

Commonwealth of Kentucky

Date: June 30, 2007

Sport Fish Restoration Grant F-50, Segment 29

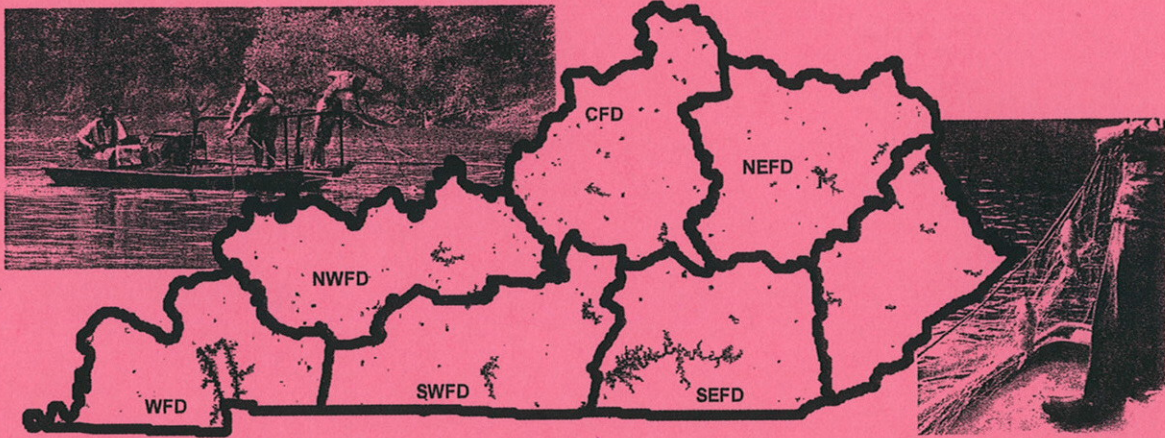
Period: 01 April 2006
through
31 March 2007

ANNUAL PERFORMANCE REPORT

District Fisheries Management

Part I

Project 1: Lake and Tailwater Fishery Surveys



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State: Kentucky

Project No.: F-50-29

Grant Title: District Fisheries Management

Grant Period Covered: 1 April 2006 through 31 March 2007

Grant Objectives: To conduct research and surveys and to manage the fishery resources statewide within each of the following seven fishery districts: Western (WFD), Northwestern (NWFD), Southwestern (SWFD), Central (CFD), Northeastern (NEFD), Southeastern (SEFD), and Eastern (EFD).

RESEARCH AND SURVEY SECTION

Project 1: Lake and Tailwater Fishery Survey

Project Objective: To develop and implement fish management plans for lake and tailwater sport fisheries based on survey data from this project.

A. ACTIVITY

Electrofishing, gill netting, trap netting, fish scale and otolith reading for age and growth determinations, temperature and oxygen profiles, additional water quality and physical data, creel data, and preparation of an annual performance report and lake management plans.

B. TARGET DATES FOR ACHIEVEMENT AND ACCOMPLISHMENT

Planned achievement date: 31 March 2007

Work accomplishment: 31 March 2007

C. SIGNIFICANT DEVIATIONS

None

D. REMARKS

See accompanying report

E. COST

Accurate estimates of project and/or grant level costs are not currently available for the inclusion into this Annual Performance Report. Final project and/or grant level costs will be submitted for this grant in the forthcoming SF-269 Report.

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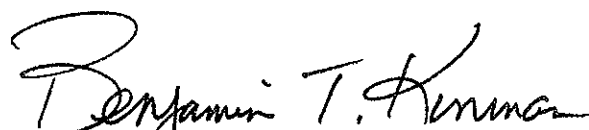
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WESTERN FISHERY DISTRICT

Project 1: Lake and Tailwater Fishery Surveys

FINDINGS

Kentucky Lake

During May, 951 black bass were collected by diurnal electrofishing from standardized sampling locations on Kentucky Lake. Largemouth bass comprised almost 90% (85.4 f/h) of this catch (Table 1). An objective in the Kentucky Lake Fish Management Plan (KLFMP) for the largemouth bass population is to maintain a catch rate of at least 24.0 f/h that are <8.0 in. The catch rate of largemouth bass <8.0 in was 28.3 f/h (Table 2). Using a regression model with a correlation of 0.64, it is estimated that this is the minimum value needed in order to produce an adequate number of harvestable size (≥ 15.0 in) largemouth bass in five years. The KLFMP objective for largemouth bass ≥ 15.0 in is to maintain a catch rate of at least 18.0 f/h. The catch rate of harvestable-size largemouth bass was 23.6 f/h during this year's sample. The catch rate for the trophy size (≥ 20.0 in) was 0.6 f/hr. This value has been below average for the past 9 years. Higher values were recorded during, and following a period when aquatic vegetation was prolific throughout the lake (Figure 1). In 2005 and 2006 the acreage of vegetation in the lake increased. It is likely that the number of trophy size bass will also increase during the next few years. Table 3 lists the PSD and RSD values for bass collected during the spring of 2006. The PSD value calculated for all largemouth bass was 77, which is slightly above the targeted ranges (PSD, 55-75) suggested in the KLFMP. The number of largemouth bass 8-12 inches collected during spring has been below average for the past two years. This decrease, along with an increase in the number of bass ≥ 15 in explains the higher calculated PSD value. The calculated RSD₁₅ was 37, which falls into the range reported in the KLFMP (RSD₁₅, 20-40).

Otoliths were not collected from largemouth bass for age and growth determinations this spring. Age frequency for the spring data were determined using age data from previous year's data sets. The catch rate of age 1 largemouth bass was 31.8 f/hr (Table 4). The KLFMP objective for age 1 largemouth bass is to maintain a catch rate of at least 36 f/h. Table 2 lists the historical catch rates of age 1 largemouth bass at Kentucky Lake. This value may increase as habitat, such as aquatic vegetation, increases.

An assessment for largemouth bass was used to evaluate this population (Table 5). The largemouth bass population has been rated "good" during the past five years. The catch of age 1 largemouth bass continues to be below a "good" rating, as does the number of bass in the 11.0 to 14.9 and greater than 20.0 inch ranges. However, the largemouth bass in Kentucky Lake continue to show excellent growth patterns, as measured by the average length at age 3. The catch rate of largemouth bass greater than 15 inches is at a high enough level to also be considered "excellent". Table 2 lists the historical values for each of these parameters for largemouth bass at Kentucky Lake.

During October, 510 black bass were collected by diurnal electrofishing at two locations that had been previously sampled during the spring. Largemouth bass comprised 89% (90.6 f/h) of this catch (Table 6). Length and weight data were recorded from all bass collected to calculate relative weight values. The relative weight for all largemouth bass was 96. For smallmouth bass this value was slightly less, 82. Table 7 lists the relative weights by sample location and size groups. Length-weight equations for black bass species at Kentucky Lake are:

Largemouth bass	$\text{Log}_{10}(\text{weight}) = -3.54616 + 3.22146 \times \text{Log}_{10}(\text{length})$
Smallmouth bass	$\text{Log}_{10}(\text{weight}) = -3.44612 + 3.07442 \times \text{Log}_{10}(\text{length})$
Spotted bass	$\text{Log}_{10}(\text{weight}) = -3.66216 + 3.30339 \times \text{Log}_{10}(\text{length})$

The CPUE of age-0 largemouth bass during the fall sample was 13.6 f/h (Table 8). The CPUE of age-0 largemouth bass ≥ 5.0 in was 4.0 f/h, and comprised 29% of all age-0 bass collected. Mean length of the age-0 cohort (2006 year-class) largemouth bass was 4.2 in. It is suggested that having larger age 0 bass, will reduce the winter mortality. These bass ranged in length from 2.7 to 5.7 in by October. The average mean length for 15 years of data is 3.9 inches.

Trap nets were fished for crappie in Blood River and Jonathan Creek embayments for a total of 80 net-nights (nn) during October. This sampling effort yielded 1,689 crappie (21.1 f/nn), of which 3.8 f/nn (18%) were white crappie and 17.3 f/nn (82%) were black crappie (Table 9). The number of black crappie has dominated the trap net catch for the past 10 years (Figure 2). It is expected that the density of black crappie in the population has increased, but not by the magnitude suggested from fall trap netting. This change in catch may also be related to the water quality of Kentucky Lake. It is possible that due to the clearer water conditions the white crappie are staying deeper, while black crappie are running the shoreline in shallower water. Under this scenario, the black crappie would be more susceptible to capture in the trap nets.

The crappie population at Kentucky Lake continues to be a quality fishery. The number of crappie ≥ 8.0 in collected in trap nets made up 64% (13.5 f/nn) of the sample (Table 10). The number of crappie ≥ 10.0 in made up 18% (3.9 f/nn) of the sample. The KLFMP objective for crappie is to maintain a catch rate of at least 10 f/nn for crappie ≥ 8.0 in, and 3.0 f/nn for crappie ≥ 10 in. Both of these objectives were met. PSD and RSD₁₀ values are reported in Table 11. Length-weight equations for white and black crappie are listed below.

White crappie	$\text{Log}_{10}(\text{weight}) = -3.62638 + 3.31978 \times \text{Log}_{10}(\text{length})$
Black crappie	$\text{Log}_{10}(\text{weight}) = -3.59988 + 3.32714 \times \text{Log}_{10}(\text{length})$

Otoliths aged from crappie collected in the 2004 trap netting sample were used to extrapolate against this year's length frequency data to determine age frequency of white and black crappie (Tables 12 and 13, respectively). The age 1 white crappie comprised almost 40% (1.7 f/nn) of the sample, while the age 1 black crappie comprised almost 36% (6.6 f/nn) of the sample. Combined, the catch of age 1 crappie was considered "good" in the crappie population assessment (Table 14). A third management objective is to maintain a catch of age 1 crappie of at least 11 f/nn. However, this value has been below the management objective for the past two years. This low recruitment will likely lead to a poorer crappie fishery in 2009. Although, crappie are known for having a cyclic population due to variable recruitment. At Kentucky Lake, it is hypothesized that spring water level fluctuations and timing of critical water temperature greatly affect spawning, leading to the variable recruitment. Environmental effects such as clear water and increased density of aquatic vegetation may also help to explain the reduced number of age 0 crappie collected. Similar conditions occurred in the late 1980's, also when low numbers of these smaller crappie were recorded. The catch of age 0-crappie has also been low for three consecutive years, and considered to be "poor". Creel statistics from a 2004 creel survey do not indicate over harvest. Overall, the crappie population at Kentucky Lake rated "good". This is mainly due to the black crappie population that has rated "good" to "excellent" over the past five years. The white crappie population has consistently rated "fair" over this same period.

Blue and channel catfish were collected using 100-hook trotlines (tl) and hoop nets during May. The trotlines were baited with cheese bait, and the hoop nets were baited with tubes of cheese. Data collected was used to determine CPUE, length and age frequencies. A total of 120 catfish were collected at a rate of 13.3 f/tl. No catfish were collected in hoop nets. CPUE of blue and channel catfish was 5.2 and 8.1 f/tl, respectively (Table 15). No catfish <12 in were collected, which is most likely the result of gear selectivity towards larger individuals. Relative weight values of both blue and channel catfish indicate excellent condition and are listed in Table 16. The length-weight equations for blue and channel catfish are:

Blue catfish	$\text{Log}_{10}(\text{weight}) = -3.62644 + 3.18150 \times \text{Log}_{10}(\text{length})$
Channel catfish	$\text{Log}_{10}(\text{weight}) = -3.85543 + 3.31361 \times \text{Log}_{10}(\text{length})$

Age frequencies for this year's catch data of blue and channel catfish were determined using age data collected in 2004. Catch of blue catfish ages 5 and 6 dominated the overall catch, comprising almost 70% of the total catch of blue catfish (Table 17). Catch of channel catfish that were age 6 comprised 52% of the total catch of channel catfish (Table 18).

During October, WFD staff assisted a Murray State University biology student with a project to age larger catfish, not normally collected during the previous sampling. The catfish used for analysis were collected by commercial fisherman from the lake. At the time, blue catfish were dominating these anglers catch, therefore only blue catfish were used for the age sample. Otoliths were removed from 50 blue catfish. The length and weight was also recorded for each of these fish. This sample yielded 41 otoliths that were readable for aging.

The oldest age blue catfish was 19 years old. This fish weighed 34.8 pounds and was 38.2 inches in length at time of capture (Table 19).

Lake Barkley

Black bass were collected by diurnal electrofishing from 24-27 May 2006 at standardized sampling sites on Lake Barkley. A total of 1,329 black bass were collected at a rate of 132.9 f/h (Table 20). Spotted and smallmouth bass accounted for less than 7% of the total black bass sampled, and too few individuals were collected to look at the true population characteristics. Largemouth bass accounted for 93.2% of the total catch, and had a catch rate of 124.4 f/h. This catch rate lies below the 22-year average catch of largemouth bass (145.0 f/h) at Lake Barkley (Table 21). The CPUE of all size-classes except stock size (8-11.9 in) largemouth bass decreased in 2006. However, the catch rates of stock size (12-14.9 in) and harvestable (>15 in) largemouth bass still exceed their respective management goals found in the Barkley Lake Fish Management Plan (BLFMP). These size classes will maintain fishing success in the near future, despite poor year-classes in each of the last two years (Table 21). The catch rate of largemouth bass ≥ 20.0 in was 2.1 f/h, and failed to meet the management objective of 3 f/h.

