EVALUATION OF SUPPLEMENTALLY STOCKED LARGEMOUTH BASS

Name and Description of Water Area: **LAKE MATTOON** is located approximately eight miles southwest of Mattoon and about 1.5 miles northwest of Neoga, in Shelby, Coles, and Cumberland Counties. The lake covers 1050 surface acres with a maximum depth of 31 feet and average depth of 11.4 feet. Lake Mattoon along with Lake Paradise are the primary water supply for the City of Mattoon. Recreational opportunities include; fishing, boating, skiing, and limited waterfowl hunting. A large portion of the lake shoreline has been developed for residential use. Public boat launching facilities are available. Availability of natural habitat has been variable in recent years in this lake. An aquatic plant rehabilitation plan has been implemented and is in the initial stages.

Largemouth Bass Stocking History: Supplemental stockings of largemouth bass have occurred in nine of the past ten years. 1999 marks the eighth consecutive year of stockings. Below is a table of Lake Mattoon's largemouth bass stocking history.

Stocking Date	Number Stocked	Size Stocked
1990	8,000 1,800	3 inch 6-8 inch
1991	0	
1992	7,650	6-7 inch
1993	6,940	4-7 inch
1994	7,650	5 inch
1995	15,300	4 inch
1996	15,333	4 inch
1997	15,300 (7700 f.b.)	4 inch
1998	17,000	4 inch
1999	15,300	4 inch

Rational for Stocking: Years of poor natural recruitment of young largemouth bass resulted in low densities of largemouth bass in Lake Mattoon. Poor catch per effort in electrofishing surveys, high body condition factor, and high size structure indices all provided biological support of this conclusion. The

14" minimum length limit, implemented in 1986, did not appear to be helping the decimated population to recover on it's own. Successive supplemental stockings over a five-year span are beingevaluated as to their potential to revitalize the largemouth bass population. Increased densities, coupled with protective size limits, may allow this fishery to become self-sustaining once again. During the summer 1997, leafy pondweed flourished in the lower basin of the lake. This appears to have boosted the survival of the 1997 year class of bass. Their recruitment into the fishery appears to have ben good.

Method of Assessment: This fishery has been evaluated every two years through two 60 minute electrofishing surveys. Supplemental electrofishing surveys have been performed every other year to evaluate stocking success for largemouth bass and striped bass hybrids.

Summary of Assessment Results: Although the analyses are not complete, the supplemental survey conducted in October 1999 indicated that largemouth bass densities have increased slightly due to improved recruitment of the 1998 and 1997 year-classes. Catch-per-unit-of-effort increased to 88.6 adult bass per hour as compared to 61 adult bass collected per hour in 1998. Catch per unit of effort in October 1997 was 59 adult bass per hour of electrofishing. This is up from the 38 in 1996 and down somewhat from the 73 in 1995. In 1994, 46 bass were collected per hour. The three surveys prior to 1994 averaged 29 bass per hour, but were conducted during summer. Good numbers of all sizes of bass from 4 to 20 inches (4.5 lbs.) were collected in the 1999 survey.

The numbers of young-of-the-year bass collected were down from 1998 and 1997. In 1999, only 12 YOY largemouth bass were collected (8.6/hr). It is difficult to determine the contribution of hatchery fish as no hatchery fish were marked in 1999 or 1998. In 1998 20 YOY bass (10/hr) were collected. In 1997, of the 54 young-of-the-year (70-164mm) bass collected in 1997, 7% had recognizable freeze brands. Since only approximately 50% of the bass received from the hatchery were marked, approximately 14% of the YOY bass collected were hatchery stock. Of the 13 young-of-the-year (100-200mm) bass collected in 1996, 0% had recognizable freeze brands. In 1995, 16% had recognizable freeze brands. No larger individuals collected had a recognizable freeze brand.

Body condition of Lake Mattoon bass is high, indicating continued room for additional numbers of bass.

EVALUATION OF SUPPLEMENTALLY STOCKED LARGEMOUTH BASS

Lake Mattoon

Comparison with Stocking Success Criterion: Catch per unit effort for electrofishing surveys in 1994 through 1999 was at or exceeded the desired 60 bass per hour as stated in management objectives in three of five years stocked. Only in 1994 and 1996

did CPUE fall significantly below 60 bass/hr.

Bass condition (Wr) appears to fall within the desired range (100-110), indicating a population at or below carrying capacity. The condition of these bass is typical for a lake with poor recruitment and an under utilized forage base.

The 1997 and 1998 year classes may change the overall size structure over the next several years. For the second year in a row PSD estimates (40:1999;48:1998) have fallen within the desired range (40-60%). Previously high PSD estimates (77%) indicate poor recruitment of prior year classes.

It appears that although there was a significant improvement in recruitment in 1997 and 1998, recruitment problems have not ended on Lake Mattoon. It is hoped that continued expansion of lake coverage and diversity of aquatic plants will help this population become self-supportive. The contribution of hatchery stocked bass appears to be important in maintaining the quality of this fishery although it has not improved recruitment enough to develop a self-sustaining population. Recent stocking results on other lakes indicate that stocking larger bass is required to develop self-sustaining populations.

