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**ILLINOIS
NATURAL HISTORY
SURVEY**

**THE LONG-TERM ILLINOIS RIVER FISH
POPULATION MONITORING PROGRAM**

Project F-101-R-16

Annual Report to the
Illinois Department of Natural Resources

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May 2005



The Long-Term Illinois River Fish Population Monitoring Program

F-101-R-16

Annual Report

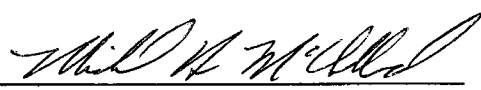
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DISCLAIMER

The findings, conclusions, and views expressed herein are those of the researchers and should not be considered as the official position of the United States Fish and Wildlife Service or the Illinois Department of Natural Resources.

ACKNOWLEDGMENT OF SUPPORT

The Long-term Illinois River Fish Population Monitoring Program (F-101-R) is supported by the Federal Aid in Sport Fish Restoration Act ((P.L. 81-6814, Dingell-Johnson/Wallop-Breaux).

EXECUTIVE SUMMARY

Between 3 September and 5 October 2004, 27 sites on the Illinois River Waterway and one site on Reach 26 of the Mississippi River were electrofished to monitor fish communities. A total of 3,655 fish representing 53 species (plus 1 hybrid) from 13 families were collected during 26.8 hours of sampling. Collections made in 2004 indicated a continued abundance of gizzard shad and bluegill throughout most of the waterway with higher numbers of freshwater drum in the lower waterway. Common carp and goldfish, species which were once dominant, continue to remain relatively low in abundance throughout the Illinois River Waterway, contributing only 4.9% and 0.2% of the total catch respectively. For the first time during project F-101-R sampling along the waterway, round gobies were collected from three sites, Ballard's Island (RM 248.0, Marseilles Reach), Mouth of the DuPage River (RM 277.3, Dresden Reach), and Treat's Island (RM 279.8, Dresden Reach). Silver carp were again collected for the third time since project F-101-R began in the Alton and La Grange Reaches. The sample from Lower Peoria Lake (RM 163.3, Peoria Reach) yielded the most fish (357, 9.8% of the total collected from all 28 sites). Species richness at sites ranged from 21 at Chillicothe Island (RM 180.6, Peoria Reach) to 8 at Turkey Island (RM 148.0, La Grange Reach). Species richness of the lower, middle, and upper waterway was 27, 41, and 33 respectively. In 2004, cyprinid numbers continued to remain relatively high in the upper waterway, with bluntnose minnow being the most abundant cyprinid making up 16.1% of the total upper waterway catch. Bluntnose minnows were also the most abundant species overall in Marseilles Reach at 32.8%. Spotfin shiners were the most abundant species for Starved Rock Reach, making up 25.6% of the total catch. Bluegill ranked highest overall in relative abundance for the upper waterway (17.7%) and first in Dresden Reach (29.9%). Important sportfish species such as black crappie, bluegill, largemouth bass, and channel catfish were collected in all six waterway reaches in 2004. Bluegill catch per unit effort in number ($CPUE_N$) ranged from 67.00 in Dresden Reach (upper waterway) to 2.50 in Alton Reach (lower waterway). Largemouth bass $CPUE_N$ ranged from 22.50 in Dresden Reach to 0.75 in La Grange Reach (middle waterway). Channel catfish $CPUE_N$ ranged from 10.67 in Alton Reach (lower waterway) to 2.00 in Marseilles Reach (upper waterway). Black crappie $CPUE_N$ ranged from 3.50 in Dresden Reach (upper waterway) to 0.17 in Alton Reach (lower waterway). In terms of pounds of fish collected per hour ($CPUE_w$), common carp ranked first in La Grange, Peoria, Marseilles, and Dresden Reaches and second in Alton Reach. Silver carp ranked first and comprised 31.2% of the total catch in weight for Alton Reach with a $CPUE_w$ of 12.54 pounds per hour. Gizzard shad ranked first and comprised 25.8% of the total catch in weight for Starved Rock reach with a $CPUE_w$ of 2.70 pounds per hour. Largemouth bass ranked second and comprised 21.3% of the total catch in weight for Dresden Reach with a $CPUE_w$ of 11.94 pounds per hour. No fish collected in 2004 exhibited externally visible abnormalities, which may indicate improved water quality, especially in the upper waterway.

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^aJob numbers and titles refer to the F-101-R-16 annual work plan dated 05 January 2005

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INTRODUCTION

This report presents a summary of data collected in 2004 during segment 16 of federal aid project F-101-R, The Long-term Illinois River Fish Population Monitoring Program. Previous summaries of the long-term data set, begun in 1957, were given by Sparks and Starrett (1975), Sparks (1977), Sparks and Lerczak (1993), Lerczak and Sparks (1994), Lerczak et al. (1994), Koel and Sparks (1999), and McClelland and Pegg (2004). The annual reports for project F-101-R will continue to build on previously collected data with major analyses of the long-term data set scheduled at five-year intervals with the next summary due at the end of segment 20. The format used in this report is patterned after previous annual reports of this project (Lerczak et al. 1993, 1994, 1995, and 1996; Koel et al. 1997 and 1998; Koel and Sparks, 1999; Arnold et al. 2000; McClelland and Pegg 2001, 2002, 2003.) to allow for easy comparisons of data among years.

STUDY AREA AND METHODS

Twenty-seven sites at fixed locations were sampled for fish along the Illinois Waterway. Twenty-six of these site locations are defined by Sparks and Starrett (1975) and Lerczak et al. (1994). In 1999, the twenty-seventh site was added at Moore's Towhead in the Alton Reach, Illinois River mile 75.3, to more closely monitor fish communities near the Nature Conservancy's (TNC) floodplain restoration project (Spunky Bottoms); (Table 1). Twenty-five of the sites were along the Illinois River, with two additional sites on the lower Des Plaines River. The Des Plaines River, along with the Illinois River forms part of the Illinois Waterway. One additional site was on the

Table 1. Station information and characteristics during sampling in 2004. All stations except where noted are on the Illinois River and are listed in downstream-to-upstream order. Site miles are the average river mile and refer to Figure 1.

Sampling Order	Date	Site Mile	Name	Sample river mile		End time (CST)	Duration (h)	Temp (°F)		DO (ppm)	DO (% Sat.)	Secchi (cm)	Cond. (umhos)	Vel. (ft/s)		Depth ^b (ft) Stage ^c		
				lower	upper			mean	air					water	Volts	ft/s	min	max
Reach 26, Mississippi River																		
28	5-Oct	0.0	Brickhouse Slough ^a	204.9	205.3	205.1	10:57	1.00	57.4	62.1	9.53	98.40%	21.0	346	225	0.04	1.0	5.0
Alton Reach																		
18	23-Sep	19.0	Montland Island	18.1	19.5	18.8	16:49	1.00	80.0	75.2	7.70	100.16%	29.0	619	215	0.12	1.5	6.0
21	24-Sep	24.7	Dark Chute	24.5	25.5	25.0	12:45	1.00	77.2	74.8	7.15	90.63%	28.0	638	170	0.15	1.5	6.0
20	24-Sep	26.8	Hurricane Island	27.0	27.9	27.5	10:44	1.00	71.0	73.8	6.52	77.85%	31.0	626	170	0.23	1.0	6.0
19	24-Sep	30.0	Crater-Willow Island	29.2	30.8	30.0	8:54	1.00	67.9	73.6	6.78	78.46%	31.0	624	170	0.13	1.3	5.5
26	1-Oct	58.3	Big Blue Island	58.0	59.0	58.5	9:35	1.00	62.3	70.2	8.46	92.27%	30.0	679	160	0.03	1.0	5.0
27	4-Oct	75.3	Moore's Towhead				1:26	1.00	57.4	65.3	9.66	99.74%	27.0	656	185	0.10	0.5	5.5
La Grange Reach																		
6	10-Sep	86.5	Grape-Bar Islands	85.7	87.0	86.4	11:48	1.00	78.6	74.7	5.89	75.64%	24.0	606	180	0.26	1.0	6.0
5	10-Sep	95.1	Sugar Creek Island	94.5	95.0	94.8	9:15	1.00	62.4	74.1	5.44	59.40%	25.0	583	170	0.24	1.4	5.5
8	13-Sep	107.1	Lower Bath Chute	106.9	107.3	107.1	14:34	0.80	86.2	76.6	5.31	72.98%	24.0	610	215	0.21	1.5	5.5
7	13-Sep	113.0	Upper Bath Chute	112.8	113.2	113.0	12:40	1.00	83.2	76.8	6.63	88.76%	25.0	629	175	0.22	1.2	5.5
17	22-Sep	148.0	Turkey Island	148.0	148.3	148.2	12:40	0.50	79.0	74.6	8.20	105.69%	28.0	707	210	0.24	1.2	6.0
25	28-Sep	155.1	Pekin	154.5	155.3	154.9	15:42	1.00	75.0	71.1	9.84	122.16%	28.0	754	160	0.12	0.5	5.5
Peoria Reach																		
2	8-Sep	163.4	Lower Peoria Lake	163.5	163.6	163.6	13:17	1.00	74.3	70.3	7.68	94.70%	20.0	566	200	0.04	1.5	2.2
1	3-Sep	170.3	Lambie's Boat Harbor	170.6	170.8	170.4	10:35	1.00	78.9	76.9	5.14	66.19%	22.0	560	170	0.02	1.7	4.0
3	7-Sep	180.6	Chillicothe	180.6	181.1	180.9	9:26	1.00	66.4	74.2	5.59	63.69%	30.0	574	180	0.11	1.5	4.0
4	7-Sep	193.8	Henry Island	193.3	194.5	193.9	12:31	1.00	71.0	74.8	5.97	71.28%	22.0	601	175	0.42	1.3	6.0
13	17-Sep	202.8	Lower Twin Sister	202.4	203.2	202.8	12:02	1.00	74.1	77.0	8.28	101.91%	38.0	730	215	0.18	1.0	5.5
12	17-Sep	203.3	Upper Twin Sister	203.3	203.5	203.4	10:09	1.00	73.5	76.6	7.86	96.18%	36.0	729	215	0.12	1.5	6.0
11	15-Sep	207.7	Hennepin	207.6	208.1	207.9	13:43	1.00	77.0	77.9	8.74	110.58%	35.0	744	210	0.16	1.0	5.5
22	27-Sep	215.3	Clark Island	214.9	215.6	215.3	16:14	1.00	76.9	74.3	9.71	122.73%	40.0	787	140	0.17	1.5	6.0
Starved Rock Reach																		
10	14-Sep	240.8	Bulls Island	240.3	241.0	240.7	13:36	1.00	87.6	79.3	8.28	115.17%	41.0	735	205	0.08	1.0	6.0
9	14-Sep	241.5	Bulls Island Bend	241.1	241.6	241.4	12:10	1.00	79.1	78.8	7.72	99.60%	50.0	732	210	0.09	1.0	5.5
Marselles Reach																		
14	21-Sep	248.0	Ballards Island	247.7	248.2	248.0	9:53	1.00	73.3	77.4	9.60	117.24%	101.0	806	210	0.18	0.5	5.0
15	21-Sep	249.7	Johnson Island	249.7	249.8	249.8	11:24	0.50	79.0	77.7	9.36	120.64%	82.0	788	215	0.11	0.5	3.0
16	21-Sep	260.6	Waupecan Island	260.2	261.1	260.7	14:07	1.00	79.1	79.2	9.12	117.66%	88.0	815	210	0.18	1.0	5.5
Dresden Reach																		
23	28-Sep	277.4	Du Page River ^d	276.8	277.8	277.3	9:21	1.00	60.2	79.9	7.62	81.21%	60.0	878	140	0.12	1.0	5.5
24	28-Sep	279.9	Treats Island ^e	279.6	280.1	279.9	11:48	1.00	67.2	80.8	7.42	85.24%	55.0	874	140	0.12	1.0	5.0
Minimum								0.5	57.4	62.1	5.1	59.40%	20	346	140	0.02	0.5	2.2
Maximum								1.00	87.6	80.8	9.8	122.70%	101	878	225	0.42	1.7	6.0
Mean								0.96	73.4	74.9	7.7	73.5%	38.25	678	187	0.15	1.1	5.3
Total time electrofished																		
26.80																		

^aRefers to approximate average river mile electrofished at each site, 1957-2004.