The PSD value for largemouth bass (83) was the same in 2006 as that recorded in 2005 (Table 22). This value is well above the twenty year average (61) for Lake Barkley, suggesting a better size distribution than in years past. The RSD_{15} (28) decreased slightly, but exceeds the 20-year average. Both PSD and RSD_{15} values met or exceeded their objective goals (PSD of 55-75 and RSD_{15} of 20-40) established in the BLFMP.

Ninety-five largemouth bass were collected for age and growth analysis (Table 23). Ages ranged from 0-8, and the dominant age-class was age-3 (Table 24). The mean length at age-3 (13.4 in) exceeds the management objective (12.0 in). On average, largemouth bass reached harvestable size between ages 4-5. Catch rates by age-class are shown in Table 25. The annual mortality of largemouth bass older than a year was 35% in 2006 as determined using catch-curve regression.

The assessment rating of the largemouth bass fishery at Lake Barkley has varied between "good" and "excellent" over the past five years (Table 26). This year it was downgraded from "excellent" to a rating of "good". The lower rating is the result of decreased catch of age-1 and harvestable size bass in the 2006 sample. Table 27 lists the assessment parameters and their respective values determined from the past 22 years of sampling on Lake Barkley.

Largemouth bass were sampled in late October and early November 2006 to collect length-weight data, and determine the strength of the 2006 year-class. Four hundred sixteen black bass were collected at a catch rate of 92.22 f/h (Table 28). The length-weight equations for each species of black bass at Lake Barkley are:

Largemouth bass	$\text{Log}_{10}(\text{weight}) = -3.61024 + 3.27628 \times \text{Log}_{10}(\text{length})$
Smallmouth bass	$\text{Log}_{10}(\text{weight}) = -3.43581 + 3.10033 \times \text{Log}_{10}(\text{length})$
Spotted bass	$\text{Log}_{10}(\text{weight}) = -3.55259 + 3.24425 \times \text{Log}_{10}(\text{length})$

Similar to previous years, despite high r^2 -values for both spotted ($r^2 = 1.0$) and smallmouth ($r^2 = 0.99$) bass, low overall sample sizes of spotted ($n = 2$) and smallmouth ($n = 5$) bass were collected during the fall sample and therefore these length-weight equations should be used with caution.

Relative weight values of all size-classes of largemouth bass increased for the fourth consecutive year, indicating excellent condition of the largemouth bass in the population (Table 29). Mean length of the age-0 cohort was 4.8 in (Table 30). Year class strength has been low in consecutive years. CPUE of age-0 largemouth bass was 9.3 f/h, the second lowest catch-rate recorded to date. CPUE of age-0 largemouth bass ≥ 5.0 in was 4.0 f/h. Fortunately, consecutive poor year classes may not produce a noticeable impact to the fishermen. However, a third poor year class in 2007 will likely result in a noticeable decline in fishing success in coming years.

Blue and channel catfish were collected using 100-hook trotlines (tl) from 22-25 May 2006. In 2006, 208 catfish were collected at a rate of 16.0 f/tl-night. The CPUE of blue catfish was 10.7 f/tl-night (Table 31). Approximately 55% of all blue catfish collected were ≥ 15.0 in, and 16% were ≥ 20.0 in.

Only one blue catfish was captured ≤ 8.0 in. The CPUE of channel catfish was 5.3 f/tl-night. Approximately 94% of all channel catfish collected were ≥ 12.0 in, and 43% were ≥ 15.0 in. Similar to blue catfish, no small channel catfish (≤ 8.0 in) were captured. Relative weight values of both blue and channel catfish indicate excellent condition and are listed in Table 32. The length-weight equations of blue and channel catfish are:

Blue catfish	$\text{Log}_{10}(\text{weight}) = -3.72131 + 3.19929 \times \text{Log}_{10}(\text{length})$
Channel catfish	$\text{Log}_{10}(\text{weight}) = -4.10605 + 3.46520 \times \text{Log}_{10}(\text{length})$

Age frequency determinations were made using 2004 age data and 2006 catch data for blue and channel catfish. The catch of blue catfish ages 5 and 6 dominated the overall catch, comprising 28 and 25% of the total catch, respectively (Table 33). The catch of channel catfish ages 4 and 5 dominated the overall catch, comprising 19 and 31% of the total catch, respectively (Table 34). The catch of young (ages 1-3) blue and channel catfish was extremely low during 2006 and is most likely the result of gear selectivity towards larger catfish. Alternative sampling schemes will be considered in 2007 to obtain better measures of recruitment and abundance of younger catfish.

Trap nets were fished for crappie in Little River and Donaldson Creek embayments for a total of 80 net-nights (nn) from 31 October - 3 November 2006. A total of 624 crappie were collected at a rate of 7.9 f/nn (Table 35). White crappie accounted for 63% of the total catch, and were collected at a rate of 5.0 f/nn. Black crappie were collected at a rate of 2.9 f/nn. The number of black crappie has increased in the catch of trap nets, but not to the magnitude seen at Kentucky Lake (Figure 3). The CPUE of harvestable-size (≥ 10.0 in) crappie was 1.3 f/nn (Table 36). In twenty-two years of sampling, this value has ranged from 0.55-3.37 f/nn. Despite failing to meet the management objective (1.7 f/nn) set in the BLFMP, there should be plenty of harvestable crappie available this season. The CPUE of quality-size (≥ 8.0 in) crappie (3.6 f/nn) also failed to meet the management objective (4.0 f/nn) set in the BLFMP. However, this value is just shy of the twenty-two year average, so there should be plenty of younger crappie growing into harvestable size fish next year. In 2006, the PSD (54.9) and RSD_{10} (35.3) of white crappie decreased from 2005 values (Table 37). The 20-year average PSD and RSD_{10} values of white crappie are 57 and 25, respectively. The PSD and RSD_{10} values of black crappie decreased in 2006, neither exceeding the 20-year average of 53 and 19, respectively. The length-weight equations of white and black crappie from Lake Barkley are:

White crappie	$\text{Log}_{10}(\text{weight}) = -3.96322 + 3.67757 \times \text{Log}_{10}(\text{length})$
Black crappie	$\text{Log}_{10}(\text{weight}) = -3.84960 + 3.59890 \times \text{Log}_{10}(\text{length})$

Otoliths were collected from 79 black crappie and 106 white crappie for age and growth analysis in 2006 (Tables 38 and 39). The catch of black crappie was dominated by age-1 fish (Table 40) while age-0 black crappie were rare in our catch (0.1 f/nn). The catch of age-1 white crappie (3.8 f/nn) comprised 77% of the total catch (Table 41). The total CPUE of age-0 crappie was 0.23 f/nn, which failed to meet the management objective (5.4 f/nn) established in the BLFMP. The annual mortality of crappie in Lake Barkley during 2006, calculated using catch curve analysis was 67.3%.

Assessment of the white and black crappie populations yielded a rating of "fair" at Lake Barkley in 2006 (Table 42, 43, 44, respectively). The lowest assessment values for white crappie were the recruitment parameter (CPUE of age-0 white crappie) and the population density parameter (CPUE of age-1 and older). The highest assessment value continues to be the growth parameter (mean length at capture of age-2 white crappie). The black crappie population received poor assessment values for all parameters except growth. These ratings have been consistent over the past five years as indicated by the population assessment scores of white crappie, black crappie, and both white and black crappie populations combined from 2001-2006.

Lake Beshear

Largemouth bass were collected by diurnal electrofishing during May. A total of 210 largemouth bass were collected at a rate of 84.0 f/h (Table 45). CPUE of harvestable-size (≥ 12.0 in) and ≥ 15.0 in largemouth bass were 41.2 and 34.0 f/h, respectively (Table 46). One objective in the Lake Beshear Fish Management Plan (LBFMP) is to maintain a catch rate of 40.0 f/h for harvestable-size largemouth bass.

Because the bass fishery at Lake Beshear is considered to be a high quality bass fishery, a second objective is to maintain a high catch rate of bass ≥ 15.0 and ≥ 20.0 inches. Ideally, these catch rates should be greater than 30 and 4 f/hr, respectively. This year was the first time in several years the catch rate of the trophy size (20 inch) bass was above the recommended rate. The historical mean for this catch rate is 3.7 f/hr, while the highest rate was recorded, in the late 1990's (8.5 f/hr). In the year following that date, LMB virus was suspected as being the cause of some bass die offs.

Age and growth determinations were made using otoliths collected during the spring sampling. Largemouth bass reach 12.0 in (harvestable-size) as early as age 2, but more commonly by age 3 (Table 47). The age frequency data is present in table 48. Although, age 1 largemouth bass made up more than a fourth of the sample, their catch rate (24.8 f/hr) is considered only to be fair. The catch rate for this age class of bass should be at least double this value. Overall, the largemouth bass population has rated "good" the past five years (Table 49). A third objective for managing a quality fishery at this lake is to maintain good growth. Ideally, the mean age -3 length at capture should be at least 12 inches. Although, the current growth exceeds this objective, growth has declined since bass were last aged in 2001. What limits this fishery is recruitment; however the number of quality fish is always high. The low recruitment could be a condition of sampling in clear water, therefore reducing the catch in the spring electrofishing sample. Although, nocturnal sampling was conducted in 1995 to 2002, and yielded similar results as diurnal sampling in other years.

During October, largemouth bass were collected by diurnal electrofishing. The catch rate (50.0 f/h) was below that of the spring sample (Table 45). However, the number of bass of < 8.0 in was slightly higher when compared to the spring data; 27.6 f/hr and 30.0 f/hr, respectively. Relative weight data suggests that the larger bass (≥ 15 in) are very healthy with regard to their length-weight ratio. Relative weight values were above 98. The length-weight equation for largemouth bass at Lake Beshear is:

$$\text{Log}_{10}(\text{weight}) = -3.76961 + 3.40440 \times \text{Log}_{10}(\text{length})$$

Otoliths were removed from a sub sample of largemouth bass ≤ 8.0 in to determine the mean fall length of the age-0 cohort. The catch rate for this year class was 23.0 f/h (Table 50). The average length of the age-0 bass was 4.2 in.

Lake Pennyrile

Lake Pennyrile was sampled by diurnal electrofishing on 12 April 2006. Largemouth bass were collected at a rate of 218.0 f/h (Table 51). This catch rate was lower than that recorded in 2005 (260.4 f/h), but similar to the catch rates in previous years (Table 52). The CPUE of largemouth bass ≤ 8.0 in was 81.0 f/h, compared to 101.5 f/h recorded in 2005. Similarly, CPUE of largemouth bass 8.0-11.9 in was 105.0 f/h, compared to 127.5 f/h recorded in 2005. CPUE of largemouth bass 12.0-14.9 in was 26 f/h, which exceeded the management objective (25.0 f/h) established in the Lake Pennyrile Fish Management Plan (LPFMP). Catch rates of largemouth bass ≥ 15.0 in remained higher than the average for all years of sampling. The catch of the larger size bass has exceeded the management objective (5.0 f/h) in consecutive years. This is the fourth year that a 12.0-15.0 in protective slot limit has been in place on Lake Pennyrile. Continued high catch rates of largemouth bass < 12 in suggests the slot limit has not been effective. However, improved catch rates of ≥ 15 in bass suggest some improvement in larger fish. PSD and RSD₁₅ values, listed in Table 53, lie well below the management objectives set in the LPFMP for PSD (40-50) and RSD₁₅ (10), and are reflective of the high density of small fish in the population.

The largemouth bass population was rated as "fair" during 2006 (Table 54). However, the assessment rating is somewhat misleading. For example, the 2006 value decreased because of a lower catch rate of age-1 bass. However, because our management objective is to decrease catch rates of smaller bass and improve growth and catch rates of larger bass, the assessment may not be effective at gauging the quality of this fishery. The lowest ratings were assigned for poor growth (mean length at capture of age-3 bass), which is expected in a stunted population.

A fall largemouth bass sample was taken on 14 September 2006. One hundred nine largemouth bass were captured ranging from 3-15 in, at a catch rate of 109.0 f/h (Table 55). The largemouth bass relative weight was 77.5 (Table 56). If a relative weight of 100 is optimal, in concept, these largemouth bass are less than ideal in condition.

Hematite Lake

Hematite Lake is a 90-acre sub-impoundment of Lake Barkley located within the Land Between the Lakes Recreational Area. The management objective for this lake is to establish a quality redear fishery, seen in the late 1980's before the lake was drained due to a levee failure. In spring 2002, the lake was sampled by electrofishing. During that study redear sunfish were collected at a catch rate of 159.0 f/h. In 2005, the redear sunfish population was again sampled resulting in a catch rate of 187.6 f/h, and in 2006 146.0 (Table 57). Redear sunfish between 3-6 in dominate the size structure of this population (Table 58). The harvest of redear sunfish is regulated by a creel limit of 10 fish \geq 10.0 in. This size limit should be revisited given the low catch rate of harvestable fish. However, these sampling conditions are not ideal due to the density of aquatic vegetation present in the lake. Until this vegetation is thinned, samples may continue to be low. Also, the dense vegetation may provide too much cover for small sunfish, limiting the needed predation by bass to keep the sunfish population in balance.

Figure 1. Estimated acres of aquatic vegetation in Kentucky Lake. Data provided by Tennessee Valley Authority.

