IEPA ATTACHMENT NO. MM

2004 LOWER DES PLAINES RIVER FISHERIES INVESTIGATION RM 274.4-285.5

Prepared for:

Midwest Generation EME, LLC
One Financial Place
440 S. LaSalle Street, Suite 3500
Chicago, IL 60605

Prepared by:

EA Engineering, Science, and Technology
444 Lake Cook Road, Suite 18
Deerfield, IL 60015

November 2005

2004 LOWER DES PLAINES RIVER FISHERIES INVESTIGATION RM 274.4-285.5

Prepared for:

Midwest Generation EME, LLC
One Financial Place
440 S. LaSalle Street, Suite 3500
Chicago, IL 60605

Prepared by:

EA Engineering, Science, and Technology
444 Lake Cook Road, Suite 18
Deerfield, IL 60015

Joe Vondruska — 10 November 2005
Joe Vondruska — Date
Project Manager

Rich Monzingo — 10 November 2005
Dr. Richard Monzingo — Date
Project Director

November 2005

61393.14 - 0000

TABLE OF CONTENTS

TABLE OF CONTENTS (CONTINUED)

Page

LIST OF FIGURES

LIST OF TABLES

LIST OF TABLES (CONTINUED)

EXECUTIVE SUMMARY

Since 1997, alternative thermal limitations have been in effect at the I-55 bridge (IPCB Order and Opinion, AS96-10, dated 3 October 1996). Pursuant to an agreement with regulatory agencies, a fisheries study has been conducted in the lower Des Plaines River, between the Brandon Road Lock and Dam and its confluence with the Kankakee River, for the period of May through September 1997-2004. The primary objective of this study has been to determine if the alternative thermal limitations have had an adverse affect on the lower Des Plaines River fish communities during the past eight years (when the more liberal thermal limits were in effect) compared to 1994 and 1995 (when the thermal limits were more restrictive).

From May through September 2004, the fish community was assessed at 11 locations along 11.1 miles of the lower Des Plaines River (RM 274.4-RM 285.5) in the Dresden Pool. The study area was segregated into two segments: 1) Upstream I-55 (the Secondary Contact waters of the lower Des Plaines River from the I-55 bridge upstream to the Brandon Road Lock and Dam) and 2) Downstream I-55 (the General Use waters of the lower Des Plaines River from the I-55 bridge downstream to its confluence with the Kankakee River). Seven sampling locations were in the Upstream I-55 segment and four locations were in the Downstream I-55 segment. In addition to the base fisheries program that emphasized fish distribution and abundance, special studies were conducted to assess fish robustness (i.e., relative weight index) and the incidence of DELT (deformities, erosion, lesions, and tumors) anomalies. Physicochemical measurements were made during each electrofishing collection. Data from the Upstream and Downstream I-55 segments were compared among 1994, 1995, and 1997-2004.

In 2004, surface or mid-depth water temperatures at the electrofishing locations ranged from 20.2 to 36.1 C, whereas mean temperatures for the period of study typically ranged from 24.5 to 30.9 C at these locations. Mean water temperatures were, however, 1.9 to 6.4 C warmer within the Joliet Stations' discharge canals and at the one or two locations directly downstream of them. Mean 2004 springtime water temperatures for both segments were higher than those observed during the previous nine study years, whereas, summertime water temperatures for both segments were among the lowest observed in the past ten study years. When mean springtime temperatures are compared among the study years, both segments have typically been higher during 1997-2004 than in 1994 and 1995. On the other hand, mean summertime temperatures within both segments during the past eight years have been intermediate to those of 1994 and 1995, except in 2002 when the Upstream I-55 mean was higher than in 1994 or 1995.

Dissolved oxygen (DO) concentrations in 2004 ranged from 5.0 to 16.1 ppm. In 2004, as well as during the previous nine study years, DO concentrations during this monitoring program have been consistently above the Secondary Contact Standard of 4 ppm within the Upstream I-55 segment and consistently at or above the General Use Standard of 5 ppm within the Downstream I-55 segment.

In 2004, a total of 160 gear efforts (88 electrofishing and 72 seining) was expended within the lower Des Plaines River. These efforts produced 11,981 fish representing 57 species and two hybrids. For electrofishing and seining combined, the catch was dominated numerically by bluegill and bluntnose minnow, and to a lesser extent by green sunfish, gizzard shad, largemouth bass, hybrid sunfish, and orangespotted sunfish. By weight, the combined catch was strongly dominated by common carp. Orangethroat darter, after being collected during this monitoring

program (1978-2004) for the first time in 2003, was collected again in 2004. However, other previous records of this species exist for the mainstem lower Des Plaines River and/or its tributaries. One state-listed fish species was collected in 2004, the endangered pallid shiner (32 specimens). Pallid shiner has been collected from the study area in four of the past five years. The abundance and distribution of pallid shiner in 2003 and 2004 was noticeably greater than that observed in 2000 and 2002. Seventy round gobies were collected from the study area in 2004: 50 specimens within the Upstream I-55 segment and twenty within the Downstream I-55 segment.

In 2004, the total number species collected in Dresden Pool decreased from the program (1994-2004) highs observed in 2002 and 2003. The lower species richness value during 2004 was primarily due to a decrease in the number of cyprinid species (including grass carp and bighead carp).

The total number of fish collected in 2004 was lower than that collected in 2002 and 2003 but higher or similar to the numbers collected during the other seven study years. The decrease in the 2004 catch from the substantially higher 2003 catch was largely due to decreases in the numbers of gizzard shad and threadfin shad (including *Dorosoma* sp.), bluntnose minnow, green sunfish, orangespotted sunfish, and bluegill.

As has been the case since 1993, exotic species (e.g., common carp) were excluded from the spatial and interyear analyses of CPE, IWBmod, and species richness values because of the confounding influence they exert on catch rates (both by weight and number).

In 2004, electrofishing CPEs (all native fish) were significantly higher downstream of I-55 than upstream of it; whereas, mean native species richness values and IWBmod scores were not significantly different between the two segments. With respect to electrofishing CPEs, the differential between the two segments was due primarily to the Downstream I-55 segment producing noticeably higher CPEs of green sunfish, orangespotted sunfish, and bluegill. Based on the mean IWBmod scores, the fish communities within both segments were classified as fair in 2004. The seine data corroborated the electrofishing data in that: 1) catch rates (all native species) were higher downstream of I-55 than upstream of it; 2) between-segment disparities in catch rates were largely due to the Downstream I-55 segment producing noticeably higher CPEs of bullhead minnow, gizzard shad (including YOY *Dorosoma* sp.), and bluegill; and 3) mean species richness values were higher within the Downstream I-55 segment than within the Upstream I-55, although for electrofishing, the difference was not statistically significant.

Comparisons of the between-segment spatial patterns for electrofishing mean CPEs (with or without gizzard shad, orangespotted sunfish, and bluegill), mean IWBmod scores, and mean native species richness among the past ten study years revealed that they have remained similar during the past eight years when compared to 1994 and 1995. The seine data again corroborated the electrofishing data in that the spatial trends for seining CPE and mean native species richness values have been similar among nine of the past ten years.

Interyear analyses of electrofishing data collected between 15 June and the end of August, a period when the alternative thermal limits and the warmest summer temperatures coincide, revealed that: 1) the fish community in the Upstream I-55 segment during the past eight years is better than the one that was present during 1994 and 1995; and 2) fish community in the

Downstream I-55 segment appears to be maintaining the "status quo", but the data do suggest that it has improved somewhat during the past three years.

Fish condition (i.e., robustness) was evaluated using relative weights (Wr). Spatial and/or interyear differences in mean Wr values were evaluated for gizzard shad, smallmouth buffalo, channel catfish, green sunfish, bluegill, smallmouth bass, largemouth bass, and freshwater drum. Although these analyses revealed that there have been significant differences in mean Wr values between segments and among years, 79 percent of the spatial means and 77 percent of the interyear means were greater than or equal to 95. This demonstrates that when significant differences occurred, they were due primarily to the extent in which mean Wr values exceeded the target value of 100 and not to suboptimal fish condition. In addition, Wr values of this magnitude suggest that the populations of these eight species have nearly always been in average or better than average condition, and that there does not appear to have been any long-term significant health, food availability, and/or feeding relationship problems within the study area. In fact, there were only 19 instances over the past ten study years when low mean Wr values suggested that there may have been a health, food availability, and/or feeding relationship problem. Instances of low Wr values were as follows: 1) gizzard shad from both segments in 2000, 2003, and 2004 (due to increased competition for food); 2) smallmouth buffalo from both segments in 1994, downstream of I-55 in 2000, and upstream of I-55 in 2003 and 2004; and 3) smallmouth bass from both segments in 1997, 1998, and 2000 downstream of I-55 in 2000, and upstream of I-55 in 2003. The consistent low mean Wr values for smallmouth bass suggest that its Ws equation may not be appropriate for the lower Des Plaines River.

All fish collected during the past ten years have been examined for external anomalies. DELT anomalies are the group of anomalies most relevant for assessment purposes because a clear relationship has been established between the incidence rate (percentage) of DELT anomalies and water quality. In 2004, a total of 910 fish (11.3 percent of the electrofishing catch), representing 25 taxa, exhibited DELT anomalies within the study area. Spatially, DELT incidence rates were higher within the Upstream I-55 segment (15.2 percent) than within the Downstream I-55 segment (7.2 percent); the same pattern that has been observed during the ten previous study years. Interyear comparisons of DELT affliction rates for both segments revealed that they have been lower during the past eight years (particularly the most recent six years) than in 1994 or 1995. Although the spatial pattern was the same in 2004; the rates were closer to the higher levels observed in 1994, 1995, and 1997. The lower affliction rates during the past seven years for both segments have also been due, at least in part, to higher numbers of bluntnose minnow, emerald shiner, and/or gizzard shad (including YOY *Dorosoma* sp. in 2003) being collected. In 2004, lower numbers of these three species were collected in the downstream segment and with the exception of gizzard shad whose numbers was higher, the same trend was observed in the upstream segment. However, even if these taxa are excluded from the calculations, the affliction rates during the past eight years (particularly the most recent six) have still been lower than those observed in 1994 and 1995. Although DELT affliction rates have declined since 1994 and 1995, they continue to be abnormally high. Since bottom feeders have consistently exhibited disproportionately higher rates of affliction, the study area sediments likely contain contaminants that are responsible for or contribute to the abnormally high DELT affliction rates.

Collectively, the water temperature, dissolved oxygen, electrofishing, seining, relative weight, and DELT anomaly data indicate that the alternative thermal limitations that went into effect in

early 1997 at the I-55 Bridge have not had an adverse effect on the fish communities in the Upstream and Downstream I-55 segments of the lower Des Plaines River.

The significant findings of this study were:

- Mean 2004 springtime water temperatures for both segments were higher than those observed during the previous nine study years, whereas, mean summertime water temperatures for both segments were among the lowest observed in the past ten study years.

- In 2004, as well as during the previous nine study years, DO concentrations during this monitoring program have been consistently above the Secondary Contact Standard of 4 ppm within the Upstream I-55 segment and consistently at or above the General Use Standard of 5 ppm within the Downstream I-55 segment.

- In 2004, 11,981 fish representing 57 species and two hybrids species were collected in Dresden Pool. The total number of fish collected in 2004 was lower than that collected in 2002 and 2003 but higher or similar to the number of fish collected during the other seven study years.

- The collection of orangethroat darter represented only the second time this species has been collected during the long-term monitoring program (1978-2004).

- One state-listed fish species was collected in 2004, the endangered pallid shiner (32 specimens).

- The number of round gobies collected in the Downstream I-55 segment increased indicating that the downstream distribution in the Upper Illinois Waterway of this exotic species is continuing to expand.

- Based on the mean IWBmod scores, the fish communities within both segments were classified as fair in 2004.

- The data collected during the 15 June to the end of August time period, in the past eight years, indicate that the fish community in the Upstream I-55 segment is better than the one that was present during 1994 and 1995.

- During this same time period, the fish community in the Downstream I-55 segment appears to be maintaining the "status quo", but the data do suggest that it has improved somewhat during the past three years, compared to 1994-1995 and 1997.

- Spatial patterns between both segments for electrofishing mean CPEs, mean IWBmod scores, and mean native species richness have remained similar during the past eight years when compared to 1994 and 1995.

- Based on mean Wr values, there do not appear to have been any significant health, food availability, and/or feeding relationship problems within the study area for the species studied.

- DELT affliction rates in both segments have been lower during the past eight years (particularly the past six) than in 1994 and 1995. Although this same pattern was observed in 2004; the rates were closer to the higher levels observed in 1994, 1995, and 1997. DELT affliction rates continue to abnormally high throughout the study area, particularly on bottom feeders.

- Both the Upstream and Downstream I-55 segments show improvements for all parameters during the period when the new thermal limits have been in place. The adjusted thermal limitations, which went into effect in early 1997 at the I-55 Bridge, have not had an adverse effect on the fish communities in the Upstream or Downstream I-55 segments.

1 INTRODUCTION

In October 1996, the Illinois Pollution Control Board (IPCB) approved Commonwealth Edison Company's (ComEd) alternative thermal limitations at the I-55 bridge (IPCB Order and Opinion, AS96-10, dated 3 October 1996). Pursuant to an agreement between ComEd and regulatory agencies, a fisheries study has been conducted in the lower Des Plaines River, between the Brandon Road Lock and Dam and its confluence with the Kankakee River, for the period of May through September during the past eight years (EA 1998-2004 and this report). Midwest Generation EME, LLC is conducting water quality and fisheries studies in order to provide current information that addresses concerns about the waterway. Midwest Generation acquired the Fisk, Crawford, Will County, and Joliet Generating Stations from ComEd in December 1999. Since the applicability of the I-55 alternative thermal limitations was also legally transferred to Midwest Generation as part of the acquisition process, Midwest Generation has continued the fisheries study. The IPCB supported the transfer of the alternative thermal limits from ComEd to Midwest Generation (IPCB Order and Opinion, AS96-10, dated 16 March 2000). This report summarizes the methodologies and results of the 2004 monitoring effort.

To understand and evaluate the fish community of the lower Des Plaines River properly, it is important to understand the morphology, history, and evolution of the entire Upper Illinois Waterway (UIW). In 1871, the flow of the Chicago River was reversed in order to divert sanitary wastes from the City of Chicago away from Lake Michigan to protect the drinking water source for the City. The polluted water of the Chicago River was directed through the Illinois and Michigan (I&M) Canal into the Des Plaines River and subsequently into the Illinois River at Hennepin. The Chicago Sanitary and Ship Canal (CSSC) was opened in 1900, bringing with it several thousand cubic feet per second of diverted Lake Michigan water (Talkington 1991). The new canal was cut into the channels of the South Branch of the Chicago River and the I&M Canal through the Chicago Portage area. At that point, it becomes a separate third channel parallel to the Des Plaines River and the old I&M Canal. About 40 miles downstream, it enters the Des Plaines River between Lockport and Joliet.

In 1919, the state began constructing the Illinois Waterway, which created a new and even larger channel through the Chicago River, the CSSC, the Des Plaines River, and the Illinois River, shaping them into a continuous navigation route at least 9 feet deep and at least 300 feet wide from Lake Michigan to the Mississippi River (Talkington 1991). The waterway project required construction of seven major locks and a new set of relatively high dams in the 1930s, including a 40-foot high dam on the Des Plaines River just south of Lockport and a 34-foot high dam just south of Joliet at Brandon Road. At Dresden Island, about two miles downstream from the confluence of the Kankakee and Des Plaines Rivers (where the Illinois River begins), there is a dam that is 22-feet high.

As a result of these extensive modifications, the UIW is now (and has been for over 70 years) a series of reservoirs or impoundments maintained principally to facilitate barge traffic and convey treated effluents from sewage treatment plants. Pool levels are controlled and flows are manipulated frequently. This control also reduces the frequency and magnitude of natural, seasonal flushing events. Dresden Pool (i.e., the Upstream and Downstream I-55 segments) is a flooded river drainage and has a fair amount of "natural" shoreline area and a number of natural

tributaries. The upper two pools (Lockport and Brandon) are mostly artificial, straight dredged channels with nearly vertical sides. Due to the channelized nature of the UIW, habitat is, on average, poor. Habitat is poorest in Lockport Pool, and though marginally better in Brandon Pool and somewhat better in the Dresden Pool, is still only poor to fair in these pools. Habitats in the UIW are only poor to fair because of: 1) sparse amounts of riffle/run habitat; 2) sparse amounts of clean, hard substrates (i.e., gravel and cobble); 3) excessive siltation; 4) channelization; 5) poor riparian and flood plain areas; and 6) lack of cover (EA 1996a; Midwest Generation and EA 2003). In addition, there is a wide variety of historic and current sources of pollutants, and contaminated sediments are present (Illinois EPA 1992; Sparks and Ross 1992; Burton 1995; Midwest Generation and EA 2003).

The 2004 fish study consisted of monitoring fish population and abundance at 11 locations along 11.1 miles of the lower Des Plaines River (RM 274.4-RM 285.5) in the Dresden Pool. The objectives of the 2004 UIW fish study were to:

- determine the species composition and relative abundance of fish within two segments of the study area: 1) Upstream I-55 (the Secondary Contact waters of the lower Des Plaines River from the I-55 bridge upstream to the Brandon Road Lock and Dam) and 2) Downstream I-55 (the General Use waters of the lower Des Plaines River from the I-55 bridge downstream to the rivers confluence with the Kankakee River);

- determine spatial trends of composition, distribution, and abundance of fishes with respect to the two segments and compare them among 1994, 1995, and 1997-2004; and

- determine longitudinal patterns of fish condition and anomalies in the study area, and compare them among 1994, 1995, and 1997-2004.

This study represents the 26th year (1978-1995 and 1997-2004) during which Commonwealth Edison or Midwest Generation-sponsored fish studies have been conducted within the Upstream and Downstream I-55 segments.

2 METHODS

Fish sampling was conducted at 11 locations along 11.1 miles of the lower Des Plaines River (RM 274.4-RM 285.5). Two Midwest Generation generating stations are located within this stretch, Joliet Station #9 at RM 284.9 and Joliet Station #29 at RM 284.6 (Figure 1). Sampling was conducted once in May (11^{th}-12^{th}), once in early June (8^{th}-9^{th}), and twice per month in July (7^{th}-8^{th} and 20^{th}-21^{st}), August (10^{th}-11^{th} and 26^{th}-27^{th}), and September (8^{th}-9^{th} and 27^{th}-28^{th}).

2.1 DESCRIPTION OF SAMPLING GEARS

2.1.1 Electrofishing

Electrofishing was conducted at all 11 locations using a boat-mounted electrofishing system energized by a 230-volt, 5000-watt, three-phase AC generator. Each electrofishing zone was 500 m long. Electrofishing was conducted in a downstream direction at eight of the 11 locations. Due to the lack of current, the other three locations (i.e., Locations 408, 414, and 418) were sampled by a combination of upstream and downstream electrofishing. Electrofishing began no earlier than 0.5 hours after sunrise and finished no later than 0.5 hours before sunset. The sampling crew consisted of a driver and a dipper. Both individuals had long-handled dip nets for catching stunned fish.

2.1.2 Seining

Seining was conducted at nine locations using a straight seine that was 25 feet (7.6 m) long by 6 feet (1.8 m) deep with 3/16-inch (4.8 mm) Ace mesh. The sampling distance depended upon the seinable area available at each location and, to the extent possible, was kept constant during each sampling period. If electrofishing and seining were conducted in the same area on the same day, seining was conducted first and at least one hour elapsed before electrofishing was conducted. Sampling areas were consistent with those of previous years.

2.2 DESCRIPTION OF SAMPLING LOCATIONS

The study area was segregated into two segments (from upstream to downstream): 1) Upstream I-55 (the Secondary Contact waters of the lower Des Plaines River from the I-55 bridge upstream to the Brandon Road Lock and Dam) and 2) Downstream I-55 (the General Use waters of the lower Des Plaines River from the I-55 bridge downstream to its confluence with the Kankakee River). Seven sampling locations were in the Upstream I-55 segment and four locations were in the Downstream I-55 segment (Figure 1). Each sampling location is described below. References to left and right banks are with respect to facing downstream.