^bEstimated during sampling.

^cFeet above sea level at the U.S. Army Corps of Engineers river gage nearest to the sampling site.

^dMississippi River.

^eDes Plaines River.

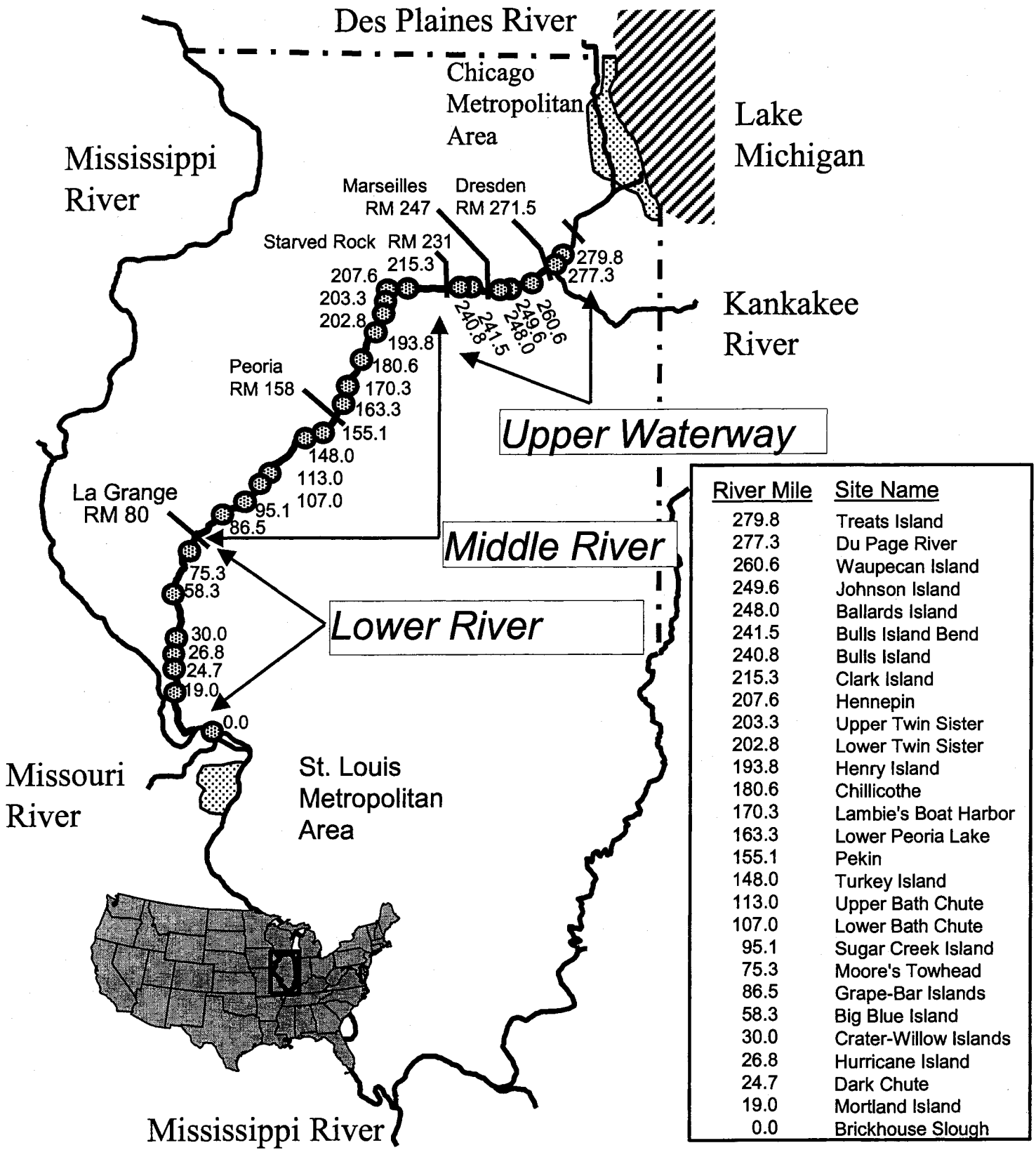


Figure 1. Three segments of the Illinois River Waterway sampled by electrofishing to monitor fish communities in 2004.

remaining sites were in other habitats, including the main channel border, or in a combination of habitat types (see Lerczak et al. 1994).

Following water quality measurements (e.g., dissolved oxygen) at each site, fish populations were sampled by electrofishing from a 16-ft (5-m) aluminum boat using a 3000-watt, three-phase AC generator. Sampling at each site typically lasted one hour. Stunned fish were gathered with a dip net (1/4-in [0.64-cm] mesh) and stored in an oxygenated livewell until sampling was completed. Fish were then identified to species, measured (total length and weight), inspected for externally visible abnormalities, and returned to the water. More details on the electrofishing method and equipment are given by Lerczak et al. (1994).

DATA ANALYSIS

At each site, number of individual fish and total weight (pounds) were tallied for each species. Fish catch rates were calculated as the number of individuals collected per hour of electrofishing ($CPUE_N$) and as weight in pounds collected per hour of electrofishing ($CPUE_W$). Catch data, both numbers of individuals and pounds collected per sample and hour, were summarized and reported by collection site. Data from sites also were grouped into reaches defined by navigation dams (Figure 1) as follows: Alton Reach, river mile (RM) 0-80; La Grange Reach, RM 80-158; Peoria Reach, RM 158-231; Starved Rock Reach, RM 231-247; Marseilles Reach, RM 247-271.5; and Dresden Reach, RM 271.5-286 on the Des Plaines River. Data from reaches were combined further into three groups (lower and middle Illinois River segments, and the upper Illinois Waterway segment) defined by their location along the river and by the

amount of off-channel habitat accessible to fish per unit length of river (Lerczak et al. 1994 and Figure 1). Lerczak et al. (1994, 1995, and 1996) showed that river fish communities of the three segments differed substantially enough to give segment designations biological meaning.

RESULTS AND DISCUSSION (Job 4)

Before the fish sampling season began, all equipment was tested and repaired as necessary, and staff were given a review in safety procedures and electrofishing methods (**Job 1**).

All 28 sites were sampled between 3 September and 5 October 2004 (**Job 2**); total sampling time was 26.80 h (Table 1). Collected data were entered into Microsoft ACCESS 2000, and verified against original field data sheets until no errors were detected (**Job 3**). The original data sheets from this year's sampling and all of the other original data sheets of this project (1957-2001) are stored in flame-resistant cabinets at the Illinois River Biological Station at 704 N. Schrader Avenue, Havana (**Job 3**).

A. CONDITIONS DURING ELECTROFISHING RUNS

Sampling was conducted in full daylight between 8:54 AM and 4:49 PM (Table 1). The ranges for physical measurements collected during the 2004 sampling season were as follows: air temperature, 57.4-87.6 °F; water temperature, 62.1-80.8 °F; dissolved oxygen concentration, 5.1-9.8 ppm; Secchi disk transparency, 7.9-39.8 in; conductivity, 346-878 umhos/cm; surface velocity, 0.2-0.4 ft/s; water depth, 0.5-6.0 ft.

All values were within the ranges expected based upon previous sampling (see Lerczak et al. 1994; Koel and Sparks, 1999). All sites were sampled within our established water temperature and river level criteria (Table 1; see Lerczak et al. 1994).

B. ELECTROFISHING RESULTS

The following data summaries proceed through several levels of detail. First, data on the numbers of individual fish (by species) collected at each of the 28 sites are presented. Then, catch rates of the number of individuals collected per hour of electrofishing are calculated for each of the seven navigation reaches. Similar summaries are presented for fish weights. Results conclude with fish health as determined by external visual inspection. Common names used throughout this report follow Robins et al. (1991). Common and scientific names are listed in APPENDIX A.

Numbers of Fish Collected

We collected a total of 3,655 fish representing 53 species (plus one hybrid) from 13 families during 26.8h of sampling at 27 sites on the Illinois Waterway and a single site on the Mississippi River in 2004. Gizzard shad was the most abundantly collected species, representing 18.8% of the total catch, followed by bluegill (15.9%), freshwater drum (8.3%), green sunfish (8.0%), emerald shiner (5.8%) and channel catfish (4.8%). Gizzard shad were collected at all 28 sites, common carp were collected at 26 sites, channel catfish were collected at 25 sites, freshwater drum were collected at 23 sites, and emerald shiners and white bass were collected at 22 sites. The sample from Lower Peoria Lake (RM 163.3, Peoria Reach) yielded the most fish (357, 9.8% of the

total collected from all 28 sites). The most species collected at one site was 21, obtained from Chillicothe Island in the Peoria Reach. The fewest species collected at a single site was eight from Turkey Island (RM 148.0) in La Grange Reach. The samples from Mortland Island (RM 19.0, Alton Reach) and Johnson Island (RM 249.6, Marseilles Reach) yielded the fewest fish at 28.

Of the 53 species and one hybrid cross, fourteen species (bighead carp, black buffalo, brook silverside, central stoneroller, freckled madtom, golden shiner, grass pickerel, ribbon shiner, red shiner, rock bass, slenderhead darter, silver redhorse, white crappie, and white perch) were collected at only a single site; whereas six species (logperch, longear sunfish, mosquitofish, redear sunfish, yellow bullhead, and yellow bass) were collected at only two sites. Ten species (bighead carp, black buffalo, brook silverside, logperch, longear sunfish, mosquitofish, slenderhead darter, silver chub, silver redhorse, and white perch) were represented by single individuals at sites, and a maximum of two individuals were collected at sites for each of nine species (blackstripe topminnow, goldfish, golden redhorse, grass carp, red shiner, skipjack herring, silverband shiner, threadfin shad, and yellow bass).

On the 27 Illinois Waterway sites, we collected 3,524 fish representing 53 species (plus one hybrid) from 13 families during 25.8 h of sampling. At Brickhouse Slough on the Mississippi River (RM 204.9), we collected 131 fish representing 16 species from seven families (Table 2). Total catch from Brickhouse Slough in 2004 was slightly higher than collections from 2001-2003, but was somewhat lower than catches observed in 2000 (McClelland and Pegg, 2004).

Table 2. Numbers of individuals of each fish species collected on the Mississippi River (Brickhouse Slough) and the lower Illinois River (Alton Reach, RM 0-80) in 2004.