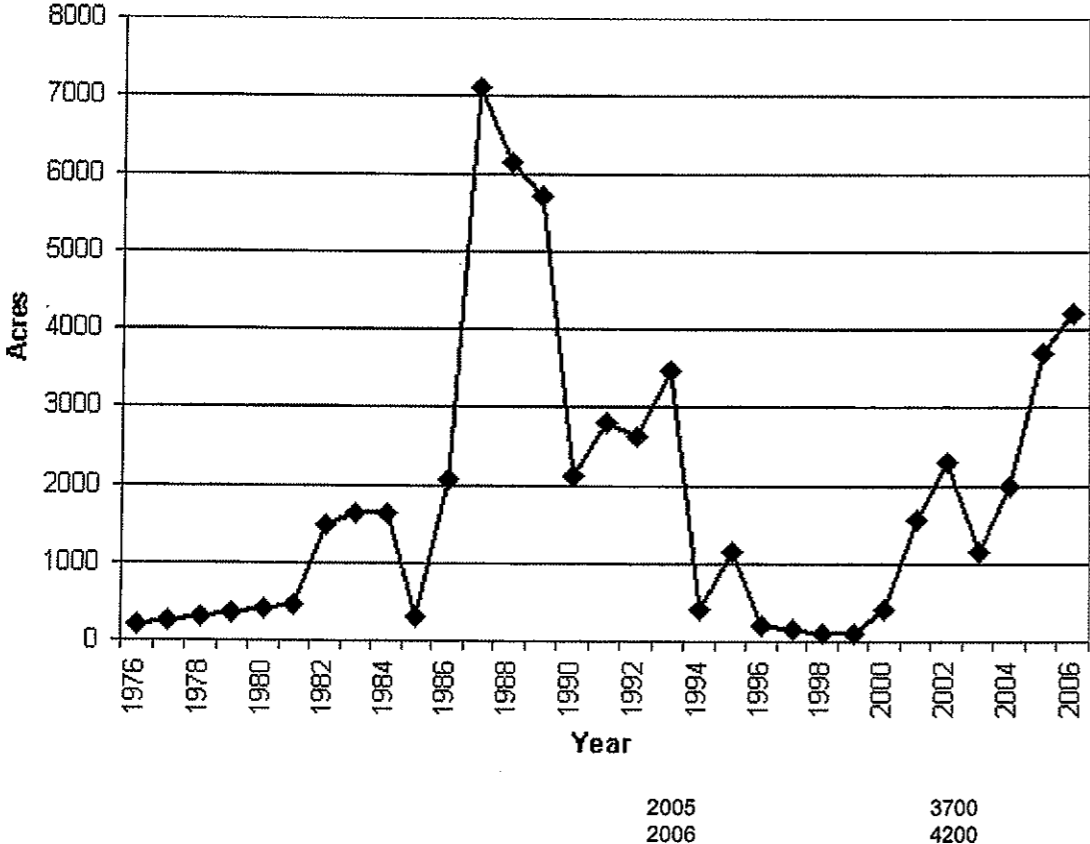
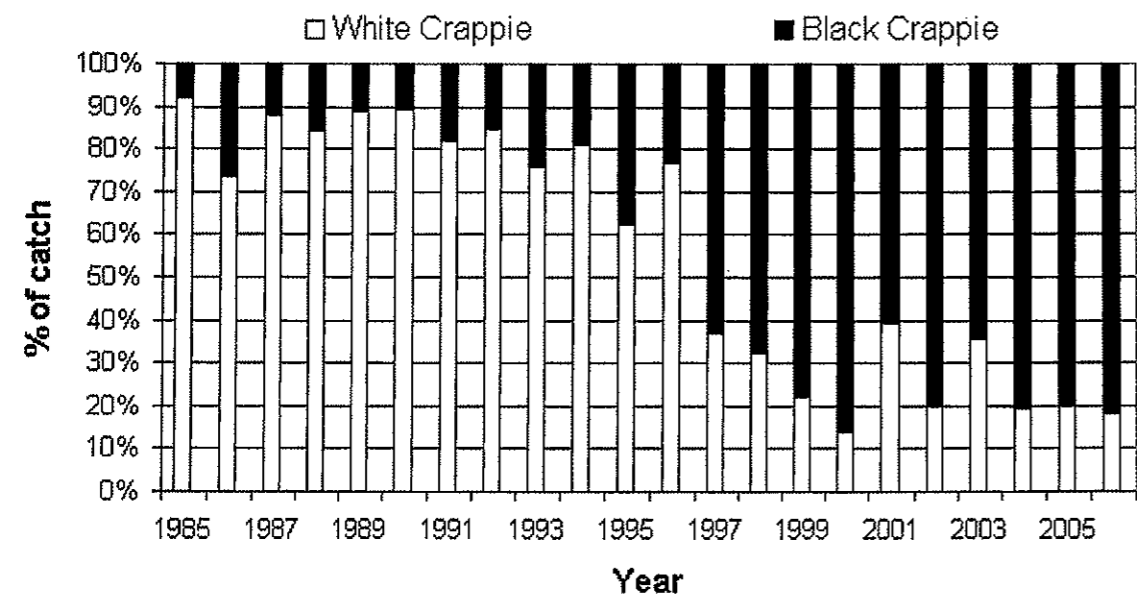
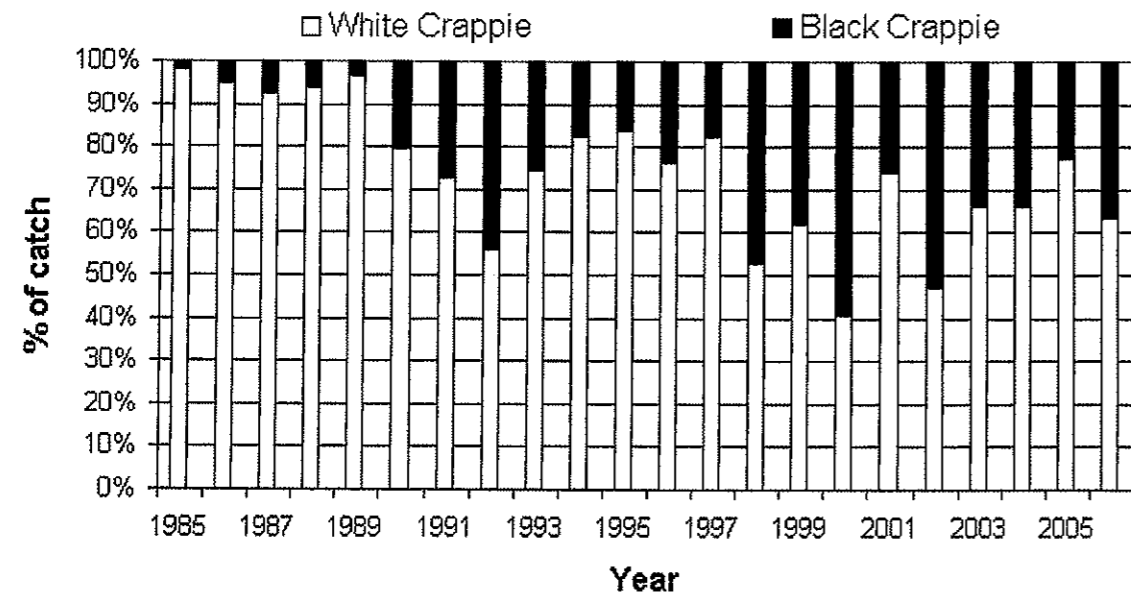


Figure 2. Relative species composition of white and black crappie collected during annual fall trap-netting from 1985-2006 at Kentucky Lake.



(Kentucky_Crappie_Database.xls)

Figure 3. Relative species composition of white and black crappie collected during annual fall trap-netting from 1985-2006 at Lake Barkley.



(Barkley_Crappie_Database.xls)

Table 1. Species composition, relative abundance, and CPUE (fish/hour) of black bass collected during 10.0 hours (20 x 30-minute runs) of diurnal electrofishing at Kentucky Lake during May 2006.

Area	Species	Inch Classes																				Total	CPUE	StdErr	
		3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22				
Blood River	Smallmouth bass		4	4	5		1			1				1								16	6.4	5.0	
	Spotted bass	1		1			2	1	1	6	8	9	2	1									32	12.8	11.3
	Largemouth bass		14	26	21	24	7	7	8	7	13	15	27	18	8	12	4		1	1	1	214	85.6	16.5	
Big Bear	Smallmouth bass									1												1	0.4	0.4	
	Spotted bass								1													1	0.4	0.4	
	Largemouth bass		2	5	9	11	7	1	6	13	19	28	35	42	17	10	4	4	2			215	86.0	5.1	
Jonathan	Spotted bass						1															1	0.4	0.4	
	Largemouth bass	2	5	3	4	8	2	9	14	15	15	16	26	25	11	6	11	3		1		176	70.4	9.3	
Sugar Bay	Smallmouth bass		3	7	2	3	5	2	1	1	2	3	1	1		1						32	12.8	7.1	
	Spotted bass	1	2	1			2	2	1	1	1	2	1									14	5.6	3.2	
	Largemouth bass	5	23	42	46	33	11	4	5	10	12	10	20	15	8	4	1					249	99.6	9.7	
TOTAL	Smallmouth bass		7	11	7	3	6	2	1	3	2	3	1	2		1						49	4.9	2.3	
	Spotted bass	2	2	2			5	4	2	7	9	11	3	1								48	4.8	2.9	
	Largemouth bass	7	44	76	80	76	27	21	33	45	59	69	108	100	44	32	20	7	3	2	1	854	85.4	5.6	

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Table 2. Spring diurnal electrofishing CPUE of each size group of largemouth bass collected at Kentucky Lake during May from 1983 - 2006.

Year	Mean length age-3 at capture	age-1 CPUE	age-1 StdErr	Inch Groups										Total		
				≤8.0 CPUE	≤8.0 StdErr	12 - 14.9 CPUE	12 - 14.9 StdErr	≥15.0 CPUE	≥15.0 StdErr	≥18.0 CPUE	≥18.0 StdErr	≥20.0 CPUE	≥20.0 StdErr	CPUE	StdErr	
1983				3.00		1.33		4.21							16.00	
1984				3.30	1.1	6.30	0.7	5.80	0.8						24.60	
1985				6.30		2.04		3.61							15.90	
1986	10.6	17.34	1.2	12.60	1.6	10.30	2.0	10.10	1.5	5.07		1.53	0.3	45.10	5.3	
1987	11.2	41.01	3.8	36.90	5.8	10.10	1.3	11.90	1.8	4.01		1.34	0.5	77.30	8.7	
1988	11.3	26.00	5.2	28.90	7.4	24.20	4.4	14.30	3.8	5.63		2.59	0.7	106.10	24.2	
1989	11	33.75	3.6	29.20	6.3	23.70	3.9	9.80	1.9	4.11		1.83	0.4	92.80	14.7	
1990	11.4	16.20	1.3	6.20	1.6	12.50	1.8	14.30	1.8	6.57		2.09	0.6	60.40	5.9	
1991	11.3	41.40	3.9	38.50	7.1	27.00	2.5	19.40	2.5	9.23		3.14	0.6	99.60	10.3	
1992	10.9	31.49	2.7	23.40	4.6	17.70	1.4	21.90	1.9	11.54		4.27	0.7	95.40	7.5	
1993	11.6	33.08	2.9	33.20	5.4	26.90	3.2	31.40	3.2	14.80		5.50	1.0	107.20	9.3	
1994	11.6	25.42	1.8	21.00	3.0	19.60	1.7	18.40	2.0	9.00		2.87	0.6	84.00	5.7	
1995	11	9.17	0.8	5.90	1.2	19.60	2.5	24.60	2.1	13.30		6.18	0.9	65.40	5.0	
1996	11	14.25	1.5	11.90	2.6	15.60	1.8	27.00	2.6	12.10		5.56	0.7	61.20	4.6	
1997	12.7	7.30	0.7	6.70	1.3	10.80	1.8	21.40	2.4	2.70		2.59	0.7	46.60	4.7	
1998	12.7	61.95	3.6	17.30	2.0	9.60	1.7	10.00	1.7	1.10		1.73	0.5	44.80	3.9	
1999	13.9	41.89	3.4	18.70	3.3	11.40	1.5	11.90	1.7	1.10		0.80	0.3	52.00	4.9	
2000	13.9	21.80	2.2	19.40	3.8	19.00	1.8	22.50	3.5	1.80		1.52	0.4	74.40	6.2	
2001	14.4	73.90	4.3	60.60	7.3	12.20	1.6	12.00	1.5	1.70		0.40	0.2	111.00	10.7	
2002	13.7	35.50	2.8	32.40	5.4	21.80	2.3	12.90	1.1	1.80		0.90	0.3	93.80	5.9	
2003	13.7	30.90	2.7	21.80	3.8	43.60	5.2	15.60	1.9	4.20	0.9	1.00	0.3	105.40	11.4	
2004	13.7	11.99	1.6	17.70	2.6	22.70	2.1	18.10	1.8	3.70	0.9	1.00	0.4	83.60	5.8	
2005	13.8	28.70	3.0	24.50	2.5	46.50	4.4	23.60	2.2	3.70	0.7	0.80	0.4	107.40	7.6	
2006	13.8	31.79	7.0	28.30	6.3	23.60	2.4	20.90	2.3	3.30	0.6	0.60	0.2	85.40	5.5	
Average	12.3	29.75		21.15		18.25		16.07		5.74		2.30		73.14		

(Kentucky Bass Database.xls)

Table 3. PSD and RSD values calculated for black bass species collected during diurnal electrofishing at Kentucky Lake during May 2006; 95% confidence limits are in parentheses.