2.2.1 Upstream I-55 Locations

Location 402 -- Brandon Dam Tailwater (RM 285.5)

Electrofishing is conducted along both banks at this location. The left bank is fished by "skirting" a shallow clay flat. This zone begins at the second duck blind upstream of the "mouth" of the tailwater and continues downstream to the end of the shallow clay flat, a distance

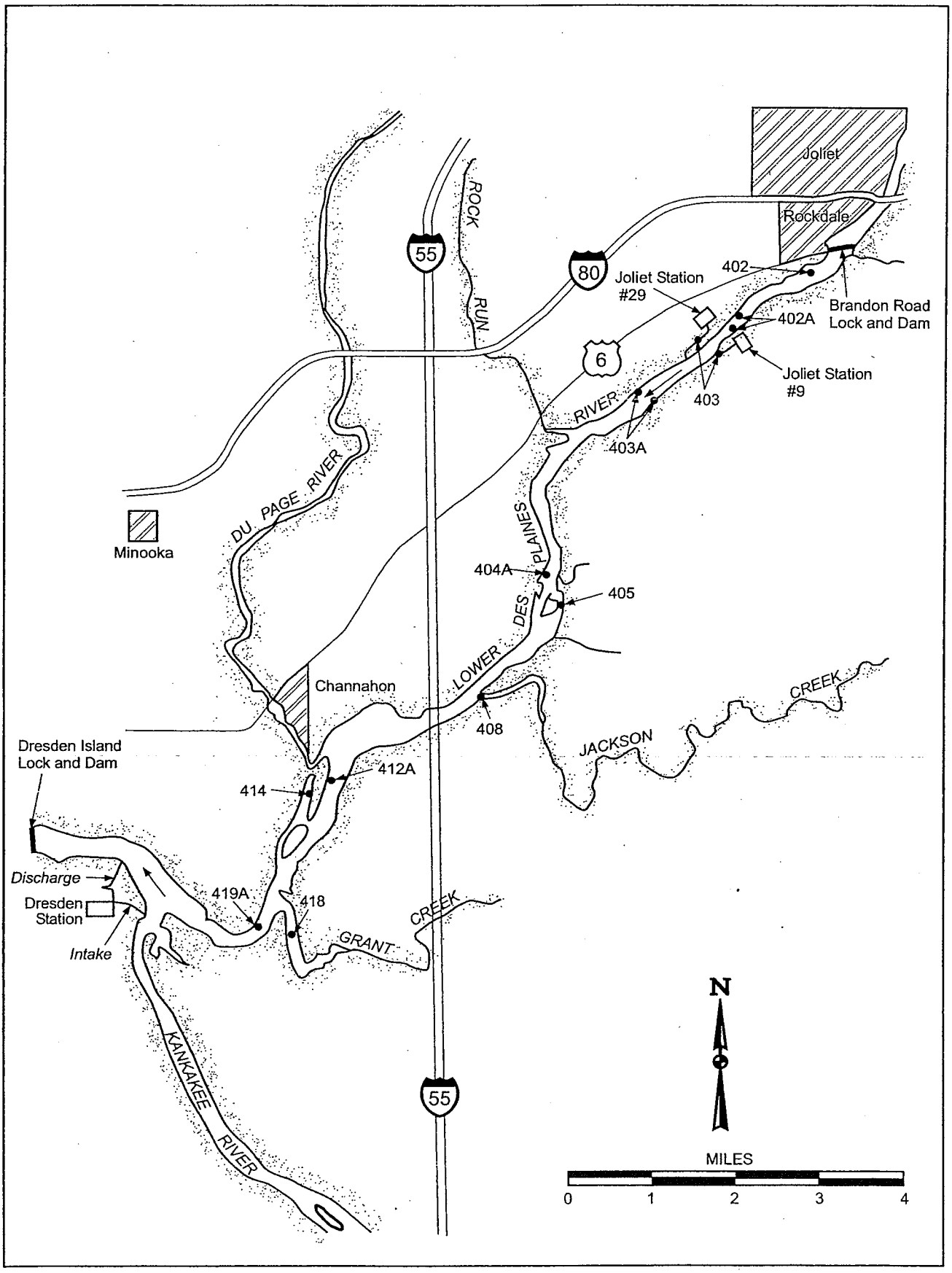


Figure 1. Fish Sampling Locations within the Upstream and Downstream I-55 segments of the lower Des Plaines River.

6139314_ph0000_Fig1.cdr

of 340 m. An additional 160 m is fished along the right bank, beginning just downstream of a gravel riffle and ending at the downstream point of a peninsula. Seining is conducted along the left bank near the first duck blind upstream of the "mouth".

Location 402A -- Joliet Stations #9 and #29, Upstream of Both Discharge Canals (RM 285.1) -- Main Channel Border

Electrofishing begins ~50 m upstream of the Joliet Station #9 intake and extends downstream along the left bank for 340 m, ending at a small tree ~30 m upstream of the mouth of the discharge canal. The area immediately in front of the intake is **not** sampled. An additional 160 m is electrofished along the right bank directly upstream of the aerial bridge. Seining is not conducted at this location.

Location 403 -- Joliet Stations #9 and #29 Discharge Canals (RM 284.9 [#9] and RM 284.6 [#29]) -- Thermally Enhanced -- Main Channel Border

Electrofishing is conducted for 250 m in both canals. Sampling is conducted along the right banks of both canals. Seining is not conducted at this location. Physicochemical parameters in Joliet Station #29's canal are measured upstream of the outfall of the supplemental cooling towers.

The 24 supplemental cooling towers at Joliet Station #29 were used several times during the summer to minimize any potential thermal impacts to the lower Des Plaines River. These towers are used on an as-needed basis in order to assist in maintaining compliance with both near-field and far-field thermal limitations, while optimizing megawatt loading during peak power demand periods.

Location 403A -- Caterpillar Co., Downstream of Both Discharge Canals (RM 283.8) -- Thermally Enhanced -- Main Channel Border

Electrofishing is conducted for 250 m along each river bank. As such, this location is sampled in the same manner as the Joliet Station's discharge canals (i.e., Location 403) and provides near-field data downstream of both discharges. The upstream end of the right bank electrofishing zone is located approximately 400 m upstream of a 42-inch storm water outfall. The start of the left bank electrofishing zone is located across the river and slightly upstream of the start of the right bank electrofishing zone. Seining is conducted along the right bank, approximately 100 m downstream of the 42-inch storm water outfall.

Location 404A – Amoco Chemical Corp. (RM 280.5) -- Main Channel Border

This location is located along the right bank of the river, just upstream of Treats Island. Electrofishing begins at Amoco Chemical's dock and extends downstream for 500 m. Seining is conducted near the midpoint of the electrofishing zone.

Location 405 -- Treats Island (RM 279.7) -- Side Channel

The electrofishing zone begins ~800 m upstream of the mouth of the Jackson Creek Diversion Channel and extends downstream along the left bank for 500 m. Seining is conducted at a gravel bar located near the mouth of the Jackson Creek Diversion Channel.

Location 408 -- Mouth of Jackson Creek (RM 278.3) -- Tributary Mouth

Electrofishing is conducted along both banks at this location. For the left bank, electrofishing begins ~20 m upstream of the mouth of Jackson Creek and ends at the Jackson Creek dam trash racks, a distance of 390 m. Depending on the elevation of the lower Des Plaines River, water is sometimes observed flowing through the trash racks upstream into Jackson Creek, and at other times downstream towards the mouth. For the right bank, electrofishing begins ~20 m downstream of the Jackson Creek dam and continues towards the mouth for 110 m, ending ~30 m upstream of the mouth. Seining is conducted along the right bank, opposite Exxon Mobil's intake.

2.2.2 Downstream I-55 Locations

Location 412A -- Bear Island West Bank of River (RM 276.5) -- Main Channel Border

Electrofishing begins adjacent to the residence at the upstream end of the island and extends downstream for 500 m, ending near the downstream tip of the island. Seining is conducted beneath the transmission lines.

Location 414 -- Bear Island Slough (RM 275.9)

The electrofishing zone begins at the downstream end of Bear Island and continues upstream along the island for 500 m. Seining is conducted along the southern tip of the island.

Location 418 -- Mouth of Grant Creek (RM 274.8) -- Tributary Mouth

This location is located south of the Grant Creek Cut-Off. Electrofishing is conducted along both banks at this location. The zone along the east bank begins 250 m upstream of the bridge and ends at the bridge. The zone along the west bank begins approximately 50 m upstream of the bridge and continues upstream for 250 m. Seining is conducted near the start of the east bank electrofishing zone.

Location 419A -- Bayhill Marina (RM 274.4) -- Main Channel Border

The 500 m electrofishing zone is located along the right bank, immediately upstream of a rock wall near a picnic area. Seining is conducted along the right bank, ~400 m downstream of the rock wall (~100 m downstream of the river bend).

2.3 FISH PROCESSING

All fish were counted and identified to the lowest practical taxonomic level, usually species. For each location and gear, a maximum of 30 specimens of each species collected was measured for total length (mm) and weighed (g). If over 30 individuals of a species were collected at any location, then 30 representative individuals were measured and weighed. The remaining individuals were plus counted and batch weighed. Minnows (excluding carp, goldfish, and their hybrid) and other small forage species (e.g., darters, brook silverside, etc.) were identified, counted, and batch weighed. All fish were maintained in water immediately after collection and until processing. After processing, they were returned to the river. All fish not processed in the

field were preserved in formalin, labeled, and returned to the laboratory for processing where they were processed in the same manner as those in the field. A voucher collection of unusual or taxonomically difficult species was compiled.

All fish encountered were examined for external anomalies. All external anomalies were classified as follows: DELT anomalies (deformities, erosions, lesions, and tumors; Ohio EPA 1987 and 1996), parasites, or "other" abnormalities. The following is a review of DELT anomalies and their causes in freshwater fishes (Ohio EPA 1989):

1) *Deformities* - These anomalies can affect the head, spine, or fins, and have a variety of causes including toxic chemicals, viruses, bacteria (e.g., *Mycobacterium* sp.), and protozoan parasites (e.g., *Myxosoma cerebalis*) (Ohio EPA 1989).

2) *Eroded fin, gill cover, barbel, or other body part* - These are the result of chronic disease principally caused by flexibacteria invading the tissue and causing necrosis (Post 1983). Necrosis of the fins may also be caused by gryodactylids, a small trematode parasite (Ohio EPA 1989). For this study, fin erosion was separated into three categories: slight erosion (<1/3 of fin eroded); moderate erosion (1/3-2/3 of fin eroded), and severe erosion (>2/3 of fin eroded) (Appendix F).

3) *Lesions and Ulcers* - These appear as open sores or exposed tissue and can be caused by viral (e.g., *Lymphocystis* sp.) or bacterial (e.g., *Flexibacter columnaris*, *Aeromonas* spp., *Vibrio* sp.) infections (Ohio EPA 1989).

4) *Tumors* - These result from the loss of carefully regulated cellular proliferative growth in tissue and are generally referred to as neoplasia. In wild fish populations, tumors can be the result of exposure to toxic chemicals. Baumann et al. (1987) identified polynuclear aromatic hydrocarbons (PAHs) as the cause of hepatic tumors in brown bullheads in the Black River (Ohio). Viral infections (e.g., Lymphocystis) can also cause tumors. Parasites (e.g., *Glugea anomala* and *Ceratomyxa shasta*; Post 1983) may cause tumor-like masses, but these are not counted as tumors. Parasite masses can be squeezed and broken between the thumb and forefinger whereas true tumors are firm and not easily broken (Ohio EPA 1989).

Only those anomalies visible to the naked eye were recorded. Exact counts of anomalies present (i.e., the number of tumors, lesions, etc. per fish) were not recorded. An external anomaly is defined as the presence of externally visible skin or subcutaneous disorders, and is expressed as percent of affected fish among all fish processed (Ohio EPA 1989).

2.4 PHYSICOCHEMICAL MEASUREMENTS (Electrofishing only)

Dissolved oxygen (DO) concentration, percent oxygen saturation, and water temperature were measured at the surface, at subsequent one-meter depth intervals, and at the bottom at each sampling location, but only at mid-depth where the water was one-meter or less in depth. In addition, near surface specific conductance and Secchi disk measurements were also taken. Measurements were taken on each day at those locations where electrofishing was conducted. Instruments used to measure temperature were checked against a calibrated thermometer. Instruments used to measure dissolved oxygen and percent oxygen saturation were calibrated before each measurement. In addition, immediately before each sampling day, these instruments

were checked against the Winkler method as specified in *Standard Methods for the Examination of Water and Wastewater* (current edition). The conductivity meter was also checked against a standard before each electrofishing sampling day.

2.5 DATA HANDLING AND ANALYSIS

Field and laboratory data were entered on forms compatible for computer entry following serialization, diga-coding, and QA/QC checks. Data were managed in a SAS format (Version 8.2) to provide flexibility in reporting study results.

Data from electrofishing were reported as number, catch-per-unit-effort (CPE, number per kilometer), and percent abundance for each species. Data were segregated by location, segment, and sampling period. Data obtained by seining were reported as number, CPE (number per haul), and percent abundance for each species by location, segment, and sampling period. Summaries of the catch data for each gear type were prepared for combined dates. Total number of fish, total number of species, CPEs, and percent abundance were included in the summaries. For the total species counts, hybrids are not counted and genus level identifications (e.g., unid. *Lepomis*) are only counted as a "species" when no species of that genus were collected.

Index of Well-Being (IWB) was calculated for each electrofishing sample. The IWB was developed by Gammon (1976) and uses the number, weight, and diversity of fishes to assess the health of the community. The IWB is calculated according to the formula:

$$IWB = 0.5 \ln N + 0.5 \ln B + d(no.) + d(wt.)$$

where: N = Number of fish collected per kilometer
B = Biomass (in kg) of fish per kilometer
d(no.) = Shannon diversity index based on numbers.
d(wt.) = Shannon diversity index based on weight.
If B was less than 1 kg, then B was always assigned a value of 1 kg to prevent negative IWB or IWBmod values.

The IWB is regularly used in the Midwest and has been shown to work reasonably well even outside the Midwest (Hughes and Gammon 1987). It was developed for use on large Midwestern rivers such as the Wabash and Ohio so its use on the UIW is appropriate. In addition, Ohio even incorporates IWB criteria into its State water quality standards.

Since 1993, this study has used the version of the IWB that was modified (IWBmod) by Ohio EPA to make it more sensitive to a wider array of environmental disturbances, particularly those that result in shifts in community composition without large reductions in species richness, numbers, and/or biomass (Ohio EPA 1987). This modification calls for the exclusion of 13 highly tolerant species, all hybrids, and all exotic species from the number and weight calculations. However, these taxa are included in the two Shannon index calculations. This modification eliminates the "undesired" effect caused by a high abundance of tolerant species (which clearly is the case in the UIW), but retains their "desired" influence on the Shannon indices. Ohio EPA's 13 highly tolerant species are central mudminnow, common carp, goldfish, golden shiner, bluntnose minnow, fathead minnow, eastern blacknose dace, creek chub, white sucker, yellow bullhead, brown bullhead, banded killifish, and green sunfish. In addition to

these 13 species, the following exotics and hybrids collected during this study are excluded during calculation of the IWBmod: threadfin shad, common carp x goldfish hybrid, western mosquitofish, *Lepomis* hybrid, and round goby. Our classification of exotic species for this study is discussed in greater detail in Section 3.2.3.

Fish condition was evaluated using the relative weight (Wr) index (Wege and Anderson 1978). This index represents a refinement of the relative condition factor concept and allows for interpopulational comparisons by making the standard weight-length regression species-specific rather than population-specific. Relative weight is calculated as:

$$Wr = W/Ws \times 100$$

where, W is the measured weight and Wr is the length-specific standard weight predicted by a weight-length regression constructed to represent the species as a whole. Length-specific standard weight functions are in the form:

$$\log_{10} Ws = a + (b \times \log_{10} \text{total length})$$

where, a (intercept) and b (slope) ideally account for genetically determined shape characteristics of a species and yield Wr values of 100 at particular times of the year for fish that have been well fed (Anderson and Gutreuter 1983).

Intercept, slope, and minimum length values for the Ws equation have been published for 35 species and one hybrid known from the UIW (Bister et al. 2000; Anderson and Neumann 1996; Murphy et al. 1991) (Table 1). Minimum lengths are established because the accuracy in weighing fish decreases markedly for smaller individuals and minimum lengths represent the length at which the variance to mean ratio for $\log_{10}$ sharply increases (Murphy et al. 1991).

Analysis of variance (ANOVA) and Duncan's Multiple Range Test were the statistical methods used to test for spatial and interyear differences in CPE, IWBmod, species richness, and Wr values. Before each data set was statistically evaluated using these methods, it was analyzed to determine whether or not the data were normally distributed. If data were not normally distributed, they were transformed using Log (Y+1).

Table 1. Intercept (a) and Slope (b) Parameters for Standard Weight (Ws) Equations with Minimum Total Lengths (mm) Recommended for Application [a].

Species	Intercept (a)	Slope (b)	Minimum Length	Reference or developer
Longnose gar	-6.811	3.449	200	Bister et al. (2000)
Gizzard shad	-5.376	3.170	180	Anderson and Gutreuter (1983)
Rainbow trout (lentic)	-4.898	2.990	120	Simpkins and Hubert (unpublished)
Brook trout	-5.085	3.043	130	Whelan and Taylor (1984)
Chinook salmon	-4.661	2.901	200	Halseth et al. (1990)
Northern pike	-5.437	3.096	100	Willis (unpublished)
Common carp	-4.639	2.920	200	Bister et al. (2000)
Golden shiner	-5.593	3.302	50	Liao et al. (1995)
Bigmouth buffalo	-5.069	3.118	150	Bister et al. (2000)
Smallmouth buffalo	-5.298	3.208	200	Bister et al. (2000)
River carpsucker	-4.839	2.992	130	Bister et al. (2000)
White sucker	-4.755	2.940	100	Bister et al. (2000)
Shorthead redhorse	-4.841	2.962	100	Bister et al. (2000)
Black bullhead	-4.974	3.085	130	Bister et al. (2000)
Yellow bullhead	-5.374	3.232	60	Bister et al. (2000)
Brown bullhead	-5.076	3.105	130	Bister et al. (2000)
Channel catfish	-5.800	3.294	70	Brown et al. (1995)
Flathead catfish	-5.542	3.230	130	Bister et al. (2000)
White perch	-5.122	3.136	80	Bister et al. (2000)
White bass	-5.066	3.081	115	Brown and Murphy (1991)
Yellow bass	-5.142	3.133	70	Bister et al. (2000)
Striped bass	-4.924	3.007	150	Brown and Murphy (1991)
Hybrid Morone	-5.201	3.139	115	Brown and Murphy (1991)
Rock bass	-4.827	3.074	80	Bister et al. (2000)
Green sunfish	-4.915	3.101	60	Bister et al. (2000)
Pumpkinseed	-5.179	3.237	50	Liao et al. (1995)
Warmouth	-5.180	3.241	80	Bister et al. (2000)
Bluegill	-5.374	3.316	80	Hillman (1982)
Largemouth bass	-5.316	3.191	150	Wege and Angerson (1978)
Smallmouth bass	-5.329	3.200	150	Kolander et al. (1993)
Black crappie	-5.618	3.345	100	Neumann and Murphy (1991)
White crappie	-5.642	3.332	100	Neumann and Murphy (1991)
Sauger	-5.492	3.187	70	C.S. Guy (unpublished)
Walleye	-5.453	3.180	150	Murphy et al. (1990)
Yellow perch	-5.386	3.230	100	Willis et al. (1991)
Freshwater drum	-5.419	3.204	100	Blackwell et al. (1995)

(a) Sources: Bister et al. 2000, Anderson and Neumann 1996, and Murphy et al. 1991.

3 RESULTS AND DISCUSSION

3.1 PHYSICOCHEMICAL MEASUREMENTS

Table 2 summarizes surface or mid-depth temperature and dissolved oxygen (DO) values, near surface specific conductivity measurements (i.e., adjusted to 25 C), and Secchi disk (i.e., transparency) depths. Surface or mid-depth temperature and DO measurements for each location and survey are presented in Figures 2 through 5. Appendix A contains all physicochemical data by location, depth, and sampling period.

3.1.1 Water Temperature

Surface or mid-depth water temperatures ranged from 20.2 to 36.1 C at the 11 electrofishing locations (Table 2 and Appendix A). The 36.1 C value was measured on 20 July within Joliet Station's #29 discharge canal (i.e., Location 403), upstream of the cooling towers' outfall (Appendix A). All physicochemical measurements within this discharge canal were measured upstream of the cooling towers' outfall. Electrofishing was conducted upstream and downstream of the outfall from the cooling towers. Among the 11 locations, mean temperatures during the study period were lowest (24.5-26.0 C) at the two locations upstream of the Joliet Stations (i.e., Locations 402 and 402A) and within the two backwater locations downstream of I-55 (i.e., Locations 414 and 418), highest within the Joliet Stations' discharge canals (i.e., Location 403, 30.9 C) and at the location directly downstream of these canals (i.e., Location 403A, 30.5 C), and intermediate (26.9-28.6 C) at the remaining five sampling locations (Table 2). Thus, mean temperatures at Locations 403 and 403A were 1.9 to 6.4 C warmer than at other locations. Mean temperatures during the study period were 2.5 C warmer within the Upstream I-55 segment than within the Downstream I-55 segment (Table 2).

The spatial pattern discussed above with respect to where the lowest and highest temperatures occurred was fairly consistent among the eight surveys (Figures 2 and 3; Appendix A). For example, during all eight surveys, warmest temperatures occurred at the Joliet Stations' discharge canals (i.e., Location 403) or at the location directly downstream of these canals (Location 403A). Coolest temperatures occurred at either or both of the locations upstream of the influence of the generating stations (i.e., Locations 402 and/or 402A) during three of the eight surveys (i.e., May, early June, and late July). For the remaining five surveys, coolest temperatures were measured at one of the two backwater locations within the Downstream I-55 segment (i.e., Bear Island slough [Location 414] or the mouth of Grant Creek [Location 418]).