Species	Mile Effort	River Mile and Hours Fished							Total
		Miss. River	Lower Illinois River						
		0.0 1.00	19.0 1.00	24.7 1.00	26.8 1.00	30.0 1.00	58.3 1.00	75.3 1.00	
Clupeidae									
gizzard shad		62	3	18	86	6	13	122	248
threadfin shad		0	0	1	0	0	0	0	1
Cyprinidae									
bighead carp		0	0	0	1	0	0	0	1
bullhead minnow		1	0	0	0	0	0	4	4
common carp		2	3	0	2	4	22	12	43
goldfish		0	0	0	0	0	0	1	1
grass carp		0	1	0	0	0	1	1	3
emerald shiner		11	2	0	9	0	0	21	32
silver carp		0	2	2	2	2	4	2	14
silver chub		1	0	1	0	0	0	0	1
silverband shiner		0	0	0	0	1	2	0	3
Catostomidae									
bigmouth buffalo		0	1	1	0	2	1	0	5
black buffalo		0	0	0	0	0	0	1	1
river carpsucker		2	0	0	1	0	2	3	6
shorthead redhorse		0	0	0	0	0	3	0	3
smallmouth buffalo		1	0	0	0	1	3	1	5
Ictaluridae									
channel catfish		3	3	4	2	13	12	30	64
flathead catfish		1	1	2	0	0	1	1	5
freckled madtom		0	0	0	0	0	1	0	1
Moronidae									
white bass		5	5	7	2	5	2	8	29
Centrarchidae									
black crappie		2	0	0	0	0	0	1	1
bluegill		18	1	3	0	1	10	0	15
green sunfish		6	0	3	0	1	1	0	5
largemouth bass		2	0	0	1	0	5	4	10
orangespotted sunfish		10	0	0	2	1	2	0	5
Percidae									
log perch		0	0	0	0	0	0	1	1
Sciaenidae									
freshwater drum		4	6	5	5	30	11	12	69
Total individuals		131	28	47	113	67	96	225	576
Total species/hybrids		16/0	11/0	11/0	11/0	12/0	18/0	17/0	27/0

On the lower Illinois River, we collected 576 fish representing 27 species with no hybrids (Table 2). In 2004, species richness ranged from 11 at Mortland Island (RM 19.0), Dark Chute (RM 24.7), and Hurricane Island (RM 26.8) to 18 at Big Blue Island (RM 58.3). This was the lowest species richness recorded for Dark Chute and Hurricane Island in F-101-R sampling. Moore's Towhead exhibited the highest catch in the lower river with 225 total fish, and also recorded its highest species richness (17 species plus no hybrids) since sampling began at this site in 1999 (Arnold et al. 2000, McClelland and Pegg 2001, 2002, 2003, 2004). Many of the fish collected at Moore's Towhead were a single species (122 gizzard shad), potentially due to the monotypic features of this site. This site is a main channel border with very little structure.

We collected 2,025 fish species representing 41 species plus one hybrid (Tables 3 and 4) on the middle Illinois River. From six sites on La Grange Reach (RM 80-158), 666 fish representing 25 species and no hybrids were collected, while eight sites on Peoria Reach (RM 158-231) produced 1,359 fish representing 38 species and no hybrids. Species richness ranged from 8 at Turkey Island (RM 148.0, La Grange Reach) to 21 at Chillicothe Island (RM 180.6, Peoria Reach) in 2004. This is the lowest species richness recorded in F-101-R sampling at Turkey Island. Species collections at the Lower Peoria Lake site in the Peoria Reach were the highest for this location in F-101-R sampling with 16 species and one hybrid collected. In addition to species richness, Lower Peoria Lake was also the site of highest total catch on the middle river with 357 total fish collected. This is the highest number of fish ever collected in F-101-R sampling for the Lower Peoria Lake site with a previous high of 278 fish recorded in 2002 (McClelland and Pegg 2003). Highest catch for any single site throughout the

Table 3. Numbers of individuals of each fish species collected on La Grange Reach (RM 80-158) of the middle Illinois River (RM 80-231) in 2004.

Species	Mile Effort	River Mile and Hours Fished						La Grange	Middle
		86.5 1.00	95.1 1.00	107 0.80	113 1.00	148 0.50	155.1 1.00	Reach Total 5.30	River Total 13.3
Clupeidae									
gizzard shad		69	35	37	26	1	7	175	328
skipjack herring		1	1	2	1	0	0	5	6
threadfin shad		0	0	0	2	1	0	3	5
Cyprinidae									
bullhead minnow		1	0	0	1	0	0	2	10
common carp		2	28	10	13	5	11	69	113
emerald shiner		27	26	5	5	2	0	65	89
goldfish		0	0	2	2	0	0	4	5
grass carp		0	0	0	0	0	2	2	4
silver carp		0	1	1	7	0	17	26	35
silverband shiner		1	0	0	0	0	0	1	1
Catostomidae									
bigmouth buffalo		2	1	2	0	0	1	6	63
river carpsucker		0	0	0	1	0	0	1	23
short head redhorse		0	0	0	0	2	1	3	9
smallmouth buffalo		3	2	1	0	0	9	15	112
Ictaluridae									
channel catfish		6	7	11	9	13	2	48	95
flathead catfish		3	0	1	2	0	0	6	8
Moronidae									
white bass		5	1	3	7	4	49	69	129
yellow bass		0	0	0	0	0	2	2	2
Centrarchidae									
black crappie		0	0	17	0	0	0	17	26
bluegill		1	3	7	15	0	0	26	398
largemouth bass		0	0	3	0	0	1	4	39
orangespotted sunfish		0	2	0	3	0	0	5	40
Percidae									
slenderhead darter		1	0	0	0	0	0	1	1
Poeciliidae									
western mosquitofish		1	1	0	0	0	0	2	2
Sciaenidae									
freshwater drum		18	23	7	16	29	16	109	234
Total Individuals		141	131	109	110	57	118	666	2025
Total species/hybrids		15/0	13/0	15/0	15/0	8/0	12/0	25/0	41/1

Table 4. Numbers of individuals of each fish species collected on Peoria Reach (RM 158-231) of the middle Illinois River (RM 80-231) in 2004.

Species	Mile Effort	River Mile and Hours Fished								Peoria Reach	Middle River
		163.3 1.00	170.3 1.00	180.6 1.00	193.8 1.00	202.8 1.00	203.3 1.00	207.6 1.00	215.3 1.00	Total 8.00	Total 13.30
Clupeidae											
gizzard shad		11	55	14	20	15	7	16	15	153	328
skipjack herring		0	0	1	0	0	0	0	0	1	6
threadfin shad		0	0	0	0	0	0	0	2	2	5
Cyprinidae											
bullhead minnow		1	0	0	2	3	0	0	2	8	10
common carp		4	1	13	10	0	1	6	9	44	113
emerald shiner		0	6	9	1	1	2	1	4	24	89
golden shiner		0	4	0	0	0	0	0	0	4	4
goldfish		0	1	0	0	0	0	0	0	1	5
grass carp		0	0	0	1	0	0	0	1	2	4
red shiner		0	0	0	0	0	0	0	2	2	2
silver carp		0	0	2	4	1	0	2	0	9	35
silverchub		0	0	1	0	0	0	1	0	2	2
spotfin shiner		0	0	0	2	0	0	1	0	3	3
spottail shiner		2	3	4	0	0	0	0	0	9	9
Catostomidae											
bigmouth buffalo		0	6	3	5	8	15	1	19	57	63
golden redhorse		0	0	2	0	1	0	0	0	3	3
river carpsucker		13	0	0	3	0	2	3	1	22	23
shorthead redhorse		0	0	1	2	1	1	1	0	6	9
silver redhorse		0	0	0	0	0	0	1	0	1	1
smallmouth buffalo		5	13	10	9	3	20	13	24	97	112
Ictaluridae											
channel catfish		7	0	13	12	4	4	2	5	47	95
flathead catfish		0	0	0	1	1	0	0	0	2	8
yellow bullhead		4	0	0	0	0	0	0	0	4	4
Moronidae											
white bass		4	4	27	9	8	1	3	4	60	129
white perch		0	0	0	0	0	0	1	0	1	1
Centrarchidae											
black crappie		0	0	1	0	0	8	0	0	9	26
bluegill		120	117	30	25	11	30	23	16	372	398
bluegill X green sunfish		1	1	0	0	0	0	0	0	2	2
green sunfish		149	12	0	1	2	1	18	1	184	184
largemouth bass		3	24	4	0	1	2	0	1	35	39
orangespotted sunfish		4	2	5	0	0	0	9	15	35	40
redecor sunfish		1	3	0	0	0	0	0	0	4	4
smallmouth bass		0	0	0	1	0	1	2	0	4	4
white crappie		3	0	0	0	0	0	0	0	3	3
Percidae											
logperch		0	0	1	0	0	0	0	0	1	1
walleye		0	0	1	0	0	0	0	1	2	2
sauger		0	0	3	3	0	0	11	2	19	19
Sciaenidae											
freshwater drum		25	35	20	17	5	10	12	1	125	234
Total individuals		357	287	165	128	65	105	127	125	1359	2025
Total species/hybrids		16/1	15/1	21/0	19/0	15/0	15/0	20/0	19/0	38/0	41/1

middle waterway was 1,142 fish, collected at Lambie's Boat Harbor (RM 170.3, Peoria Reach) in 2002 (McClelland and Pegg 2003).

We collected 923 fish representing 33 species plus one hybrid cross (bluegill x green sunfish) (Table 5) on the Upper Waterway in 2004. Species richness ranged from 9 at Johnson Island (RM 240.8, Marseilles Reach) to 18 at Ballard's Island (RM 249.6, Marseilles Reach). Collections at Johnson Island remained low with only 28 fish collected in 2004. Although species richness was highest at Ballard's Island, the total catch observed was 107 and was the lowest collection since 1999 for this site (Arnold et al. 2000). The highest total catch was 472 fish collected in 1995 (Lerczak et al. 1996).

Catch Rates in Numbers of Individuals Collected per Hour by Reach.

In the following data summary, most of the discussion is restricted either to species that each separately accounted for over 10% of the total catch or to species that were of special significance.

Alton (lower river). The 95% lists (species were added to the list until 95% of the total catch in numbers was obtained) for Alton, La Grange, and Peoria Reaches remained similar to each other, as in past years, although total catch in numbers per hour ($CPUE_N$) varied within reaches. Fifteen species accounted for 96.5% of the total catch in Alton Reach (Tables 6 and 7) and overall, $CPUE_N$ was 96.00 in 2004. This is the highest catch rate observed since 1999 when a $CPUE_N$ of 100.87 occurred; the highest $CPUE_N$ of 166.60 occurred in 1997 (Lerczak et al. 1994, 1995, 1996; Koel et al. 1997, 1998; Koel and Sparks, 1999; Arnold et al. 2000; McClelland and Pegg 2001,

Table 5. Numbers of individuals of each fish species collected on Starved Rock, Marseilles, and Dresden Reaches of the upper Illinois Waterway (RM 231-280) in 2004.