Area	Species	No. Fish ≥ 8 in	PSD (+/- 95%)	RSD ^a (+/- 95%)
Blood River	Smallmouth bass	3	67 (+/- 65)	33 (+/- 65)
	Spotted bass	30	87 (+/- 12)	10 (+/- 11)
	Largemouth bass	129	78 (+/- 7)	35 (+/- 8)
Big Bear Creek	Largemouth bass	188	86 (+/- 5)	42 (+/- 7)
Jonathan Creek	Largemouth bass	154	92 (+/- 4)	33 (+/- 6)
Sugar Bay	Smallmouth bass	17	45 (+/- 22)	15 (+/- 16)
	Spotted bass	10	50 (+/- 33)	10 (+/- 20)
	Largemouth bass	100	70 (+/- 9)	28 (+/- 9)
TOTAL	Smallmouth bass	21	50 (+/- 20)	17 (+/- 15)
	Spotted bass	42	74 (+/- 13)	10 (+/- 9)
	Largemouth bass	571	77 (+/- 3)	37 (+/- 4)

^aLargemouth bass = RSD₁₅, Spotted and Smallmouth bass = RSD₁₄

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Table 4. Age frequencies and CPUE of largemouth bass collected during diurnal electrofishing for 10 hours (20 x 30-minute runs) at Kentucky Lake during May 2006.

Age	Inch Classes																				Total	%	CPUE	StdErr
	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21					
1	7	44	76	80	76	27	8													318	37.2	31.8	6.89	
2							13	33	37	24										107	12.5	10.7	1.07	
3									8	35	63	32	13							151	17.7	15.1	1.77	
4											6	33	25	7						71	8.3	7.1	0.61	
5												32	63	29	32	12	2			170	19.9	17.0	1.69	
6												11		7						20	2.3	2.0	0.18	
7															8	4	1			13	1.5	1.3	0.27	
8																	1	2		3	0.4	0.3	0.14	
9																		1		1	0.1	0.1	0.05	
Total	7	44	76	80	76	27	21	33	45	59	69	108	101	43	32	20	8	3	2	854				
%	1	5	9	9	9	3	2	4	5	7	8	13	12	5	4	2	1	0	0					

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Table 5. Population assessment of largemouth bass based on spring sampling at Kentucky Lake from 2002-2006.

Parameter	2006		2005		2005		2003		2002	
	Value	Score	Value	Score	Value	Score	Value	Score	Value	Score
Length at Age-3	13.8	4	13.8	4	13.7	4	13.7	4	13.7	4
Spring CPUE of Age-1 Fish	31.8	2	28.7	2	12.0	1	30.9	2	35.5	2
Spring CPUE 12-14.9-in Fish	23.6	2	46.5	4	22.7	2	43.6	4	21.8	2
Spring CPUE \geq 15.0-in Fish	20.9	4	23.6	4	18.1	3	15.6	3	12.9	3
Spring CPUE \geq 20-in Fish	0.6	2	0.8	2	1.3	2	1.0	2	0.9	2
Instantaneous Mortality (z)	0.666		0.639		0.697		0.728		0.873	
Annual Mortality (A)%	48.6		47.2		50.2		51.7		58.2	
Total Score	14		16		12		15		13	
Assessment Rating	G		G		G		G		G	

Rating

- 5-7 = Poor (P)
- 8-11 = Fair (F)
- 12-16 = Good (G)
- 17-20 = Excellent (E)

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Table 6. Species composition, relative abundance and CPUE (fish/hour) of black bass collected during 5.0 hours (10 x 30-minute runs) of diurnal electrofishing runs for black bass at Kentucky Lake during October 2006.

Area	Species	Inch Classes																				Total	CPUE	StdErr
		2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21			
Blood River	Smallmouth bass	1	4	2			1	2	2		2		3								17	6.8	3.38	
	Spotted bass	2	2				1			2	1	2	1								11	4.4	2.04	
	Largemouth bass	12	11	12	12	4	5	18	17	19	19	17	22	8	10	6	5	3	3		203	81.2	6.05	
Jonathan	Smallmouth bass	1	1	1					1	1	1	1	1								9	3.6	1.47	
	Spotted bass	2	5	3	1			1	2	4	1	1									20	8.0	2.53	
	Largemouth bass	3	14	11	12	5	4	9	21	20	21	24	17	35	24	18	11	4	4	2	259	100.0	14.10	
TOTAL	Smallmouth bass	2	5	3		1	2	3		3	1	1	4	1							26	5.2	1.82	
	Spotted bass	4	7	3	1		1	1	2	6	2	3	1								31	6.2	1.65	
	Largemouth bass	3	26	22	24	17	8	14	39	37	31	43	34	57	32	28	17	9	7	5	453	90.6	7.88	

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Table 7. Number of bass, and relative weight (Wr) for each length group of black bass collected at Kentucky Lake during October 2006. Standard errors are in parentheses.

Species	Area	Inch Groups					
		8.0-11.9 in		12.0-14.9 in		> 15.0 in	
		No.	Wr	No.	Wr	No.	Wr
Largemouth bass	Blood River	58	99 (1.07)	58	97 (1.17)	35	96 (1.57)
	Jonathan Creek	62	97 (1.59)	76	92 (1.23)	63	95 (1.36)
	Total	120	98 (0.97)	134	94 (0.89)	98	95 (1.04)

Species	Area	Inch Groups					
		7.0-10.9 in		11.0-13.9 in		> 14.0 in	
		No.	Wr	No.	Wr	No.	Wr
Spotted bass	Blood River	1	110	5	92 (5.62)	1	107
	Jonathan Creek	3	89 (4.47)	6	93 (3.84)		
	Total	4	94 (6.21)	11	93 (3.13)	1	107
Smallmouth bass	Blood River	5	84 (3.73)	2	84 (3.45)	3	78 (6.29)
	Jonathan Creek	1	85	3	81 (4.44)	2	83 (6.06)
	Total	6	95 (3.05)	5	82 (2.76)	5	80 (4.09)

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Table 8. Indices of year-class strength at age-0 and mean length (in) of largemouth bass collected in the fall, and CPUE of age-1 largemouth bass collected the following spring during diurnal electrofishing at Kentucky Lake.

Year Class	Age 0 ^A		Age 0 ≥ 5.0 in ^A		Age 1 ^B	
	Mean Length	CPUE	Std. Error	CPUE	CPUE	Std. Error
1990	4.1	9.5	3.02	4.2	41.4	7.23
1991					31.5	4.94
1992	3.8	30.6	8.70	5.3	33.1	5.43
1993	3.3	33.3	9.45	2.4	25.4	3.28
1994	3.4	13.1	4.46	1.5	9.2	1.58
1995	3.8	33.0	9.18	6.1	14.3	2.70
1996	3.4	38.5	8.01	2.5	7.3	1.28
1997					52.0	6.74
1998	4.5	9.0	1.86	3.2	41.9	6.40
1999	3.5	36.4	10.68	2.4	21.8	4.04
2000	4.2	14.5	2.82	4.8	73.9	7.96
2001	4.9	18.4	3.83	15.1	35.5	5.26
2002	3.4	12.8	6.52	0.0	30.9	0.00
2003	3.6	15.7	5.36	0.7	12.0	0.00
2004	3.7	18.5	5.56	2.3	28.7	5.60
2005	4.2	28.8	3.53	13.2	31.8	6.69
2006	4.2	13.6	2.87	4.0		
Average	3.9	21.7		4.5	30.7	

^A Data collected by fall (October) diurnal electrofishing. Mean lengths were determined by analysis of otoliths, removed from a subsample of LMB < 8.0 in, and extrapolated to the entire catch of the fall sample.

^B Data collected during the following spring (April/May) diurnal electrofishing sample.

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Table 9. Species composition, relative abundance, and CPUE (fish/net night) of crappie collected by trap nets fished during 80 net-nights in two embayments of Kentucky Lake during October 2006.

Area	Species	Inch Classes														Total	CPUE	StdErr
		2	3	4	5	6	7	8	9	10	11	12	13	14				
Blood River	White Crappie	2	54	8	1	28	25	3	4	15	12	5	1	1	159	4.0	1.19	
	Black Crappie	17	45	6	41	108	57	119	140	62	30	4	1	1	631	15.8	2.27	
Jonathan Cr.	White Crappie	3	32			15	13	5	28	37	8	9			150	3.8	0.56	
	Black Crappie	7	19	2	7	90	32	183	285	101	23				749	18.7	3.19	
TOTAL	White Crappie	5	86	8	1	43	38	8	32	52	20	14	1	1	309	3.9	0.65	
	Black Crappie	24	64	8	48	198	89	302	425	163	53	4	1	1	1,380	17.3	1.95	

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Table 10. Crappie population parameters used to manage the population at Kentucky Lake, with values determined from fall trap netting.

Year	Total CPUE (f/nn) excluding age-0			CPUE (f/nn) age-0			Mean length (in) age-2 at capture			CPUE (f/nn) for crappie ≥8 inches			CPUE (f/nn) age-1			CPUE (f/nn) for crappie >10 inches		
	WC	BC	Crappie	WC	BC	Crappie	WC	BC	Crappie	WC	BC	Crappie	WC	BC	Crappie	WC	BC	Crappie
1985	15.70	1.85	17.55	5.65	0.33	5.98	9.0	8.4	8.4	1.73	0.78	2.51	16.91	0.80	17.71	0.50	0.35	0.85
1986	5.20	2.88	8.08	3.29	0.27	3.56	10.3	10.5	10.6	3.50	2.43	5.93	1.79	1.33	3.12	1.80	1.34	3.14
1987	9.80	3.64	13.44	2.35	0.19	2.54	10.5	9.9	10.5	8.32	1.64	9.96	9.05	1.29	10.34	4.00	0.38	4.38
1988	5.20	0.85	6.05	0.95	0.14	1.09	11.0	10.6	10.5	3.66	0.64	4.30	2.66	0.34	3.00	0.83	0.31	1.14
1989	15.60	2.39	17.99	20.41	1.12	21.53	9.3	9.4	9.9	1.74	0.23	1.97	6.08	2.18	8.26	0.87	0.04	0.91
1990	14.10	1.70	15.80	3.73	0.48	4.21	9.7	10.3	10.6	2.62	0.78	3.40	13.83	1.00	14.83	0.71	0.49	1.20
1991	12.70	3.82	16.52	4.95	0.08	5.03	9.7	8.6	9.4	5.56	0.46	6.02	6.84	3.19	10.03	1.14	0.10	1.24
1992	16.00	3.25	19.25	3.06	0.28	3.34	9.5	8.6	9.3	5.49	1.85	7.34	10.95	0.65	11.60	1.74	0.35	2.09
1993	12.00	3.43	15.43	1.96	0.95	2.91	9.0	8.6	9.6	4.69	1.76	6.45	7.61	1.68	9.29	2.73	0.76	3.49
1994	10.50	2.33	12.83	2.35	0.72	3.07	9.6	8.7	9.4	5.52	0.75	6.27	5.23	1.60	6.83	2.30	0.34	2.64
1995	11.00	6.61	17.61	3.54	2.02	5.56	10.4	9.4	9.9	3.34	1.56	4.90	8.49	5.04	13.53	1.69	0.94	2.63
1996	11.90	9.84	21.74	28.02	2.16	30.18	10.0	9.3	9.7	4.24	3.20	7.44	7.94	6.01	13.95	1.73	0.48	2.21
1997	7.00	11.59	18.59	1.70	2.49	4.19	9.6	8.5	9.0	3.33	5.50	8.83	3.29	4.82	8.11	1.61	0.70	2.31
1998	9.60	31.27	40.87	9.49	8.64	18.13	9.3	9.3	9.3	5.75	11.27	17.02	3.21	17.49	20.70	1.68	1.34	3.02
1999	5.40	21.66	27.06	0.95	1.00	1.95	9.5	8.9	9.1	2.30	12.66	14.96	3.42	6.30	9.72	1.26	1.83	3.09
2000	2.70	18.63	21.33	0.45	1.31	1.76	10.0	8.9	9.4	2.38	10.57	12.95	1.01	7.56	8.57	0.77	2.17	2.94
2001	4.69	22.59	27.28	26.76	24.52	51.28	10.8	9.3	9.8	2.21	12.55	14.76	2.34	9.67	12.01	1.29	3.17	4.46
2002	3.90	15.14	19.04	0.71	3.06	3.77	10.8	9.9	10.4	2.74	8.60	11.34	3.30	9.80	13.10	0.68	4.21	4.89
2003 ^A	3.75	20.33	24.08	10.46	5.4	15.86	10.8	9.9	10.4	2.55	6.2	8.75	2.34	15.52	17.86	1.35	1.76	3.11
2004	7.47	32.46	39.93	0.65	0.98	1.63	10.8	9.2	9.7	2.71	11.67	14.38	6.2	18.60	24.80	1.09	2.99	4.08
2005 ^A	3.91	22.75	26.66	2.29	1.92	4.21	10.8	9.2	9.7	2.45	13.78	16.23	2.55	10.31	3.10	1.12	3.42	4.54
2006 ^A	2.62	16.07	18.69	1.24	1.18	2.42	10.8	9.2	9.7	1.60	11.86	13.46	1.68	6.60	8.28	1.10	2.78	3.88
Average	8.7	11.6	20.3	6.1	2.7	8.8	10.1	9.3	9.7	3.56	5.49	9.05	5.76	5.99	11.31	1.45	1.37	2.83

^A Indicate years where age and growth data was not collected. Age and growth data from the previous year was used to calculate the appropriate value.

Table 11. Proportional stock density (PSD) and relative stock density (RSD10) of white and black crappie collected by trap-nets (80 net-nights) at Kentucky Lake during October 2006.

