Chara	2.17	0.02	1.00	0.43
Coontail	21.74	0.18	1.10	4.78
Slender naiad	2.17	0.02	1.00	0.43
Filamentous Algae	30.4			

Other Observed Plants: spatterdock

Beaver Dam 6/13/05					
SPECIES AND RELATIVE ABUNDANCE OF FISHES COLLECTED BY NUMBER AND WEIGHT					
*Common name of fish	Number	Percent	Length range (in)	Weight (lb)	Percent
Bluegill	426	45.8	1.7 - 8.1	39.51	10.8
Largemouth bass	124	13.3	3.2 - 16.0	83.55	22.9
Yellow perch	98	10.5	1.3 - 11.8	17.61	4.8
Gizzard shad	79	8.5	8.8 - 15.8	66.94	18.4
White sucker	41	4.4	7.2 - 18.5	41.00	11.2
Brook silverside	38	4.1	2.8 - 3.4	0.18	0.0
Spotted gar	37	4.0	16.0 - 30.2	56.71	15.5
Black crappie	29	3.1	3.0 - 11.1	4.94	1.4
Pumpkinseed	25	2.7	2.1 - 7.9	1.35	0.4
Warmouth	7	0.8	4.3 - 8.1	1.75	0.5
Golden shiner	6	0.6	3.5 - 8.7	0.92	0.3
Yellow bullhead	6	0.6	9.7 - 12.5	4.45	1.2
Longear sunfish	5	0.5	3.7 - 4.8	0.32	0.1
Carp	4	0.4	24.2 - 26.9	32.40	8.9
Channel catfish	2	0.2	20.1 - 21.5	7.31	2.0
Brown bullhead	2	0.2	13.7 - 14.6	2.99	0.8
Bowfin	1	0.1	20.9	2.59	0.7
Hybrid sunfish	1	0.1	6.3	0.22	0.1
Total (18 Species, 1 Hybrid)	931	100.0		364.74	100.0
*Common names of fishes recognized by the American Fisheries Society.					

NUMBER, PERCENTAGE, WEIGHT, AND AGE OF LARGEMOUTH BASS									
TOTAL LENGTH (inches)	NUMBER COLLECTED	PERCENT OF FISH COLLECTED	AVERAGE WEIGHT (pounds)	AGE OF FISH	TOTAL LENGTH (inches)	NUMBER COLLECTED	PERCENT OF FISH COLLECTED	AVERAGE WEIGHT (pounds)	AGE OF FISH
1.0					19.0				
1.5					19.5				
2.0					20.0				
2.5					20.5				
3.0	1	0.8	0.02		21.0				
3.5	1	0.8	0.01		21.5				
4.0	3	2.4	0.03		22.0				
4.5	5	4.0	0.04		22.5				
5.0	1	0.8	0.07		23.0				
5.5	5	4.0	0.08		23.5				
6.0	4	3.2	0.10		24.0				
6.5	1	0.8	0.13		24.5				
7.0	1	0.8	0.18		25.0				
7.5	3	2.4	0.21		25.5				
8.0	5	4.0	0.22		26.0				
8.5	2	1.6	0.32		TOTAL	124			
9.0	4	3.2	0.33						
9.5	3	2.4	0.42						
10.0	5	4.0	0.49						
10.5	14	11.3	0.56						
11.0	14	11.3	0.63						
11.5	6	4.8	0.73						
12.0	8	6.5	0.84						
12.5	8	6.5	0.91						
13.0	9	7.3	1.01						
13.5	4	3.2	1.32						
14.0	8	6.5	1.22						
14.5	3	2.4	1.48						
15.0									
15.5	5	4.0	1.81						
16.0	1	0.8	2.07						
16.5									
17.0									
17.5									
18.0									
18.5									