Among surveys, coolest mean temperatures occurred in May (25.7 C), whereas the highest mean water temperature occurred during late July (31.3 C) (Table 2). In fact, temperatures were greater than or equal to 30 C at seven of the 11 sampling locations during late July (Figure 2). The warm mean water temperature during the late July survey was coincident with high air temperatures:

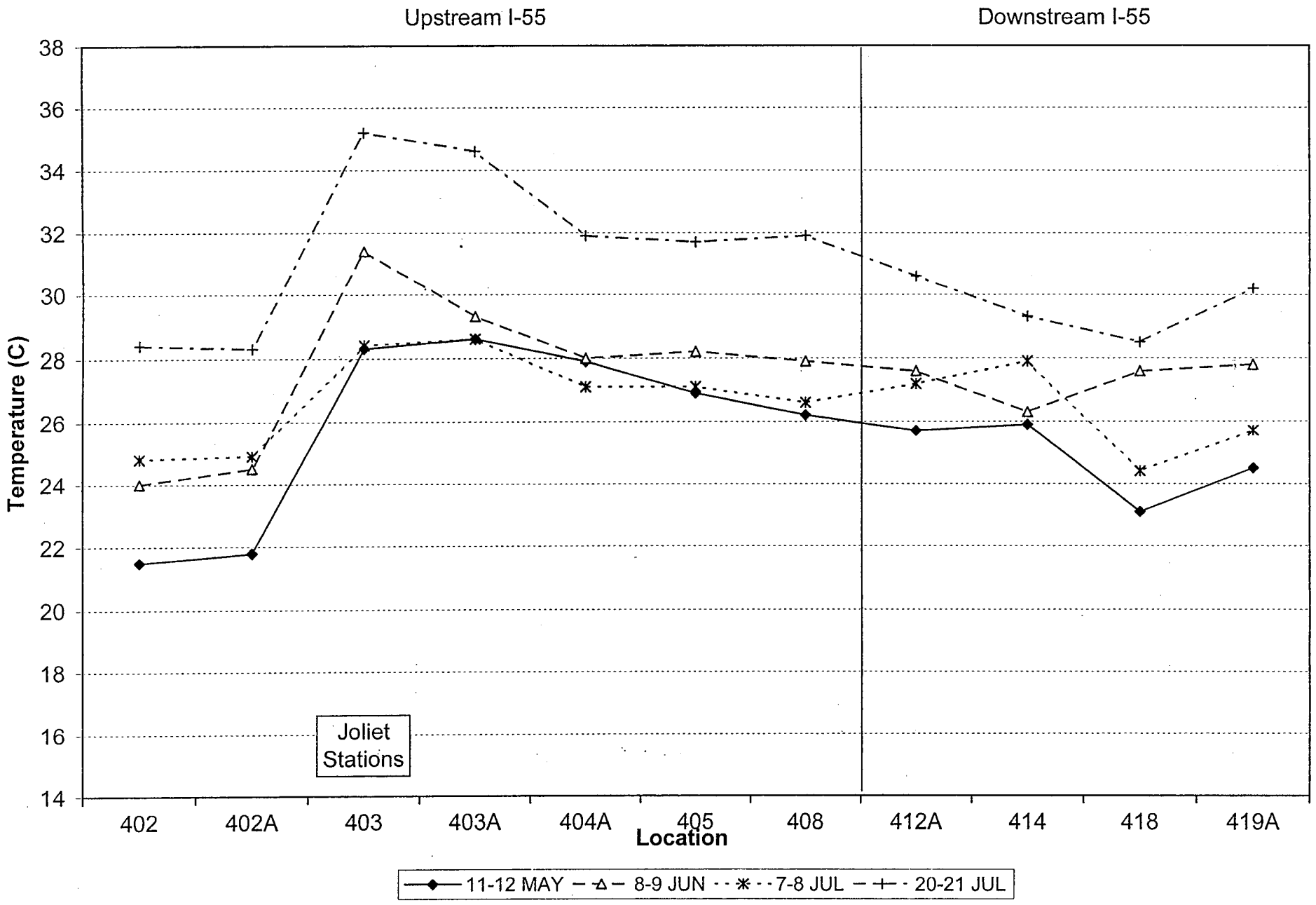
Date	Maximum Air Temperature (F)[1]
20 July	90
21 July	87

[1] Chicago's Midway Airport (AccuWeather.com 2005)

TABLE 2. SUMMARY OF SURFACE OR MID-DEPTH PHYSICOCHEMICAL PARAMETERS MEASURED AT ELECTROFISHING LOCATIONS, 2004.

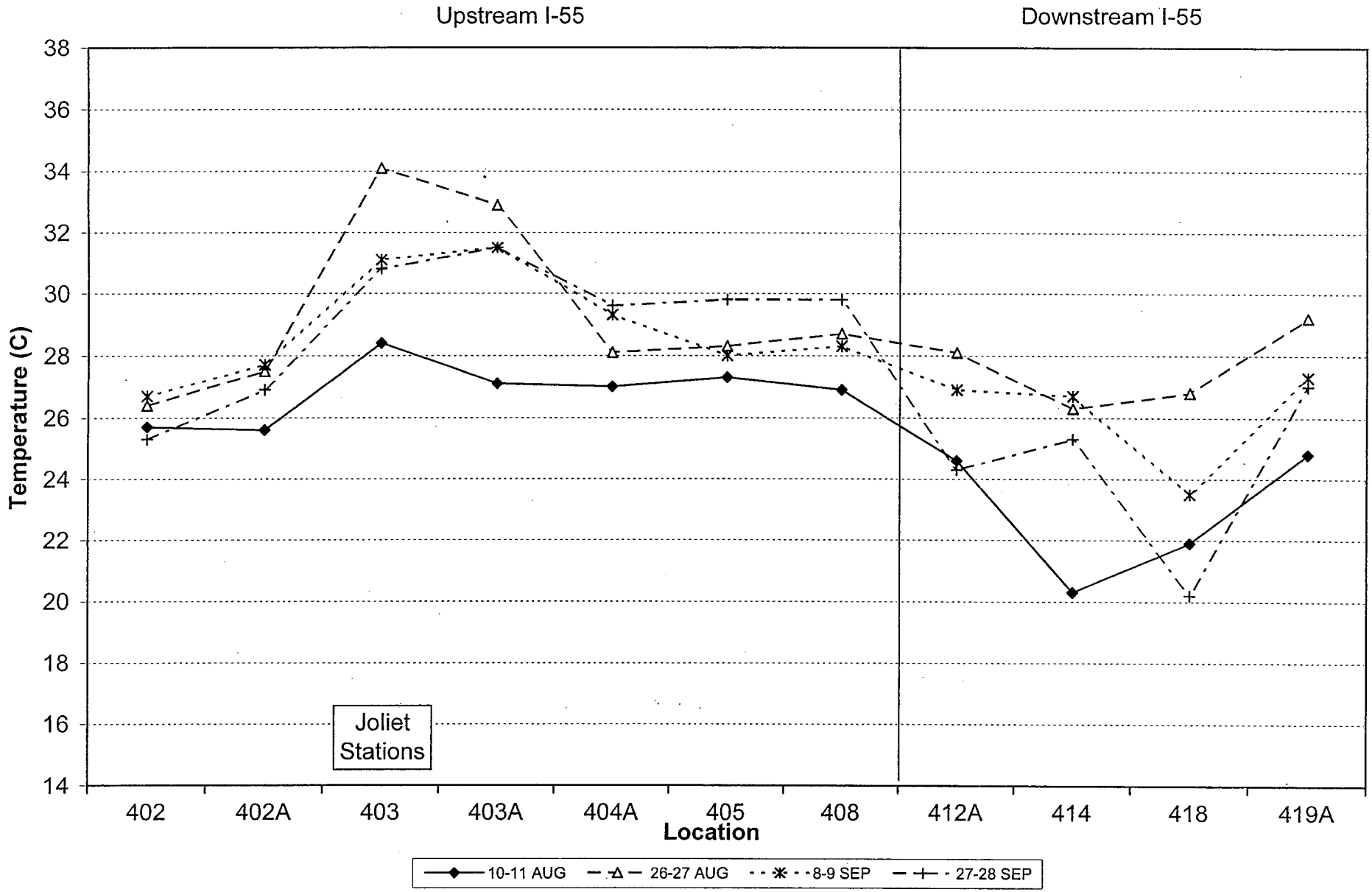
	TEMPERATURE (C)			DISSOLVED OXYGEN (ppm)			DISSOLVED OXYGEN Percent Saturation			CONDUCTIVITY (µS/cm)			SECCHI (cm)		
TRIP	MEAN	MIN	MAX	MEAN	MIN	MAX	MEAN	MIN	MAX	MEAN	MIN	MAX	MEAN	MIN	MAX
11-12 MAY	25.7	21.5	28.8	11.0	8.5	16.1	138	102	196	1196	859	1578	55	35	72
8-9 JUN	27.8	24.0	32.9	9.0	7.4	12.7	115	95	156	915	610	961	70	32	94
7-8 JUL	26.8	24.4	29.3	7.7	6.5	10.8	97	78	128	686	645	709	55	42	66
20-21 JUL	31.3	28.3	36.1	7.9	6.3	12.4	107	85	163	772	734	790	67	33	81
10-11 AUG	25.7	20.3	29.3	7.7	6.2	13.0	94	72	139	688	661	715	62	32	88
26-27 AUG	29.2	26.3	35.0	6.8	5.0	8.8	89	66	110	719	644	758	48	37	64
8-9 SEP	28.2	23.5	31.5	8.1	6.7	10.7	104	86	123	806	688	843	57	39	71
27-28 SEP	27.6	20.2	32.1	9.6	7.8	11.0	121	98	146	816	765	863	55	35	61
LOCATION															
402	25.4	21.5	28.4	8.1	7.0	9.2	99	86	107	824	661	1217	59	45	89
402A	25.9	21.8	28.3	7.6	6.7	9.0	94	86	107	827	670	1195	66	57	94
403	30.9	27.4	36.1	7.7	6.2	10.9	104	85	143	840	682	1215	60	40	79
403A	30.5	27.1	34.6	8.2	6.6	10.6	109	89	138	828	679	1202	64	53	85
404A	28.6	27.0	31.9	8.6	6.8	11.0	112	86	144	876	667	1578	63	53	77
405	28.4	26.9	31.7	8.7	6.0	12.2	113	77	155	820	647	1162	64	37	88
408	28.3	26.2	31.9	8.0	5.0	11.0	105	66	146	823	645	1198	64	50	72
412A	26.9	24.3	30.6	8.7	6.3	12.9	110	81	170	843	694	1185	61	37	81
414	26.0	20.3	29.3	10.5	6.1	16.1	128	76	196	830	685	1152	45	32	53
418	24.5	20.2	28.5	10.4	8.8	12.7	124	110	156	711	610	859	39	32	48
419A	27.1	24.5	30.2	7.5	6.3	10.7	94	72	138	837	695	1187	59	47	71
SEGMENT															
UPSTREAM I-55	28.6	21.5	36.1	8.1	5.0	12.2	105	66	155	835	645	1578	62	37	94
DOWNSTREAM I-55	26.1	20.2	30.6	9.3	6.1	16.1	114	72	196	805	610	1187	51	32	81

Figure 2. Spatial and Temporal Comparisons of Surface or Mid-Depth Water Temperatures at Electrofishing Locations, May-July 2004.



Note: Values for Location 403 are means of measurements from Joliet Stations' #9 and #29 discharge canals.

Figure 3. Spatial and Temporal Comparisons of Surface or Mid-Depth Water Temperatures at Electrofishing Locations, August-September 2004.



Note: Values for Location 403 are means of measurements from Joliet Stations' #9 and #29 discharge canals.

The mean water temperature was also warm (29.2 C) during the late August survey. Maximum air temperatures during this period were similar to the mean water temperature on the first day and typical of August air temperatures for this date on the second sample day.

Date	Maximum Air Temperature (F)[1]
27 August	84
28 August	79

[1] Chicago's Midway Airport (AccuWeather.com 2005)

Mean springtime (i.e., May) water temperatures (C) for the two segments in 2004 were higher than during the previous nine study years (EA 1995, 1996c, and 1998-2004):

Year	Upstream I-55	Downstream I-55
2004	25.9	24.8
2003	20.9	19.8
2002	21.9	23.2
2001	24.5	22.8
2000	25.1	21.2
1999	20.7	24.0
1998	19.1	19.7
1997	19.0	16.4
1995	17.4	19.0
1994	17.7	17.7

Mean springtime temperatures within both segments have typically been higher during the past eight years compared to 1994 and 1995. The spatial trend for mean springtime temperatures in 2004 was similar to those observed in 1997, 2000, 2001 and 2003, in that they were slightly higher upstream of I-55 than downstream of it. For the remaining five study years, mean temperatures were either similar between the two segments or higher within the Downstream I-55 segment.

In contrast to mean springtime water temperatures, mean summertime (i.e., 15 June-September) water temperatures (C) in both segments during 2004 were among the lowest observed during the past 10 study years:

Year	Upstream I-55	Downstream I-55
2004	28.8	26.1
2003	29.7	27.3
2002	31.1	28.0
2001	28.6	27.9
2000	29.7	27.5
1999	29.9	27.8
1998	29.5	28.3
1997	28.5	26.8
1995	30.7	30.3
1994	26.7	25.7

In fact, with the exception of the Upstream I-55 mean in 2002, which was the highest among years compared, mean summertime temperatures within both segments during the past eight years have been intermediate to those of 1994 and 1995. The spatial trends for mean summertime temperatures have been consistent during each of the past 10 study years, slightly warmer in the Upstream I-55 segment than within the Downstream I-55 segment.

3.1.2 Dissolved Oxygen

Surface or mid-depth dissolved oxygen (DO) concentrations ranged from 5.0 to 16.1 ppm (Table 2 and Appendix A). DO concentrations within the Upstream I-55 segment were consistently above the Secondary Contact Standard of 4 ppm and DO concentrations within the Downstream I-55 segment were consistently above the General Use Standard of 5 ppm. The lowest value was measured within the mouth of Jackson Creek (i.e., Location 408) on 26 August, and the highest value was measured within Bear Island Slough (i.e., Location 414) on 12 May (Figures 4 and 5).

Spatially, mean DO and percent saturation values were highest within the two backwaters of the Downstream I-55 segment (i.e., Locations 414 and 418) and lowest at main channel border Locations 402A and 419A (Table 2). DO and percent saturation values were highest at either or both of these backwater locations during seven of the eight surveys and lowest at either or both Locations 402A and 419A during five (DO) or six (percent saturation) of the eight surveys (Figures 4 and 5; Appendix A). No consistent longitudinal trends in DO or percent saturation values were evident for either the surveys combined or individual survey data (Table 2; Figures 4 and 5; Appendix A). Mean DOs during the study period were 1.2 ppm lower within the Upstream I-55 segment than within the Downstream I-55 segment, but mean percent saturation values were similar (Table 2).

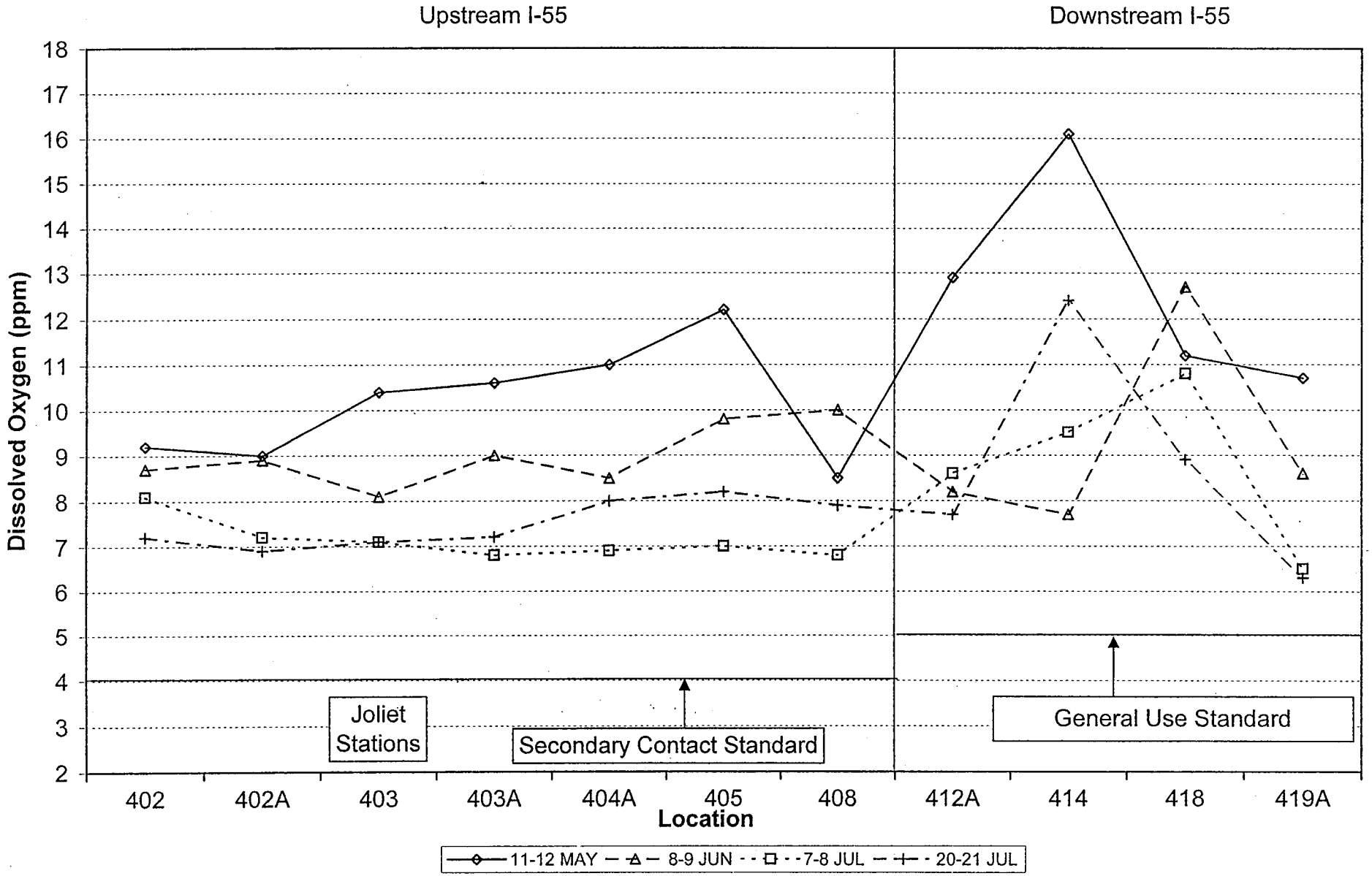
Temporally, mean DO and percent saturation values were highest in May, early June, and late September, and lowest in late August (Table 2). Mean values among the other four surveys were similar.

The annual mean (i.e., May-September) DO values from each segment in 2004 were within their respective range of values observed during the previous nine study years:

Year	Upstream I-55	Downstream I-55
2004	8.1	9.3
2003	8.3	8.9
2002	8.5	8.9
2001	8.4	10.8
2000	8.0	9.5
1999	7.7	10.3
1998	8.2	9.7
1997	8.2	9.3
1995	7.5	10.8
1994	7.9	9.7

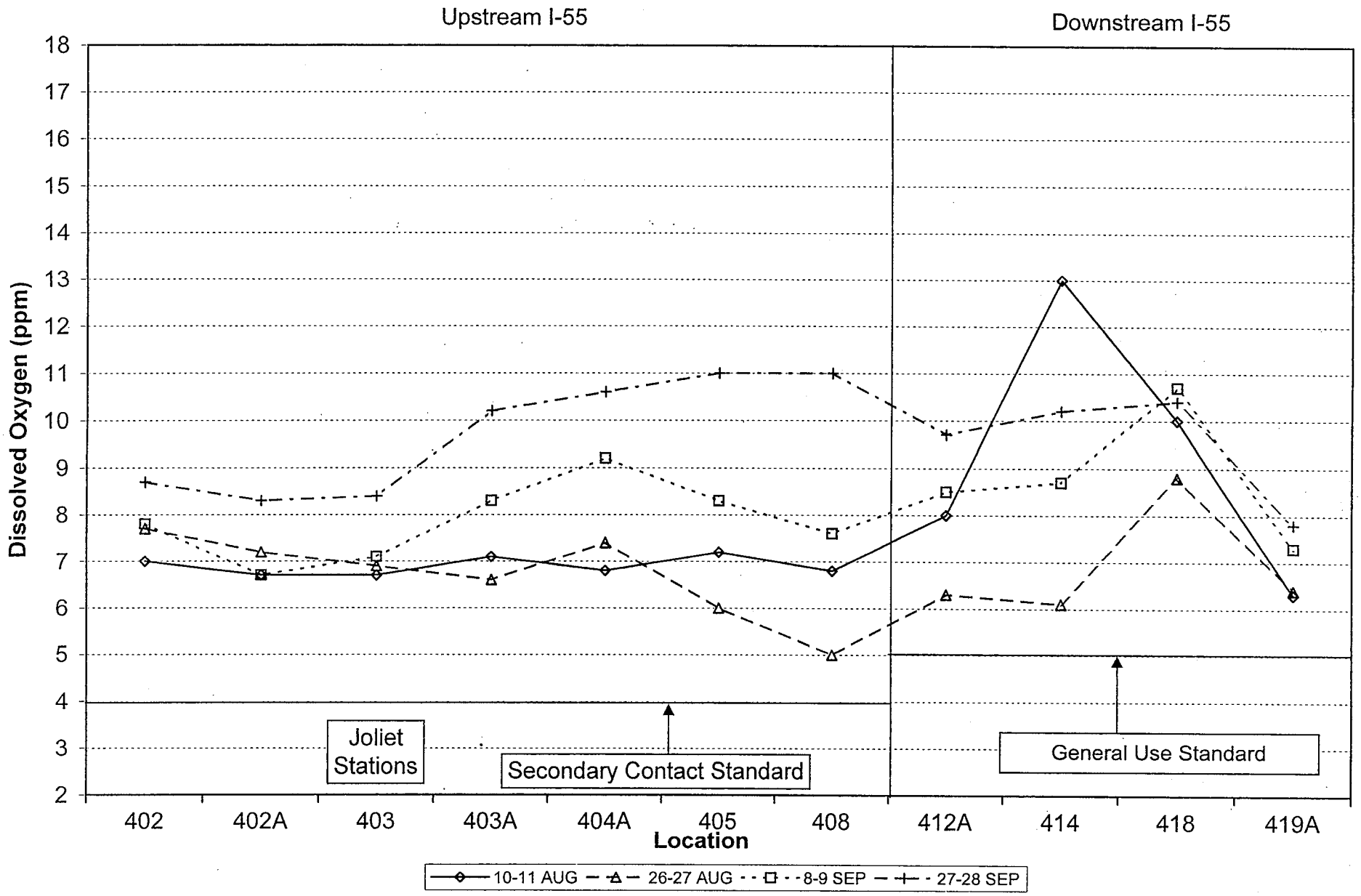
The spatial pattern for annual mean DO values was identical in each of these 10 years, higher downstream of I-55 than upstream of it. For each of the 10 years analyzed, DO concentrations within the Upstream I-55 segment were consistently above the Secondary Contact Standard of 4 ppm and DO concentrations within the Downstream I-55 segment were consistently at or above the General Use Standard of 5 ppm (Table 2; EA 1995, 1996c, and 1998-2004).

Figure 4. Spatial and Temporal Comparisons of Surface or Mid-Depth Dissolved Oxygen Measurements at Electrofishing Locations, May-July 2004.



Note: Values for Location 403 are means of measurements from Joliet Stations' #9 and #29 discharge canals.

Figure 5. Spatial and Temporal Comparisons of Surface or Mid-Depth Dissolved Oxygen Measurements at Electrofishing Locations, August-September 2004.



Note: Values for Location 403 are means of measurements from Joliet Stations' #9 and #29 discharge canals.