Location	Species	N	PSD	RSD10
Blood River	White Crappie	41	43 (\pm 10)	36 (\pm 10)
	Black Crappie	357	63 (\pm 4)	17 (\pm 3)
Jonathan Creek	White Crappie	87	76 (\pm 8)	47 (\pm 9)
	Black Crappie	592	82 (\pm 3)	17 (\pm 3)
Total	White Crappie	128	61 (\pm 7)	42 (\pm 7)
	Black Crappie	949	74 (\pm 2)	17 (\pm 2)

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Table 12. Age frequencies and CPUE of white crappie collected in trap nets fished for 80 net nights in Kentucky Lake during October 2006. Age data was obtained using otoliths collected in 2000-2002, and 2004.

Age	Inch Classes												Total	%	CPUE	StdErr	
	2	3	4	5	6	7	8	9	10	11	12	13					14
0	5	86	8											99	32.0	1.24	0.36
1				1	43	38	7	19	9	1				118	38.2	1.47	0.30
2							1	9	27	9	2			48	15.5	0.59	0.11
3								2	9	7	3			21	6.8	0.26	0.05
4								1	5	2	4			12	3.9	0.15	0.03
5								1		1	3			5	1.6	0.06	0.02
6									1		1		1	3	1.0	0.04	0.01
7									1		1			2	0.6	0.02	0.01
9												1		1	0.3	0.01	0.00
Total	5	86	8	1	43	38	8	32	52	20	14	1	1	309			
%	2	28	3	0	14	12	3	10	17	6	5	0	0		100		

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Table 13. Age frequencies and CPUE of black crappie collected in trap nets fished for 80 net-nights in Kentucky Lake during October 2006. Age data was obtained using otoliths collected in 2000-2002, and 2004.

Age	Inch Classes													Total	%	CPUE	StdErr
	2	3	4	5	6	7	8	9	10	11	12	13	14				
0	24	64	7	4										99	7.2	1.24	0.33
1			1	44	194	66	104	73	10	1				493	35.7	6.17	0.74
2					4	23	193	234	51	11				516	37.4	6.46	0.79
3							5	100	72	20	1			198	14.3	2.47	0.36
4								6	20	10	2			38	2.8	0.47	0.08
5								6	7	6	1	1		21	1.5	0.26	0.04
6								6	3	3			1	13	0.9	0.16	0.02
7										1				1	0.1	0.01	0.00
10										1				1	0.1	0.01	0.00
Total	24	64	8	48	198	89	302	425	163	53	4	1	1	1,380			
%	2	5	1	3	14	6	22	31	12	4	0	0	0		100		

wfdtpntk.d06, wfdmycad.d06

Table 14. Population assessment determined from white and black crappie based on fall trap netting at Kentucky Lake from 2002-2006, table 14a - white crappie and table 14b - black crappie.

Parameter	2006		2005		2004		2003		2002	
	Value	Score	Value	Score	Value	Score	Value	Score	Value	Score
CPUE of crappie (excluding age 0)	18.63	3	26.66	4	39.43	4	24.08	4	18.98	3
CPUE of age 1 crappie	7.64	3	12.86	3	24.80	4	17.86	4	13.10	4
CPUE of age 0 crappie	2.48	1	4.21	1	1.63	1	15.86	4	3.77	2
CPUE of crappie \geq 8 inches	13.46	4	16.24	4	14.38	4	8.75	3	11.34	4
Mean age-2 length at capture	9.7	4	9.7	4	9.7	4	10.4	4	10.4	4
Instantaneous Mortality (Z)	0.729		0.788		0.649		0.709		0.673	
Annual Mortality (A)%	51.7		54.5		47.7		50.8		49.0	
Total Score	15		16		17		19		17	
Assessment Rating	G		G		G		E		G	

Table 14a. White Crappie

Parameter	2006		2005		2004		2003		2002	
	Value	Score	Value	Score	Value	Score	Value	Score	Value	Score
CPUE of crappie (excluding age 0)	2.63	1	3.91	1	7.38	2	3.75	1	3.85	1
CPUE of age 1 crappie	1.48	1	2.55	1	6.20	2	2.34	1	3.30	2
CPUE of age 0 crappie	1.24	1	2.29	1	0.65	1	10.46	4	0.71	1
CPUE of crappie \geq 8 inches	1.60	1	2.45	2	2.71	2	2.55	2	2.74	2
Mean age-2 length at capture	10.8	4	10.8	4	10.8	4	10.8	4	10.8	4
Instantaneous Mortality (Z)	0.506		0.469		0.517		0.255		0.360	
Annual Mortality (A)%	39.7		37.4		40.4		22.5		43.3	
Total Score	8		9		11		12		10	
Assessment Rating	F		F		F		F		F	

Table 14b. Black Crappie

Parameter	2006		2005		2004		2003		2002	
	Value	Score	Value	Score	Value	Score	Value	Score	Value	Score
CPUE of crappie (excluding age 0)	16.00	3	22.75	4	32.05	4	20.33	3	15.14	3
CPUE of age 1 crappie	6.16	2	10.31	3	18.60	4	15.53	4	9.80	3
CPUE of age 0 crappie	1.24	1	1.92	1	0.98	1	5.40	2	3.06	2
CPUE of crappie \geq 8 inches	11.86	4	13.78	4	11.67	4	6.20	3	8.60	3
Mean age-2 length at capture	9.2	3	9.2	3	9.2	3	9.9	4	9.9	4
Instantaneous Mortality (Z)	0.797		1.208		0.685		0.748		0.716	
Annual Mortality (A)%	54.9		70.1		49.6		52.7		51.1	
Total Score	13		15		16		16		15	
Assessment Rating	G		G		G		G		G	

Rating

- 5 - 7 = Poor (P)
- 8 - 12 = Fair (F)
- 13 - 17 = Good (G)
- 18 - 20 = Excellent (E)

WFDTPNTK.D06, WFDTPNTK.D05, WFDTPNTK.D04, WFDTPNTK.D03, WFDTPNTK.D02

Table 15. Length frequency and CPUE (fish/trotline) of blue and channel catfish collected from Kentucky Lake in May 2006 using 3 100-hook trotlines baited with cheese bait for 3 line nights.

Species	Inch Classes														Total	CPUE	Std. Error								
	12	13	14	15	16	17	18	19	20	21	22	23	24	25				26	27	28	29	30	~	34	35
Blue catfish		1		1	1				3	6	8	7	2	2	6	4	2		2		1	1	47	5.2	0.9
Channel catfish	1	1		1	1	2	3	5	4	8	8	10	11	11	3	1	2	1					73	8.1	1.4

(wfdctf1.d06)

Table 16. Relative weight (Wr) of each length-group of blue and channel catfish collected at Kentucky Lake during May 2006. Fish were collected using trotlines (9 trotline-nights).

Species	Inch Groups									Total		
	12.0 - 19.9 in.			20.0 - 29.9 in.			≥ 30.0 in.			N	Wr	Std. Error
	N	Wr	Std. Error	N	Wr	Std. Error	N	Wr	Std. Error			
Blue Catfish	3	139.3	24.07	40	110.2	1.2	4	113.4	8.81	47	112.4	2.04

Species	Inch Groups									Total		
	11.0 - 15.9 in.			16.0 - 23.9 in.			≥ 24.0 in.			N	Wr	Std. Error
	N	Wr	Std. Error	N	Wr	Std. Error	N	Wr	Std. Error			
Channel Catfish	3	96.4	7.14	41	101.5	1.55	29	100.1	2.8	73	100.8	1.43

wfdctfk.d06

Table 17. Age frequencies and CPUE of blue catfish collected from Kentucky Lake in May 2006 using 3 100-hook trotlines baited with cheese bait for 3 nights. Age data was obtained using otoliths collected during the 2004 study.

Age	Inch Classes														Total	%	CPUE	StdErr	
	15	16	~	20	21	22	23	24	25	26	27	28	29	~					34
3	1	1														2	4.3	0.2	0.1
4				1	3		1									5	10.9	0.6	0.2
5				2	2	8	2	1								15	32.6	1.7	0.4
6					1		4	1	2	6	2					16	34.8	1.8	0.2
7											2	2				4	8.7	0.4	0.3
8												1	2			3	6.5	0.3	0.2
10															1	1	2.2	0.1	0.1
Total	1	1		3	6	8	7	2	2	6	4	3	2		1	46			
%	2	2		7	13	17	15	4	4	13	9	7	4		2	100			

wfdctfk.d06, wfdcfagk.d04

Table 18. Age frequencies and CPUE of channel catfish collected from Kentucky Lake in May 2006 using 3 100-hook trotlines baited with cheese bait for 3 nights. Age data was obtained using otoliths collected during the 2004 study.

Age	Inch Classes														Total	%	CPUE	StdErr
	15	16	17	18	19	20	21	22	23	24	25	26	27	28				
3	1		1												2	2.9	0.22	0.19
4				2	1										3	4.3	0.3	0.1
5					2			2	3						7	10.0	0.8	0.2
6		1			2	2	4	6	7	8	5		1		36	51.4	4.0	0.7
7				1			2				3	2		2	10	14.3	1.1	0.3
8			1			2	2			3	3				11	15.7	1.2	0.2
9												1			1	1.4	0.1	0.1
Total	1	1	2	3	5	4	8	8	10	11	11	3	1	2	70			
%	1	1	3	4	7	6	11	11	14	16	16	4	1	3		100		

wfdcflik.d06, wfdcfagk.d04

Table 19. Mean back-calculated length (in) at each annulus of blue catfish including the range in length at each age, and the 95% confidence interval of each age group. . Otoliths were collected from larger fish at Ronnie Hopkins fish market during November.

Year-Class	N	Age																		
		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19
2003	4	5.0	10.1	14.1																
2002	2	5.7	9.7	14.1	17.7															
2001	4	5.7	9.4	12.5	15.9	18.6														
2000	7	5.5	10.0	13.8	16.7	19.5	22.2													
1999	9	5.9	10.1	14.5	17.9	20.7	23.2	26.7												
1998	4	4.1	8.1	11.1	14.0	16.4	19.0	21.6	24.1											
1997	2	5.5	9.0	13.3	16.5	19.2	22.0	24.4	27.2	28.8										
1996	3	4.7	8.5	12.0	15.0	18.0	19.8	21.7	24.1	26.1	28.1									
1995	2	5.0	7.5	9.8	13.0	15.4	18.5	20.1	22.9	25.6	27.2	28.7								
1994	2	5.1	9.6	12.2	14.1	17.5	19.8	22.1	24.3	26.2	27.7	29.2	31.5							
1993	1	3.9	7.1	9.4	13.4	15.7	18.9	20.4	22.8	24.4	26.7	28.3	29.9	33.0						
1987	1	4.0	7.2	9.9	13.2	14.5	16.5	17.8	19.8	21.7	23.1	25.7	26.3	27.7	29.6	31.0	32.9	33.6	34.9	36.9
Mean		5.3	9.3	13.0	16.0	18.6	21.2	23.5	24.8	26.0	27.1	28.3	29.8	20.2	29.6	31.0	32.9	33.6	34.9	36.9
Number		41	41	41	39	35	28	19	15	11	9	6	4	2	1	1	1	1	1	1
Smallest		3.1	5.6	7.5	9.9	12.4	14.9	16.8	18.6	21.7	23.1	25.6	26.3	27.7						
Largest		10.3	16.5	20.6	24.7	26.7	28.8	33.9	29.7	31.4	31.9	32.9	35.3	33.0						
Std. Error		0.3	0.4	0.4	0.5	0.5	0.5	0.8	0.9	0.9	1.0	1.3	2.3							
Low 95% CI		4.8	8.7	12.3	15.1	17.7	20.3	22.1	22.6	24.5	25.7	26.3	26.5							
High 95% CI		5.8	10.1	13.8	17.0	19.8	22.3	25.3	26.0	28.2	29.5	31.4	35.4							

¹ Otoliths were used to make age determinations. Intercept = 0.

Table 20. Species composition, relative abundance, and CPUE of black bass collected during 9.5 hours (19 runs; each 0.50 hours) of diurnal electrofishing at Lake Barkley on 24-27 May 2006.

Area	Species	Inch-Class																				Total	CPUE	Std. Error
		3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22			
Lower																								
Donaldson Cr.	Smallmouth bass																				0			
	Spotted bass																				0			
	Largemouth bass	1	12	12	9	5	15	29	34	35	56	50	24	17	11	9	7	6			332	132.8	21.3	
Ford's Bay	Smallmouth bass																				0			
	Spotted bass		1				2														3	3.0	3.0	
	Largemouth bass	2	5	6	3	1	2	8	13	11	34	15	8	7	4	2	6	2		1	130	130.0	26.0	
Parsons Bay	Smallmouth bass																				0			
	Spotted bass						1	1	1	2		1									6	6.0	4.0	
	Largemouth bass		7	4	4	3		6	10	11	21	18	7	3	7	7	2	2			112	112.0	22.0	
Middle																								
Little River	Smallmouth bass											1									1	2.0	0.0	
	Spotted bass			1		1	1	2	1	1	2										9	18.0	0.0	
	Largemouth bass	1	2	4	5	2	1	6	9	7	5	14	11	6	2					1	76	152.0	0.0	
Eddy Cr.	Smallmouth bass																				0			
	Spotted bass						1		2	2	1										6	2.4	2.4	
	Largemouth bass	1	3	5	11	4	5	13	15	33	23	40	54	32	20	18	13	5	7	1	303	121.2	14.1	
Upper																								
Nickel Br.	Smallmouth bass	3	5	6			2		1												17	11.3	7.3	
	Spotted bass	1					1	3	4	5	6										20	13.3	10.5	
	Largemouth bass	1	1	17	17	7	4	2	6	35	20	20	39	17	2	6	3	1			198	132.0	16.2	
Willow Cr.	Smallmouth bass			1	2		1				1										5	10.0	0.0	
	Spotted bass	1					1	8	2	4	1		1								18	38.0	0.0	
	Largemouth bass			2	3			2	4	8	3	12	4	4	1	1	1	1			46	92.0	0.0	
Denumbers Bay	Smallmouth bass																				0			
	Spotted bass																				0			
	Largemouth bass	2	5			2			2	6	9	7	10	2		2					47	94.0	0.0	
Total	Smallmouth bass	3	6	8		1	2		1	1	1										23	2.3	1.4	
	Spotted bass	2	1	1		3	16	9	13	12	3	1	1								62	6.2	2.5	
	Largemouth bass	2	10	53	56	35	22	33	72	140	121	188	209	113	61	49	37	22	18	1	2	1244	124.4	7.4

(wfdpsdb.d06)

Table 21. Spring diurnal electrofishing CPUE of each size group of largemouth bass collected at Lake Barkley during late April/early May since 1985.