ELECTROFISHING CATCH	108/hr	GILL NET CATCH	5/lift	TRAP NET CATCH	0.3/lift
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NUMBER, PERCENTAGE, WEIGHT, AND AGE OF BLUEGILL									
TOTAL LENGTH (inches)	NUMBER COLLECTED	PERCENT OF FISH COLLECTED	AVERAGE WEIGHT (pounds)	AGE OF FISH	TOTAL LENGTH (inches)	NUMBER COLLECTED	PERCENT OF FISH COLLECTED	AVERAGE WEIGHT (pounds)	AGE OF FISH
1.0					19.0				
1.5	2	0.5	0.00	1	19.5				
2.0	42	9.9	0.00	1	20.0				
2.5	57	13.4	0.01	1, 2	20.5				
3.0	10	2.3	0.02	1, 2	21.0				
3.5	62	14.6	0.03	2	21.5				
4.0	74	17.4	0.04	2	22.0				
4.5	43	10.1	0.06	2	22.5				
5.0	19	4.5	0.08	2	23.0				
5.5	7	1.6	0.12	2, 3	23.5				
6.0	17	4.0	0.17	3	24.0				
6.5	31	7.3	0.21	3, 4	24.5				
7.0	29	6.8	0.29	3, 4	25.0				
7.5	18	4.2	0.32	3, 4, 5	25.5				
8.0	15	3.5	0.40	4, 5	26.0				
8.5					TOTAL	426	100		
9.0									
9.5									
10.0									
10.5									
11.0									
11.5									
12.0									
12.5									
13.0									
13.5									
14.0									
14.5									
15.0									
15.5									
16.0									
16.5									
17.0									
17.5									
18.0									
18.5									
ELECTROFISHING CATCH	355 fish/h			GILL NET CATCH	1.3 fish/lift		TRAP NET CATCH	16.8 fish/lift	

NUMBER, PERCENTAGE, WEIGHT, AND AGE OF YELLOW PERCH									
TOTAL LENGTH (inches)	NUMBER COLLECTED	PERCENT OF FISH COLLECTED	AVERAGE WEIGHT (pounds)	AGE OF FISH	TOTAL LENGTH (inches)	NUMBER COLLECTED	PERCENT OF FISH COLLECTED	AVERAGE WEIGHT (pounds)	AGE OF FISH
1.0					19.0				
1.5	1	1.0	0	yoy	19.5				
2.0					20.0				
2.5					20.5				
3.0	1	1.0	0.01	1	21.0				
3.5	22	22.4	0.01	1	21.5				
4.0	14	14.3	0.02	1	22.0				
4.5	1	1.0	0.03	1	22.5				
5.0	1	1.0	0.05	2	23.0				
5.5	6	6.1	0.07	2	23.5				
6.0	8	8.2	0.08	2, 3	24.0				
6.5	9	9.2	0.1	2, 3, 4	24.5				
7.0	7	7.1	0.1	3, 4	25.0				
7.5	5	5.1	0.16	3, 4	25.5				
8.0	1	1.0	0.2	4	26.0				
8.5	1	1.0	0.24	3	TOTAL	98	100		
9.0	1	1.0	0.25	4					
9.5									
10.0	2	2.0	0.23	11					
10.5	2	2.0	0.62	6					
11.0	7	7.1	0.67	7, 8, 10					
11.5	8	8.2	0.71	10					
12.0	1	1.0	0.82	11					
12.5									
13.0									
13.5									
14.0									
14.5									
15.0									
15.5									
16.0									
16.5									
17.0									
17.5									
18.0									
18.5									