3.1.3 Specific Conductivity

Specific conductance values ranged from 610 to 1578 µS/cm (Table 2 and Appendix A). Temporally, mean values were highest in May (1196 µS/cm), and except for mid July (772 µS/cm) consecutively decreased or were similar through early August (688 µS/cm), after which values increased during the latter three surveys. Spatially, mean conductance values were lowest at Location 418 (711 µS/cm) and higher, but similar (820-876 µS/cm) among the other ten locations. Mean values were similar between the Upstream and Downstream I-55 segments.

3.1.4 Transparency

Transparency (Secchi disk) values ranged from 32 to 94 cm (Table 2 and Appendix A). Among locations, mean values were lowest at backwater Locations 414 and 418 (45 and 39 cm, respectively), and higher, but similar (59-66 cm) among the other nine locations. The low mean values at these two backwater locations were due to algal blooms, which also resulted in the high DO values noted at these locations. Among surveys, mean values were lowest in late August (48 cm), highest during the 8-9 June survey (70 cm), and fairly similar (55-67 cm) among the remaining six surveys.

3.2 SPECIES COMPOSITION AND ABUNDANCE

3.2.1 2004

In 2004, a total of 160 gear efforts (88 electrofishing and 72 seining) were expended within the lower Des Plaines River at the 11 locations. These efforts produced 11,981 fish representing 57 species and two hybrids (Tables 3 and 4). The combined catch was dominated numerically by bluegill (21.8 percent) and bluntnose minnow (21.7 percent). Other taxa that composed greater than 2 percent of the catch by number were green sunfish (11.2 percent), gizzard shad (10.6 percent), largemouth bass (6.1 percent), hybrid sunfish (3.4 percent), orangespotted sunfish (3.1 percent), bullhead minnow (2.8 percent), spotfin shiner (2.7 percent), emerald shiner (2.6 percent), and channel catfish (2.3 percent). Conversely, 26 species were represented by 10 or fewer individuals. By weight, the combined catch was dominated by common carp (26.3 percent) and, to a lesser extent, channel catfish (18.8 percent), largemouth bass (11.1 percent), smallmouth buffalo (10.7 percent), gizzard shad (10.1 percent), and freshwater drum (8.5 percent). Complete summaries of fish data by survey and for surveys combined are provided in Appendix B; a raw data listing is provided in Appendix C.

Several interesting species records were reported for 2004. One orangethroat darter was collected by seining at Location 402 (Brandon Dam tailwater) on 07 July 2004 (Table 4; Appendix B). This species was collected last year for the first time during this monitoring program (EA 1996a, 1996b, 1996c, and 1998-2003). However, it was previously collected within the lower Des Plaines River during the 1994 ichthyoplankton study of the UIW (EA 1996b) and older published records exist from the Des Plaines River system (Smith 1979; Page et al. 1992). One highfin carpsucker was collected at Location 403 by electrofishing on 26 August (Table 4; Appendix B). This species had not been collected during the last 10 years of Midwest Generation or Commonwealth Edison sponsored studies (EA 1996b, 1996c and 1998-2002) of the lower Des Plaines River. Smith (1979) indicates that it was once the most generally

TABLE 3. LIST OF COMMON AND SCIENTIFIC NAMES FOR FISH TAXA COLLECTED FROM THE LOWER DES PLAINES RIVER, 2004.

Common Family Name	COMMON NAME	*Scientific Name*
Gars	LONGNOSE GAR	*Lepisosteus osseus*
Herrings	SKIPJACK HERRING	*Alosa chrysochloris*
	GIZZARD SHAD	*Dorosoma cepedianum*
	THREADFIN SHAD	*Dorosoma petenense*
Pikes	GRASS PICKEREL	*Esox americanus*
Minnows	SPOTFIN SHINER	*Cyprinella spiloptera*
	COMMON CARP	*Cyprinus carpio*
	CARP X GOLDFISH HYBRID	*Cyprinus carpio* X *Carassius auratus*
	PALLID SHINER	*Hybopsis amnis*
	STRIPED SHINER	*Luxilus chrysocephalus*
	REDFIN SHINER	*Lythurus umbratilis*
	GOLDEN SHINER	*Notemigonus crysoleucas*
	EMERALD SHINER	*Notropis atherinoides*
	GHOST SHINER	*Notropis buchanani*
	SPOTTAIL SHINER	*Notropis hudsonius*
	SAND SHINER	*Notropis stramineus*
	BLUNTNOSE MINNOW	*Pimephales notatus*
	FATHEAD MINNOW	*Pimephales promelas*
	BULLHEAD MINNOW	*Pimephales vigilax*
Suckers	RIVER CARPSUCKER	*Carpiodes carpio*
	QUILLBACK	*Carpiodes cyprinus*
	HIGHFIN CARPSUCKER	*Carpiodes velifer*
	WHITE SUCKER	*Catostomus commersonii*
	SMALLMOUTH BUFFALO	*Ictiobus bubalus*
	BIGMOUTH BUFFALO	*Ictiobus cyprinellus*
	BLACK BUFFALO	*Ictiobus niger*
	SPOTTED SUCKER	*Minytrema melanops*
	SILVER REDHORSE	*Moxostoma anisurum*
	GOLDEN REDHORSE	*Moxostoma erythrurum*
	SHORTHEAD REDHORSE	*Moxostoma macrolepidotum*
Bullhead catfishes	BLACK BULLHEAD	*Ameiurus melas*
	YELLOW BULLHEAD	*Ameiurus natalis*
	CHANNEL CATFISH	*Ictalurus punctatus*
	TADPOLE MADTOM	*Noturus gyrinus*
	FLATHEAD CATFISH	*Pylodictis olivaris*
Killifishes	BLACKSTRIPE TOPMINNOW	*Fundulus notatus*
Livebearers	WESTERN MOSQUITOFISH	*Gambusia affinis*
Silversides	BROOK SILVERSIDE	*Labidesthes sicculus*
Temperate basses	WHITE BASS	*Morone chrysops*
	YELLOW BASS	*Morone mississippiensis*
Sunfishes	ROCK BASS	*Ambloplites rupestris*
	GREEN SUNFISH	*Lepomis cyanellus*
	PUMPKINSEED	*Lepomis gibbosus*
	WARMOUTH	*Lepomis gulosus*
	ORANGESPOTTED SUNFISH	*Lepomis humilis*
	BLUEGILL	*Lepomis macrochirus*
	LONGEAR SUNFISH	*Lepomis megalotis*
	HYBRID SUNFISH	*Lepomis* hybrid
	UNID LEPOMIS	*Lepomis* sp.
	SMALLMOUTH BASS	*Micropterus dolomieu*
	LARGEMOUTH BASS	*Micropterus salmoides*
	WHITE CRAPPIE	*Pomoxis annularis*
	BLACK CRAPPIE	*Pomoxis nigromaculatus*
Perches	JOHNNY DARTER	*Etheostoma nigrum*
	ORANGETHROAT DARTER	*Etheostoma spectabile*
	LOGPERCH	*Percina caprodes*
	BLACKSIDE DARTER	*Percina maculata*
	WALLEYE	*Sander vitreus*
Drums	FRESHWATER DRUM	*Aplodinotus grunniens*
Gobies	ROUND GOBY	*Neogobius melanostomus*

TABLE 4. SPECIES COMPOSITION, NUMBER, BIOMASS, AND RELATIVE ABUNDANCE OF FISH COLLECTED FROM THE LOWER DES PLAINES RIVER, 2004.

SPECIES	NUMBER CAUGHT		WEIGHT CAUGHT	
	#	%	KG	%
LONGNOSE GAR	8	0.07	5.115	0.35
SKIPJACK HERRING	6	0.05	0.201	0.01
GIZZARD SHAD	1,275	10.64	148.402	10.09
THREADFIN SHAD	85	0.71	0.221	0.02
GRASS PICKEREL	1	0.01	0.007	0.00
COMMON CARP	202	1.69	387.280	26.34
CARP X GOLDFISH HYBRID	4	0.03	5.685	0.39
GOLDEN SHINER	13	0.11	0.079	0.01
PALLID SHINER	32	0.27	0.034	0.00
EMERALD SHINER	314	2.62	0.811	0.06
GHOST SHINER	4	0.03	0.003	0.00
STRIPED SHINER	12	0.10	0.022	0.00
SPOTTAIL SHINER	53	0.44	0.241	0.02
SPOTFIN SHINER	322	2.69	0.565	0.04
SAND SHINER	14	0.12	0.016	0.00
REDFIN SHINER	1	0.01	0.002	0.00
BLUNTNOSE MINNOW	2,600	21.70	3.054	0.21
FATHEAD MINNOW	1	0.01	0.001	0.00
BULLHEAD MINNOW	334	2.79	0.225	0.02
RIVER CARPSUCKER	24	0.20	28.955	1.97
QUILLBACK	23	0.19	12.826	0.87
HIGHFIN CARPSUCKER	1	0.01	0.200	0.01
WHITE SUCKER	4	0.03	1.610	0.11
SMALLMOUTH BUFFALO	115	0.96	156.530	10.65
BIGMOUTH BUFFALO	3	0.03	9.720	0.66
BLACK BUFFALO	1	0.01	0.460	0.03
SPOTTED SUCKER	1	0.01	0.480	0.03
SILVER REDHORSE	4	0.03	2.310	0.16
GOLDEN REDHORSE	29	0.24	5.643	0.38
SHORTHEAD REDHORSE	4	0.03	0.804	0.05
BLACK BULLHEAD	1	0.01	0.062	0.00
YELLOW BULLHEAD	17	0.14	3.203	0.22
CHANNEL CATFISH	271	2.26	276.749	18.82
TADPOLE MADTOM	1	0.01	0.005	0.00
FLATHEAD CATFISH	4	0.03	7.870	0.54
BLACKSTRIPE TOPMINNOW	79	0.66	0.063	0.00
WESTERN MOSQUITOFISH	132	1.10	0.061	0.00
BROOK SILVERSIDE	45	0.38	0.027	0.00
WHITE BASS	6	0.05	2.855	0.19
YELLOW BASS	4	0.03	0.594	0.04
ROCK BASS	4	0.03	0.246	0.02
GREEN SUNFISH	1,346	11.23	26.017	1.77
PUMPKINSEED	3	0.03	0.109	0.01
WARMOUTH	3	0.03	0.061	0.00
ORANGESPOTTED SUNFISH	377	3.15	2.519	0.17
BLUEGILL	2,609	21.78	52.529	3.57
LONGEAR SUNFISH	15	0.13	0.216	0.01
HYBRID SUNFISH	412	3.44	12.740	0.87
UNID LEPOMIS	49	0.41	0.037	0.00
SMALLMOUTH BASS	113	0.94	18.070	1.23
LARGEMOUTH BASS	736	6.14	162.471	11.05
WHITE CRAPPIE	5	0.04	0.690	0.05
BLACK CRAPPIE	19	0.16	1.531	0.10
JOHNNY DARTER	6	0.05	0.006	0.00
ORANGETHROAT DARTER	1	0.01	0.001	0.00
LOGPERCH	12	0.10	0.078	0.01
BLACKSIDE DARTER	6	0.05	0.013	0.00
WALLEYE	8	0.07	4.270	0.29
FRESHWATER DRUM	137	1.14	125.510	8.54
ROUND GOBY	70	0.58	0.128	0.01
TOTAL FISH	11,981	100.00	1,470.233	100.00
TOTAL SPECIES	57			

NOTE: 0.00 DENOTES VALUES LESS THAN 0.005.

distributed and most abundant carpsucker in Illinois and now it is the least. Seventy round gobies were collected from the study area in 2004; 50 specimens were collected within the Upstream I-55 segment (Tables 4 and 5). Round goby was first collected from the lower Des Plaines River during this monitoring program in 2001 (EA 2002). One specimen was collected that year and an additional specimen was collected in 2002, both of which were collected within the Upstream I-55 segment (EA 2002 and 2003). The number of round goby collected in 2004 was the highest to date and the number collected within the Downstream I-55 segment increased from one in 2003 to twenty in 2004. Thirty-two state-endangered pallid shiners were collected in 2004 (Table 4). All specimens were collected within the Downstream I-55 segment. Their spatial and temporal distributions for 2004 are provided below:

Numbers of Pallid Shiners, 2004.

	Location	
Date	412A	414
11 August	1	2
27August	--	16
8 September	1	6
28 September	--	6

As shown above, 30 of the 32 specimens were collected from Bear Island Slough (i.e., Location 414). The 2004 collections represent only the fourth year in which this species has been collected from the Des Plaines River (EA 1996b, and 1996c, and 1998-2003; Smith 1979; Page et al. 1992). In 2000 and 2002, two specimens per year were collected, all from Bear Island slough (EA 2001 and 2003). Thus, there appears to be a resident population within the lower Des Plaines River, primarily near Bear Island slough, which may be increasing in abundance and distribution.

Inspection of Table 4 reveals that a relatively diverse fish fauna (57 species) is present within the lower Des Plaines River portion of the Dresden Pool. Diversity is highest in the minnow, sunfish, and sucker families, which were represented by 13, 11, and 11 species, respectively. EA attributes the overall richness of the Dresden Pool study area to the availability of a better variety of lentic and lotic habitats compared to the Lockport and Brandon Pools, as well as periodic contributions of fish from the species-rich Kankakee River.

Compilation of catch data by segment (Table 5) reveals several interesting observations. First, community dominants were similar between the two segments. For example, gizzard shad, common carp, emerald shiner, spotfin shiner, bluntnose minnow, green sunfish, bluegill, and largemouth bass were among the 10 most abundant species collected in both segments. Second, species richness was nearly identical between the two segments, 50 species upstream of I-55 vs. 49 species downstream of it. Third, the abundance of fish (based on catch-per-gear-effort) was lower within the Downstream I-55 segment (64 fish per gear effort) than within the Upstream I-55 segment (96 fish per gear effort). Fourth, both the absolute and relative abundance of hybrid sunfish was much higher in the upstream I-55 segment. Finally, highly tolerant taxa (including carp x goldfish hybrid) are more abundant upstream of I-55 (38 percent) than downstream of it (32 percent) (Table 5).

3.2.2 Interyear Comparisons

Composition and abundance data, for electrofishing and seining combined, are compared among 1994, 1995, and 1997-2004 for segments combined (Table 6) and for segments individually

TABLE 5. SUMMARY OF THE NUMBER OF FISH COLLECTED WITHIN EACH SEGMENT OF THE LOWER DES PLAINES RIVER, 2004.

SPECIES	UPSTREAM I-55		DOWNSTREAM I-55		SEGMENTS COMBINED	
	#	%	#	%	#	%
LONGNOSE GAR	8	0.14	--	--	8	0.07
SKIPJACK HERRING	4	0.07	2	0.03	6	0.05
GIZZARD SHAD	739	12.94	536	8.55	1,275	10.64
THREADFIN SHAD	25	0.44	60	0.96	85	0.71
GRASS PICKEREL	--	--	1	0.02	1	0.01
COMMON CARP	136	2.38	66	1.05	202	1.69
CARP X GOLDFISH HYBRID	4	0.07	--	--	4	0.03
GOLDEN SHINER	1	0.02	12	0.19	13	0.11
PALLID SHINER	--	--	32	0.51	32	0.27
EMERALD SHINER	180	3.15	134	2.14	314	2.62
GHOST SHINER	3	0.05	1	0.02	4	0.03
STRIPED SHINER	2	0.04	10	0.16	12	0.10
SPOTTAIL SHINER	31	0.54	22	0.35	53	0.44
SPOTFIN SHINER	164	2.87	158	2.52	322	2.69
SAND SHINER	13	0.23	1	0.02	14	0.12
REDFIN SHINER	1	0.02	--	--	1	0.01
BLUNTNOSE MINNOW	1,310	22.93	1,290	20.58	2,600	21.70
FATHEAD MINNOW	--	--	1	0.02	1	0.01
BULLHEAD MINNOW	52	0.91	282	4.50	334	2.79
RIVER CARPSUCKER	2	0.04	22	0.35	24	0.20
QUILLBACK	16	0.28	7	0.11	23	0.19
HIGHFIN CARPSUCKER	1	0.02	--	--	1	0.01
WHITE SUCKER	4	0.07	--	--	4	0.03
SMALLMOUTH BUFFALO	75	1.31	40	0.64	115	0.96
BIGMOUTH BUFFALO	1	0.02	2	0.03	3	0.03
BLACK BUFFALO	1	0.02	--	--	1	0.01
SPOTTED SUCKER	1	0.02	--	--	1	0.01
SILVER REDHORSE	2	0.04	2	0.03	4	0.03
GOLDEN REDHORSE	17	0.30	12	0.19	29	0.24
SHORTHEAD REDHORSE	3	0.05	1	0.02	4	0.03
BLACK BULLHEAD	1	0.02	--	--	1	0.01
YELLOW BULLHEAD	13	0.23	4	0.06	17	0.14
CHANNEL CATFISH	210	3.68	61	0.97	271	2.26
TADPOLE MADTOM	--	--	1	0.02	1	0.01
FLATHEAD CATFISH	3	0.05	1	0.02	4	0.03
BLACKSTRIPE TOPMINNOW	47	0.82	32	0.51	79	0.66
WESTERN MOSQUITOFISH	124	2.17	8	0.13	132	1.10
BROOK SILVERSIDE	--	--	45	0.72	45	0.38
WHITE BASS	4	0.07	2	0.03	6	0.05
YELLOW BASS	2	0.04	2	0.03	4	0.03
ROCK BASS	3	0.05	1	0.02	4	0.03
GREEN SUNFISH	709	12.41	637	10.16	1,346	11.23
PUMPKINSEED	--	--	3	0.05	3	0.03
WARMOUTH	2	0.04	1	0.02	3	0.03
ORANGESPOTTED SUNFISH	46	0.81	331	5.28	377	3.15
BLUEGILL	763	13.36	1,846	29.45	2,609	21.78
LONGEAR SUNFISH	9	0.16	6	0.10	15	0.13
HYBRID SUNFISH	371	6.50	41	0.65	412	3.44
UNID LEPOMIS	2	0.04	47	0.75	49	0.41
SMALLMOUTH BASS	69	1.21	44	0.70	113	0.94
LARGEMOUTH BASS	377	6.60	359	5.73	736	6.14
WHITE CRAPPIE	1	0.02	4	0.06	5	0.04
BLACK CRAPPIE	9	0.16	10	0.16	19	0.16
JOHNNY DARTER	1	0.02	5	0.08	6	0.05
ORANGETHROAT DARTER	1	0.02	--	--	1	0.01
LOGPERCH	--	--	12	0.19	12	0.10
BLACKSIDE DARTER	5	0.09	1	0.02	6	0.05
WALLEYE	6	0.11	2	0.03	8	0.07
FRESHWATER DRUM	88	1.54	49	0.78	137	1.14
ROUND GOBY	50	0.88	20	0.32	70	0.58
TOTAL FISH	5,712	100.00	6,269	100.00	11,981	100.00
GEAR EFFORTS	96		64		160	
CATCH PER GEAR EFFORT	60		98		75	
TOTAL SPECIES	50		49		57	

TABLE 6. SPECIES COMPOSITION, NUMBER, AND RELATIVE ABUNDANCE OF FISH COLLECTED FROM THE LOWER DES PLAINES RIVER, MAY-SEPTEMBER 1994, 1995, AND 1997-2004.