Species	River Mile and Hours Fished								Upper Waterway Total
	Mile Effort	Starved Rock		Marseilles			Dresden		
		240.8 1.00	241.5 1.00	248 1.00	249.6 0.50	260.6 1.00	277.3 1.00	279.8 1.00	6.50
Clupeidae									
gizzard shad		15	23	3	6	2	2	13	64
skipjack herring		1	0	0	0	0	0	0	1
threadfin shad		0	0	0	0	0	0	1	1
Cyprinidae									
bluntnose minnow		1	7	62	1	0	29	49	149
bullhead minnow		27	10	0	5	11	0	0	53
central stoneroller		0	0	0	0	0	1	0	1
common carp		1	0	3	1	2	2	10	19
emerald shiner		46	15	3	7	12	2	0	85
gold fish		0	0	0	0	1	0	0	1
ribbon shiner		0	0	0	0	0	0	1	1
spotfin shiner		54	11	3	4	5	0	0	77
spottail shiner		0	0	2	0	0	0	2	4
Atherinidae									
brook silverside		0	0	0	0	0	1	0	1
Catostomidae									
golden redhorse		0	1	0	0	1	0	0	2
river carpsucker		1	0	0	0	0	0	0	1
smallmouth buffalo		2	0	0	0	3	0	0	5
Ictaluridae									
channel catfish		0	6	1	0	4	5	2	18
Moronidae									
white bass		0	0	0	0	2	0	0	4
yellow bass		0	0	1	0	0	0	1	2
Centrarchidae									
black crappie		1	0	1	0	1	5	2	10
bluegill		5	7	8	1	8	79	55	163
bluegill X green sunfish		0	0	0	0	0	11	17	28
green sunfish		3	6	2	0	3	17	73	104
largemouth bass		4	1	10	1	1	30	15	62
longear sunfish		1	1	0	0	0	0	0	2
orangespotted sunfish		0	0	2	0	1	0	0	3
rock bass		0	0	0	0	0	8	0	8
smallmouth bass		2	1	1	0	0	4	1	9
Gobiidae									
round goby		0	0	2	0	0	4	3	9
Percidae									
walleye		0	1	0	0	0	0	0	1
Esocidae									
grass pickerel		0	0	1	0	0	0	0	1
Fundulidae									
blackstripe topminnow		0	0	1	0	0	1	2	4
Sciaenidae									
freshwater drum		0	0	1	2	0	0	0	3
Total individuals		164	90	107	28	57	201	247	923
Total species/hybrids		15/0	13/0	18/0	9/0	15/0	15/1	15/1	33/1

Table 6. Numbers of individuals of each fish species collected per hour of electrofishing (CPUE_N) on Reach 26 of the Mississippi River (Brickhouse Slough) and on six reaches of the Illinois River Waterway in 2004.

Species	Reach and Hours Fished							Overall CPUE _N 26.80
	Reach 26 1.00	Alton 6.00	La Grange 5.30	Peoria 8.00	Starved Rock 2.00	Marseilles 2.50	Dresden 2.00	
Clupeidae								
gizzard shad	62.00	41.33	32.81	19.13	19.00	4.40	7.50	26.19
skipjack herring			0.94	0.13	0.50			0.26
threadfin shad		0.17	0.56	0.25			0.50	0.26
Cyprinidae								
bighead carp		0.17						0.04
bluntnose minnow					4.00	25.20	39.00	5.56
bullhead minnow	1.00	0.67	0.38	0.50	18.50	6.40		2.39
central stoneroller							0.50	0.04
common carp	2.00	7.17	12.94	6.00	0.50	2.40	6.00	6.75
emerald shiner	11.00	5.53	12.19	3.00	30.50	8.80	1.00	8.10
grass carp		0.50	0.38	0.25				0.26
golden shiner				0.50				0.15
gold fish		0.17	0.75	0.13		0.40		0.26
red shiner				0.25				0.07
ribbon shiner							0.50	0.04
silverband shiner		0.50	0.19					0.15
silver carp		2.33	4.88					1.83
silver chub	1.00	0.17		0.25				0.15
spotfin shiner				0.38	32.50	4.80	1.00	3.06
spottail shiner	1.00			1.13		0.80		0.41
Catostomidae								
bigmouth buffalo		0.83	1.13	7.13				2.54
black buffalo		0.17						0.04
golden redhorse				0.38	0.50	0.40		0.19
river carpsucker	2.00	1.00	0.19	2.75				1.19
shorthead redhorse		0.50	0.56	0.75				0.45
silver redhorse				0.13				0.04
smallmouth buffalo	1.00	0.83	2.81	12.13	1.00	1.20		4.59
Ictaluridae								
channel catfish	3.00	10.67	9.00	5.88	3.00	2.00	3.50	6.72
flathead catfish	1.00	0.83	1.13	0.25				0.05
freckled madtom		0.17						0.04
yellow bullhead				0.63			0.50	0.19
Moronidae								
white bass	5.00	4.83	12.94	7.50		0.80		6.16
white perch				0.13				0.04
yellow bass			0.38	0.50		0.40		0.11
Centrarchidae								
black crappie	2.00	0.17	3.19	1.13	0.50	0.80	3.50	1.46
bluegill	18.00	2.50	4.88	46.50	6.00	6.80	67.00	22.16
bluegill X green sunfish				0.25			14.00	1.12
green sunfish	6.00	0.83		23.00	4.50	2.00	45.00	11.16
largemouth bass	2.00	1.67	0.75	4.38	2.50	4.80	22.50	4.22
longear sunfish					1.00			0.07
orangespotted sunfish	10.00	0.83	0.09	4.38		1.20		2.16
redecor sunfish				0.50				0.15
rock bass							4.00	0.30
smallmouth bass				0.50	1.50	0.40	2.50	0.49
white crappie				0.38				0.11

Table 6. (continued)

Numbers of individuals of each fish species collected per hour of electrofishing (CPUE_N) on Reach 26 of the Mississippi River (Brickhouse Slough) and on six reaches of the Illinois River Waterway in 2004.

Species	Reach and Hours Fished							Overall CPUE _N 26.80
	Reach 26 1.00	Alton 6.00	La Grange 5.30	Peoria 8.00	Starved Rock 2.00	Marseilles 2.50	Dresden 2.00	
Atherinidae								
brook silverside							0.50	0.04
Gobiidae								
round goby						0.80	3.50	0.34
Percidae								
logperch		0.17		0.13				0.07
sauger				2.38				0.71
slenderhead darter			0.19					0.04
walleye				0.25	0.50			0.11
Esocidae								
grass pickerel						0.40		0.04
Poeciliidae								
western mosquitofish			0.38					0.07
Fundulidae								
blackstripe topminnow						0.40	1.50	0.15
Sciaenidae								
freshwater drum	4.00	11.50	20.44	15.63		1.20		11.57
Total Number per hour	131.00	108.00	125.66	169.87	127.00	76.80	224.00	139.07
Number of species/hybrids	17/0	27/0	26/0	36/1	17/0	23/0	20/1	54/1

Table 7. Species ranks by relative abundance (number of fish collected per hour) for 2004 on the 6 reaches of the Illinois Waterway. Species were added to the list in descending order of abundance until 95% of the total catch for that reach was obtained. Percentages are in parentheses.

Species	Rankings by Reach					
	Alton	La Grange	Peoria	Starved Rock	Marseilles	Dresden
Clupeidae						
gizzard shad	1 (41.3)	1 (32.8)	3 (19.1)	3 (19.0)	7 (4.4)	6 (7.5)
skipjack herring		13 (0.9)				
Cyprinidae						
bullhead minnow				4 (18.5)	4 (6.4)	
bluntnose minnow				7 (4.0)	1 (25.2)	3 (39.0)
common carp	4 (7.2)	3 (12.9)	8 (6.0)		8 (2.4)	7 (6.0)
emerald shiner	5 (5.5)	5 (12.2)	11 (3.0)	2 (30.5)	2 (8.8)	
silver carp	8 (2.3)	7 (4.9)				
spotfin shiner				1 (32.5)	5 (4.8)	
spottail shiner			14 (1.1)		14 (0.8)	
Catostomidae						
bigmouth buffalo	11 (0.8)	11 (1.1)	7 (7.1)			
river carpsucker	10 (1.0)		12 (2.7)			
smallmouth buffalo	11 (0.8)	10 (2.8)	5 (12.1)		11 (1.2)	
Ictaluridae						
channel catfish	3 (10.7)	6 (9.0)	9 (5.9)	8 (3.0)	9 (2.0)	9 (3.5)
flathead catfish	11 (0.8)	11 (1.1)				
Moronidae						
white bass	6 (4.8)	3 (12.9)	6 (7.5)		14 (0.8)	
Centrarchidae						
black crappie		9 (3.2)	14 (1.1)		14 (0.8)	9 (3.5)
bluegill	7 (2.5)	7 (4.9)	1 (46.5)	5 (6.0)	3 (6.8)	1 (67.0)
bluegill X green sunfish						5 (14.0)
green sunfish	11 (0.8)		2 (23.0)	6 (4.5)	9 (2.0)	2 (45.0)
largemouth bass	9 (1.7)		10 (4.4)	9 (2.5)	5 (4.8)	4 (22.5)
orangespotted sunfish			10 (4.4)		11 (1.2)	
rock bass						8 (4.0)
Gobiidae						
round goby					14 (0.8)	9 (3.5)
Percidae						
sauger			13 (2.4)			
Sciaenidae						
freshwater drum	2 (11.5)	2 (20.4)	4 (15.6)		11 (1.2)	
Number of species accounting for 95 % of total catch						
	15	13	16	9	17	11

2002). The highest CPUE_N for an individual species was 41.33 for gizzard shad, which made up 43.1% of the total fish collected in this reach. Freshwater drum ranked second with a CPUE_N of 11.50 (12.0% of the total), and channel catfish ranked third with a CPUE_N of 10.67 (11.1% of the total).

La Grange (middle river). Thirteen species accounted for 94.9% of the total catch in La Grange Reach (Tables 6 and 7). Overall, CPUE_N was 125.66, the highest catch rate since 1998 when a CPUE_N of 160.91 was observed (Koel and Sparks 1999). The highest CPUE_N occurred in 1996 (314.91) (Koel et al. 1997). In 2004, the highest CPUE_N for any species was 32.81 for gizzard shad, which made up 26.1% of the total fish collected in this reach. Freshwater drum ranked second with a CPUE_N of 20.44 (16.3% of the total). White bass and common carp ranked third with a CPUE_N of 12.94 each (10.3% of the total, each). This is the highest collection rate of common carp since 2000, and catch rates have also not ranked in the top three in La Grange Reach since 2000 (McClelland and Pegg 2004). The exotic silver carp, which were collected for the first time in F-101-R sampling in the La Grange Reach in 2002, were recorded as the seventh most common species in the La Grange Reach in 2004 (McClelland and Pegg 2003).

Peoria (middle river). Sixteen species accounted for 95.4% of the total catch in Peoria Reach (Tables 6 and 7). Overall, CPUE_N was 169.87. This catch rate is back up from the CPUE_N of 112.06 observed in the Peoria Reach in 2003 (McClelland and Pegg 2004). Previous high catch rates of 291.00 and 285.57 were observed in 1995 and 1996, respectively (Lerczak et al. 1996; Koel et al. 1997). The highest CPUE_N for any

species was 46.50 for bluegill, which made up 27.4% of the total fish collected in this reach. This catch rate is up from the CPUE_N of 23.03 observed in 2003 (McClelland and Pegg 2004). Bluegill have ranked among the top two species since 1990 in the Peoria Reach (Lerczak et al. 1993, 1994, 1995, 1996; Koel et al. 1997, 1998, 1999; Arnold et al. 2000; McClelland and Pegg 2001, 2002). Green sunfish ranked second in 2004 with a CPUE_N of 23.00 (13.5% of the total). This is the second highest catch rate recorded for green sunfish in the Peoria Reach, with a previous high catch rate of 24.81 recorded in 1989 (Lerczak et al. 1993). Gizzard shad ranked third with a CPUE_N of 19.13 (11.3% of total). Silver carp were collected for the first time in F-101-R sampling in the Peoria Reach. A total of nine individuals were collected from four sites, Chillicothe Island (RM 180.6), Henry Island (RM 193.8), Lower Twin Sisters Island (RM 202.8), and Hennepin Island (RM 207.6), marking the furthest upstream collection of this species in F-101-R sampling. Silver redhorse were collected for the second time in the Peoria Reach, a single individual was collected at Hennepin Island (RM 207.6). Walleye were once again collected in the Peoria Reach at Chillicothe Island (RM 180.6) and Clark Island (RM 215.3). Walleye have not been collected in the Peoria Reach since 1996, and have only been collected in 1995, 1996, and now 2004 (Lerczak et al. 1996, Koel et al. 1997).