ELECTROFISHING CATCH	56 fish/h	GILL NET CATCH	9.7 fish/lift	TRAP NET CATCH	3.3 fish/lift
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NUMBER, PERCENTAGE, WEIGHT, AND AGE OF BLACK CRAPPIE									
TOTAL LENGTH (inches)	NUMBER COLLECTED	PERCENT OF FISH COLLECTED	AVERAGE WEIGHT (pounds)	AGE OF FISH	TOTAL LENGTH (inches)	NUMBER COLLECTED	PERCENT OF FISH COLLECTED	AVERAGE WEIGHT (pounds)	AGE OF FISH
1.0					19.0				
1.5					19.5				
2.0					20.0				
2.5					20.5				
3.0	1	3.4	0.00	1	21.0				
3.5	9	31.0	0.01	1	21.5				
4.0	4	13.8	0.02	1	22.0				
4.5					22.5				
5.0					23.0				
5.5					23.5				
6.0					24.0				
6.5					24.5				
7.0					25.0				
7.5	4	13.8	0.23	2, 3	25.5				
8.0	7	24.1	0.27	2, 3	26.0				
8.5	1	3.4	0.31	2	TOTAL	29	100		
9.0	1	3.4	0.40	3					
9.5									
10.0									
10.5	1	3.4	0.57	4					
11.0	1	3.4	0.67	4					
11.5									
12.0									
12.5									
13.0									
13.5									
14.0									
14.5									
15.0									
15.5									
16.0									
16.5									
17.0									
17.5									
18.0									
18.5									

ELECTROFISHING CATCH	0 fish/h	GILL NET CATCH	5 fish/lift	TRAP NET CATCH	3.5 fish/lift
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Back-calculated lengths-at-age for largemouth bass, yellow perch, bluegill, and black crappie.

Species: Largemouth bass		Year Class	Number Aged	Back Calculated Length (inches) at Each Age										
Intercept = 0.8				I	II	III	IV	V	VI	VII	VIII	IX	X	
		2004	22	4.7										
		2003	44	3.2	7.6									
		2002	46	3.8	8.5	11								
		2001	30	4.4	9.2	11.7	12.7							
		2000	26	4.4	8.9	11.7	13.5	14.3						
		1999	24	4.5	9.3	12.1	13.6	14.7	15.2					
		1998	22	4.1	8.4	11.3	12.8	14.1	15.3	15.6				
		1997	11	4.9	9.5	11.5	13.1	14.5	15.5	16	16.3			
		1996	1	4.9	8.7	10.4	12.6	14	15.1	15.6	16	16.2		
		1995	1	3.1	8.7	12.9	14	14.7	16	17	17.5	18.1	18.8	
		Average Length		4.2	8.8	11.6	13.1	14.4	15.3	15.8	16.3			
		Standard Deviation		0.53	0.68	0.37	0.39	0.25	0.13	0.27				
		Yr. Classes Averaged		8	7	6	5	4	3	2	1			

Species: Yellow perch		Year Class	Number Aged	Back Calculated Length (inches) at Each Age										
Intercept = 1.2				I	II	III	IV	V	VI	VII	VIII	IX	X	XI
		2004	17	2.8										
		2003	8	3	4.5									
		2002	18	2.9	4.4	5.7								
		2001	7	2.9	4.2	5.5	6.7							
		0	0	0	0	0	0	0						
		1999	1	3	4.8	7.1	8.7	9.7	10.3					
		1998	1	2.7	4.6	6.6	8.6	9.6	10.2	10.6				
		1997	2	2.9	4.8	6	7.7	9.2	10	10.4	10.7			
		0	0	0	0	0	0	0	0	0	0	0		
		1995	5	3.2	5.2	6.7	8	8.9	9.6	10.2	10.7	11	11.2	
		1994	2	3	4.6	6.2	7.2	8	8.9	9.5	9.9	10.4	10.7	10.9
		Average Length		3	4.6	6	7.4	8.9	9.6	10.2	10.7	11	11.2	0
		Standard Deviation		0.14	0.42	0.63	0.98	0	0	0	0	0	0	0
		Yr. Classes Averaged		5	4	3	2	1	1	1	1	1	1	0