SPECIES	1994		1995		1997		1998		1999		2000		2001		2002		2003		2004	
	#	%	#	%	#	%	#	%	#	%	#	%	#	%	#	%	#	%	#	%
LONGNOSE GAR	--	--	7	0.16	13	0.17	15	0.14	2	0.03	11	0.14	15	0.14	15	0.12	26	0.09	8	0.07
SHORTNOSE GAR	--	--	--	--	--	--	--	--	1	0.02	--	--	--	--	--	--	--	--	--	--
UNID GAR	1	0.03	--	--	--	--	--	--	--	--	3	0.04	--	--	1	0.01	--	--	--	--
BOWFIN	--	--	--	--	--	--	--	--	--	--	--	--	1	0.01	--	--	--	--	--	--
UNID CLUPEIDAE	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	152	0.52	--	--
SKIPJACK HERRING	3	0.09	--	--	2	0.03	5	0.05	5	0.08	2	0.02	15	0.14	10	0.08	--	--	6	0.05
ALEWIFE	--	--	--	--	--	--	1	0.01	--	--	--	--	--	--	--	--	--	--	--	--
GIZZARD SHAD	812	24.59	393	9.17	2,244	29.77	1,950	17.60	1,308	21.37	1,543	18.98	2,982	27.69	3,265	25.16	1,665	5.72	1,183	10.51
THREADFIN SHAD	--	--	--	--	--	--	1	0.01	18	0.29	132	1.62	72	0.67	62	0.48	261	0.90	85	0.76
UNID DOROSOMA	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	2,823	9.70	--	--
GRASS PICKEREL	--	--	--	--	2	0.03	3	0.03	--	--	2	0.02	4	0.04	1	0.01	--	--	1	0.01
NORTHERN PIKE	--	--	2	0.05	--	--	1	0.01	--	--	--	--	1	0.01	--	--	--	--	--	--
CENTRAL STONEROLLER	2	0.06	--	--	3	0.04	2	0.02	1	0.02	--	--	18	0.17	--	--	9	0.03	--	--
GOLDFISH	5	0.15	5	0.12	5	0.07	3	0.03	--	--	4	0.05	5	0.05	4	0.03	7	0.02	--	--
GRASS CARP	--	--	--	--	--	--	--	--	--	--	--	--	3	0.03	1	0.01	1	0.00	--	--
COMMON CARP	243	7.36	222	5.18	553	7.34	431	3.89	279	4.56	299	3.68	447	4.15	296	2.28	275	0.94	198	1.76
CARP X GOLDFISH HYBRID	44	1.33	52	1.21	104	1.38	82	0.74	36	0.59	32	0.39	22	0.20	18	0.14	15	0.05	4	0.04
BIGHEAD CARP	--	--	--	--	--	--	--	--	--	--	--	--	--	--	2	0.02	--	--	--	--
HORNYHEAD CHUB	--	--	--	--	--	--	--	--	--	--	--	--	2	0.02	1	0.01	3	0.01	--	--
GOLDEN SHINER	15	0.45	2	0.05	17	0.23	15	0.14	2	0.03	8	0.10	11	0.10	14	0.11	52	0.18	13	0.12
PALLID SHINER	--	--	--	--	--	--	--	--	--	--	2	0.02	--	--	2	0.02	30	0.10	32	0.28
EMERALD SHINER	288	8.72	59	1.38	669	8.88	1,640	14.80	395	6.45	214	2.63	611	5.67	1,504	11.59	1,063	3.65	275	2.44
GHOST SHINER	5	0.15	2	0.05	1	0.01	9	0.08	4	0.07	--	--	3	0.03	4	0.03	104	0.36	4	0.04
STRIPED SHINER	22	0.67	2	0.05	5	0.07	7	0.06	--	--	--	--	21	0.20	40	0.31	66	0.23	12	0.11
BIGMOUTH SHINER	--	--	--	--	--	--	1	0.01	1	0.02	--	--	--	--	1	0.01	1	0.00	--	--
SPOTTAIL SHINER	205	6.21	174	4.06	62	0.82	222	2.00	27	0.44	281	3.46	507	4.71	159	1.23	466	1.60	45	0.40
RED SHINER	--	--	--	--	--	--	3	0.03	--	--	1	0.01	1	0.01	1	0.01	--	--	--	--
ROSYFACE SHINER	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	15	0.05	--	--
SPOTFIN SHINER	14	0.42	21	0.49	36	0.48	59	0.53	54	0.88	73	0.90	130	1.21	171	1.32	574	1.97	272	2.42
SAND SHINER	16	0.48	8	0.19	16	0.21	23	0.21	5	0.08	10	0.12	28	0.26	42	0.32	100	0.34	12	0.11
REDFIN SHINER	--	--	1	0.02	1	0.01	3	0.03	--	--	--	--	2	0.02	1	0.01	--	--	1	0.01
MIMIC SHINER	9	0.27	5	0.12	--	--	--	--	--	--	--	--	--	--	--	--	49	0.17	--	--
CHANNEL SHINER	--	--	--	--	1	0.01	--	--	--	--	--	--	--	--	--	--	--	--	--	--
UNID NOTROPIS	--	--	1	0.02	--	--	--	--	--	--	--	--	--	--	--	--	9	0.03	--	--
SUCKERMOUTH MINNOW	--	--	--	--	--	--	2	0.02	1	0.02	--	--	--	--	1	0.01	--	--	--	--
BLUNTNOSE MINNOW	802	24.29	1,637	38.20	1,501	19.92	2,076	18.74	575	9.40	841	10.34	2,003	18.60	1,303	10.04	8,481	29.14	2,376	21.11
FATHEAD MINNOW	--	--	3	0.07	1	0.01	2	0.02	1	0.02	--	--	1	0.01	--	--	25	0.09	1	0.01
BULLHEAD MINNOW	59	1.79	199	4.64	182	2.41	352	3.18	181	2.96	247	3.04	366	3.40	104	0.80	337	1.16	334	2.97
CREEK CHUB	--	--	1	0.02	1	0.01	--	--	--	--	--	--	--	--	--	--	--	--	--	--
RIVER CARPSUCKER	12	0.36	17	0.40	45	0.60	23	0.21	20	0.33	22	0.27	20	0.19	19	0.15	12	0.04	24	0.21
QUILLBACK	10	0.30	17	0.40	31	0.41	16	0.14	10	0.16	15	0.18	17	0.16	9	0.07	8	0.03	21	0.19
HIGHFIN CARPSUCKER	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	1	0.01
UNID CARPIODES	--	--	--	--	1	0.01	1	0.01	--	--	--	--	--	--	--	--	1	0.00	--	--
WHITE SUCKER	9	0.27	20	0.47	3	0.04	7	0.06	2	0.03	2	0.02	4	0.04	2	0.02	12	0.04	4	0.04
SMALLMOUTH BUFFALO	25	0.76	43	1.00	98	1.30	88	0.79	112	1.83	86	1.06	116	1.08	120	0.92	100	0.34	111	0.99
BIGMOUTH BUFFALO	--	--	2	0.05	8	0.11	3	0.03	4	0.07	5	0.06	3	0.03	7	0.05	3	0.01	3	0.03
BLACK BUFFALO	4	0.12	2	0.05	--	--	3	0.03	3	0.05	5	0.06	3	0.03	1	0.01	10	0.03	1	0.01
SPOTTED SUCKER	--	--	--	--	2	0.03	--	--	--	--	--	--	2	0.02	1	0.01	--	--	1	0.01
SILVER REDHORSE	2	0.06	3	0.07	1	0.01	4	0.04	1	0.02	1	0.01	2	0.02	3	0.02	2	0.01	3	0.03
RIVER REDHORSE	1	0.03	--	--	--	--	--	--	--	--	--	--	--	--	--	--	1	0.00	--	--
BLACK REDHORSE	--	--	--	--	--	--	--	--	--	--	--	--	--	--	1	0.01	--	--	--	--
GOLDEN REDHORSE	6	0.18	20	0.47	28	0.37	27	0.24	12	0.20	2	0.02	4	0.04	23	0.18	50	0.17	23	0.20
SHORTHEAD REDHORSE	28	0.85	25	0.58	25	0.33	20	0.18	13	0.21	23	0.28	13	0.12	8	0.06	10	0.03	2	0.02
UNID MOXOSTOMA	1	0.03	--	--	--	--	--	--	--	--	1	0.01	--	--	--	--	--	--	--	--
UNID ICTIOBINAE	--	--	--	--	--	--	--	--	--	--	--	--	--	--	1	0.01	--	--	--	--
BLACK BULLHEAD	4	0.12	1	0.02	--	--	5	0.05	--	--	1	0.01	--	--	--	--	1	0.00	1	0.01
YELLOW BULLHEAD	3	0.09	2	0.05	10	0.13	6	0.05	12	0.20	26	0.32	6	0.06	28	0.22	24	0.08	17	0.15
CHANNEL CATFISH	27	0.82	34	0.79	120	1.59	119	1.07	84	1.37	105	1.29	119	1.11	150	1.16	263	0.90	253	2.25
UNID AMEIURUS	--	--	--	--	--	--	--	--	1	0.02	--	--	1	0.01	--	--	--	--	--	--

TABLE 6 (cont.)

SPECIES	1994		1995		1997		1998		1999		2000		2001		2002		2003		2004	
	#	%	#	%	#	%	#	%	#	%	#	%	#	%	#	%	#	%	#	%
TADPOLE MADTOM	--	--	1	0.02	3	0.04	1	0.01	--	--	3	0.04	2	0.02	2	0.02	1	0.00	1	0.01
FLATHEAD CATFISH	--	--	--	--	1	0.01	1	0.01	--	--	2	0.02	1	0.01	2	0.02	8	0.03	4	0.04
BLACKSTRIPE TOPMINNOW	10	0.30	4	0.09	10	0.13	16	0.14	16	0.26	26	0.32	12	0.11	18	0.14	67	0.23	79	0.70
WESTERN MOSQUITOFISH	--	--	--	--	--	--	3	0.03	1	0.02	8	0.10	4	0.04	4	0.03	7	0.02	21	0.19
BROOK SILVERSIDE	14	0.42	23	0.54	7	0.09	1	0.01	4	0.07	4	0.05	9	0.08	17	0.13	50	0.17	45	0.40
WHITE PERCH	--	--	1	0.02	1	0.01	1	0.01	4	0.07	6	0.07	5	0.05	5	0.04	5	0.02	--	--
WHITE BASS	1	0.03	--	--	4	0.05	5	0.05	4	0.07	5	0.06	6	0.06	14	0.11	14	0.05	6	0.05
YELLOW BASS	--	--	3	0.07	1	0.01	1	0.01	5	0.08	3	0.04	2	0.02	1	0.01	2	0.01	4	0.04
HYBRID MORONE	1	0.03	--	--	--	--	1	0.01	1	0.02	--	--	2	0.02	--	--	1	0.00	--	--
UNID MORONE	2	0.06	--	--	--	--	--	--	1	0.02	--	--	--	--	--	--	--	--	--	--
ROCK BASS	--	--	--	--	3	0.04	3	0.03	3	0.05	7	0.09	7	0.07	6	0.05	6	0.02	3	0.03
GREEN SUNFISH	169	5.12	98	2.29	360	4.78	961	8.67	697	11.39	957	11.77	513	4.76	1,167	8.99	2,501	8.59	1,325	11.77
PUMPKINSEED	3	0.09	1	0.02	--	--	16	0.14	9	0.15	1	0.01	--	--	6	0.05	13	0.04	3	0.03
WARMOUTH	--	--	--	--	--	--	2	0.02	--	--	1	0.01	--	--	1	0.01	--	--	3	0.03
ORANGESPOTTED SUNFISH	97	2.94	163	3.80	387	5.13	1,219	11.00	470	7.68	277	3.41	137	1.27	734	5.66	1,777	6.11	376	3.34
BLUEGILL	43	1.30	176	4.11	450	5.97	866	7.82	1,051	17.17	2,088	25.68	1,944	18.05	2,779	21.42	5,595	19.23	2,552	22.67
LONGEAR SUNFISH	7	0.21	1	0.02	7	0.09	4	0.04	1	0.02	28	0.34	36	0.33	29	0.22	42	0.14	15	0.13
REDEAR SUNFISH	--	--	--	--	--	--	--	--	--	--	--	--	--	--	3	0.02	4	0.01	--	--
HYBRID SUNFISH	4	0.12	3	0.07	27	0.36	78	0.70	162	2.65	129	1.59	63	0.59	125	0.96	661	2.27	402	3.57
UNID LEPOMIS	88	2.67	111	2.59	1	0.01	--	--	1	0.02	3	0.04	30	0.28	8	0.06	136	0.47	49	0.44
SMALLMOUTH BASS	25	0.76	32	0.75	53	0.70	69	0.62	31	0.51	26	0.32	45	0.42	94	0.72	153	0.53	103	0.92
LARGEMOUTH BASS	77	2.33	572	13.35	231	3.06	421	3.80	372	6.08	410	5.04	245	2.28	406	3.13	729	2.50	683	6.07
UNID MICROPTERUS	--	--	8	0.19	5	0.07	--	--	--	--	--	--	--	--	--	--	--	--	--	--
WHITE CRAPPIE	6	0.18	--	--	1	0.01	8	0.07	4	0.07	7	0.09	--	--	3	0.02	6	0.02	5	0.04
BLACK CRAPPIE	--	--	2	0.05	6	0.08	15	0.14	9	0.15	13	0.16	3	0.03	18	0.14	13	0.04	19	0.17
JOHNNY DARTER	2	0.06	43	1.00	--	--	--	--	1	0.02	1	0.01	--	--	--	--	13	0.04	6	0.05
ORANGETHROAT DARTER	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	1	0.00	1	0.01
YELLOW PERCH	--	--	--	--	2	0.03	3	0.03	--	--	--	--	--	--	--	--	--	--	--	--
LOGPERCH	1	0.03	4	0.09	41	0.54	18	0.16	12	0.20	9	0.11	11	0.10	15	0.12	13	0.04	12	0.11
BLACKSIDE DARTER	--	--	--	--	--	--	--	--	1	0.02	--	--	1	0.01	--	--	9	0.03	6	0.05
SLENDERHEAD DARTER	--	--	--	--	1	0.01	1	0.01	1	0.02	2	0.02	--	--	2	0.02	1	0.00	--	--
SAUGER	--	--	--	--	--	--	--	--	--	--	--	--	--	--	1	0.01	--	--	--	--
WALLEYE	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	1	0.00	5	0.04
FRESHWATER DRUM	75	2.27	57	1.33	144	1.91	134	1.21	89	1.45	116	1.43	109	1.01	118	0.91	121	0.42	134	1.19
ROUND GOBY	--	--	--	--	--	--	--	--	--	--	--	--	1	0.01	1	0.01	46	0.16	67	0.60
TOTAL FISH	3,302	100.00	4,285	100.00	7,537	100.00	11,078	100.00	6,120	100.00	8,131	100.00	10,769	100.00	12,975	100.00	29,102	100.00	11,256	100.00
TOTAL SPECIES	42		46		51		59		50		51		56		62		62		57	

NOTE: DATA COMPARED ARE FROM ELECTROFISHING AND SEINING DURING THE PERIOD OF MAY-SEPTEMBER AT THE SAME LOCATIONS, EXCEPT THAT LOCATION 405 IN THE UPSTREAM I-55 SEGMENT WAS NOT SAMPLED DURING 1997-2000. DATA FROM THE FOLLOWING LOCATIONS (AND YEARS) ARE EXCLUDED: LOCATION 404A (2001-2004) AND LOCATION 409 (1994 AND 1995).

0.00 DENOTES VALUES LESS THAN 0.05.

(Table 7). Data compared in Tables 6 and 7 are from the same seasons (i.e., spring and summer) and the same locations, except that Location 405 in the Upstream I-55 segment was not sampled during 1997-2000. Therefore, data from the following locations (and years) are excluded: Location 404A (2001-2004) and Location 409 (1994 and 1995). In addition, October/November data collected in 1994, 1995, and 1999 are also omitted from the analyses.

For segments combined, the total number of species collected in 2004 decreased to 57 from highs of 62 species in 2002 and 2003 (Table 6). The lower species richness value during 2004 was primarily due to a decrease in the number of cyprinid species (including grass carp and bighead carp). In both 2002 and 2003, 19 cyprinid species were collected compared to 13 in 2004.

The total number of fish collected in 2004 (11,256), was noticeably lower than that collected in 2003 (29,102) and higher or similar to the number of fish collected during the other eight study years (Table 6). The decrease in the 2004 catch from the substantially higher 2003 catch was largely due to decreases in the numbers of gizzard shad and threadfin shad (including *Dorosoma* sp.), bluntnose minnow, green sunfish, orangespotted sunfish, and bluegill. The 2003 data suggested that the high catches for many of these species were due to inordinately successful spawns in 2003 and/or recruitment of 2002 year classes (EA 2004).

Although more fish and species have been collected the past few years, the data also shows that the fish community has typically been dominated by the same species each year (Table 6). For example, gizzard shad, common carp, emerald shiner, bluntnose minnow, bullhead minnow, green sunfish, orangespotted sunfish, bluegill, and largemouth bass have ranked among the 15 most abundant species collected each year. In addition, channel catfish, and freshwater drum have ranked among the 15 most abundant species in nine of the past ten study years and spottail shiner in eight of the last ten years. The only major difference, with respect to community dominants, is that the relative abundance of bluegill during the past six years (17.2-25.7 percent) has been markedly higher than during 1994-1998 (1.3-7.8 percent).

Compilation of the 2004 data by segment revealed that fish abundance (i.e., catch-per-gear-effort) was higher in the Downstream I-55 segment, species richness (i.e., total number of species) values were similar between the two segments, and that highly tolerant taxa composed a higher percentage of the catch upstream of I-55 than downstream of it. The trend with respect to fish abundance occurred during eight of the previous nine study years and species richness was similar between segments during six of the previous nine study years, whereas the trend with respect to the percent abundance of highly tolerant taxa has been consistent among all ten study years:

	2004	2003	2002	2001	2000	1999	1998	1997	1995	1994
Catch-Per-Gear-Effort										
Upstream I-55	60	142	79	75	44	50	90	46	44	46
Downstream I-55	96	277	104	77	83	60	83	72	123	80
Total Number of Species										
Upstream I-55	50	54	55	55	45	45	50	43	36	36
Downstream I-55	49	53	45	41	44	37	47	42	38	36
Percent Highly Tolerant										
Upstream I-55	38	54	28	35	35	36	41	44	54	62
Downstream I-55	32	29	16	20	22	17	22	25	45	23

ABLE 7. SPECIES COMPOSITION, NUMBER, AND RELATIVE ABUNDANCE OF FISH COLLECTED WITHIN TWO SEGMENTS OF THE LOWER DES PLAINES RIVER, MAY-SEPTEMBER 1994, 1995, AND 1997-2004.

UPSTREAM I-55

SPECIES	1994		1995		1997		1998		1999		2000		2001		2002		2003		2004	
	#	%	#	%	#	%	#	%	#	%	#	%	#	%	#	%	#	%	#	%
LONGNOSE GAR	--	--	1	0.08	5	0.17	10	0.17	2	0.07	9	0.32	12	0.21	8	0.13	22	0.19	8	0.16
UNID GAR	1	0.07	--	--	--	--	--	--	--	--	1	0.04	--	--	1	0.02	--	--	--	--
BOWFIN	--	--	--	--	--	--	--	--	--	--	--	--	1	0.02	--	--	--	--	--	--
SKIPJACK HERRING	1	0.07	--	--	1	0.03	2	0.03	2	0.07	1	0.04	7	0.12	6	0.09	--	--	4	0.08
ALEWIFE	--	--	--	--	--	--	1	0.02	--	--	--	--	--	--	--	--	--	--	--	--
GIZZARD SHAD	87	6.31	191	14.37	400	13.71	747	12.99	580	20.83	542	19.14	1,571	27.02	1,754	27.72	520	4.56	647	12.97
THREADFIN SHAD	--	--	--	--	--	--	--	--	--	--	25	0.88	6	0.10	9	0.14	--	--	25	0.50
GRASS PICKEREL	--	--	--	--	1	0.03	--	--	--	--	2	0.07	1	0.02	1	0.02	--	--	--	--
NORTHERN PIKE	--	--	2	0.15	--	--	1	0.02	--	--	--	--	1	0.02	--	--	--	--	--	--
CENTRAL STONEROLLER	2	0.15	--	--	2	0.07	2	0.03	1	0.04	--	--	18	0.31	--	--	9	0.08	--	--
GOLDFISH	4	0.29	4	0.30	3	0.10	2	0.03	--	--	4	0.14	5	0.09	4	0.06	7	0.06	--	--
GRASS CARP	--	--	--	--	--	--	--	--	--	--	--	--	2	0.03	1	0.02	1	0.01	--	--
COMMON CARP	156	11.31	180	13.54	411	14.08	310	5.39	195	7.00	188	6.64	299	5.14	239	3.78	192	1.68	132	2.65
CARP X GOLDFISH HYBRID	26	1.89	28	2.11	87	2.98	72	1.25	32	1.15	26	0.92	21	0.36	18	0.28	12	0.11	4	0.08
HORNYHEAD CHUB	--	--	--	--	--	--	--	--	--	--	--	--	2	0.03	1	0.02	3	0.03	--	--
GOLDEN SHINER	2	0.15	--	--	--	--	12	0.21	1	0.04	1	0.04	2	0.03	6	0.09	16	0.14	1	0.02
PALLID SHINER	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	2	0.02	--	--
EMERALD SHINER	109	7.90	35	2.63	402	13.78	1,424	24.77	318	11.42	173	6.11	392	6.74	977	15.44	385	3.38	141	2.83
GHOST SHINER	3	0.22	--	--	1	0.03	2	0.03	1	0.04	--	--	2	0.03	3	0.05	15	0.13	3	0.06
STRIPED SHINER	19	1.38	1	0.08	--	--	6	0.10	--	--	--	--	21	0.36	37	0.58	65	0.57	2	0.04
BIGMOUTH SHINER	--	--	--	--	--	--	1	0.02	1	0.04	--	--	--	--	1	0.02	1	0.01	--	--
SPOTTAIL SHINER	113	8.19	93	7.00	14	0.48	86	1.50	13	0.47	14	0.49	435	7.48	84	1.33	252	2.21	23	0.46
RED SHINER	--	--	--	--	--	--	--	--	--	--	--	--	1	0.02	1	0.02	--	--	--	--
SPOTFIN SHINER	2	0.15	8	0.60	9	0.31	29	0.50	13	0.47	28	0.99	80	1.38	90	1.42	290	2.54	114	2.29
SAND SHINER	16	1.16	8	0.60	9	0.31	23	0.40	5	0.18	10	0.35	26	0.45	41	0.65	94	0.82	11	0.22
REDFIN SHINER	--	--	--	--	--	--	2	0.03	--	--	--	--	2	0.03	1	0.02	--	--	1	0.02
MIMIC SHINER	9	0.65	4	0.30	--	--	--	--	--	--	--	--	--	--	--	--	7	0.06	--	--
CHANNEL SHINER	--	--	--	--	1	0.03	--	--	--	--	--	--	--	--	--	--	--	--	--	--
UNID NOTROPIS	--	--	1	0.08	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
SUCKERMOUTH MINNOW	--	--	--	--	--	--	2	0.03	1	0.04	--	--	--	--	1	0.02	--	--	--	--
BLUNTNOSE MINNOW	552	40.03	408	30.70	554	18.99	1,228	21.36	266	9.55	262	9.25	1,290	22.18	747	11.80	4,672	40.99	1,086	21.78
FATHEAD MINNOW	--	--	3	0.23	--	--	2	0.03	1	0.04	--	--	1	0.02	--	--	5	0.04	--	--
BULLHEAD MINNOW	2	0.15	6	0.45	14	0.48	26	0.45	3	0.11	12	0.42	126	2.17	7	0.11	31	0.27	52	1.04
CREEK CHUB	--	--	1	0.08	1	0.03	--	--	--	--	--	--	--	--	--	--	--	--	--	--
RIVER CARPSUCKER	8	0.58	7	0.53	21	0.72	8	0.14	11	0.40	11	0.39	7	0.12	12	0.19	5	0.04	2	0.04
QUILLBACK	4	0.29	7	0.53	18	0.62	11	0.19	4	0.14	11	0.39	5	0.09	5	0.08	4	0.04	14	0.28
HIGHFIN CARPSUCKER	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	1	0.02
UNID CARPIODES	--	--	--	--	1	0.03	1	0.02	--	--	--	--	--	--	--	--	1	0.01	--	--
WHITE SUCKER	8	0.58	12	0.90	3	0.10	6	0.10	2	0.07	1	0.04	4	0.07	2	0.03	12	0.11	4	0.08
SMALLMOUTH BUFFALO	19	1.38	29	2.18	59	2.02	60	1.04	60	2.16	48	1.69	58	1.00	71	1.12	68	0.60	71	1.42
BIGMOUTH BUFFALO	--	--	2	0.15	1	0.03	--	--	1	0.04	3	0.11	2	0.03	3	0.05	2	0.02	1	0.02
BLACK BUFFALO	4	0.29	--	--	--	--	2	0.03	3	0.11	2	0.07	2	0.03	1	0.02	4	0.04	1	0.02
SPOTTED SUCKER	--	--	--	--	2	0.07	--	--	--	--	--	--	1	0.02	--	--	--	--	1	0.02
SILVER REDHORSE	--	--	--	--	--	--	4	0.07	1	0.04	1	0.04	1	0.02	3	0.05	1	0.01	1	0.02
RIVER REDHORSE	1	0.07	--	--	--	--	--	--	--	--	--	--	--	--	--	--	1	0.01	--	--
GOLDEN REDHORSE	2	0.15	2	0.15	1	0.03	3	0.05	2	0.07	1	0.04	--	--	6	0.09	6	0.05	11	0.22
SHORTHEAD REDHORSE	3	0.22	7	0.53	13	0.45	6	0.10	7	0.25	12	0.42	8	0.14	4	0.06	7	0.06	1	0.02
UNID MOXOSTOMA	1	0.07	--	--	--	--	--	--	--	--	1	0.04	--	--	--	--	--	--	--	--
UNID ICTIOBINAE	--	--	--	--	--	--	--	--	--	--	--	--	--	--	1	0.02	--	--	--	--
BLACK BULLHEAD	1	0.07	1	0.08	--	--	5	0.09	--	--	1	0.04	--	--	--	--	--	--	1	0.02
YELLOW BULLHEAD	1	0.07	2	0.15	7	0.24	3	0.05	6	0.22	11	0.39	1	0.02	19	0.30	10	0.09	13	0.26
CHANNEL CATFISH	24	1.74	27	2.03	99	3.39	101	1.76	56	2.01	73	2.58	86	1.48	98	1.55	203	1.78	192	3.85
UNID AMEIURUS	--	--	--	--	--	--	--	--	--	--	--	--	1	0.02	--	--	--	--	--	--
TADPOLE MADTOM	--	--	--	--	3	0.10	--	--	--	--	--	--	1	0.02	2	0.03	--	--	--	--
FLATHEAD CATFISH	--	--	--	--	1	0.03	1	0.02	--	--	2	0.07	1	0.02	2	0.03	8	0.07	3	0.06
BLACKSTRIPE TOPMINNOW	9	0.65	1	0.08	6	0.21	12	0.21	14	0.50	11	0.39	9	0.15	11	0.17	42	0.37	47	0.94
WESTERN MOSQUITOFISH	--	--	--	--	--	--	1	0.02	1	0.04	6	0.21	3	0.05	4	0.06	5	0.04	13	0.26
BROOK SILVERSIDE	--	--	--	--	6	0.21	--	--	1	0.04	1	0.04	1	0.02	2	0.03	14	0.12	--	--
WHITE PERCH	--	--	--	--	1	0.03	1	0.02	4	0.14	5	0.18	3	0.05	5	0.08	2	0.02	--	--
WHITE BASS	1	0.07	--	--	3	0.10	4	0.07	3	0.11	4	0.14	6	0.10	12	0.19	8	0.07	4	0.08
YELLOW BASS	--	--	1	0.08	--	--	--	--	3	0.11	2	0.07	2	0.03	--	--	--	--	2	0.04
HYBRID MORONE	--	--	--	--	--	--	1	0.02	1	0.04	--	--	1	0.02	--	--	1	0.01	--	--
ROCK BASS	--	--	--	--	1	0.03	3	0.05	3	0.11	3	0.11	5	0.09	5	0.08	3	0.03	2	0.04
GREEN SUNFISH	103	7.47	82	6.17	298	10.21	767	13.34	521	18.71	492	17.37	398	6.84	761	12.03	1,296	11.37	688	13.80
PUMPKINSEED	--	--	--	--	--	--	6	0.10	1	0.04	--	--	--	--	--	--	1	0.01	--	--
WARMOUTH	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	2	0.04