Starved Rock (upper river). Nine species accounted for 94.9% of the total catch in Starved Rock Reach (Tables 6 and 7). Overall, CPUE_N was 127.00 in 2004. This catch rate is the lowest CPUE_N recorded for Starved Rock Reach since 1994 when a CPUE_N of 73.00 was observed. Spottfin shiner, emerald shiner and gizzard shad were the top three ranked species composing 64.6% of the catch. The highest CPUE_N

for any species was 32.50 for spotfin shiners comprising 25.6% of the total catch. Spotfin shiner have only been documented on the Starved Rock Reach four times during the sixteen segments of project F-101-R (1998, 2002, 2003, 2004) and have ranked among the top three species in this reach for the past three sampling seasons (Koel et al. 1999, McClelland and Pegg 2004). Emerald shiner ranked second with a CPUE_N of 30.50 (24.0% of total). This is the lowest catch rate for emerald shiners since 1996 when a CPUE_N of 11.50 was observed. Gizzard Shad ranked third with a CPUE_N of 19.00 (15.0% of total). Walleye were collected for the first time in F-101-R sampling in Starved Rock Reach where a single individual was collected at Bull's Island Bend (RM 241.5).

Marseilles (upper river). Seventeen species accounted for 96.9% of the total catch in Marseilles Reach (Tables 6 and 7) and overall CPUE_N was 76.80 in 2004. The highest CPUE_N for any species was 25.20 for bluntnose minnow, consisting of 32.8% of the total fish collected at this reach. This is the highest CPUE_N recorded for bluntnose minnow in the Marseilles Reach since 1994 when a CPUE_N of 26.80 was observed. Emerald shiners ranked second with a CPUE_N of 8.80 (11.5% of total) and have been among the top three fish species collected for the Marseilles Reach every year of F-101-R sampling except for 1996 (Koel et al. 1997). Bluegill ranked third with a CPUE_N of 6.80 (8.9% of total), however, this is the lowest catch rate observed for this species in the Marseilles Reach since 1996 when a CPUE_N of 6.15 was recorded (Koel et al. 1999). Bullhead minnow ranked fourth with a CPUE_N of 6.40 (8.3% of total). Round goby were collected for the first time in the Marseilles Reach at Ballard's Island (RM 248.0); two individuals were collected. This marks the first documentation of round

goby during the fourteen segments of project F-101- R. Grass pickerel were collected for the third time in Marseilles Reach; a single individual was collected at Ballard's Island (RM 248.0). Grass pickerel have not been collected in Marseilles Reach since 1999 (Arnold et al. 2000).

Dresden (Des Plaines River). Eleven species accounted for 96.2% of the total catch in Dresden Reach (Tables 6 and 7). Overall, CPUE_N was 224.00 in 2004. This catch rate is up from the CPUE_N of 168.00 observed in 2003 (McClelland and Pegg 2004). In 2004, the highest CPUE_N for any species was 67.00 for bluegill, which made up 29.9% of the fish collected. This is the fourth highest catch rate for bluegill in the Dresden Reach since the beginning of project F-101-R. The highest catch rate was recorded in 2001 with a CPUE_N of 131.00. Green sunfish ranked second with a CPUE_N of 45.00 (20.1% of total). This is the second highest collection of green sunfish recorded for Dresden Reach, the highest CPUE_N of 46.00 was observed in 1995 (Koel et al. 1999). Bluntnose minnow ranked third with a CPUE_N of 39.00, making up 17.4% of the catch. Largemouth bass ranked fourth in abundance, the catch rate of 22.50 (10.0% of total) observed in 2004 was the highest recorded in F-101-R sampling for this species. A previous high CPUE_N of 17.00 was recorded in 2002 (McClelland and Pegg 2003). In addition, round goby were collected for the first time in Dresden Reach at both sampling sites, the Mouth of the Du Page River (RM 277.3) and Treat's Island (RM 279.8). Four individuals were collected at the Mouth of the Du Page River and three individuals were collected at Treat's Island. Ribbon shiner were also collected for the first time in F-101-R sampling in Dresden Reach, a single individual was collected at Treat's Island. Brook silverside were collected for the second time in F-101-R sampling

at the Mouth of the Du Page River, this species was last collected in Dresden Reach in 1994 (Koel et al. 1999).

Catch Rates in Weights (pounds) Collected per Hour by Reach.

The following data summary and discussion is restricted to species that individually accounted for over 10% of the total catch and to species that were of special interest. A 95% list was produced for each reach, in which species were ranked by relative biomass (pounds per hour) and added to the list until 95% of the total catch rate in weight for that reach was obtained. Overall, these data indicate that in terms of biomass the fish communities of the Illinois River continue to be dominated by common carp, bigmouth buffalo, and channel catfish in the lower and middle river, and common carp, largemouth bass, gizzard shad, and channel catfish in the upper waterway.

Alton (lower river). Ten species accounted for 95.7% of the total catch by weight in pounds per hour ($CPUE_w$) in Alton Reach (Tables 8 and 9) in 2004. Overall $CPUE_w$ was 63.74. This catch weight is the highest observed in Alton Reach since 1997 when a $CPUE_w$ of 91.65 was observed (Koel et al. 1999). Common carp $CPUE_w$ was the highest at 24.56 (38.5% of total). This is the also the highest recorded $CPUE_w$ in the Alton Reach for common carp since 1997 when catch weight for this species was 29.69 (Koel et al. 1999). Silver carp ranked second with a $CPUE_w$ of 14.55 (22.8% of total), which is also the highest $CPUE_w$ recorded for this species in F-101-R sampling. Silver carp were first collected in Alton Reach in 2001 (McClelland and Pegg 2002). Channel catfish ranked third with a $CPUE_w$ of 6.76 (10.6% of total).

Table 8. Pounds of each fish species collected per hour of electrofishing (CPUE_w) on Reach 26 of the Mississippi River (Brickhouse Slough) and on six reaches of the Illinois River Waterway in 2004. Pounds per hour less than 0.01 but greater than zero are indicated by 0.00.

Species	Reach and Hours Fished							Overall CPUE
	Reach 26 1.00	Alton 6.00	La Grange 5.30	Peoria 8.00	Starved Rock 2.00	Marseilles 2.50	Dresden 2.00	
Clupeidae								
gizzard shad	1.35	1.87	0.78	0.81	2.70	0.95	1.09	1.24
skipjack herring			0.02	0.01	0.04			0.01
threadfin shad		0.00	0.01	0.00			0.00	0.00
Cyprinidae								
bighead carp		0.19						0.04
bluntnose minnow					0.01	0.07	0.11	0.02
bullhead minnow	0.00	0.00	0.00	0.00	0.02	0.01		0.00
common carp	7.23	24.56	36.87	18.89	1.44	7.27	24.49	21.31
central stoneroller							0.00	0.00
emerald shiner	0.04	0.02	0.02	0.01	0.06	0.04	0.00	0.02
golden shiner				0.01				0.00
goldfish		0.01	0.10	0.00		0.13		0.03
grass carp		3.55	3.12	1.41				1.83
red shiner				0.00				0.00
ribbon shiner							0.00	0.00
silver carp		14.55	6.10	3.74				5.58
silver chub	0.00	0.00		0.01				0.00
silverband shiner		0.01	0.00					0.00
spotfin shiner				0.00	0.04	0.01	0.00	0.01
spottail shiner				0.01		0.01		0.00
Catostomidae								
bigmouth buffalo		3.12	6.44	15.99				6.74
black buffalo		0.65						0.15
golden redbreast				0.14	0.52	0.13		0.09
river carpsucker	0.10	0.73	0.03	3.12	0.23			1.12
shorthead redbreast		0.49	0.12	0.07				0.15
silver redbreast				0.01				0.00
smallmouth buffalo	0.05	2.00	3.75	14.24	1.16	2.09		5.73
Ictaluridae								
channel catfish	5.74	6.76	11.07	8.64	1.76	1.48	6.34	7.24
flathead catfish	0.09	0.41	4.36	0.06				0.98
freckled madtom		0.00						0.00
yellow perch				0.08			0.18	0.04
Moronidae								
white bass	0.17	2.39	2.93	2.78		0.16		1.97
yellow bass			0.01			0.01		0.00
white perch				0.00				0.00
Centrarchidae								
black crappie	1.27	0.00	0.62	0.36	0.22	0.46	2.17	0.50
bluegill	2.26	0.17	0.21	3.33	0.41	0.44	4.55	1.57
bluegill X greensunfish				0.01			1.51	0.11
green sunfish	0.11	0.01		1.73	0.16	0.05	2.62	0.74
largemouth bass	1.18	1.28	0.05	2.30	0.39	2.51	11.94	2.18
longear sunfish					0.03			0.00
orangespotted sunfish	0.11	0.01	0.00	0.05		0.02		0.02
redecor sunfish				0.06				0.02
rock bass							0.36	0.03
smallmouth bass				0.16	0.44	0.01	0.66	0.13
white crappie				0.09				0.03

Table 8. (continued)

Pounds of each fish species collected per hour of electrofishing (CPUEw) on Reach 26 of the Mississippi River (Brickhouse Slough) and on six reaches of the Illinois River Waterway in 2004. Pounds per hour less than 0.01 but greater than zero are indicated by 0.00.

Species	Reach and Hours Fished							Overall CPUE
	Reach 26 1.00	Alton 6.00	La Grange 5.30	Peoria 8.00	Starved Rock 2.00	Marseilles 2.50	Dresden 2.00	
Atherinidae								
brook silverside							0.00	0.00
Gobiidae								
round goby						0.01	0.02	0.00
Percidae								
logperch		0.00		0.00				0.00
walleye				0.50	0.83			0.21
sauger				0.45				0.13
slenderhead darter			0.00					0.00
Esocidae								
grass pickerel						0.02		0.00
Poeciliidae								
western mosquitofish			0.00					0.00
Fundulidae								
blackstripe topminnow						0.00	0.00	0.00
Sciaenidae								
freshwater drum	3.74	0.94	3.10	4.65		0.71		2.42
Total pounds per hour	23.44	63.74	79.74	83.74	10.46	16.60	56.08	62.43

Table 9. Species ranked by relative biomass in pounds of fish collected per hour for 2004. Species were added to the list in descending order of abundance until 95% of the total catch for that reach was obtained. Percentages are in parentheses.