I believe that this lake meets the stocking success criteria and should continue to be stocked on that merit until natural recruitment is stabilized at self-sustaining levels.

EVALUATION OF SUPPLEMENTALLY STOCKED
LARGEMOUTH BASS

Name and Description of Water Area: **LAKE DECATUR** is located on the east side of the City of Decatur, in Macon County. The lake covers 2905 surface acres with a maximum depth of 22 feet and average depth of six feet. Lake Decatur is the primary water supply for the City of Decatur. Recreational opportunities include; fishing, boating, skiing, and limited waterfowl hunting. A large portion of the lake shoreline has been developed for residential use. Public boat launching facilities are available.

Largemouth Bass Stocking History: Supplemental stockings of largemouth bass have occurred for nine of the last ten years, with the past eight years in succession. Below is a table of Lake Decatur's largemouth bass stocking history.

Stocking Date	Number Stocked	Size Stocked
1990	15,000	3 inch
1991	0	
1992	11,100	4 - 6 inch
1993	28,300	3 - 8 inch
1994	11,400	3 - 8 inch
1995	54,900	4 inch
1996	61,950	4 inch
1997	61,880(31010 f.b.)	4 inch
1998	61,860 (0 f.b.) 300 (l.p.c.)	4 inch 6 inch
1999	61,861 9,320 (88% r.p.c.)	4 inch 6.2 inch

Rational for Stocking: Years of poor natural recruitment of young largemouth bass resulted in low densities of largemouth bass in Lake Decatur. Poor catch per effort in electrofishing surveys, high body condition factor, and high size structure indices all provided biological support of this conclusion. The 14" minimum length limit, implemented in 1985, did not appear to be helping the decimated population to recover on it's own. Supplemental stockings over a consecutive five year span are being evaluated as to their potential to revitalize the

largemouth bass population. Increased densities, coupled with protective size limits, may allow the fishery to become self-sustaining once again.

Method of Assessment: This fishery has been evaluated every two years through three 60 minute electrofishing surveys. Supplemental electrofishing surveys have been performed every other year to evaluate stocking success for largemouth bass, walleye, and striped bass hybrids.

Summary of Assessment Results: Although the analyses are not complete, the supplemental survey in 1999 resulted in very poor catch rates (26.7/hr). This is in stark contrast to recent surveys with much higher catch rates. The fall population survey in September 1998 had poor catch rates (43/hr) for largemouth bass, but not as low as 1999. However the supplemental survey in October, 1998 resulted in excellent catch rates of 96 bass/hr of effort! The supplemental survey in October 1997 had a catch rate similar to the September survey, with 46 bass/hr having been collected.

I do not believe that the CPUE of 1999 is reflective of a decrease in bass densities on this lake. I still believe that densities are improved over years prior to significant stockings of largemouth bass and are not like changed significantly from recent years. These results are well below the average of CPUE (81 bass per hour) in the 1994-98 supplemental surveys. Weather may have been a significant factor in the reduced catch rates in 1999. These results are up significantly from the 20 adult bass per hour average from the four surveys prior to 1994.

A reduced size range of bass from 4 to 18.7 inches (4.3 lbs.) were collected in this survey. The reduction in the number of large bass collected in this survey, indicates that environmental effects on sampling efficiency are again likely the cause of reduced CPUE since mortality rates of larger bass is usually low.

Hatchery bass were not freeze branded this year, so the percent contribution cannot be calculated. Most (88%) of the bass produced in the Lake Decatur Nursery Pond in 1999 received a right pelvic fin clip. YOY bass with fin clips comprised 60% of the YOY bass recovered during the supplemental survey. This would result in approximately 75% of the bass collected having originated from the Lake Decatur Nursery Pond. No adult bass

were captured with pelvic clips or obvious freeze brands. A similar number of YOY bass were collected (40/hr) in this survey as compared to the 1998 supplemental survey (36/hr) and the 1997 supplemental survey (33/hr).

Historically the contribution of hatchery bass has been significant in the fall supplemental surveys. Of the 101 young-of-the-year (80-180mm) bass collected in the supplemental survey in 1997, 15% had recognizable freeze brands. Since only approximately 50% of the bass received from the hatchery were marked, approximately 30% of the YOY bass collected were hatchery stock.

Comparison with Stocking Success Criterion: In three of the last six surveys, the catch per unit effort for electrofishing surveys fell above the desired 60 bass per hour, as stated in management objectives. Size structure indices (PSD=49) fall within management objectives of (40-60) for the fourth year in a row.

Although I do not believe that the quality of this fishery is a high as desired, it has improved significantly over the past few years and is in position to improve even further. The addition of the Lake Decatur Nursery pond should contribute positively to this trend. Continued stockings through IDNR hatcheries should also help improve this population, although larger fingerlings would likely work better. I believe that this lake meets the stocking success criteria and should continue to be stocked on that merit until natural recruitment is stabilized.