TABLE 7 (cont.)

UPSTREAM I-55 (cont.)

SPECIES	1994		1995		1997		1998		1999		2000		2001		2002		2003		2004	
	#	%	#	%	#	%	#	%	#	%	#	%	#	%	#	%	#	%	#	%
ORANGESPOTTED SUNFISH	3	0.22	7	0.53	57	1.95	63	1.10	51	1.83	29	1.02	2	0.03	14	0.22	76	0.67	45	0.90
BLUEGILL	11	0.80	36	2.71	122	4.18	291	5.06	212	7.61	404	14.27	572	9.84	733	11.58	1,688	14.81	706	14.16
LONGEAR SUNFISH	5	0.36	1	0.08	6	0.21	3	0.05	1	0.04	25	0.88	24	0.41	26	0.41	36	0.32	9	0.18
REDEAR SUNFISH	--	--	--	--	--	--	--	--	--	--	--	--	--	--	2	0.03	2	0.02	--	--
HYBRID SUNFISH	2	0.15	3	0.23	24	0.82	74	1.29	147	5.28	98	3.46	51	0.88	101	1.60	610	5.35	361	7.24
UNID LEPOMIS	--	--	--	--	--	--	--	--	--	--	--	--	2	0.03	--	--	21	0.18	2	0.04
SMALLMOUTH BASS	10	0.73	10	0.75	29	0.99	41	0.71	22	0.79	7	0.25	26	0.45	63	1.00	96	0.84	59	1.18
LARGEMOUTH BASS	28	2.03	43	3.24	121	4.15	185	3.22	152	5.46	169	5.97	132	2.27	219	3.46	416	3.65	324	6.50
UNID MICROPTERUS	--	--	8	0.60	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
WHITE CRAPPIE	--	--	--	--	--	--	2	0.03	1	0.04	2	0.07	--	--	1	0.02	1	0.01	1	0.02
BLACK CRAPPIE	--	--	1	0.08	1	0.03	9	0.16	4	0.14	4	0.14	2	0.03	9	0.14	6	0.05	9	0.18
JOHNNY DARTER	--	--	41	3.09	--	--	--	--	--	--	1	0.04	--	--	--	--	11	0.10	1	0.02
ORANGETHROAT DARTER	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	1	0.01	1	0.02
YELLOW PERCH	--	--	--	--	2	0.07	2	0.03	--	--	--	--	--	--	--	--	--	--	--	--
LOGPERCH	--	--	--	--	3	0.10	1	0.02	2	0.07	2	0.07	1	0.02	3	0.05	--	--	--	--
BLACKSIDE DARTER	--	--	--	--	--	--	--	--	--	--	--	--	1	0.02	--	--	2	0.02	5	0.10
SLENDERHEAD DARTER	--	--	--	--	--	--	--	--	--	--	--	--	--	--	1	0.02	--	--	--	--
SAUGER	--	--	--	--	--	--	--	--	--	--	--	--	--	--	1	0.02	--	--	--	--
WALLEYE	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	3	0.06
FRESHWATER DRUM	27	1.96	25	1.88	94	3.22	82	1.43	52	1.87	91	3.21	71	1.22	87	1.37	82	0.72	85	1.70
ROUND GOBY	--	--	--	--	--	--	--	--	--	--	--	--	1	0.02	1	0.02	45	0.39	47	0.94
TOTAL FISH	1,379	100.00	1,329	100.00	2,918	100.00	5,749	100.00	2,784	100.00	2,832	100.00	5,815	100.00	6,328	100.00	11,398	100.00	4,987	100.00
CATCH PER GEAR EFFORT	46		44		46		90		50		44		75		79		142		62	
TOTAL SPECIES	36		36		43		50		45		45		55		55		54		50	

DOWNSTREAM I-55

SPECIES	1994		1995		1997		1998		1999		2000		2001		2002		2003		2004	
	#	%	#	%	#	%	#	%	#	%	#	%	#	%	#	%	#	%	#	%
LONGNOSE GAR	--	--	6	0.20	8	0.17	5	0.09	--	--	2	0.04	3	0.06	7	0.11	4	0.02	--	--
SHORTNOSE GAR	--	--	--	--	--	--	--	--	1	0.03	--	--	--	--	--	--	--	--	--	--
UNID GAR	--	--	--	--	--	--	--	--	--	--	2	0.04	--	--	--	--	--	--	--	--
UNID CLUPEIDAE	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	152	0.86	--	--
SKIPJACK HERRING	2	0.10	--	--	1	0.02	3	0.06	3	0.09	1	0.02	8	0.16	4	0.06	--	--	2	0.03
GIZZARD SHAD	725	37.70	202	6.83	1,844	39.92	1,203	22.57	728	21.82	1,001	18.89	1,411	28.48	1,511	22.73	1,145	6.47	536	8.55
THREADFIN SHAD	--	--	--	--	--	--	1	0.02	18	0.54	107	2.02	66	1.33	53	0.80	261	1.47	60	0.96
UNID DOROSOMA	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	2,823	15.95	--	--
GRASS PICKEREL	--	--	--	--	1	0.02	3	0.06	--	--	--	--	3	0.06	--	--	--	--	1	0.02
CENTRAL STONEROLLER	--	--	--	--	1	0.02	--	--	--	--	--	--	--	--	--	--	--	--	--	--
GOLDFISH	1	0.05	1	0.03	2	0.04	1	0.02	--	--	--	--	--	--	--	--	--	--	--	--
GRASS CARP	--	--	--	--	--	--	--	--	--	--	--	--	1	0.02	--	--	--	--	--	--
COMMON CARP	87	4.52	42	1.42	142	3.07	121	2.27	84	2.52	111	2.09	148	2.99	57	0.86	83	0.47	66	1.05
CARP X GOLDFISH HYBRID	18	0.94	24	0.81	17	0.37	10	0.19	4	0.12	6	0.11	1	0.02	--	--	3	0.02	--	--
BIGHEAD CARP	--	--	--	--	--	--	--	--	--	--	--	--	--	--	2	0.03	--	--	--	--
GOLDEN SHINER	13	0.68	2	0.07	17	0.37	3	0.06	1	0.03	7	0.13	9	0.18	8	0.12	36	0.20	12	0.19
PALLID SHINER	--	--	--	--	--	--	--	--	--	--	2	0.04	--	--	2	0.03	28	0.16	32	0.51
EMERALD SHINER	179	9.31	24	0.81	267	5.78	216	4.05	77	2.31	41	0.77	219	4.42	527	7.93	678	3.83	134	2.14
GHOST SHINER	2	0.10	2	0.07	--	--	7	0.13	3	0.09	--	--	1	0.02	1	0.02	89	0.50	1	0.02
STRIPED SHINER	3	0.16	1	0.03	5	0.11	1	0.02	--	--	--	--	--	--	3	0.05	1	0.01	10	0.16
SPOTTAIL SHINER	92	4.78	81	2.74	48	1.04	136	2.55	14	0.42	267	5.04	72	1.45	75	1.13	214	1.21	22	0.35
RED SHINER	--	--	--	--	--	--	3	0.06	--	--	1	0.02	--	--	--	--	--	--	--	--
ROSYFACE SHINER	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	15	0.08	--	--
SPOTFIN SHINER	12	0.62	13	0.44	27	0.58	30	0.56	41	1.23	45	0.85	50	1.01	81	1.22	284	1.60	158	2.52
SAND SHINER	--	--	--	--	7	0.15	--	--	--	--	--	--	2	0.04	1	0.02	6	0.03	1	0.02
REDFIN SHINER	--	--	1	0.03	1	0.02	1	0.02	--	--	--	--	--	--	--	--	--	--	--	--
MIMIC SHINER	--	--	1	0.03	--	--	--	--	--	--	--	--	--	--	--	--	42	0.24	--	--
UNID NOTROPIS	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	9	0.05	--	--
BLUNTNOSE MINNOW	250	13.00	1,229	41.58	947	20.50	848	15.91	309	9.26	579	10.93	713	14.39	556	8.36	3,809	21.51	1,290	20.58
FATHEAD MINNOW	--	--	--	--	1	0.02	--	--	--	--	--	--	--	--	--	--	20	0.11	1	0.02
BULLHEAD MINNOW	57	2.96	193	6.53	168	3.64	326	6.12	178	5.34	235	4.43	240	4.84	97	1.46	306	1.73	282	4.50

TABLE 7 (cont.)

DOWNSTREAM I-55 (cont.)

SPECIES	1994		1995		1997		1998		1999		2000		2001		2002		2003		2004	
	#	%	#	%	#	%	#	%	#	%	#	%	#	%	#	%	#	%	#	%
RIVER CARPSUCKER	4	0.21	10	0.34	24	0.52	15	0.28	9	0.27	11	0.21	13	0.26	7	0.11	7	0.04	22	0.35
QUILLBACK	6	0.31	10	0.34	13	0.28	5	0.09	6	0.18	4	0.08	12	0.24	4	0.06	4	0.02	7	0.11
WHITE SUCKER	1	0.05	8	0.27	--	--	1	0.02	--	--	1	0.02	--	--	--	--	--	--	--	--
SMALLMOUTH BUFFALO	6	0.31	14	0.47	39	0.84	28	0.53	52	1.56	38	0.72	58	1.17	49	0.74	32	0.18	40	0.64
BIGMOUTH BUFFALO	--	--	--	--	7	0.15	3	0.06	3	0.09	2	0.04	1	0.02	4	0.06	1	0.01	2	0.03
BLACK BUFFALO	--	--	2	0.07	--	--	1	0.02	--	--	3	0.06	1	0.02	--	--	6	0.03	--	--
SPOTTED SUCKER	--	--	--	--	--	--	--	--	--	--	--	--	1	0.02	1	0.02	--	--	--	--
SILVER REDHORSE	2	0.10	3	0.10	1	0.02	--	--	--	--	--	--	1	0.02	--	--	1	0.01	2	0.03
BLACK REDHORSE	--	--	--	--	--	--	--	--	--	--	--	--	--	--	1	0.02	--	--	--	--
GOLDEN REDHORSE	4	0.21	18	0.61	27	0.58	24	0.45	10	0.30	1	0.02	4	0.08	17	0.26	44	0.25	12	0.19
SHORTHEAD REDHORSE	25	1.30	18	0.61	12	0.26	14	0.26	6	0.18	11	0.21	5	0.10	4	0.06	3	0.02	1	0.02
BLACK BULLHEAD	3	0.16	--	--	--	--	--	--	--	--	--	--	--	--	--	--	1	0.01	--	--
YELLOW BULLHEAD	2	0.10	--	--	3	0.06	3	0.06	6	0.18	15	0.28	5	0.10	9	0.14	14	0.08	4	0.06
CHANNEL CATFISH	3	0.16	7	0.24	21	0.45	18	0.34	28	0.84	32	0.60	33	0.67	52	0.78	60	0.34	61	0.97
UNID AMEIURUS	--	--	--	--	--	--	--	--	1	0.03	--	--	--	--	--	--	--	--	--	--
TADPOLE MADTOM	--	--	1	0.03	--	--	1	0.02	--	--	3	0.06	1	0.02	--	--	1	0.01	1	0.02
FLATHEAD CATFISH	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	1	0.02
BLACKSTRIPE TOPMINNOW	1	0.05	3	0.10	4	0.09	4	0.08	2	0.06	15	0.28	3	0.06	7	0.11	25	0.14	32	0.51
WESTERN MOSQUITOFISH	--	--	--	--	--	--	2	0.04	--	--	2	0.04	1	0.02	--	--	2	0.01	8	0.13
BROOK SILVERSIDE	14	0.73	23	0.78	1	0.02	1	0.02	3	0.09	3	0.06	8	0.16	15	0.23	36	0.20	45	0.72
WHITE PERCH	--	--	1	0.03	--	--	--	--	--	--	1	0.02	2	0.04	--	--	3	0.02	--	--
WHITE BASS	--	--	--	--	1	0.02	1	0.02	1	0.03	1	0.02	--	--	2	0.03	6	0.03	2	0.03
YELLOW BASS	--	--	2	0.07	1	0.02	1	0.02	2	0.06	1	0.02	--	--	1	0.02	2	0.01	2	0.03
HYBRID MORONE	1	0.05	--	--	--	--	--	--	--	--	--	--	1	0.02	--	--	--	--	--	--
UNID MORONE	2	0.10	--	--	--	--	--	--	1	0.03	--	--	--	--	--	--	--	--	--	--
ROCK BASS	--	--	--	--	2	0.04	--	--	--	--	4	0.08	2	0.04	1	0.02	3	0.02	1	0.02
GREEN SUNFISH	66	3.43	16	0.54	62	1.34	194	3.64	176	5.28	465	8.78	115	2.32	406	6.11	1,205	6.81	637	10.16
PUMPKINSEED	3	0.16	1	0.03	--	--	10	0.19	8	0.24	1	0.02	--	--	6	0.09	12	0.07	3	0.05
WARMOUTH	--	--	--	--	--	--	2	0.04	--	--	1	0.02	--	--	1	0.02	--	--	1	0.02
ORANGESPOTTED SUNFISH	94	4.89	156	5.28	330	7.14	1,156	21.69	419	12.56	248	4.68	135	2.73	720	10.83	1,701	9.61	331	5.28
BLUEGILL	32	1.66	140	4.74	328	7.10	575	10.79	839	25.15	1,684	31.78	1,372	27.69	2,046	30.78	3,907	22.07	1,846	29.45
LONGEAR SUNFISH	2	0.10	--	--	1	0.02	1	0.02	--	--	3	0.06	12	0.24	3	0.05	6	0.03	6	0.10
REDEAR SUNFISH	--	--	--	--	--	--	--	--	--	--	--	--	--	--	1	0.02	2	0.01	--	--
HYBRID SUNFISH	2	0.10	--	--	3	0.06	4	0.08	15	0.45	31	0.59	12	0.24	24	0.36	51	0.29	41	0.65
UNID LEPOMIS	88	4.58	111	3.76	1	0.02	--	--	1	0.03	3	0.06	28	0.57	8	0.12	115	0.65	47	0.75
SMALLMOUTH BASS	15	0.78	22	0.74	24	0.52	28	0.53	9	0.27	19	0.36	19	0.38	31	0.47	57	0.32	44	0.70
LARGEMOUTH BASS	49	2.55	529	17.90	110	2.38	236	4.43	220	6.59	241	4.55	113	2.28	187	2.81	313	1.77	359	5.73
UNID MICROPTERUS	--	--	--	--	5	0.11	--	--	--	--	--	--	--	--	--	--	--	--	--	--
WHITE CRAPPIE	6	0.31	--	--	1	0.02	6	0.11	3	0.09	5	0.09	--	--	2	0.03	5	0.03	4	0.06
BLACK CRAPPIE	--	--	1	0.03	5	0.11	6	0.11	5	0.15	9	0.17	1	0.02	9	0.14	7	0.04	10	0.16
JOHNNY DARTER	2	0.10	2	0.07	--	--	--	--	1	0.03	--	--	--	--	--	--	2	0.01	5	0.08
YELLOW PERCH	--	--	--	--	--	--	1	0.02	--	--	--	--	--	--	--	--	--	--	--	--
LOGPERCH	1	0.05	4	0.14	38	0.82	17	0.32	10	0.30	7	0.13	10	0.20	12	0.18	13	0.07	12	0.19
BLACKSIDE DARTER	--	--	--	--	--	--	--	--	1	0.03	--	--	--	--	--	--	7	0.04	1	0.02
SLENDERHEAD DARTER	--	--	--	--	1	0.02	1	0.02	1	0.03	2	0.04	--	--	1	0.02	1	0.01	--	--
WALLEYE	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	1	0.01	2	0.03
FRESHWATER DRUM	48	2.50	32	1.08	50	1.08	52	0.98	37	1.11	25	0.47	38	0.77	31	0.47	39	0.22	49	0.78
ROUND GOBY	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	1	0.01	20	0.32
TOTAL FISH	1,923	100.00	2,956	100.00	4,619	100.00	5,329	100.00	3,336	100.00	5,299	100.00	4,954	100.00	6,647	100.00	17,704	100.00	6,269	100.00
CATCH PER GEAR EFFORT	80		123		72		83		60		83		77		104		277		98	
TOTAL SPECIES	36		38		42		47		37		44		41		45		53		49	

NOTE: DATA COMPARED ARE FROM ELECTROFISHING AND SEINING DURING THE PERIOD OF MAY-SEPTEMBER AT THE SAME LOCATIONS, EXCEPT THAT LOCATION 405 IN THE UPSTREAM I-55 SEGMENT WAS NOT SAMPLED DURING 1997-2000. DATA FROM THE FOLLOWING LOCATIONS (AND YEARS) ARE EXCLUDED: LOCATION 404A (2001-2004) AND LOCATION 409 (1994 AND 1995).

These data suggest that the fish communities within the Upstream and Downstream I-55 segments have improved, particularly when compared to 1994 and 1995 based on: 1) catch-per-gear-effort values for the Upstream I-55 segment during the past four years being highest to date, with the exception of 1998 which was higher than all years except 2003; 2) species richness values for the Upstream I-55 segment during the past four years being highest to date, except for 1998 which was identical to 2004; 3) the species richness value for the Downstream I-55 segment in 2004 and 2003 also being highest to date, and 4) the percentages of highly tolerant taxa in 2004 decreased within the Upstream segment in comparison with 2003 values.

Conversely, the percentage of highly tolerant taxa in the Downstream segment showed a slight increase when compared to values in 2003. In fact, percentages in 2003 and 2004 were higher than in any of the preceding six years. The higher percentages in 2003 were due to unusually large catches of green sunfish and particularly bluntnose minnow (EA 2004). Although the percentage of highly tolerant taxa in the Upstream segment have returned to values more typical of recent years, the high 2004 Downstream values were again associated with well-above average percentages of bluntnose minnow and green sunfish.

3.2.3 Exotic Taxa

Our classification of exotic taxa is consistent with lists of exotics developed in Illinois (Page et al. 1992), Ohio (Ohio EPA 1987), Wisconsin (Lyons 1992), and for the Ohio River (Emery et al. 2003). Exotic taxa are all fishes not native to some portion of northern Illinois. As such, we treat mosquitofish and redear sunfish as exotics because their natural distributions in Illinois are limited to the southern third of the state (Smith 1979). Their occurrences in northern Illinois are the result of stockings.

Five exotic taxa were collected during 2004: threadfin shad, common carp, common carp x goldfish hybrid, mosquitofish, and round goby (Tables 3 and 4). Thus, 53 native species were collected in 2004. Collectively, the five exotic taxa numerically composed only 4.1 percent of the total catch, and common carp and mosquitofish accounted for 67.7 percent (334/493) of all exotics collected. However, the exotics composed a large portion of total biomass (26.8 percent), with common carp accounting for 98.4 percent of the exotic biomass (Table 4).