Species: Bluegill
Intercept = 0.8

Year Class	Number Aged	Back Calculated Length (inches) at Each Age				
		I	II	III	IV	V
2004	25	1.7				
2003	47	1.7	3			
2002	29	2	3.7	5.4		
2001	14	1.8	3.3	5.6	6.9	
2000	3	1.5	2.6	4.1	6.3	7.4
Average Length		1.7	3.1	5	6.6	7.4
Standard Deviation		0.19	0.46	0.8	0.39	0
Yr. Classes Averaged		5	4	3	2	1

Species: Black crappie
Intercept = 1.4

Year Class	Number Aged	Back Calculated Length (inches) at Each Age			
		I	II	III	IV
2004	7	2.8			
2003	10	2.7	7		
2002	3	3.2	5.6	7.6	
2001	2	3.3	8.2	9.9	10.6
Average Length		2.9	6.3	7.6	0
Standard Deviation		0.26	1.04	0	0
Yr. Classes Averaged		3	2	1	0

Locations of gear types in Beaver Dam Lake given in decimal degrees.

GILL NETS				TRAP NETS				ELECTROFISHING			
1	N	41.09173179	W -85.97209462	1	N	41.09697282	W -85.97959944	1	N	41.09806716	W -85.97577461
	N		W		2	N	41.09535277		W -85.97448715	N	41.09586775
2	N	41.08960211	W -85.97892352	3	N	41.09277785	W -85.97883233	2	N	41.09214485	W -85.98041483
	N		W		4	N			W	N	41.08947337
3	N	41.09249890	W -85.98042556	5	N		W	3	N	41.08907104	W -85.97490021
	N		W		6	N			W	N	41.09035313
4	N	41.09712839	W -85.97751268	7	N		W	4	N	41.09203219	W -85.97163328
	N		W		8	N			W	N	41.09437108

APPENDIX 2

Creel Data Pages

WD = weekday, WE = weekend, S = shore, B = boat, T = total, Int. = interview, TFP = total fishing pressure

Distribution of party and angler numbers as well as the average amount of time for each fishing trip broken down by month.

	April	May	June	July	August	September	Total
WD Parties	10	47	89	118	107	41	412
WE Parties	2	19	86	78	81	18	284
S Parties	7	30	64	79	78	16	274
B Parties	5	36	111	117	110	43	422
Total Parties	12	66	175	196	188	59	696
WD Anglers	15	69	143	182	161	56	626
WE Anglers	3	31	133	134	132	31	464
S Anglers	11	36	88	107	116	23	381
B Anglers	7	64	188	209	177	64	709
Total Anglers	18	100	276	316	293	87	1090
WD Avg. Trip	1.5	2.28	2.08	2.07	2.1	2.12	2.1
WE Avg. Trip	1	3.02	2.53	1.92	2.27	2.12	2.31
S Avg. Trip	1.22	2.08	1.57	1.43	1.81	1.34	1.63
B Avg. Trip	1.74	2.88	2.76	2.52	2.39	2.41	2.56
T Avg. Trip	1.46	2.51	2.32	2	2.18	2.12	2.19

Number of parties fishing by fishing preference and the fish harvested or caught-and-released by fishing preference.

Fishing preference	Party	Harvest			Catch-and-release	
		LMB	BLG	YEP	LMB <14	LMB >14
LMB	450	59	0	1	810	227
BLG	427	7	692	30	26	7
LMB/BLG	175	3	40	3	62	17
LMB/BLG/CRP	2	0	0	0	0	0
LMB/CRP	3	0	0	0	0	0
BLG/CRP	5	0	0	0	1	0
Anything	1	0	0	0	1	0
LMB/CRP/CCF	4	0	0	0	0	0
BLG/YEP	14	0	11	3	1	0
RES	1	0	0	0	0	0
LMB/YEP/BLG	1	0	0	0	1	0
CRP	2	0	0	0	3	0
OTHER	5	0	0	0	0	0

Number of parties, total number of fishing hours, trip hours, reported number of fish harvested, and reported number of fish caught-and-released by month of survey.