Species	Rankings by Reach					
	Alton	La Grange	Peoria	Starved Rock	Marseilles	Dresden
Clupeidae						
gizzard shad	8 (1.9)			1 (2.7)	5 (0.9)	7 (1.1)
Cyprinidae						
common carp	1 (24.6)	1 (36.9)	1 (19.0)	3 (1.4)	1 (7.3)	1 (24.5)
grass carp	4 (3.5)	7 (3.1)				
silver carp	2 (14.5)	4 (6.1)	6 (3.7)			
Catostomidae						
bigmouth buffalo	5 (3.1)	3 (6.4)	2 (16.0)			
golden redhorse				6 (0.5)		
river carpsucker			8 (3.1)	10 (0.2)		
smallmouth buffalo		6 (3.7)	3 (14.2)	4 (1.2)	3 (2.1)	
Ictaluridae						
channel catfish	3 (6.8)	2 (11.1)	4 (8.6)	2 (1.8)	4 (1.5)	3 (6.3)
flathead catfish		5 (4.4)				
Moronidae						
white bass	6 (2.4)		9 (2.8)			
Centrarchidae						
black crappie					7 (0.5)	6 (2.2)
bluegill			7 (3.3)	8 (0.4)	8 (0.4)	4 (4.5)
bluegill X green sunfish						
green sunfish			11 (1.7)			5 (2.6)
largemouth bass	9 (1.3)		10 (2.3)	9 (0.4)	2 (2.5)	2 (11.9)
smallmouth bass				7 (0.4)		
Percidae						
walleye				5 (0.8)		
Sciaenidae						
freshwater drum	10 (0.9)	8 (3.1)	5 (4.6)		6 (0.7)	
Number of species accounting for 95% of total catch	10	8	11	10	8	7

Another exotic species, grass carp, ranked fourth with a CPUE_w of 3.55 (5.6% of total).

La Grange (middle river). Eight species accounted for 93.8% of the total catch by weight in La Grange Reach (Tables 8 and 9) in 2004. Overall, CPUE_w was 79.74. Common carp was once again the top ranked species in total catch in weight on La Grange Reach with a CPUE_w of 36.87 (46.2% of total). Channel catfish ranked second with a CPUE_w of 11.07 (13.9% of total) and bigmouth buffalo ranked third at 6.44 (8.8% of total). Common carp, bigmouth buffalo, and channel catfish have ranked in the top three for nine of the last ten years (Koel et al. 1997, and 1998; Koel and Sparks, 1999; McClelland and Pegg 2001,2002). Silver carp ranked fourth on the La Grange Reach with a new high CPUE_w of 6.10, this is the highest recorded CPUE_w for silver carp in F-101-R sampling. CPUE_w for largemouth bass on the La Grange Reach prior to 1996 varied but typically had been about 5 pounds per hour (Lerczak et al. 1993,1994,1995,1996). CPUE_w for largemouth bass has been well below 5 pounds per hour for the last eight of nine years (1996, 1997, 1998, 1999, 2001, 2002, 2003, 2004) of project F-101-R (Koel et al. 1997, 1998; Koel and Sparks, 1999; Arnold et al. 2000; McClelland and Pegg 2002), and in 2004 the catch weight for largemouth bass (0.05) was the second lowest ever recorded.

Peoria (middle river). Eleven species accounted for 94.8% of the total catch by weight in Peoria Reach (Tables 8 and 9). Overall, CPUE_w was 83.74. This is the highest catch weight recorded for all reaches of the Illinois River in 2004. The highest species specific CPUE_w was 18.89 for common carp, which made up 22.6% of the total catch in weight for this reach in 2004. Bigmouth buffalo ranked second with a CPUE_w

of 15.99 (19.1% of total) and smallmouth buffalo ranked third with a CPUE_W of 14.24 (17.0% of total). Common carp, bigmouth buffalo, and smallmouth buffalo have been among the top three species since 1994 (Lerczak et al. 1995,1996; Koel et al. 1997,1998; Koel and Sparks 1999; Arnold et al. 2000; McClelland and Pegg 2001,2002, 2003, 2004). Channel catfish ranked fourth with a CPUE_W of 8.64 (10.3% of total). The newest species to the Peoria Reach, silver carp, ranked sixth in catch in weight with a CPUE_W of 3.74.

Starved Rock (upper river). Ten species accounted for 94.5% of the total catch by weight in Starved Rock Reach (Tables 8 and 9). Overall, CPUE_W was 10.46 in 2004. The highest CPUE_W for any species was 2.70 for gizzard shad, which made up 26.8% of the total. Channel catfish ranked second with a CPUE_W of 1.76 (16.8% of total) and common carp ranked third with a CPUE_W of 1.44 (13.8% of total). Walleye, which have never been collected in Starved Rock Reach, ranked fifth in catch in weight with a CPUE_W of 0.83.

Marseilles (upper river). Eight species accounted for 95.8% of the total catch by weight in Marseilles Reach (Tables 8 and 9). Overall, CPUE_W was 16.60 and is similar to catch weights obtained from this reach during previous years (Lerczak et al. 1994, 1995, and 1996; Koel et al. 1997 and 1998; Koel and Sparks, 1999; Arnold et al. 2000; McClelland and Pegg 2001, 2002, 2003, 2004). Common carp CPUE_W was highest at 7.27 (43.8% of total). Largemouth bass ranked second with a CPUE_W of 2.51 (15.1% of total) and remains comparable to the CPUE_W observed since 1995 (Lerczak et al. 1996, Koel et al. 1998; Koel and Sparks 1999; Arnold et al. 2000;

McClelland and Pegg 2001,2002, 2003, 2004). Smallmouth buffalo ranked third with a CPUE_w of 2.09 (12.6% of total) and channel catfish ranked fourth with a CPUE_w of 1.48 (8.9% of total).

Dresden (Des Plaines River). Seven species accounted for 94.9% of the total catch by weight in Dresden Reach (Tables 8 and 9). Overall, CPUE_w was 56.08 and is the highest recorded for Dresden Reach in F-101-R sampling. The highest CPUE_w for any species in 2004 was 24.49 for common carp, which made up 43.7% of the total. This is the highest CPUE_w recorded for common carp on the Dresden Reach since F-101-R was initiated. Largemouth bass ranked second with a CPUE_w of 11.94 (21.3% of total). This represents the second highest biomass caught for largemouth bass in all sampling reaches of F-101-R, while the highest CPUE_w for largemouth bass in all reaches of F-101-R is 14.24 recorded in the Dresden Reach in 2002 (Lerczak et al. 1994, 1995, and 1996; Koel et al. 1997 and 1998; Koel and Sparks, 1999; Arnold et al. 2000, McClelland and Pegg 2001,2002, 2003, 2004). Channel catfish ranked third with a CPUE_w of 6.34 (11.3% of total) and bluegill ranked fourth with a CPUE_w of 4.55. This is the highest catch rate for bluegill in the Dresden Reach in all years of F-101-R sampling, as well as the highest catch for bluegill throughout all reaches for all years of F-101-R sampling. The previous high bluegill CPUE_w for all reaches was 4.40 recorded in 1991 in the La Grange Reach (Lerczak et al. 1993).

Fish Health Determined by External Visual Inspection.

No fish were observed to have externally visible abnormalities in 2004. This is the first year in F-101-R that there have been no recordings of incidences of externally visible abnormalities (e.g., sores, eroded fins).

CONCLUSIONS

Samples collected by electrofishing on the Illinois River Waterway during September and October 2004 provided evidence of continued increase in species richness, catch rates, and a decrease in abnormalities. Ninety-eight species and six hybrids have been collected since William Starrett began this survey in 1957. Seventy-seven species and five hybrids have been documented by project F-101-R sampling (1989-present); 53 species and one hybrid from thirteen families were collected during 26.80 h of sampling in 2004. Round goby and ribbon shiner were collected for the first time during project F-101-R sampling along the waterway; two specimens of round goby were collected on the Marseilles Reach (upper river) at Ballard's Island and seven specimens of round goby were collected on the Dresden Reach (upper river), four at the Mouth of the Du Page River site and three at Treat's Island. A single ribbon shiner specimen was collected on the Dresden Reach at Treat's Island. Peoria Reach continues to produce the highest number of species (38) along the waterway. This could be due, in part, to a greater number of sites in this reach, varied site types (backwater and side channel), and its position along the waterway, which includes the Great Bend (above Hennepin) of the Illinois River. This reach represents a transition from a river which is constricted, lacks contiguous backwaters, and is high in gradient

(upper river) to a large river floodplain system with low gradient (lower river) (Sparks 1977).

The total weight of fishes collected was also highest in Peoria Reach, where $CPUE_W$ was 83.74 (Table 8). Species accounting for this high catch in weight were common carp, bigmouth buffalo, smallmouth buffalo, and channel catfish. Catch weight was also relatively high in La Grange Reach where 79.74 pounds per hour were collected. Of the 1,649.6 pounds of fish collected during our 2004 survey, 1,092.6 pounds (66.2%) were collected from the middle river. The upper river produced 174.6 pounds (10.6%) while the lower river produced 382.5 pounds (23.2%). These catches may be reflective of higher productivity of the middle Illinois River floodplain ecosystem.

Sportfishes were collected throughout the Waterway in 2004, although catch rate in number and weight varied among reaches. For channel catfish, we again collected more individuals per hour in the Alton Reach (lower river) than in the middle or upper river reaches, however pounds per hour were higher for the La Grange and Peoria Reaches (middle river; Table 6 and 8). White bass were most abundant and provided the highest $CPUE_W$ in the middle river; $CPUE_N$ and $CPUE_W$ were highest in La Grange Reach. Black crappie were most abundant in the Dresden Reach of the upper river that provided the highest catches in number and weight. Bluegill $CPUE_N$ and $CPUE_W$ were also greatest in Dresden Reach in the upper waterway. Largemouth bass $CPUE_N$ and $CPUE_W$ were highest in Dresden Reach as well, and the catches for number and weight observed here were the second highest ever recorded for all years of F-101-R sampling throughout all reaches. As in previous years of project F-101-R sampling, we collected only low numbers of sauger. Walleye were collected in Starved Rock Reach for the first

time in F-101-R sampling and third time in Peoria Reach. Smallmouth bass, which are usually found in low numbers, were again collected in every reach of the upper river and in the Peoria Reach of the middle river.

No fish were observed to have externally visible abnormalities for the first time in F-101-R sampling. This may suggest water and sediment quality of the Illinois Waterway may be improving for fishes.

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APPENDIX A. Fish species collected during Long-term Monitoring of the Illinois Waterway, 1957-2004. Common names marked by an asterisk indicate species that were collected from 1989 through 2004 during federal aid project F-101-R. Common and scientific names are from Robins et al. (1991). Habitat associations are based on behavioral descriptions from Pflieger (1975) and communications with INHS fisheries biologists.