Exotic species often thrive at the expense of native fishes because the ecological checks and balances (e.g., predators, diseases, and parasites) that normally keep populations in equilibrium are lacking or greatly reduced for exotics. Thus, exotics have a considerable propensity for population explosions (e.g., alewife and round goby [in Lake Michigan], common carp, zebra mussels, etc.). Although some exotics may be considered "good" (e.g., salmonids) and others "not so good" (e.g., common carp and zebra mussels), several facts are clear:

- Exotics usually expand their populations at the expense of native species (Smith 1979; Becker 1983).

- The lack of normal checks and balances means that trends in the numerical abundance of exotics often do not follow expected patterns (e.g., exotics may increase in abundance under poor water quality conditions, whereas most native species decline when

water quality is poor) (Karr et al. 1986; Ohio EPA 1987; Emery et al. 2003).

- Their presence, often in high numbers, confounds data analysis and can result in misleading or erroneous conclusions concerning the "quality" of the area (Ohio EPA 1987; Emery et al. 2003).

- It is the policy of some resource agencies and professional societies (e.g., American Fisheries Society) to encourage biodiversity of native species and slow down or even reverse the spread and introduction of exotics.

For the reasons listed above, we have tabulated the occurrence and distribution of exotic species in the previous two sections, but will exclude them from our spatial and interyear analyses in the remainder of this report. Thus, we follow Ohio EPA (1987), Lyons (1992), and Emery et al. (2003), and exclude exotic species from species richness and other calculations (i.e., catch rates and IWBmod).

We do not believe it is appropriate to subjectively classify some exotics as good and some as bad, therefore, all five exotic taxa listed above are excluded. Except for common carp and the mosquitofish, the other exotics were relatively rare in the lower Des Plaines River during 2004. Although it would be true that including the other exotics would not appreciably affect variables such as catch rate, species richness, biomass, etc., their exclusion is warranted to maintain a consistent approach as to how exotics are treated as part of our analysis. Numerous researchers (e.g., Karr et al. 1986; Ohio EPA 1987; Lyons 1992; Emery et al. 2003) recommend that exotics be excluded because including them can lead to erroneous conclusions because of greatly inflated community measures such as catch rates and biomass. Catch data for exotic taxa from 2004 are only provided in Appendix C.

3.2.4 Highly Tolerant Species

Exotic species are not the only species that can actually increase as water and habitat quality declines (Ohio EPA 1987; Karr et al. 1986; Lyons 1992). Various fishes are tolerant to environmental disturbances such as low dissolved oxygen (DO) levels (e.g., goldfish, common carp, and central mudminnow), siltation (e.g., bluntnose minnow, golden shiner, and fathead minnow), high turbidity (e.g., creek chub, fathead minnow, common carp, and goldfish), and habitat disturbances generally (e.g., green sunfish, common carp, goldfish, and creek chub). Generally, increased abundance is indicative of better water quality; however, inclusion of tolerant species, especially in abundance calculations, can lead to erroneous conclusions because many tolerant species thrive where water or habitat quality is marginal. Goldfish, common carp, and common carp x goldfish hybrid are both highly tolerant and exotic taxa. Since these taxa were discussed in the previous section, they are not included in the following discussion.

In 2004, six highly tolerant native species (as defined by Ohio EPA 1987) were collected from the lower Des Plaines River: golden shiner, bluntnose minnow, fathead minnow, white sucker, yellow bullhead, and green sunfish. Collectively, they composed 33.2 percent of the catch of all native species. Bluntnose minnow and green sunfish (32.9 percent combined) were, by far, the two most abundant highly tolerant species collected (Table 4). As discussed previously, highly

tolerant species are prevalent within the lower Des Plaines River, particularly in the Upstream I-55 segment. In order to formulate proper conclusions regarding the quality of the fishery within the lower Des Plaines River, we compare only IWBmod scores in the following sections because this community measure excludes all exotic, highly tolerant, and hybrid taxa. IWB scores were calculated, but are only provided in Appendix D along with the IWBmod scores.

3.3 SPATIAL COMPARISONS OF COMMUNITY LEVEL PARAMETERS

3.3.1 Electrofishing

3.3.1.1 2004

Electrofishing CPEs of native fishes for the period of study were highly variable (Figure 6; Appendix B). They were highest among the four backwater (BW) locations (379.3 to 1269.8 fish per km), lowest at main channel border (MCB) Location 403A and tailwater (TW) Location 402 (95.3 and 131.5, respectively), and intermediate, but similar (187.5 to 258.0 fish per km), among the five remaining MCB locations. Since no consistent spatial trend was evident for CPEs among the individual sampling locations (Figure 6), the sampling locations were grouped into the two discrete segments and CPEs compared between them (Tables 8 and 9). A one factor ANOVA test of CPE data, treating log transformed CPEs from separate locations and trips as replicates, indicated that CPEs were significantly higher ($P<0.05$) downstream of I-55 than upstream of it (Table 9). This disparity was due primarily to the Downstream I-55 segment producing noticeably higher CPEs of green sunfish, orangespotted sunfish, and bluegill:

	CPEs (No. per km)	
	Upstream I-55	Downstream I-55
All Native Fish	144.7	234.6
Green sunfish	25.2	39.7
Orangespotted sunfish	1.6	17.1
Bluegill	23.8	78.2
All Fish less these 3 taxa	94.1	99.6

Thus, CPEs were quite similar between the two segments after these three taxa are excluded (Table 9). In addition, CPEs (less these three taxa) were fairly similar among six of the 11 sampling locations, remaining lowest at MCB Location 403A and highest at two of the four BW locations (i.e., Locations 408 and 418) (Figure 6).

Mean IWBmod scores for the study period ranged from 6.1 at MCB Location 403A to 8.6 at BW Location 418 (Figure 7; Appendices B and D). Among the nine remaining electrofishing locations, values were similar (6.6 to 6.8) among four of the MCB locations and higher, but similar (7.5 to 8.0) among the TW location, MCB location 402A and the three BW locations. IWBmod scores were not significantly higher ($P>0.05$) downstream of I-55 than upstream of it (Table 9). Ohio EPA (1987) uses IWBmod scores to divide streams or stream segments into the following classifications: Exceptional = >9.5; Good = 8.0-9.5; Fair = 6.4-7.9; Poor = 5.0-6.3; and Very Poor = <5.0. According to this classification scheme, both segments would be classified as fair in 2004.

Mean native species richness values for the period of study were lowest at MCB Location 403A, (eight species), and highest at BW Locations 414 and 418 (13 and 14 species, respectively)

Figure 6. Spatial Comparisons of Electrofishing Catch Rates, 2004.

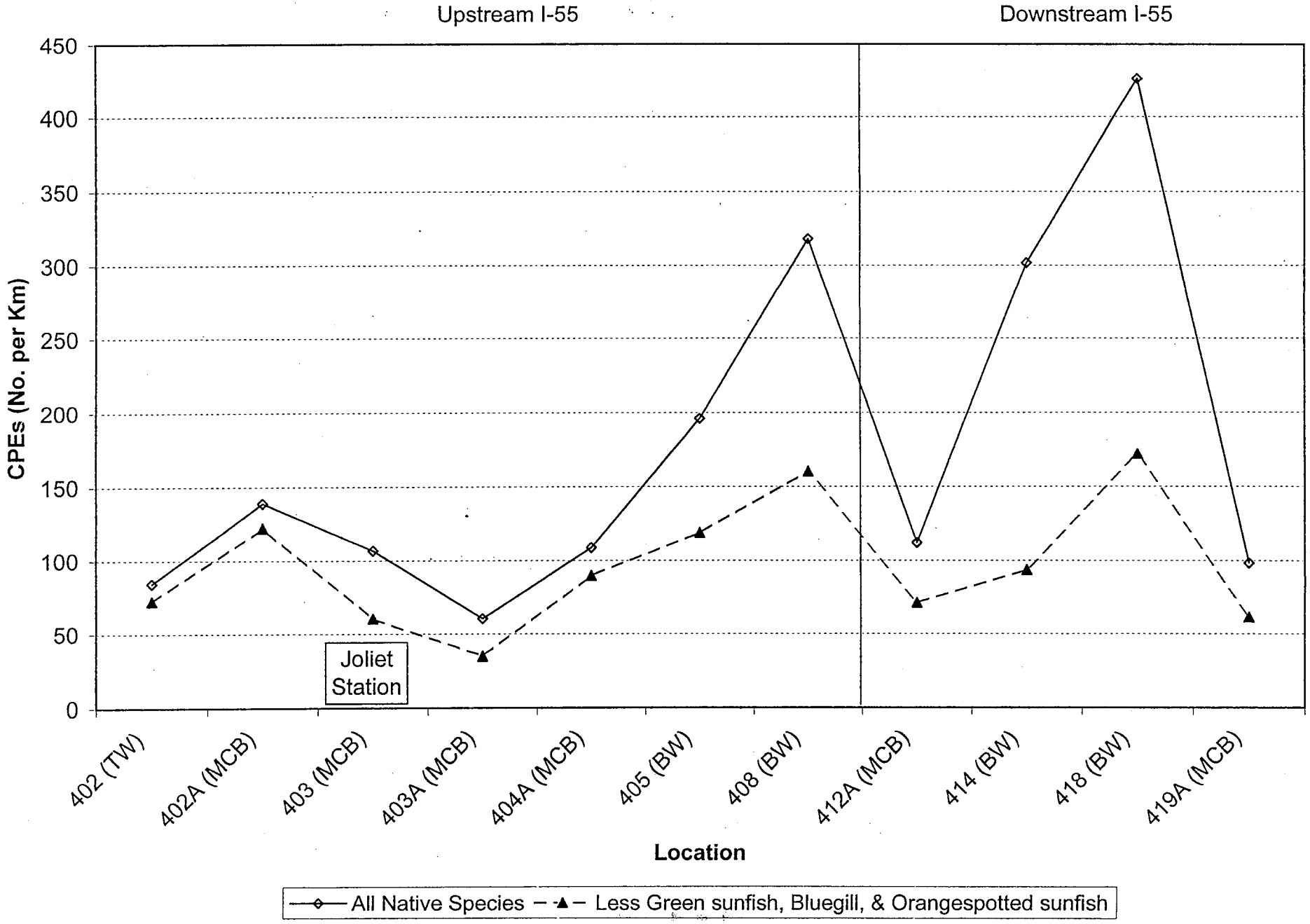


Figure 7. Spatial Comparisons of Electrofishing Mean IWBmod and Native Species Richness Values, 2004.

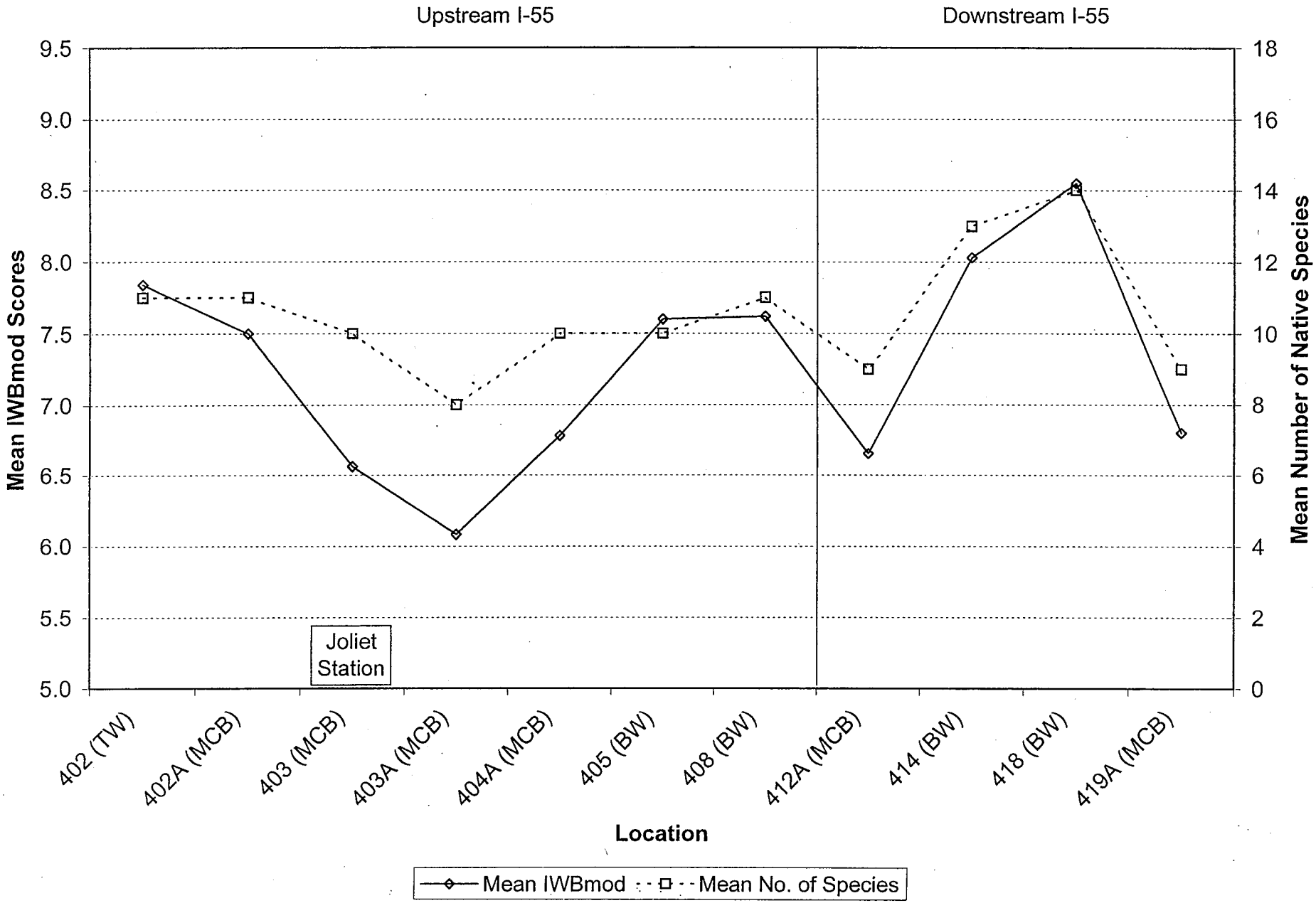


TABLE 8. NUMBER, CPE (No./KM), AND RELATIVE ABUNDANCE OF NATIVE FISH COLLECTED ELECTROFISHING WITHIN TWO SEGMENTS OF THE LOWER DES PLAINES RIVER, 2004.

SPECIES	UPSTREAM I-55			DOWNSTREAM I-55		
	#	CPE	%	#	CPE	%
LONGNOSE GAR	8	0.3	0.20	--	--	--
SKIPJACK HERRING	4	0.1	0.10	2	0.1	0.05
GIZZARD SHAD	739	26.4	18.24	533	33.3	14.20
GOLDEN SHINER	1	0.0	0.02	6	0.4	0.16
PALLID SHINER	--	--	--	6	0.4	0.16
EMERALD SHINER	129	4.6	3.18	53	3.3	1.41
GHOST SHINER	1	0.0	0.02	--	--	--
SPOTTAIL SHINER	23	0.8	0.57	15	0.9	0.40
SPOTFIN SHINER	70	2.5	1.73	20	1.3	0.53
SAND SHINER	3	0.1	0.07	--	--	--
REDFIN SHINER	1	0.0	0.02	--	--	--
BLUNTNOSE MINNOW	390	13.9	9.63	237	14.8	6.31
BULLHEAD MINNOW	1	0.0	0.02	63	3.9	1.68
RIVER CARPSUCKER	2	0.1	0.05	22	1.4	0.59
QUILLBACK	16	0.6	0.39	7	0.4	0.19
HIGHFIN CARPSUCKER	1	0.0	0.02	--	--	--
WHITE SUCKER	4	0.1	0.10	--	--	--
SMALLMOUTH BUFFALO	74	2.6	1.83	40	2.5	1.07
BIGMOUTH BUFFALO	1	0.0	0.02	2	0.1	0.05
BLACK BUFFALO	1	0.0	0.02	--	--	--
SPOTTED SUCKER	1	0.0	0.02	--	--	--
SILVER REDHORSE	2	0.1	0.05	2	0.1	0.05
GOLDEN REDHORSE	17	0.6	0.42	11	0.7	0.29
SHORTHEAD REDHORSE	3	0.1	0.07	1	0.1	0.03
BLACK BULLHEAD	1	0.0	0.02	--	--	--
YELLOW BULLHEAD	13	0.5	0.32	4	0.3	0.11
CHANNEL CATFISH	210	7.5	5.18	61	3.8	1.63
TADPOLE MADTOM	--	--	--	1	0.1	0.03
FLATHEAD CATFISH	3	0.1	0.07	1	0.1	0.03
BLACKSTRIPE TOPMINNOW	5	0.2	0.12	5	0.3	0.13
BROOK SILVERSIDE	--	--	--	6	0.4	0.16
WHITE BASS	4	0.1	0.10	2	0.1	0.05
YELLOW BASS	2	0.1	0.05	2	0.1	0.05
ROCK BASS	1	0.0	0.02	1	0.1	0.03
GREEN SUNFISH	706	25.2	17.43	635	39.7	16.92
PUMPKINSEED	--	--	--	3	0.2	0.08
WARMOUTH	2	0.1	0.05	1	0.1	0.03
ORANGESPOTTED SUNFISH	44	1.6	1.09	274	17.1	7.30
BLUEGILL	667	23.8	16.47	1,251	78.2	33.33
LONGEAR SUNFISH	7	0.3	0.17	2	0.1	0.05
HYBRID SUNFISH	371	13.3	9.16	39	2.4	1.04
UNID LEPOMIS	--	--	--	1	0.1	0.03
SMALLMOUTH BASS	67	2.4	1.65	37	2.3	0.99
LARGEMOUTH BASS	352	12.6	8.69	337	21.1	8.98
WHITE CRAPPIE	1	0.0	0.02	4	0.3	0.11
BLACK CRAPPIE	9	0.3	0.22	6	0.4	0.16
LOGPERCH	--	--	--	8	0.5	0.21
BLACKSIDE DARTER	--	--	--	1	0.1	0.03
WALLEYE	6	0.2	0.15	2	0.1	0.05
FRESHWATER DRUM	88	3.1	2.17	49	3.1	1.31
TOTAL FISH	4,051	144.7	100.00	3,753	234.6	100.00
TOTAL SPECIES	42			39		

NOTE: 0.0 DENOTES VALUES LESS THAN 0.05.

Table 9. Segment vs. Segment Comparisons of Mean Electrofishing Catch Parameters, 2004.

Parameter	Upstream I-55	Downstream I-55	Significant Difference[a]	F Value	P Value
CPEs-All Native Species[b]	144.7	234.6	Yes	9.10	<0.01
CPEs-Excluding Selected spp.[b,c]	94.1	99.6	No	0.42	0.52
IWBmod	7.1	7.5	No	3.06	0.08
Native Species Richness	10.1	11.2	No	3.35	0.07

(a) Results of one-factor parametric Analysis of Variance tests (alpha=0.05).
(b) Data log transformed for statistical analyses because they are not normally distributed.
(c) Comparison excludes green sunfish, bluegill, and orangespotted sunfish.

(Figure 7 and Appendix B). Mean richness values were intermediate and similar (9-11 species) among the eight other electrofishing locations. In contrast to the segment vs. segment comparison that showed a significant difference in CPEs (all native species), mean native species richness values, and IWBmod scores were not significantly different between the two segments (Table 9).

3.3.1.2 Comparisons of Spatial Trends Over the Period 1994-2004

The following discussion compares electrofishing CPE, IWBmod, and species richness values for native species between the Upstream and Downstream I-55 segments for the past ten study years (i.e., 1994, 1995, and 1997-2004). The objective of these comparisons is to determine if the spatial patterns of these parameters during the past eight years (i.e., 1997-2004), the period for which the alternative thermal limits have been applicable at the I-55 bridge, have changed with respect to 1994 or 1995. As discussed in Section 3.2.2, data compared are from similar locations and the same seasons.

The spatial pattern of CPEs (all native fish) during the past ten study years has been consistent. In each of these years, CPEs have been lower within the Upstream I-55 segment than within the Downstream I-55 segment (Tables 10 and 11). In fact, these differences were statistically significant ($P<0.05$) during eight of the ten study years; all years except for 1998 and 2001 (Table 11). When significant differences occurred, they were primarily due to higher catch rates of gizzard shad (including YOY *Dorosoma* sp. in 2003), orangespotted sunfish, and bluegill in the Downstream I-55 segment. For example, if CPEs are recalculated excluding these three taxa, then the resulting CPEs were not significantly different between segments in any of those eight study years (Table 11).

As observed for CPEs, mean IWBmod and native species richness values have also been consistently lower within the Upstream I-55 segment than within the Downstream I-55 segment during the past ten study years (Table 11). In contrast to CPEs, however, differences in IWBmod and native species richness values have only been statistically significant during two (i.e., 1995 and 1999) of the past nine study years. The consistently lower IWBmod values upstream of I-55 are primarily due to this segment producing lower catch rates by number of non-tolerant species compared to the Downstream I-55 segment (see Section 3.3.1.1; EA 1994, 1996, and 1998-2004).

3.3.2 Seining

3.3.2.1 2004

As was observed for electrofishing CPEs, seining CPEs of native fishes for the period of study were also highly variable, ranging from 19.3 fish per haul at MCB Location 419A to 126.8 fish per haul at BW Location 414 (Figure 8; Appendix B). Because CPEs were quite variable throughout the study area, further discussions of spatial trends will focus primarily on differences between the two segments as opposed to individual locations. Statistical testing was not applied to the seine data because of its qualitative nature.

CPEs were higher within the Downstream I-55 segment (73.8 fish per haul) than within the Upstream I-55 segment (33.0 fish per haul) (Table 12). The variability in CPEs among the nine

Figure 8. Spatial Comparisons of Seining Catch Rates and Mean Native Species Richness Values, 2004.