Name and Description of Water Area: **CHARLESTON SIDE CHANNEL LAKE** is located approximately three miles southeast of Charleston, in Coles County. The lake covers 330 surface acres with a maximum depth of 16 feet and average depth of 7.7 feet. The Charleston Side Channel Lake is the primary water supply for the City of Charleston. Recreational opportunities include; fishing and limited boating. Public boat launching facilities are available. There is a no wake regulation in effect on the entire lake.

Largemouth Bass Stocking History: Supplemental stockings of largemouth bass have occurred in nine of the past ten years. 1999 marks the eighth consecutive year in which largemouth bass fingerlings have been stocked in the Charleston Side Channel Lake. Below is a table of Charleston Side Channel Lake's largemouth bass stocking history.

Stocking Date	Number Stocked	Size Stocked
1990	3,500	3 inch
1991	0	
1992	22,450	3 inch
1993	13,840	3.5 inch
1994	13,840	3.5 inch
1995	6,920	4 inch
1996	**6,920**	**6 inch**
1997	6,930 (6930 f.b.)	4.2 inch
1998	10,000 (O.T.C.) 6,920 (R.P.C.) 3,100 (B.P.C.)	2.1 inch 4.1 inch 6.0 inch
1999	1529 (L.P.C.) 7000 (no marks)	8.0 inch 4.0 inch

Rational for Stocking: Years of poor natural recruitment of young largemouth bass resulted in low densities of largemouth bass in Charleston Side Channel Lake. Poor catch per effort in electrofishing surveys, high body condition factor, and high size structure indices all provided biological support of this conclusion. The 14" minimum length limit, implemented in 1989,

did not appear to be helping the decimated population to recover on it's own. Supplemental stockings over a consecutive five year span are being evaluated as to their potential to revitalize the largemouth bass population. Increased densities, coupled with protective size limits, may allow the fishery to become self-sustaining once again.

In 1998, the Illinois Natural History Survey began an evaluation of largemouth bass stocking strategies. They stocked 2,4,6, and 8 inch bass fingerlings to compare the relative contribution of each size group to the population. This stocking strategy will be repeated in fall 2000 and spring 2001. This should provide the IDNR with valuable information regarding current stocking practices as well as provide a substantial boost to the bass fishery in this lake.

Method of Assessment: This fishery has been evaluated every two years through two 60 minute electrofishing surveys. Supplemental electrofishing surveys have been performed every other year to evaluate stocking success for largemouth bass and striped bass hybrids.

Summary of Assessment Results: Although the analyses are not complete, the fall standardized survey in 1999 indicated that largemouth bass densities continue to improve. Catch-per-unit-effort averaged 71.4 adult bass per hour of electrofishing. This is similar to the results obtained in the supplemental survey conducted in October 1998 with a CPUE of 75 adult bass per hour of electrofishing. These results are somewhat improved over the 1997 supplemental survey when the CPUE averaged 65 adult bass per hour of electrofishing. The results of each successive year's surveys keeps improving over previous surveys. In 1996, CPUE averaged 55 adult bass per hour of electrofishing. This is higher than the 41 per hour in 1995, and much higher than 22 adult bass per hour average from the four previous surveys.

Again, a lower percentage of large bass were collected, but good numbers of 8-14 inch bass were collected. Most notably, the previous three, 1998, 1997, and 1996 year classes contributed much higher than any previous age I+ or II+ year classes have. Natural recruitment was high in 1997, but in 1996 and 1998 the larger bass stocked seems to have made a significant difference in recruitment rates. Sizes of bass collected ranged from 4 to 21 inches (4.7 lbs.).

A poor number of young-of-the-year bass (n=12, CPUE=6/hr) were collected as compared to 1998 (n=114, CPUE=81). This is a severe

reduction over recent years. The 1997 collection resulted in 96 YOY collected with a CPUE of 56/hr. Of the young-of-the-year (94-187mm) bass collected in 1998, 88% had recognizable marks.

This contrast significantly with 1997 percentage of YOY marked (20%), but similar to 1996 when 86% of the young-of-the-year bass collected, had recognizable freeze brands. In 1995, 63% the young-of-the-year (90-189mm) bass collected had recognizable freeze brands. The percent contribution of hatchery bass has been largest in both years when 6-inch bass have been stocked as compared to 1997 and 1995 when hatchery bass were marked.

Body condition is excellent, indicating continued room for additional numbers of bass.

Comparison with Stocking Success Criterion: The catch per unit effort for electrofishing surveys was over or within the desired 60 bass per hour range, as stated in management objectives, in four of the last six surveys. This could be attributed at least in part to the higher catch rate of age I+, II+, and III+ bass.

Size structure indices (PSD=58%) fell with the desirable range (40-60) for the third time, thanks to significantly improved recruitment of the 1996, 1997, and 1998 year classes. The angling quality of this population should improve significantly over the next several years.

I believe that this lake meets the stocking success criteria and should continue to be stocked on that merit until natural recruitment is stabilized.