Family Name	Common Name	Scientific Name	Habitat Association (B=benthic)
Lepisosteidae	longnose gar*	<i>Lepisosteus osseus</i>	
	shortnose gar*	<i>Lepisosteus platostomus</i>	
	spotted gar*	<i>Lepisosteus oculatus</i>	
Amiidae	bowfin*	<i>Amia calva</i>	
Hiodontidae	goldeye*	<i>Hiodon alosoides</i>	
	mooneye*	<i>Hiodon tergisus</i>	
Anguillidae	American eel	<i>Anguilla rostrata</i>	
Clupeidae	gizzard shad*	<i>Dorosoma cepedianum</i>	
	skipjack herring*	<i>Alosa chrysochloris</i>	
	threadfin shad*	<i>Dorosoma petenense</i>	
Cyprinidae	bighead carp*	<i>Hypophthalmichthys nobilis</i>	
	bigmouth shiner*	<i>Notropis dorsalis</i>	B
	bluntnose minnow*	<i>Pimephales notatus</i>	
	bullhead minnow*	<i>Pimephales vigilax</i>	
	common carp*	<i>Cyprinus carpio</i>	B
	common carp x goldfish*	<i>Cyprinus carpio x Carassius auratus</i>	B
	central stoneroller*	<i>Campostoma anomalum</i>	B
	common shiner*	<i>Luxilus cornutus</i>	
	creek chub	<i>Semotilus atromaculatus</i>	
	emerald shiner*	<i>Notropis atherinoides</i>	
	fathead minnow*	<i>Pimephales promelas</i>	
	ghost shiner	<i>Notropis buchmanii</i>	
	golden shiner*	<i>Notemigonus crysolucas</i>	
	goldfish*	<i>Carassius auratus</i>	B
	grass carp*	<i>Ctenopharyngodon idella</i>	
	hornyhead chub	<i>Nocomis biguttatus</i>	
	Mississippi silvery minnow	<i>Hybognathus nuchalis</i>	B
	pugnose minnow	<i>Opsopoeodus emiliae</i>	
	red shiner*	<i>Cyprinella lutrensis</i>	
	redfin shiner	<i>Lythrurus umbratilis</i>	
	ribbon shiner*	<i>Lythrurus fumeus</i>	
	river shiner*	<i>Notropis blennioides</i>	
	sand shiner*	<i>Notropis stramineus</i>	
	spotfin shiner*	<i>Cyprinella spiloptera</i>	
	silver carp*	<i>Hypophthalmichthys molitrix</i>	
	silver chub*	<i>Hybopsis storeriana</i>	B
silverband shiner*	<i>Notropis shumardi</i>		
silverjaw minnow	<i>Notropis buccatus</i>	B	
spottail shiner*	<i>Notropis hudsonius</i>		
steelcolor shiner	<i>Cyprinella whipplei</i>		
striped shiner*	<i>Luxilus chrysocephalus</i>		
suckermouth minnow*	<i>Phenacobius mirabilis</i>	B	
Catastomidae	bigmouth buffalo*	<i>Ictiobus cyprinellus</i>	B
	black buffalo*	<i>Ictiobus niger</i>	B
	black redhorse	<i>Moxostoma duzuesnei</i>	B
	golden redhorse*	<i>Moxostoma erythrurum</i>	B
	highfin carpsucker*	<i>Carpoides velifer</i>	B
	northern hogsucker*	<i>Hypentelium nigricans</i>	B
	quillback*	<i>Carpoides cyprinus</i>	B
	river carpsucker*	<i>Carpoides carpio</i>	B
	river redhorse	<i>Moxostoma carinatum</i>	B
	shorthead redhorse*	<i>Moxostoma macrolepidotum</i>	B
	silver redhorse*	<i>Moxostoma anisurum</i>	B
	smallmouth buffalo*	<i>Ictiobus bubalus</i>	B
	white sucker*	<i>Catostomus commersoni</i>	B

Appendix A Continued.

Family Name	Common Name	Scientific Name	Habitat Association (B=benthic)
Ictaluridae	black bullhead*	<i>Ameiurus melas</i>	B
	blue catfish	<i>Ictalurus furcatus</i>	B
	brown bullhead*	<i>Ameiurus nebulosus</i>	B
	channel catfish*	<i>Ictalurus punctatus</i>	B
	flathead catfish*	<i>Pylodictis olivaris</i>	B
	freckled madtom*	<i>Noturus nocturnus</i>	B
	tadpole madtom*	<i>Noturus gyrinus</i>	B
	white catfish	<i>Ameiurus catus</i>	B
	yellow bullhead*	<i>Ameiurus natalis</i>	B
Esocidae	grass pickerel*	<i>Esox americanus vermiculatus</i>	
	nothern pike	<i>Esox lucius</i>	
Salmonidae	rainbow trout	<i>Oncorhynchus mykiss</i>	
Percopsidae	trout-perch	<i>Percopsis omiscomaycus</i>	B
Fundulidae	blackstripe topminnow*	<i>Fundulus notatus</i>	
Poeciliidae	western mosquitofish*	<i>Gambusia affinis</i>	
Atherinidae	brook silverside*	<i>Labidesthes sicculus</i>	
Percichthyidae	striped bass	<i>Morone saxatilis</i>	
	striped bass x white bass*	<i>Morone saxatilis</i> x <i>M. chrysops</i>	
	white bass*	<i>Morone chrysops</i>	
	white perch*	<i>Morone americana</i>	
	yellow bass*	<i>Morone mississippiensis</i>	
Centrarchidae	black crappie*	<i>Pomoxis nigromaculatus</i>	
	bluegill*	<i>Lepomis macrochirus</i>	
	green sunfish*	<i>Lepomis cyanellus</i>	
	green sunfish x bluegill*	<i>Lepomis cyanellus</i> x <i>L. macrochirus</i>	
	green sunfish x orangespotted sunfish*	<i>Lepomis cyanellus</i> x <i>L. humilis</i>	
	green sunfish x pumpkinseed*	<i>Lepomis cyanellus</i> x <i>L. gibbosus</i>	
	largemouth bass*	<i>Micropterus salmoides</i>	
	longear sunfish*	<i>Lepomis megalotis</i>	
	orangespotted sunfish*	<i>Lepomis humilis</i>	
	orangespotted sunfish x bluegill*	<i>Lepomis humilis</i> x <i>L. macrochirus</i>	
	pumpkinseed*	<i>Lepomis gibbosus</i>	
	redecor sunfish*	<i>Lepomis microlophus</i>	
	rock bass*	<i>Ambloplites rupestris</i>	
	smallmouth bass*	<i>Micropterus dolomieu</i>	
spotted sunfish*	<i>Lepomis punctatus</i>		
warmouth*	<i>Lepomis gulosus</i>		
white crappie*	<i>Pomoxis annularis</i>		
Percidae	bluntnose darter	<i>Etheostoma chlorosomum</i>	B
	johnny darter	<i>Etheostoma nigrum</i>	B
	logperch*	<i>Percina caprodes</i>	B
	mud darter*	<i>Etheostoma asprigene</i>	B
	sauger*	<i>Stizostedion canadense</i>	
	slenderhead darter*	<i>Percina phoxocephala</i>	B
	walleye*	<i>Stizostedion vitreum</i>	
	yellow perch*	<i>Perca flavescens</i>	
Sciaenidae	freshwater drum*	<i>Aplodinotus grunniens</i>	B
Gobiidae	round goby*	<i>Neogobius melanostomus</i>	B

APPENDIX B. Species richness (S) at Long-term Illinois River Fish Population Monitoring (F-101-R) sites.

Description	Site #	Reach	Low S (year)	High S (year)
Treats Island	279.8	3	10 (2003)	19 (1995)
Du Page River	277.3	3	11 (1999 & 2000))	18 (1994)
Waupecan Island	260.6	4	11 (1996)	20 (2001)
Johnson Island	249.6	4	6 (1993)	16 (1995)
Ballards Island	248.0	4	10 (1991)	19 (1995)
Bulls Island Bend	241.5	5	8 (1990)	22 (2001)
Bulls Island	240.8	5	8 (1990, 96, 99)	18 (2001)
Clark Island	215.3	6	11 (1990)	21 (1995)
Hennepin	207.6	6	2 (1990)	21 (2002)
Upper Twin Sister	203.3	6	8 (1990)	22 (2001)
Lower Twin Sister	202.8	6	7 (1992)	17 (2001)
Henry Island	193.8	6	12 (1991)	21 (2002)
Chillicothe	180.6	6	14 (1989,91,92,96)	22 (1997)
Lambie's Boat Harbor	170.3	6	9 (1989)	20 (1996)
Lower Peoria Lake	163.3	6	10 (1989)	16 (1996,2002,2004)
Pekin	155.1	7	6 (1992)	16 (1996)
Turkey Island	148.0	7	8 (2004)	17 (1999)
Upper Bath Chute	113.0	7	12 (1994)	22 (2001)
Lower Bath Chute	107.0	7	9 (1992)	19 (2001)
Sugar Creek Island	95.1	7	10 (1989, 1999 and 2003)	19 (1995)
Grape-Bar Islands	86.5	7	7 (1989)	23 (1994)
Moore's Towhead	75.3	8	6 (2002)	17 (2004)
Big Blue Island	58.3	8	9 (1990)	19 (1995)
Crater-Willow Islands	30.0	8	11 (2003)	18 (1999)
Hurricane Island	26.8	8	11 (1990, 1999, 2004)	20 (1997)
Dark Chute	24.7	8	11 (1994, 2004)	17 (1990)
Mortland Island	19.0	8	10 (2003)	16 (1991, 97, 99)
Brickhouse Slough	0.0	26	10 (1990)	17 (1991 & 1995)

¹Sites 0.0-215.3 were not sampled during 1993 (n=10 years) (sites 240.8-279.8 n=11 years).

Appendix C (Job 5). Publications, reports, and presentations that resulted from research conducted during segments 6-15 of project F-101-R, the Long-term Illinois River Fish Population Monitoring Program (funded under Federal Aid in Sportfish Restoration Act, P.L. 81-681, Dingell-Johnson, Wallup-Breaux).

I. Publications

Koel, T.M. and Richard E. Sparks. 2000. Ecohydrology of the Illinois River and development of ecological criteria for operation of dams. Regulated Rivers: Research and Management.

Koel, T.M. 2000. Ecohydrology and development of ecological criteria for operation of dams. Project Status Report 2000-02. U.S. Geological Survey, Upper Midwest Environmental Sciences Center, Onalaska, Wisconsin.

Koel, T.M. 2000. Abundance of age-0 fishes correlated with hydrologic indicators. Project Status Report 2000-03. U.S. Geological Survey, Upper Midwest Environmental Sciences Center, Onalaska, Wisconsin.

Koel, T.M. 1998. Channel catfish (*Ictalurus punctatus*) in the Upper Mississippi River System. Project Status Report 98-11. U.S. Geological Survey, Environmental Management Technical Center, Onalaska, Wisconsin.

Koel, T.M., R. Sparks, and R.E. Sparks. 1998. Channel catfish in the Upper Mississippi River System. Survey Report No. 353. Illinois Natural History Survey, Champaign.

Lerczak, T.V., R.E. Sparks, and K.D. Blodgett. 1994. Some upstream-to-downstream differences in Illinois River fish communities. Transactions of the Illinois State Academy of Science 87(Supplement):53. (Abstract)

Lerczak, T.V. 1995. Fish community changes in the Illinois River, 1962-1994. American Currents (Summer Issue).

Lerczak, T.V. 1995. The gizzard shad in nature's economy. Illinois Audubon. (Summer Issue). Reprinted in Big River 2(12):1-3.

Lerczak, T.V., and R.E. Sparks. 1995. Fish populations in the Illinois River. Pages 7-9 in G.S. Farris, editor. Our living resources 1994. National Biological Survey, Washington, D.C.