Year	Inch Groups										Total	
	< 8.0 inch		8.0 - 11.9 inch		12.0 - 14.9 inch		≥ 15.0 inch		≥ 20.0 inch		CPUE	Std. Error
	CPUE	Std. Error	CPUE	Std. Error	CPUE	Std. Error	CPUE	Std. Error	CPUE	Std. Error	CPUE	Std. Error
1985	3.0	1.0	11.6	1.7	4.7	1.0	3.6	1.0	0.2	0.2	22.9	2.6
1986	6.1		7.3		39.0		12.2		1.2		64.6	
1987	64.9	12.4	84.1	11.2	14.5	3.0	25.9	6.1	2.2	1.3	189.4	27.7
1988	39.5	6.6	98.2	12.6	76.9	21.8	29.0	9.5	2.9	1.6	243.6	45.5
1989	28.7	8.7	74.6	7.4	34.8	4.2	25.0	4.5	0.9	0.5	163.2	15.5
1990	10.4	2.5	47.2	6.9	33.8	5.3	26.6	3.5	3.4	1.1	118.0	12.9
1991	57.8	7.6	72.9	7.5	59.4	6.1	34.0	3.9	1.9	0.7	224.1	16.4
1992	30.7	4.8	79.0	7.6	20.5	1.7	29.5	2.3	2.7	0.7	159.7	9.0
1993	40.2	12.1	65.0	6.0	69.2	6.1	32.2	4.5	3.4	1.0	206.6	15.2
1994	49.2	8.4	51.0	6.3	72.8	6.2	36.0	5.3	4.2	1.1	209.0	19.8
1995	12.2	2.8	55.6	6.4	42.2	4.3	56.0	5.9	7.6	1.2	166.0	12.3
1996	14.4	5.9	36.0	4.0	45.6	7.8	43.2	6.4	7.6	1.5	139.2	16.6
1997	7.2	1.0	23.0	2.9	22.4	2.1	35.8	3.3	6.2	1.2	88.4	5.7
1998	22.2	4.7	26.2	4.2	28.6	3.0	29.8	3.5	7.1	1.0	106.8	5.9
1999	16.3	1.9	21.0	2.2	22.7	2.5	34.0	2.6	4.7	0.7	93.9	6.0
2000	32.8	4.2	28.6	2.3	24.7	2.3	27.9	2.4	2.7	0.7	114.1	6.0
2001	70.4	8.3	61.2	5.1	31.1	2.5	19.0	1.5	1.6	0.7	181.7	10.8
2002	26.4	3.6	49.7	5.9	40.6	4.1	16.3	1.8	1.3	0.4	133.0	8.5
2003	41.1	5.2	38.5	3.9	75.3	5.3	26.9	2.3	1.7	0.4	181.8	10.4
2004	11.3	1.3	40.9	2.9	29.3	1.6	24.7	2.2	1.8	0.4	106.2	5.1
2005	36.6	4.9	19.3	1.9	59.4	4.8	37.5	3.3	2.0	0.6	152.7	10.3
2006	15.6	2.2	26.7	2.2	51.8	3.9	30.8	2.4	2.1	0.6	124.2	7.4
Average	29.0		46.3		40.9		28.9		3.2		145.0	

(Barkley_LMB_Database.xls)

Table 22. PSD and RSD values obtained for each black bass species collected during 9.5 hours (19 runs; each 0.50 hours) of spring diurnal electrofishing at each area of Lake Barkley from 24-27 April 2006. 95% confidence intervals are in parentheses.

Area	Species	No. fish \geq 8.0 inch	PSD (\pm 95% CI)	RSD ^A (\pm 95% CI)
Upper ¹	Largemouth bass	260	73 (6)	23 (5)
	Spotted bass	44	48 (15)	2 (4)
	Smallmouth bass	6	50 (44)	*
Middle ²	Largemouth bass	577	82 (3)	29 (3)
	Spotted bass	6	83 (33)	*
	Smallmouth bass	0	*	*
Lower ³	Largemouth bass	251	81 (5)	29 (6)
	Spotted bass	8	50 (38)	12 (24)
	Smallmouth bass	0	*	*
Total	Largemouth bass	1088	83 (2)	32 (3)
	Spotted bass	58	88 (13)	*
	Smallmouth bass	6	75 (49)	*

^A Largemouth bass = RSD₁₅, spotted bass and smallmouth bass = RSD₁₄.

¹ Upper Lake Barkley samples consisted of Demumbers Bay, Nickel Branch, and Willow Creek.

² Middle Lake Barkley samples consisted of Little River and Eddy Creek.

³ Lower Lake Barkley samples consisted of Donaldson Creek, Fords Bay, and Parsons Bay.

* No fish of sufficient size were collected during sampling.

(wfdpsdb.d06)

Table 23. Mean back-calculated length (ln) at each annulus of largemouth bass collected during diurnal electrofishing at Lake Barkley during April 2006.

Year-Class	N	Age							
		1	2	3	4	5	6	7	8
2005	28	6.7							
2004	25	7.6	10.9						
2003	14	7.5	10.7	13.1					
2002	11	7.9	11.4	13.1	13.6				
2001	9	7.8	12.2	13.9	15.1	16.3			
2000	5	8.4	12.0	14.1	15.3	16.5	17.4		
1999	2	7.0	11.1	13.5	15.5	16.3	17.3	18.6	
1998	1	6.8	11.1	14.5	15.9	16.7	17.3	17.7	17.9
Mean		7.3	11.0	13.2	14.6	16.4	17.4	18.3	17.9
Smallest		4.7	8.2	10.5	12.7	14.6	15.2	17.7	17.9
Largest		10.1	13.7	16.2	17.4	18.5	19.7	18.8	17.9
Std. Error		0.2	0.2	0.3	0.3	0.3	0.6	0.3	
Low 95% CI		7.1	10.7	12.9	14.1	15.8	16.2	17.7	
High 95% CI		7.8	11.6	14.0	15.1	17.0	18.5	18.9	

Otoliths were used to make age determinations. Intercept = 0.

wfdlbagb.d06

Table 24. Age frequencies and CPUE of largemouth bass collected during diurnal electrofishing at Lake Barkley in May 2006.

Age	Inch Classes															Total	%	CPUE	StdErr	
	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18					19
1	10	53	56	35	22	8											184	15.1	28.70	2.86
2						25	72	126	55								278	22.8	12.21	1.25
3								14	44	63	163	14					298	24.4	30.14	3.05
4									22	125	46	28					221	18.1	10.54	0.95
5												57	20	49	15		141	11.5	20.66	1.74
6													14	41		22	77	6.3	3.12	0.32
7															15		15	1.2	1.44	0.28
8																7	7	0.6	0.30	0.15
Total	10	53	56	35	22	33	72	140	121	188	209	113	61	49	37	22	1,221			
%	1	4	5	3	2	3	6	11	10	15	17	9	5	4	3	2		0		

wfdpsdb.d06, wfdlbagb.d06

Table 25. Electrofishing catch rate (fish/hour) for each age of largemouth bass collected from Lake Barkley spring samples.

Age	Year									
	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006
1	3.0	23.0	17.3	23.4	76.9	25.1	59.0	29.0	42.5	18.4
2	4.5	15.2	18.0	21.5	70.0	72.4	13.1	17.8	9.1	27.8
3	18.4	23.8	11.7	15.2	8.9	10.7	65.9	25.5	50.9	28.6
4	15.6	8.1	15.3	14.9	11.0	10.8	33.7	23.3	35.7	23.3
5	10.2	16.1	5.0	4.9	0.5	0.7	5.7	5.5	8.3	14.1
6	14.0		10.9	10.6	5.3	4.7	0.0	2.1	2.7	7.7
7	2.5			1.3	0.5	0.4	1.6	1.2	1.7	1.5
8	4.9				1.5	0.1	0.0	0.2	0.3	0.7
9	2.8				0.5	0.7	1.0	0.7	0.9	
10							0.2			
11							0.6			

(Barkley_LMB_Database.xls)

Table 26. Population assessment of largemouth bass based on spring sampling at Lake Barkley from 2002-2006.

Parameter	2002		2003		2004		2005		2006	
	Value	Score	Value	Score	Value	Score	Value	Score	Value	Score
Length at Age-3	14.7	4	12.9	4	12.9	4	12.9	4	13.6	4
Spring CPUE of Age-1 Fish	28.9	2	59.2	4	29.2	2	42.5	3	18.4	1
Spring CPUE 12-14.9-in Fish	40.6	4	75.3	4	29.3	3	59.4	4	51.8	4
Spring CPUE ≥ 15.0-in Fish	16.3	3	26.9	4	24.7	4	37.5	4	30.8	4
Spring CPUE ≥ 20-in Fish	1.3	2	1.7	3	1.8	3	2.0	3	2.0	3
Instantaneous Mortality (z)									0.431	
Annual Mortality (A)%									0.35	
Total Score		15		19		16		18		16
Assessment Rating		G		E		G		E		G

Rating

- 5-7 = Poor (P)
- 8-11 = Fair (F)
- 12-16 = Good (G)
- 17-20 = Excellent (E)

Table 27. Spring diurnal electrofishing CPUE of each size-class of largemouth bass collected at Lake Barkley during May from 1985 - 2006. This table also includes the other parameters that are included in the BLFMP and used in calculating the black bass assessment values.

Year	Mean length age-3 at capture	age-1		Inch Groups						Total	
		CPUE	StdErr	12 - 14.9 CPUE	StdErr	≥15.0 CPUE	StdErr	≥20.0 CPUE	StdErr	CPUE	StdErr
1985	10.6	*	*	4.7	1.0	3.6	1.0	0.2	0.2	22.9	2.6
1986	10.8	*	*	39.0	0.0	12.2	0.0	1.2	*	64.6	0.0
1987	11.1	*	*	14.5	3.0	25.9	6.1	2.2	1.3	189.4	27.7
1988	11.2	*	*	76.9	21.8	29.0	9.5	2.9	1.6	243.6	45.5
1989	*	*	*	34.8	4.2	25.0	4.5	0.9	0.5	163.2	15.5
1990	11.7	*	*	33.8	5.3	26.6	3.5	3.4	1.1	118.0	12.9
1991	11.4	*	*	59.4	6.1	34.0	3.9	1.9	0.7	224.1	16.4
1992	11.0	*	*	20.5	1.7	29.5	2.3	2.7	0.7	159.7	9.0
1993	11.3	*	*	69.2	6.1	32.2	4.5	3.4	1.0	206.6	15.2
1994	11.1	*	*	72.8	6.2	36.0	5.3	4.2	1.1	209.0	19.8
1995	11.0	*	*	42.2	4.3	56.0	5.9	7.6	1.2	166.0	12.3
1996	10.9	*	*	45.6	7.8	43.2	6.4	7.6	1.5	139.2	16.6
1997	10.9	3.0	0.59	22.4	2.1	35.8	3.3	6.2	1.2	88.4	5.7
1998	12.0	23.0	4.77	28.6	3.0	29.8	3.5	7.0	1.0	106.8	5.9
1999	12.6	17.3	1.34	22.7	2.5	34.0	2.6	4.7	0.7	93.9	6.0
2000	12.6 ^A	37.3	2.93	24.7	2.3	27.9	2.4	2.7	0.7	114.1	6.0
2001	14.7	81.0	8.59	31.1	2.5	19.0	1.5	1.6	0.7	181.7	10.8
2002	14.7 ^A	28.9	3.21	40.6	4.1	16.3	1.8	1.3	0.4	133.0	8.5
2003	12.9	59.2	6.36	75.3	5.3	26.9	2.3	1.7	0.4	181.8	10.4
2004	12.9 ^A	29.2	2.42	29.3	1.6	24.7	2.2	1.8	0.4	106.2	5.09
2005	12.9 ^A	42.5	5.44	59.4	4.8	37.5	3.3	2.0	0.6	152.7	10.3
2006	13.4	18.4	2.35	51.8	3.9	30.8	2.4	2.0	0.6	124.2	7.36
Average	11.7	33.98		40.88		28.90		3.29		144.96	

(Kentucky Bass Database.xls)

* Data not available

^A Previous years data used

Table 28. Species composition, relative abundance, and CPUE (fish/hour) of black bass collected during 4.5 hours of diurnal electrofishing (9 runs; each 0.50 hours) for black bass in each area of Lake Barkley from 17-19 October 2006.