Month	Harvest									Catch-and-release		
	Parties	Total h	Trip h	LMB	BLG	YEP	RES	CCF	CRP	LMB <14	LMB >14	Other
April	18	25	17	3	1	0	0	0	0	28	13	0
May	100	240	160	14	61	0	0	0	0	102	25	7
June	276	635	389	24	55	8	1	0	0	400	96	135
July	316	595	371	15	238	13	1	3	3	200	65	398
August	293	622	396	7	299	15	5	2	1	141	46	337
September	87	163	118	6	89	1	0	0	0	34	6	77

Total number of fishing hours, trip hours, reported number of fish harvested, and reported number of fish caught-and-released by weekday or weekend-day.

Day	Total h	Trip h	Harvest						Catch-and-release		
			LMB	BLG	YEP	RES	CCF	CRP	LMB <14	LMB >14	Other
WD	1220	811	47	533	14	6	2	4	495	114	583
WE	1059	640	22	210	23	1	3	0	410	137	371

Distribution of weekday, weekend, shore, and boat interview hours as well as weekday, weekend, shore, boat, and total fishing pressure broken down by month.

	April	May	June	July	August	September	Total
WD Int. Hours	21.7	147.3	278.9	348.9	318.9	104.6	1220.3
WE Int. Hours	2.9	92.5	355.8	246.6	303.3	58.4	1059.4
S Int. Hours	11.5	67.9	138.3	160.0	195.6	28.7	602.0
B Int. Hours	13.1	171.9	496.4	435.4	426.6	134.3	1677.7
Total Int. Hours	24.6	239.8	634.7	595.4	622.2	163.0	2279.7
WD TFP	81.3	590.2	850.8	1076.3	946.1	495.0	4039.5
WE TFP	16.9	687.7	702.9	1113.3	767.1	495.0	3782.8
S TFP	48.1	408.8	385.1	557.8	551.5	211.3	2162.6
B TFP	50.0	869.1	1168.6	1631.7	1161.7	778.8	5659.8
T TFP	98.1	1277.9	1553.6	2189.5	1713.2	990.0	7822.3
h/acre	0.7	8.8	10.6	15.0	11.7	6.8	53.6

Total number of fishing hours, trip hours, reported number of largemouth bass and bluegill harvested, reported number of largemouth bass caught-and-released, and catch-per-hour of reported number of largemouth bass and bluegill harvested and reported number of largemouth bass caught-and-released based on angler fishing preference.

Species	Total h	Trip h	Catch				Catch-per-hour			
			LMB	BLG	LMB <14	LMB >14	LMB	BLG	LMB <14	LMB >14
LMB	1059.3	711.74	59	0	810	227	0.08	0.00	1.14	0.32
BLG	332.13	163.99	3	40	62	17	0.02	0.24	0.38	0.10
LMB/BLG	813.12	521.04	7	692	26	7	0.01	1.33	0.05	0.01
LMB/BLG/CRP	6.64	6.64	0	0	0	0	0.00	0.00	0.00	0.00
LMB/CRP	5.6	2.96	0	0	0	0	0.00	0.00	0.00	0.00
BLG/CRP	7.5	4.5	0	0	1	0	0.00	0.00	0.22	0.00
Anything	0.88	0.88	0	0	1	0	0.00	0.00	1.14	0.00
LMB/CRP/CCF	8	4	0	0	0	0	0.00	0.00	0.00	0.00
BLG/YEP	26.38	19.27	0	11	1	0	0.00	0.57	0.05	0.00
RES	3.83	3.83	0	0	0	0	0.00	0.00	0.00	0.00
LMB/YEP/BLG	5.17	5.17	0	0	1	0	0.00	0.00	0.19	0.00
CRP	2.97	1.48	0	0	3	0	0.00	0.00	2.03	0.00
OTHER	8.15	4.9	0	0	0	0	0.00	0.00	0.00	0.00