Lerczak, T.V., R.E. Sparks, and K.D. Blodgett. 1995. Long-term trends (1959-1994) in fish populations of the Illinois River. Transactions of the Illinois State Academy of Science 88(Supplement):74. (Abstract)

Lerczak, T.V., R.E. Sparks, and K.D. Blodgett. 1995. Long-term trends (1959-1994) in fish populations of the Illinois River with emphasis on upstream-to-downstream trends. *Proceedings of the Mississippi River Research Consortium* 27:62-63.

Lerczak, T.V. 1996. Illinois River fish communities: 1960's versus 1990's. *Illinois Natural History Survey Report No.* 339.

Pegg, M.A. and M.A. McClelland. 2004. Assessment of spatial and temporal fish community patterns in the Illinois River. *Ecology of Freshwater Fish* 13:125-135.

Pegg, M. A. 2002. Invasion and transport of non-native aquatic species in the Illinois River. Pages 203-209 in A.M. Strawn, editor. *Proceedings of the 2001 Governor's conference on the management of the Illinois River System, Special Report Number 27*, Illinois Water Resources Center, Champaign, Illinois.

Raibley, P.T., K.D. Blodgett, and R.E. Sparks. 1995. Evidence of grass carp (*Ctenopharyngodon idella*) reproduction in the Illinois and upper Mississippi Rivers. *Journal of Freshwater Ecology* 10:65-74.

Sparks, R.E. 1995. Value and need for ecosystem management of large rivers and their floodplains. *Bioscience* 45:168-182.

Sparks, R.E. 1995. Environmental effects. Pages 132-162 in S.A. Changnon, editor. *The great flood of 1993*. University Corporation for Atmospheric Research (UCAR) and Westview Press.

II. Essays

Pegg, M.A. 2002. Aquatic resource monitoring in the Upper Mississippi River Basin. *INHS Reports*. Number 371:8-9.

III. Technical Papers (presenters in bold)

Michael A. McClelland, Mark A. Pegg, Kevin S. Irons, and T. Matt O'Hara. Fish Abundances of Backwater Lakes with Connectivity Gradients in the La Grange Reach, Illinois River. Presented at the 37th Annual Meeting of the Mississippi River Research Consortium, La Crosse, WI, April 28-29, 2005.

McClelland, Michael A., Kevin S. Irons, T. Matt O'Hara, Mark A. Pegg, and Thad R. Cook. A Comparison of Two Electrofishing Gears Used for Fish Monitoring on the Illinois River. Presented at the 36th Annual Meeting of the Mississippi River Research Consortium, LaCrosse, WI, April 1-2, 2004.

McClelland, Michael A. and Mark A. Pegg. Longitudinal Patterns of the Illinois Waterway Fish Community. Presented at the 64th Annual Midwest Fish and Wildlife Conference, Kansas City, MO, December 7-10, 2003.

Pegg, M.A. and M.A. McClelland. Assessment of spatial and temporal fish community patterns in the Illinois River. Presented at the American Fisheries Society meeting, Quebec City, Quebec Canada, August, 2003.

O'Hara, T.M., K.S. Irons, M.A. McClelland, and M.A. Pegg. Status of bighead carp and silver carp in the La Grange Reach, Illinois River and possible impacts to the commercial fishery. 41st Annual Meeting of the Illinois Chapter of the American Fisheries Society, Mt. Vernon, Illinois, 4-6 March, 2003.

Irons, K.S., T.M. O'Hara, M.A. McClelland, and M.A. Pegg. Status of non-native fish species in the Illinois River. 41st Annual Meeting of the Illinois Chapter of the American Fisheries Society, Mt. Vernon, Illinois, 4-6 March, 2003.

O'Hara, T.M., K.S. Irons, M.A. McClelland, and M.A. Pegg. Status of bighead carp and silver carp in the La Grange Reach, Illinois River and possible impacts to the commercial fishery. Presented at the 34th Annual Meeting of the Mississippi River Research Consortium, LaCrosse, Wisconsin, April, 2002.

Irons, K.S., T.M. O'Hara, M.A. McClelland, and M.A. Pegg. White perch distributions in the Illinois River: detecting an invasive species with the Long Term Resource Monitoring Program. Presented at the 34th Annual Meeting of the Mississippi River Research Consortium, LaCrosse, Wisconsin, April, 2002.

O'Hara, T.M., K.S. Irons, M.A. McClelland, and M.A. Pegg. Status of bighead carp and silver carp in the La Grange Reach, Illinois River and possible impacts to the commercial fishery. Presented at the 2002 North Central Division American Fisheries Society River and Streams Technical Committee Meeting, Moline, Illinois, March 2002.

McClelland, M.A., Irons, K.S., and T.M. O'Hara, and M.A. Pegg. White perch (*morone americana*) occurrence in the Illinois River, Upper Mississippi River System. Presentation at the Illinois-Iowa American Fisheries Society Annual Meeting, Moline, Illinois, February, 2002.

Pegg, M.A. Invasion and transport of non-native aquatic species in the Illinois River. 2001 Governor's conference on the management of the Illinois River System, Peoria, Illinois, October, 2001.

Koel, T.M. and Richard E. Sparks. Ecohydrology of the Illinois River: development of criteria for operation of the La Grange and Peoria locks and dams. 32nd Annual Meeting of the Mississippi River Research Consortium, La Crosse, Wisconsin, April 13-14, 2000.

Koel, T.M., T.R. Cook, and K.S. Irons. Criteria for biota-friendly operations of the Peoria and La Grange locks and dams, Illinois River Waterway. 61st Midwest Fish and Wildlife Conference, Chicago, Illinois December 5-8, 1999.

Koel, T.M. and R.E. Sparks. Interannual variation in catches of young-of-year fish correlated with hydrology of the Upper Mississippi River System. 47th Annual Meeting of the North American Benthological Society, Duluth, Minnesota, May 23-24, 1999.

Koel, T.M. Changes in fish community structure: effects of hydrological variability in the Upper Mississippi River System. Presented to the Illinois Natural History Survey, Center for Aquatic Ecology, Havana Field Station Director Search Committee and Senior Staff, March 24, 1999.

Koel, T.M. Spatial and temporal variability of channel catfish populations in the Upper Mississippi River System. Illinois Department of Natural Resources LTRMP field station biannual retreat, Dickson Mounds, Illinois, December 15, 1998.

Koel, T.M. Long Term Resource Monitoring Program Showcase: analysis of catfish catch. Environmental Management Program Coordinating Committee, Fall Quarterly Meeting, Rock Island, Illinois, November 19-20, 1998.

Koel, T.M. and K.D. Blodgett. Fish-environment associations: effects of inter-annual hydrological variability on fish populations of the Illinois River waterway, 1957-1997. Upper Mississippi River Conservation Committee, Fish Technical Section Annual Fall Meeting, Dubuque, Iowa, September 15-17, 1998.

Koel, T.M., K.S. Irons, T.M. O'Hara, K.D. Blodgett, and R.E. Sparks. Changes in fish community structure: effects of hydrological variability in the Upper Mississippi River System. 128th Annual Meeting of the American Fisheries Society, Hartford, Connecticut, August 23-27, 1998.

Koel, T.M., T.M. Mihuc, R.E. Sparks, and K.D. Blodgett. Upper Mississippi River System status and trends report. Fish species-environment relationships: LTRMP data analysis and preliminary results. 54th Annual Meeting of the Upper Mississippi River Conservation Committee, Moline, Illinois, 17-19 March 1998.

Blodgett, K.D. and T.M. Mihuc. Decision support using Long Term Resource Monitoring Program component data and supplementary data on the Illinois River. 54th Annual Meeting of the Upper Mississippi River Conservation Committee, Moline, Illinois, 17-19 March 1998.

Koel, T.M. and T.M. Mihuc. Fish abundance in the La Grange Reach of the Illinois River correlated with environmental factors: problems of cross-component analysis. Presented at the Long Term Resource Monitoring Program Annual Winter Meeting, Davenport, Iowa, 13 January 1998.

Lerczak, T.V., R.E. Sparks, and K.D. Blodgett. Some upstream-to-downstream differences in Illinois River fish communities. Contributed paper presented at the Illinois State Academy of Science Annual Meeting, Galesburg, Illinois, 7 October 1994.

Sparks, R.E. Large river-floodplain ecosystems of the Midwest: status, trends, and management needs. Presented at the U.S. Environmental Protection Agency's "Ecological Seminar Series" held in Chicago, Illinois, 14 March.

IV. Poster Presentations (presenter in bold)

Koel, T.M. and R.E. Sparks. The Long-term Illinois River Fish Population Monitoring Program. National Meeting of the Ecological Society of America, Spokane, Washington, August 10-14, 1998.

Lerczak, T.V., R.E. Sparks, and K.D. Blodgett. Long-term trends (1959-1994) in fish populations of the Illinois River. Poster presented at the 56th Midwest Fish and Wildlife Conference, Indianapolis, Indiana, 4-7 December 1994.

Lerczak, T.V., R.E. Sparks, and K.D. Blodgett. Long-term trends (1959-1994) in fish populations of the Illinois River. Poster presented at the Illinois State Academy of Science Annual Meeting, Charleston, Illinois, 6 October 1995.

Lerczak, T.V., R.E. Sparks, and K.D. Blodgett. Long-term trends (1959-1994) in fish populations of the Illinois River with emphasis on upstream-to-downstream differences. Poster presented at the annual meeting of the Mississippi River Research Consortium, La Crosse, Wisconsin, 26-28 April 1995.

Pegg, M.A. and M.A. McClelland. Long-term fish population trends along the Illinois River. Poster presented at the 63rd Midwest Fish and Wildlife Conference, Des Moines, Iowa, December, 2001.

Pegg, M.A. and M.A. McClelland. Long-term fish population trends along the Illinois River. Poster presented at the 131st Annual Meeting of the American Fisheries Society, Phoenix, Arizona, August, 2001.

V. Popular Presentations

Lerczak, T.V. Wintering bald eagles along the Illinois River and factors affecting their environment. Invited presentation to the Peoria Audubon Society, Peoria, Illinois, 8 March 1995.

Lerczak, T.V. Seminar on Illinois River environmental issues. Conducted for Biology 140 (Human Ecology) at Spoon River College, 27 June 1994.

Lerczak, T.V. A photo trip up the Illinois River. After dinner talk presented to Havana Rotary Club, Havana, Illinois, 17 April 1995.

Blodgett, K.D. Ecosystem management for the Illinois River: can biological integrity be restored? Invited lecture for Earth Day celebration at Spoon River College, Canton, Illinois, 19 April 1995.

McClelland, M.A. The Long Term Illinois River Fish Population Monitoring Program. After dinner talk presented to Central Christian Men's 10th Annual Fish Fry, August 2003.

VI. Data Requests

1. Sam Cull, City of Peru, Electrical Department, Peru, Illinois
2. Stanley and Associates, Muscatine, Iowa
3. U.S. Army Corps of Engineers, Rock Island, Illinois
4. Shelly Miller, Aquatic Ecologist, The Nature Conservancy, Peoria, Illinois
5. K. Douglas Blodgett, Project Manager, The Nature Conservancy, Havana, Illinois
6. Kevin Irons, Fishery Biologist, LTRMP, Havana, Illinois
7. Matt O'Hara, Fishery Biologist, LTRMP, Havana, Illinois
8. Scott Langloss, Writer for Adventure Sports Outdoors
9. Richard Sparks, Director of Research National Great Rivers Research & Education Center
10. Jim Mick, Illinois Department of Natural Resources
11. James B. McLaren, ASA Analysis & Communication, Inc.