Area	Species	Inch Classes																			Total	CPUE	Std. Error
		3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21			
Eddy Creek	Largemouth bass	4	10	4	3		4	17	23	26	48	36	23	22	10	6	3	2	2	1	244	97.20	8.01
	Spotted bass										1										1	0.40	0.40
	Smallmouth bass	1			1		1						1	1							5	2.00	1.26
Little River	Largemouth bass	4	6	7	4	2	6	11	14	11	28	21	21	19	4	6	1	4	2	1	172	86.00	10.42
	Spotted bass			1	1																2	1.00	0.58
	Smallmouth bass			1																	1	0.5	0.5
Total	Largemouth bass	8	16	11	7	2	10	28	37	37	76	57	44	41	14	12	4	6	4	2	416	92.22	6.31
	Spotted bass			1	1							1									3	0.67	0.33
	Smallmouth bass	1	1	1	1		1						1	1							6	1.33	0.75

(wfdwrb.d06)

Table 29. Number of fish and the relative weight (Wr) values of each size-class of largemouth, spotted, and smallmouth bass collected at Lake Barkley during 4.5 hours (9 runs; each 0.50 hours) of diurnal electrofishing on 17-19 October 2006.

Species	Area	Inch Groups									Total		
		8.0 - 11.9 inch			12.0 -14.9 inch			≥15.0 inch			N	Wr	Std. Error
		N	Wr	Std. Error	N	Wr	Std. Error	N	Wr	Std. Error			
Largemouth bass	Eddy Creek	70	92.73	1.03	107	99.5	7.89	45	98.45	1.93	222	97.16	3.83
	Little River	42	113.3	23.09	70	92.37	1.22	37	99.4	1.5	149	100	6.53
	Total	112	100.46	8.67	177	96.68	4.79	82	98.9	1.25	371	98.3	3.48
Spotted bass	Eddy Creek	7.0 - 10.9 inch			11.0 - 13.9 inch			≥14.0 inch			Total		
		N	Wr	Std. Error	N	Wr	Std. Error	N	Wr	Std. Error	N	Wr	Std. Error
					1	103.02						1	103.02
	Little River												
	Total				1	103					1	103.0	
Smallmouth bass	Eddy Creek	7.0 - 10.9 inch			11.0 - 13.9 inch			≥14.0 inch			Total		
		N	Wr	Std. Error	N	Wr	Std. Error	N	Wr	Std. Error	N	Wr	Std. Error
		1	82.19					2	91.01	5.54	3	88.07	4.35
	Little River												
	Total	1	82.19				2	91.01	5.54				

(wfdwrb.d06)

Table 30. Indices of year-class strength at age 0 and age 1 and mean length (in) of largemouth bass collected during fall electrofishing at Lake Barkley.

Year-class	Age 0 ^A		Age 0 ^A		Age 0 ≥ 5.0 In ^A		Age 1 ^B	
	Mean Length	Std. Error	CPUE	Std. Error	CPUE	Std. Error	CPUE	Std. Error
2001	5.4		21.2	4.0	16.0		32.6 ^C	3.4
2002	5.3		26.7	2.4	10.1		59.0	6.4
2003	5.1		35.2	4.4	20.9		29.2 ^U	2.4
2004	5.4	0.8	39.8	5.8	30.4	4.3	42.5 ^D	5.4
2005	5.4	0.14	5.4	1.2	4.8	1.2	18.4	2.4
2006	4.8	0.15	9.3	1.7	4.0	1.3	*	

^A Data collected by fall (October) diurnal electrofishing. Mean lengths were determined by analysis of scales, removed from a subsample of LMB < 8.0 in, and extrapolated to the entire catch of the fall sample.

^B Data collected during the following spring (April/May) diurnal electrofishing sample.

^C Age and growth data was not collected during the spring of 2002. Age and growth data collected during the spring of 2001 and 2003 was used to determine CPUE of each individual age-class.

^D Age and growth data was not collected during the spring of 2004. Age and growth data collected during the spring of 2003 will be used to determine CPUE of each individual age-class.

* Data will be collected during the spring, diurnal electrofishing sample of 2006.

Table 31. Length frequency and CPUE (fish/trotline) of blue, channel, and flathead catfish collected by trotline at Lake Barkley from 22-25 May 2006. A total of 13 trotline nights were conducted.

Species	Inch Classes													Total	CPUE	Std. Error									
	6	7	8	9	10	11	12	13	14	15	16	17	18				19	20	21	22	23	24	25	26	27
Blue catfish				12	14	12	15	5	3	11	8	15	6	9	6	5	8	2	1	2	3	1	139	10.7	1.9
Channel catfish				1	3	6	11	10	8	12	9	3	3	3	3								69	5.3	0.1

(wfdcatb.d06)

Table 32. Relative weight (Wr) of each length-class of blue and channel catfish collected at Lake Barkley from 22-25 May 2006. Fish were collected using trotlines (13 trotline-nights).

Species	Inch Groups										Total
	12.0 - 19.9 in.			20.0 - 29.9 in.			≥ 30.0 in.			Total	
	N	Wr	Std. Error	N	Wr	Std. Error	N	Wr	Std. Error		
Blue Catfish	72	104.98	1.7	28	95.6	4.3	100	102.35	1.7		
	11.0 - 15.9 in.			16.0 - 23.9 in.			≥ 24.0 in.			Total	
Channel Catfish	37	90.7	5.2	30	91.6	3.5	67	91	3.2		

(widcatb.d06)

Table 33. Age frequencies and CPUE of blue catfish collected during 13 trotline-nights at Lake Barkley during 22-25 May 2006.

Age	Inch Classes													Total	Percent	Cum. Percent	CPUE	Std. Error			
	11	12	13	14	15	16	17	18	19	20	21	22	23						24	25	26
3	12	15															27	23.1	23.1	2.1	0.7
4			5	3	6		3										17	14.5	37.6	1.2	0.3
5					6	8	8	5		1	4	1					33	28.2	65.8	2.4	0.4
6							5	2	9	5	2	3	1		1	2	30	25.6	91.5	2.2	0.4
7										2	2	1		1			7	6.0	97.4	0.5	0.2
8											1					1	2	1.7	99.1	0.1	0.1
9															1		1	0.9	100.0	0.1	0.1
Total	12	15	5	3	12	8	16	7	9	7	6	8	2	1	2	3	1	117	100.0		
%	10	13	4	3	10	7	14	6	8	6	5	7	2	1	2	3	1	100			

(wfdcatb.d06) (wfdbcagb.d04)

Table 34. Age frequencies and CPUE of channel catfish collected during 13 trotline-nights at Lake Barkley during 22-25 May 2006.

Age	Inch Classes												Total	Percent	Cum. Percent	CPUE	Std. Error				
	10	11	12	13	14	15	16	17	18	19	20	21						22			
3	1				2												3	4.1	2.8	0.3	0.1
4		3	4	4	3												14	18.9	21.7	1.1	0.2
5			2	4	5	3	5	2	1		1						23	31.1	52.8	1.7	0.3
6					2	3	5			2	1						13	17.6	70.4	0.9	0.2
7						2	2	2					1				7	9.5	79.8	0.4	0.1
8								2	1							2	5	6.8	86.6	0.2	0.1
9									1	2	1						4	5.4	92.0	0.3	0.1
10								5									5	6.8	100.0	0.4	0.1
Total	1	3	6	10	10	8	12	11	3	4	3	1	2				74				
%	1	4	8	14	14	11	16	15	4	5	4	1	3				100				

(wfdcatb.d06) (wfdccagb.d04)

Table 35. Length frequency and CPUE (#/net-night) of each inch-class of white and black crappie collected by trap-net (80 net-nights) at Lake Barkley from 31 October-3 November 2006.

Location	Species	Inch Classes												Total	CPUE	Std. Error			
		2	3	4	5	6	7	8	9	10	11	12	13				14		
Little River	White Crappie				1	1	1	19	40	35	70	30	8	14	1	1	221	5.68	0.83
	Black Crappie				5	1	2	39	34	23	10	8	4	1	127	3.18	0.61		
Donaldson Creek	White Crappie	2	1				18	64	34	13	19	16	4	2	1	174	4.35	0.74	
	Black Crappie				5		2	40	24	6	8	6	6	5	102	2.60	0.34		
Total	White Crappie	2	2	1			19	83	74	48	89	46	12	16	2	1	395	5.01	0.56
	Black Crappie				10	1	4	79	58	29	18	14	10	6	229	2.89	0.35		

(wfdtpntb.d06)

Table 36. CPUE for size groups of crappie collected from multiple years of trap netting on Barkley Lake. Includes mean lengths at capture for age 2 crappie and % of trap netting catch that is age-4 or older (catch excludes age-0 fish).

Year	CPUE ≥ 8.0 in			CPUE ≥ 10.0 in			Mean Length @ age 2		% Age 4 and Older		
	WC	BC	WC&BC	WC	BC	WC&BC	WC	BC	WC	BC	WC&BC
1985	3.39	0.12	3.51	1.22	0.05	1.27	7.5	6.1	0.10	0.04	0.20
1986	5.88	0.16	6.04	2.29	0.04	2.33	7.7	6.8	1.05	0.00	1.00
1987	2.04	0.35	2.39	1.51	0.11	1.63	8.5	7.6	0.78	0.00	0.72
1988	3.46	0.16	3.63	1.48	0.09	1.56	8.4	8.5	3.01	8.33	3.22
1989	1.26	0.11	1.38	0.50	0.05	0.55	6.9	7.7	10.70	0.00	9.95
1990	4.55	0.15	4.71	1.95	0.01	1.96	8.4	8.9	0.00	0.00	0.00
1991	3.19	0.23	3.41	1.06	0.06	1.13	7.6	7.3	0.98	0.00	0.69
1992	2.10	1.99	4.09	0.91	0.39	1.30	8.2	7.5	0.00	0.00	0.00
1993	1.35	0.49	1.85	0.52	0.27	0.78	8.3	7.6	0.59	13.73	3.64
1994	3.41	0.82	4.23	1.13	0.65	1.78	7.4	7.4	1.06	10.91	3.53
1995	4.44	0.74	5.18	1.01	0.22	1.23	8.4	7.2	0.22	2.05	0.47
1996	5.60	0.74	6.34	2.89	0.18	3.06	7.9	7.1	0.67	0.00	0.46
1997	2.51	0.60	3.11	1.10	0.11	1.20	7.9	7.3	0.26	1.47	0.44
1998	4.50	1.51	6.01	1.25	0.21	1.46	7.9	7.2	5.11	0.63	2.99
1999	1.92	1.00	2.92	1.35	0.09	1.44	7.5	7.1	1.03	1.65	1.27
2000	2.03	1.86	3.89	0.79	0.60	1.39	7.7	7.3	9.19	0.95	3.99
2001	1.08	1.55	2.63	0.94	1.03	1.96	7.6	8.1	2.17	7.78	5.79
2002	2.56	2.74	5.30	1.10	0.64	1.74	6.4	6.5	2.71	6.80	4.88
2003	2.26	1.63	3.89	1.09	1.13	2.21	8.8	8.3	4.20	4.27	4.24
2004	5.47	1.82	7.29	1.04	0.74	1.78			1.83	3.43	2.30
2005	3.8	1.4	5.2	2.75	0.62	3.37	8.9	7.7	0.00	0.01	0.01
2006	2.68	0.96	3.64	0.96	0.38	1.34	7.8	8.4	0.01	0.01	0.02
Average	3.2	1.0	4.1	1.3	0.3	1.7	7.9	7.5	2.1	2.8	2.3

(Barkley_Crappie_Database.xls)

Table 37. Proportional stock density (PSD) and relative stock density (RSD) of white and black crappie collected by trap-nets (80 net-nights) at Lake Barkley from 31 October-3 November 2006. Numbers in parentheses represent 95% confidence intervals.

Location	Species	N	PSD	RSD ₁₀
Barkley Lake	White Crappie	390	54.9 (±5.0)	19.7 (±3.9)
	Black Crappie	218	35.3 (±6.3)	13.8 (±4.6)

(wfdtpntb.06)

Table 38. Mean back-calculated length (in.) at each annulus of black crappie collected by trap-netting (80 net-nights) at Lake Barkley from 31 October-3 November 2006, including the range in length of black crappie at each age and the 95% confidence interval of each age group^A.

Year-Class	N	Age			
		1	2	3	4
2005	48	4.3			
2004	24	4.9	8.5		
2003	5	4.8	8.2	10.5	
2002	2	4.5	7.4	10.5	12.0
Mean		4.5	8.4	10.5	12.0
Smallest		3.1	6.6	9.2	11.6
Largest		6.6	10.5	11.5	12.3
Std. Error		0.1	0.2	0.3	0.4
Low 95% CI		4.4	8.0	10.0	11.3
High 95% CI		4.7	8.7	11.1	12.7

^A Otoliths were used to make age determinations. Intercept = 0.

(wfdtpntb.d06) (wfdtnagb.d06)

Table 39. Mean back-calculated length (in.) at each annulus of white crappie collected by trap-netting (80 net-nights) at Lake Barkley from 31 October- 3 November 2006, including the range in length of white crappie at each age and the 95% confidence interval of each.

Year-Class	N	Age				
		1	2	3	4	5
2005	60	4.1				
2004	25	4.2	7.4			
2003	19	4.6	8.2	10.3		
2001	2	5.1	9.3	11.0	12.5	13.3
Mean		4.2	7.8	10.3	12.5	13.3
Smallest		2.5	4.4	6.2	12.2	12.9
Largest		6.2	11.7	12.9	12.7	13.6
Std. Error		0.1	0.3	0.3	0.2	0.4
Low 95% CI		4.1	7.3	9.7	12.0	12.6
High 95% CI		4.4	8.3	11.0	12.9	14.0

^A Otoliths were used to make age determinations. Intercept = 0.

(wfdtpntb.d06) (wfdtnagb.d06)

Table 40. Age frequencies and CPUE of black crapple collected during 80 net-nights at Lake Barkley during 31 October-3 November 2006.

Age	Inch Classes										Total	Percent	Cum. Percent	CPUE	Std. Error	
	3	4	5	6	7	8	9	10	11	12						
0	10	1										11	4.8	4.8	0.1	0.1
1			4	79	58	24	10	1				176	77.2	82.0	2.2	0.3
2						5	8	11	9	1		34	14.9	96.9	0.4	0.1
3										1	1	5	2.2	99.1	0.1	0.0
4												2	0.9	100.0	0.0	0.0
Total	10	1	4	79	58	29	18	13	10	6		228				
%	4	0	2	35	25	13	8	6	4	3						

(wfdtpntb.d06) (wfdtnagb.d06)

Table 41. Age frequencies and CPUE of white crapple collected during 80 net-nights at Lake Barkley during 31 October-3 November 2006.

Age	Inch Classes												Total	Percent	Cum. Percent	CPUE	Std. Error	
	2	3	4	5	6	7	8	9	10	11	12	13						14
0	2	2	1	2										7	1.8	1.8	0.1	0.0
1				17	83	68	48	82	5					303	76.7	78.5	3.8	0.5
2						6		7	34	6	4			57	14.4	92.9	0.7	0.1
3									7	6	12	1		26	6.6	99.5	0.3	0.1
4														0	0.0	99.5	0.0	0.0
5												1	1	2	0.5	100.0	0.0	0.02
Total	2	2	1	19	83	74	48	89	46	12	16	2	1	395				
%	1	1	0	5	21	19	12	23	12	3	4	1	0					

(wfdtpntb.d06) (wfdtnagb.d06)

Table 42. Population assessment for white crappie from Lake Barkley trap-net data collected in November 2001-2006.

Parameter	2001		2002		2003		2004		2005		2006	
	Actual Value	Score	Actual Value	Score	Actual Value	Score	Actual Value	Score	Actual Value	Score	Actual Value	Score
Population Density (CPUE of age-1 and older crappie)	1.14	1	2.73	1	2.94	1	6.48	2	4.3	1	2.7	1
Recruitment (CPUE of age-1 crappie)	0.69	1	1.49	1	1.84	1	5.15	2	1.7	1	3.8	2
Recruitment (CPUE of age-0 crappie)	19.49	4	0.81	1	9.89	3	1.73	1	7.4	3	0.1	1
Size Structure (CPUE of > 8.0 inches)	1.08	1	2.56	2	2.26	2	5.47	3	3.8	2	2.7	2
Growth (Mean age-2 length at capture)	11.3	4	10.4	4	11.1	4	11.1	4	10.6	4	10.7	4
Instantaneous Mortality (Z)		1.04		1.33		1.2		1.52		1.4		1.0
Annual Mortality (A)%		83.6		73.6		70		78.3		75.4		63.3
Total Score:		11		9		11		12		11		10
Assessment Rating:		F		F		F		F		F		F

(Barkley_Crappie_Database.xls)

Table 43. Population assessment for black crapple from Lake Barkley trap-net data collected in November 2001-2006.

Parameter	2001		2002		2003		2004		2005		2006	
	Actual Value	Score	Actual Value	Score	Actual Value	Score	Actual Value	Score	Actual Value	Score	Actual Value	Score
Population Density (CPUE of age-1 and older crapple)	2.11	1	3.12	1	4.39	1	2.70	1	2.2	1	4.9	1
Recruitment (CPUE of age-1 crapple)	0.88	1	2.13	1	2.96	1	1.17	1	1.4	1	2.2	1
Recruitment (CPUE of age-0 crapple)	8.03	3	0.94	1	2.14	1	1.50	1	1.2	1	0.1	1
Size Structure (CPUE of > 8.0 inches)	1.55	1	2.74	2	1.63	1	1.82	1	1.4	1	1.0	1
Growth (Mean age-2 length at capture)	10.2	4	10.0	4	10.3	4	10.3	4	9.7	4	10.5	4
Instantaneous Mortality (Z)		0.92		0.82		1.12		1.11		1.18		1.61
Annual Mortality (A)%		68.2		62.0		55.9		67.2		69.5		80.0
Total Score:		10		9		8		8		8		8
Assessment Rating:		F		F		F		F		F		F

(Barkley_Crappie_Database.xls)

Table 44. Population assessment for all crappie from Lake Barkley trap-net data collected in November 2001-2006.

Parameter	2001		2002		2003		2004		2005		2006	
	Actual Value	Score	Actual Value	Score	Actual Value	Score	Actual Value	Score	Actual Value	Score	Actual Value	Score
Population Density (CPUE of age-1 and older crappie)	3.25	1	5.85	2	7.33	2	9.18	2	6.5	2	7.6	2
Recruitment (CPUE of age-1 crappie)	1.57	1	3.62	2	4.80	2	6.32	2	3.1	2	6.0	2
Recruitment (CPUE of age-0 crappie)	36.66	4	1.90	1	12.03	4	3.23	2	8.6	3	0.2	1
Size Structure (CPUE of > 8.0 inches)	2.63	2	5.30	3	3.89	2	7.29	3	5.2	3	3.6	2
Growth (Mean age-2 length at capture)	10.4	4	10.2	4	10.7	4	10.7	4	10.7	4	10.6	4
Instantaneous Mortality (Z)	1.34		1.01		1.14		1.51		1.42		1.49	
Annual Mortality (A)%	74.0		64.0		68.0		77.8		75.8		77.5	
Total Score:	12		12		14		13		14		11	
Assessment Rating: (Barkley_Crappie_Database.xls)	F		F		G		G		G		G	

Table 45. Species composition, relative abundance, and CPUE (fish/hour) of black bass collected during diurnal electrofishing at Lake Beshear during 2006.

Season	Species	Inch Class																				Total	CPUE	StdErr	
		3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22				
Spring	Largemouth bass	1	10	34	15	9	8	21	6	3	7	4	7	6	14	20	21	12	9	2	1	210	84.0	13.3	
Fall	Largemouth bass	16	24	6	1	13	6	5	3	1	7	7	2	4	2	2	2	1					100	50.0	4.9

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Table 46. Spring diurnal electrofishing CPUE for each size class of largemouth bass collected at Lake Beshear. Nocturnal sampling was conducted from 1995 to 2002. CPUE = fish/hour/run

Year	Mean length age-3 at capture	age-1 CPUE	StdErr	Inch Groups												Total	
				≤8.0 CPUE	StdErr	≥12.0 CPUE	StdErr	12 - 14.9 CPUE	StdErr	≥15.0 CPUE	StdErr	≥18.0 CPUE	StdErr	≥20.0 CPUE	StdErr	CPUE	StdErr
1986				4.8		18.5		4.0		14.5		4.8		0.8		34.7	
1987				4.0		9.7		4.0		5.7		1.6		0.0		56.7	
1988				1.8		38.4		7.9		30.5		15.2		4.9		22.6	
1989				9.8		54.9		28.4		26.5		6.9		0.0		80.4	
1990		1.33		4.7	1.8	38.7	3.3	9.3	1.8	29.3	4.8	13.3	1.3	3.3	0.7	50.7	2.9
1991		7.50		15.0	2.4	34.0	5.7	10.5	1.9	23.5	4.0	10.5	3.9	5.0	2.1	65.0	6.0
1992		1.33		2.7	0.7	65.3	0.7	20.0	1.2	45.3	1.8	18.0	1.2	6.0	1.2	92.0	5.3
1993		4.00		6.5	1.7	37.5	13.7	6.0	2.9	31.5	10.8	17.0	5.6	5.0	2.6	48.0	15.4
1994		6.00		11.2	2.9	48.8	10.8	14.8	3.9	34.0	9.5	14.8	5.0	6.8	2.9	68.0	10.1
1995	9.5	15.60	8.3	13.5	3.7	51.0	16.5	15.5	4.1	35.5	12.6	16.5	5.9	4.0	1.8	87.0	21.6
1996		2.00		5.5	2.2	55.5	5.1	16.5	1.9	39.0	4.2	19.5	4.6	8.0	2.4	73.5	6.2
1997		2.50		4.5	2.5	39.0	7.0	10.5	2.9	28.5	4.8	14.0	2.6	4.0	1.8	53.5	8.3
1998		0.00		5.0	1.3	70.0	8.7	17.0	4.4	53.0	5.3	22.0	2.2	8.5	1.7	88.0	8.3
1999		3.50		4.0	1.8	39.5	6.7	14.0	2.9	25.5	4.9	8.0	2.7	1.0	1.0	55.0	8.8
2000		3.20		11.2	3.7	36.0	8.7	4.0	2.1	32.0	7.6	16.4	3.1	2.8	0.5	65.2	10.9
2001	14.1	1.00	2.0	5.0	2.4	26.0	6.1	10.5	2.5	15.5	3.8	5.5	1.3	1.5	1.0	73.0	6.7
2002		3.50		11.5	1.7	64.5	10.7	28.0	4.2	36.5	8.6	11.5	2.9	3.5	1.3	100.0	16.4
2003	14.0	0.80	3.8	5.2	2.9	33.6	7.8	8.0	1.9	25.6	7.2	3.6	0.7	2.0	1.1	45.2	9.5
2004		6.40		4.4	1.6	52.0	9.3	9.6	2.6	42.4	8.5	16.0	3.7	2.8	1.4	68.4	11.7
2005		38.80		30.8	4.9	51.6	6.2	7.2	2.1	44.4	5.9	19.6	2.4	3.6	1.2	94.8	8.5
2006	12.7	24.80	15.3	27.6	8.2	41.2	5.6	7.2	2.9	34.0	3.0	18.0	1.9	4.8	1.5	84.0	13.3
Average	12.6	7.2		9.0		43.1		12.0		31.1		13.0		3.7		66.9	

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Table 47. Mean back-calculated length (in) at each annulus of largemouth bass, including the range in length at each age, and the 95% confidence interval of each age group, for fish caught during April at Lake Beshear.

Year-Class	N	Age															
		1	2	3	4	5	6	7	8	9	10	11					
2005	17	5.4															
2004	15	4.9	8.6														
2003	17	5.3	9.2	12.7													
2002	7	7.1	11.9	15.5	16.9												
2001	6	6.2	10.2	14.2	16.1	16.9											
2000	6	6.8	10.9	14.1	16.1	17.6	18.5										
1999	2	6.4	11.3	15.0	17.2	18.6	19.5	20.3									
1998	2	6.4	10.3	14.0	15.9	17.1	18.1	18.9	19.4								
1995	1	6.2	9.2	12.7	15.7	17.1	17.5	17.9	18.3	18.7	19.1	19.3					
Mean		5.7	9.8	13.8	16.4	17.4	18.5	19.3	19.0	18.7	19.1	19.3					
Number		73	56	41	24	17	11	5	3	1	1	1					
Smallest		3.9	6.9	10.2	14.2	15.2	17.0	17.9	18.2								
Largest		8.3	13.9	17.6	18.4	19.6	20.2	21.1	20.5								
Std. Error		0.1	0.2	0.3	0.2	0.3	0.3	0.6	0.7								
Low 95% CI		5.4	9.4	13.3	15.9	16.8	17.9	18.0	17.5								
High 95% CI		5.9	10.2	14.3	16.9	18.0	19.2	20.5	20.5								

Otoliths were used to make age determinations. Intercept = 0.

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Table 48. Age frequencies and CPUE of largemouth bass collected from Lake Beshear in May 2006 during 2.5 hours of diurnal sampling.

Age	Inch Class																					Total	%	CPUE	StdErr
	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21						
1	1	10	34	15	2																62	29.5	24.8	7.8	
2					7	8	21	3													39	18.6	15.7	2.7	
3								3	3	7	4	7	2								26	12.4	10.2	3.4	
4													2	11	4	4					21	10.0	8.4	1.1	
5													3	3	8	4					18	8.6	7.2	1.2	
6															8	8	4	5			25	11.9	10.0	1.2	
7																	4		2		6	2.9	2.4	0.6	
8																4		5			9	4.3	3.5	0.7	
11																	4				4	1.9	1.6	0.5	
Total	1	10	34	15	9	8	21	6	3	7	4	7	7	14	20	20	12	10	2		210				
%	0	5	16	7	4	4	10	3	1	3	2	3	3	7	10	10	6	5	1		100				

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Table 49. Population assessment determined from largemouth bass based on spring sampling at Lake Beshear from 2002-2006.

Parameter	2006		2005		2004		2003		2002	
	Value	Score	Value	Score	Value	Score	Value	Score	Value	Score
Length at Age 3	12.7	4	14.0	4	14.0	4	14.0	4	14.0	4
Spring CPUE of Age 1 fish	24.8	2	38.8	2	6.4	1	0.8	1	3.5	1
Spring CPUE 12-14.9-in fish	7.2	1	7.2	1	9.6	1	8.0	1	28.0	2
Spring CPUE ≥ 15.0-in fish	34.0	4	44.4	4	42.4	4	25.6	3	36.5	4
Spring CPUE ≥ 20-in fish	4.8	4	3.6	3	2.8	3	2.0	3	3.5	3
Instantaneous Mortality (z)	0.344		0.262		0.430		0.547		0.803	
Annual Mortality (A)%	29.1		23.0		34.9		54.7		55.2	
Total Score		15		14		13		12		14
Assessment Rating		G		G		G		G		G

Rating

- 5-7 = Poor (P)
- 8-11 = Fair (F)
- 12-16 = Good (G)
- 17-20 = Excellent (E)

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