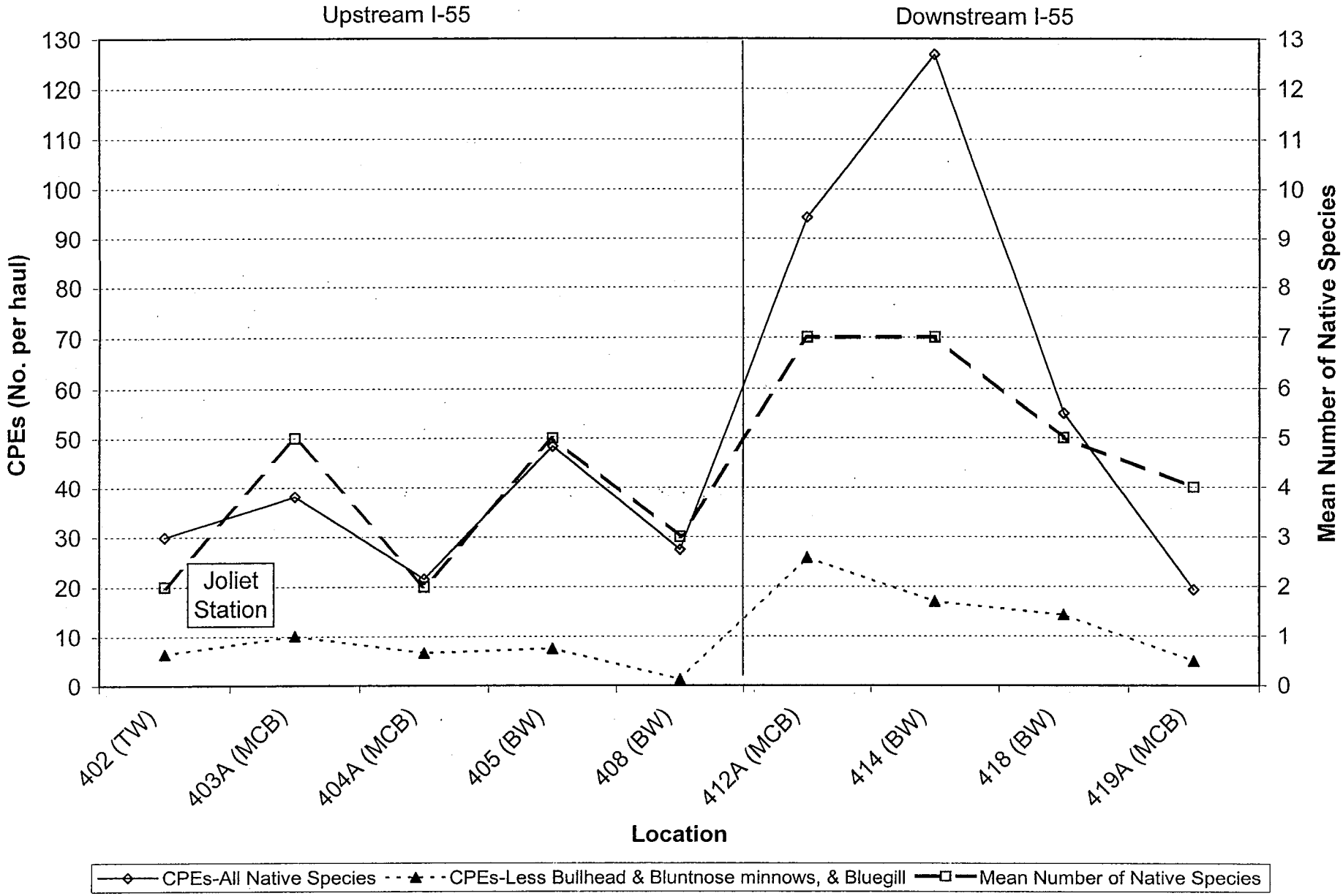


TABLE 10. CPE AND RELATIVE ABUNDANCE OF NATIVE FISH COLLECTED ELECTROFISHING WITHIN TWO SEGMENTS OF THE LOWER DES PLAINES RIVER, MAY-SEPTEMBER 1994, 1995, AND 1997-2004.

SPECIES	1994				1995				1997				1998				1999				2000			
	U/S I-55		D/S I-55		U/S I-55		D/S I-55		U/S I-55		D/S I-55		U/S I-55		D/S I-55		U/S I-55		D/S I-55		U/S I-55		D/S I-55	
	CPE	%	CPE	%	CPE	%	CPE	%	CPE	%	CPE	%	CPE	%	CPE	%	CPE	%	CPE	%	CPE	%	CPE	%
LONGNOSE GAR	--	--	--	--	--	--	0.3	0.3	0.3	0.3	0.4	0.2	0.5	0.3	0.3	0.1	0.1	0.1	--	--	0.4	0.3	--	--
SHORTNOSE GAR	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	0.1	0.0	--	--	--	--
UNID GAR	0.1	0.2	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	0.1	0.0	0.1	0.0
BOWFIN	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
SKIPJACK HERRING	0.1	0.2	0.3	0.2	--	--	--	--	0.1	0.1	0.1	0.0	0.1	0.1	0.2	0.1	0.1	0.1	0.2	0.1	0.1	0.0	--	--
GIZZARD SHAD	6.6	13.8	102.5	60.7	17.0	30.8	28.6	25.7	17.9	19.9	112.8	56.3	37.0	18.7	74.5	27.0	32.1	25.7	51.0	26.2	27.0	23.0	62.3	23.3
UNID DOROSOMA	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
GRASS PICKEREL	--	--	--	--	--	--	--	--	0.1	0.1	--	--	--	--	0.2	0.1	--	--	--	--	0.1	0.0	--	--
NORTHERN PIKE	--	--	--	--	0.2	0.3	--	--	--	--	--	--	0.1	0.0	--	--	--	--	--	--	--	--	--	--
CENTRAL STONEROLLER	--	--	--	--	--	--	--	--	--	--	--	--	0.1	0.0	--	--	0.1	0.0	--	--	--	--	--	--
HORNYHEAD CHUB	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
GOLDEN SHINER	--	--	--	--	--	--	0.1	0.1	--	--	0.2	0.1	0.5	0.3	--	--	0.1	0.0	0.1	0.0	--	--	0.3	0.1
PALLID SHINER	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	0.1	0.0
EMERALD SHINER	3.2	6.8	7.2	4.2	2.2	4.0	0.9	0.8	13.0	14.4	8.3	4.1	38.6	19.5	9.5	3.4	10.1	8.0	3.2	1.7	7.7	6.5	1.8	0.7
GHOST SHINER	--	--	0.2	0.1	--	--	0.1	0.1	0.1	0.1	--	--	0.1	0.0	0.4	0.2	--	--	--	--	--	--	--	--
STRIPED SHINER	0.3	0.7	0.2	0.1	--	--	0.1	0.1	--	--	0.1	0.1	0.1	0.1	0.1	0.0	--	--	--	--	--	--	--	--
BIGMOUTH SHINER	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
SPOTTAIL SHINER	1.0	2.1	0.7	0.4	1.6	3.0	2.3	2.1	0.4	0.4	0.7	0.3	0.7	0.4	3.7	1.3	0.3	0.3	0.6	0.3	0.4	0.3	5.8	2.2
RED SHINER	--	--	--	--	--	--	--	--	--	--	--	--	--	--	0.1	0.0	--	--	--	--	--	--	--	--
ROSYFACE SHINER	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
SPOTFIN SHINER	0.2	0.5	0.2	0.1	0.5	0.8	0.6	0.5	0.4	0.4	0.4	0.2	1.1	0.5	1.1	0.4	0.5	0.4	1.1	0.6	1.3	1.1	1.5	0.6
SAND SHINER	--	--	--	--	0.1	0.2	--	--	0.1	0.1	--	--	0.4	0.2	--	--	--	--	--	--	0.4	0.3	--	--
REDFIN SHINER	--	--	--	--	--	--	--	--	--	--	--	--	0.1	0.0	0.1	0.0	--	--	--	--	--	--	--	--
MIMIC SHINER	--	--	--	--	0.4	0.7	0.1	0.1	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
UNID NOTROPIS	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
SUCKERMOUTH MINNOW	--	--	--	--	--	--	--	--	--	--	--	--	0.1	0.1	--	--	0.1	0.0	--	--	--	--	--	--
BLUNTNOSE MINNOW	8.8	18.4	4.0	2.4	7.0	12.7	12.3	11.1	9.3	10.3	16.9	8.5	32.7	16.6	27.2	9.9	8.3	6.7	12.1	6.2	6.2	5.3	26.7	10.0
FATHEAD MINNOW	--	--	--	--	--	--	--	--	--	--	0.1	0.0	0.1	0.1	--	--	--	--	--	--	--	--	--	--
BULLHEAD MINNOW	--	--	2.2	1.3	0.3	0.5	1.0	0.9	0.7	0.7	4.8	2.4	0.7	0.3	16.8	6.1	0.1	0.1	8.7	4.4	0.6	0.5	11.2	4.2
RIVER CARPSUCKER	0.9	1.9	0.7	0.4	0.6	1.2	1.4	1.3	1.1	1.2	1.5	0.7	0.4	0.2	0.9	0.3	0.6	0.5	0.6	0.3	0.6	0.5	0.7	0.3
QUILLBACK	0.4	0.9	1.0	0.6	0.6	1.2	1.4	1.3	0.9	1.0	0.8	0.4	0.6	0.3	0.3	0.1	0.2	0.2	0.4	0.2	0.6	0.5	0.3	0.1
UNID CARPIODES	--	--	--	--	--	--	--	--	0.1	0.1	--	--	0.1	0.0	--	--	--	--	--	--	--	--	--	--
WHITE SUCKER	0.2	0.5	0.2	0.1	1.1	2.0	1.1	1.0	0.2	0.2	--	--	0.3	0.2	0.1	0.0	0.1	0.1	--	--	0.1	0.0	0.1	0.0
SMALLMOUTH BUFFALO	2.1	4.4	1.0	0.6	2.6	4.8	2.0	1.8	3.0	3.3	2.4	1.2	3.0	1.5	1.8	0.6	3.4	2.7	3.7	1.9	2.4	2.1	2.4	0.9
BIGMOUTH BUFFALO	--	--	--	--	0.2	0.3	--	--	0.1	0.1	0.4	0.2	--	--	0.2	0.1	0.1	0.0	0.2	0.1	0.2	0.1	0.1	0.0
BLACK BUFFALO	0.4	0.9	--	--	--	--	0.3	0.3	--	--	--	--	0.1	0.1	0.1	0.0	0.2	0.1	--	--	0.1	0.1	0.2	0.1
SPOTTED SUCKER	--	--	--	--	--	--	--	--	0.1	0.1	--	--	--	--	--	--	--	--	--	--	--	--	--	--
SILVER REDHORSE	--	--	0.3	0.2	--	--	0.4	0.4	--	--	0.1	0.0	0.2	0.1	--	--	0.1	0.0	--	--	0.1	0.0	--	--
RIVER REDHORSE	0.1	0.2	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
BLACK REDHORSE	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
GOLDEN REDHORSE	0.2	0.5	0.7	0.4	0.2	0.3	2.6	2.3	0.1	0.1	1.6	0.8	0.2	0.1	1.5	0.5	0.1	0.0	0.7	0.4	0.1	0.0	0.1	0.0
SHORTHEAD REDHORSE	0.3	0.7	4.2	2.5	0.6	1.2	2.6	2.3	0.7	0.7	0.8	0.4	0.3	0.2	0.9	0.3	0.4	0.3	0.4	0.2	0.6	0.5	0.7	0.3
UNID MOXOSTOMA	0.1	0.2	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	0.1	0.0	--	--
BLACK BULLHEAD	0.1	0.2	0.5	0.3	0.1	0.2	--	--	--	--	--	--	0.3	0.1	--	--	--	--	--	--	0.1	0.0	--	--
YELLOW BULLHEAD	0.1	0.2	0.3	0.2	0.1	0.2	--	--	0.3	0.3	0.2	0.1	0.2	0.1	0.2	0.1	0.3	0.3	0.4	0.2	0.5	0.4	0.9	0.3
CHANNEL CATFISH	2.7	5.6	0.5	0.3	2.5	4.4	1.0	0.9	4.9	5.4	1.3	0.7	5.0	2.5	1.1	0.4	3.2	2.6	1.9	1.0	3.6	3.1	2.0	0.7
UNID AMEIURUS	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	0.1	0.0	--	--	--	--

TABLE 10 (cont.)

SPECIES	1994				1995				1997				1998				1999				2000			
	U/S I-55		D/S I-55		U/S I-55		D/S I-55		U/S I-55		D/S I-55		U/S I-55		D/S I-55		U/S I-55		D/S I-55		U/S I-55		D/S I-55	
	CPE	%	CPE	%	CPE	%	CPE	%	CPE	%	CPE	%	CPE	%	CPE	%	CPE	%	CPE	%	CPE	%	CPE	%
TADPOLE MADTOM	--	--	--	--	--	--	--	--	--	--	--	--	--	--	0.1	0.0	--	--	--	--	--	--	0.2	0.1
FLATHEAD CATFISH	--	--	--	--	--	--	--	--	0.1	0.1	--	--	0.1	0.0	--	--	--	--	--	--	0.1	0.1	--	--
BLACKSTRIPE TOPMINNOW	0.1	0.2	--	--	--	--	--	--	0.2	0.2	0.1	0.0	0.6	0.3	0.2	0.1	0.1	0.0	--	--	0.3	0.2	0.2	0.1
BROOK SILVERSIDE	--	--	--	--	--	--	--	--	0.1	0.1	0.1	0.0	--	--	0.1	0.0	0.1	0.0	0.2	0.1	--	--	0.1	0.0
WHITE BASS	0.1	0.2	--	--	--	--	--	--	0.2	0.2	0.1	0.0	0.2	0.1	0.1	0.0	0.2	0.1	0.1	0.0	0.2	0.2	0.1	0.0
YELLOW BASS	--	--	--	--	0.1	0.2	0.3	0.3	--	--	0.1	0.0	--	--	0.1	0.0	0.2	0.1	0.1	0.1	0.1	0.1	0.1	0.0
UNID MORONE	--	--	0.3	0.2	--	--	--	--	--	--	--	--	--	--	--	--	--	--	0.1	0.0	--	--	--	--
ROCK BASS	--	--	--	--	--	--	--	--	0.1	0.1	0.1	0.1	0.2	0.1	--	--	0.2	0.1	--	--	0.2	0.1	--	--
GREEN SUNFISH	11.3	23.8	11.0	6.5	7.5	13.5	2.3	2.1	14.9	16.5	3.8	1.9	38.2	19.4	12.0	4.4	29.7	23.7	12.6	6.5	24.5	20.9	28.9	10.8
PUMPKINSEED	--	--	0.5	0.3	--	--	0.1	0.1	--	--	--	--	0.3	0.2	0.6	0.2	0.1	0.0	0.4	0.2	--	--	0.1	0.0
WARMOUTH	--	--	--	--	--	--	--	--	--	--	--	--	--	--	0.1	0.0	--	--	--	--	--	--	0.1	0.0
ORANGESPOTTED SUNFISH	0.3	0.7	13.2	7.8	0.5	1.0	16.3	14.7	2.8	3.1	17.4	8.7	2.9	1.5	69.0	25.0	2.9	2.3	25.6	13.1	1.5	1.2	14.5	5.4
BLUEGILL	1.0	2.1	5.0	3.0	2.7	4.9	6.7	6.0	5.2	5.7	12.6	6.3	12.9	6.5	32.2	11.7	10.6	8.5	50.9	26.1	19.0	16.2	86.4	32.4
LONGEAR SUNFISH	0.4	0.9	0.3	0.2	--	--	--	--	0.3	0.3	0.1	0.0	0.2	0.1	--	--	0.1	0.0	--	--	1.3	1.1	0.2	0.1
HYBRID SUNFISH	0.2	0.5	0.3	0.2	0.3	0.5	--	--	1.2	1.3	0.2	0.1	3.7	1.9	0.2	0.1	8.1	6.5	1.1	0.6	4.9	4.2	1.9	0.7
UNID LEPOMIS	--	--	0.5	0.3	--	--	14.3	12.9	--	--	--	--	--	--	--	--	--	--	--	--	--	--	0.1	0.0
SMALLMOUTH BASS	0.8	1.6	1.8	1.1	0.6	1.2	2.6	2.3	1.5	1.6	1.4	0.7	1.9	1.0	1.6	0.6	1.2	1.0	0.6	0.3	0.4	0.3	1.1	0.4
LARGEMOUTH BASS	2.2	4.7	1.2	0.7	3.4	6.1	4.0	3.6	5.8	6.4	5.6	2.8	8.7	4.4	13.7	5.0	7.9	6.3	14.0	7.2	7.2	6.2	13.7	5.1
WHITE CRAPPIE	--	--	--	--	--	--	--	--	--	--	0.1	0.0	0.1	0.1	0.4	0.1	0.1	0.0	0.1	0.1	0.1	0.1	0.3	0.1
BLACK CRAPPIE	--	--	--	--	--	--	0.1	0.1	0.1	0.1	0.2	0.1	0.4	0.2	0.3	0.1	0.2	0.2	0.3	0.1	0.2	0.2	0.5	0.2
JOHNNY DARTER	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	0.1	0.0	--	--
YELLOW PERCH	--	--	--	--	--	--	--	--	0.1	0.1	--	--	0.1	0.1	0.1	0.0	--	--	--	--	--	--	--	--
LOGPERCH	--	--	--	--	--	--	0.6	0.5	0.1	0.1	1.7	0.8	0.1	0.0	0.9	0.3	0.1	0.0	0.6	0.3	0.1	0.1	0.1	0.0
BLACKSIDE DARTER	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	0.1	0.0	--	--	--	--
SLENDERHEAD DARTER	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
SAUGER	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
WALLEYE	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
FRESHWATER DRUM	3.0	6.3	8.0	4.7	2.3	4.1	4.6	4.1	4.7	5.2	3.1	1.6	4.0	2.0	3.3	1.2	3.0	2.4	2.6	1.4	4.6	3.9	1.6	0.6
TOTAL FISH	47.7	100.0	168.8	100.0	55.2	100.0	111.1	100.0	90.1	100.0	200.3	100.0	197.4	100.0	275.7	100.0	125.0	100.0	195.1	100.0	117.0	100.0	267.0	100.0
TOTAL SPECIES	28		28		26		30		36		35		44		40		38		31		38		36	

TABLE 10 (cont.)

SPECIES	2001				2002				2003				2004			
	U/S I-55		D/S I-55		U/S I-55		D/S I-55		U/S I-55		D/S I-55		U/S I-55		D/S I-55	
	CPE	%	CPE	%	CPE	%	CPE	%	CPE	%	CPE	%	CPE	%	CPE	%
LONGNOSE GAR	0.5	0.3	0.1	0.1	0.3	0.2	0.4	0.1	0.9	0.3	0.1	0.0	0.3	0.2	--	--
SHORTNOSE GAR	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
UNID GAR	--	--	--	--	0.0	0.0	--	--	--	--	--	--	--	--	--	--
BOWFIN	0.0	0.0	--	--	--	--	--	--	--	--	--	--	--	--	--	--
SKIPJACK HERRING	0.3	0.2	0.4	0.2	0.3	0.1	0.2	0.1	--	--	--	--	0.2	0.1	0.1	0.1
GIZZARD SHAD	65.1	39.7	84.9	42.7	71.8	33.0	89.8	26.6	20.8	7.7	60.9	8.8	27.0	17.9	33.3	14.2
UNID DOROSOMA	--	--	--	--	--	--	--	--	--	--	97.2	14.1	--	--	--	--
GRASS PICKEREL	--	--	--	--	0.0	0.0	--	--	--	--	--	--	--	--	--	--
NORTHERN PIKE	0.0	0.0	--	--	--	--	--	--	--	--	--	--	--	--	--	--
CENTRAL STONEROLLER	0.1	0.1	--	--	--	--	--	--	0.3	0.1	--	--	--	--	--	--
HORNYHEAD CHUB	0.0	0.0	--	--	--	--	--	--	--	--	--	--	--	--	--	--
GOLDEN SHINER	0.0	0.0	0.2	0.1	0.2	0.1	0.4	0.1	0.6	0.2	2.3	0.3	0.0	0.0	0.4	0.2
PALLID SHINER	--	--	--	--	--	--	0.1	0.0	0.0	0.0	0.8	0.1	--	--	0.4	0.2
EMERALD SHINER	11.4	6.9	9.2	4.6	34.5	15.9	31.9	9.4	7.9	2.9	19.3	2.8	4.4	2.9	3.3	1.4
GHOST SHINER	0.0	0.0	0.1	0.0	0.1	0.1	0.1	0.0	0.0	0.0	1.9	0.3	0.0	0.0	--	--
STRIPED SHINER	0.0	0.0	--	--	--	--	--	--	0.2	0.1	0.1	0.0	--	--	--	--
BIGMOUTH SHINER	--	--	--	--	0.0	0.0	--	--	--	--	--	--	--	--	--	--
SPOTTAIL SHINER	4.5	2.7	2.4	1.2	2.4	1.1	2.4	0.7	3.4	1.3	5.5	0.8	0.6	0.4	0.9	0.4
RED SHINER	--	--	--	--	0.0	0.0	--	--	--	--	--	--	--	--	--	--
ROSYFACE SHINER	--	--	--	--	--	--	--	--	--	--	0.9	0.1	--	--	--	--
SPOTFIN SHINER	1.4	0.9	2.1	1.1	2.5	1.2	1.5	0.4	9.5	3.5	5.5	0.8	2.3	1.5	1.3	0.5
SAND SHINER	0.2	0.1	--	--	0.5	0.2	0.1	0.0	0.3	0.1	--	--	0.0	0.0	--	--
REDFIN SHINER	0.0	0.0	--	--	0.0	0.0	--	--	--	--	--	--	0.0	0.0	--	--
MIMIC SHINER	--	--	--	--	--	--	--	--	--	--	2.4	0.4	--	--	--	--
UNID NOTROPIS	--	--	--	--	--	--	--	--	--	--	0.1	0.0	--	--	--	--
SUCKERMOUTH MINNOW	--	--	--	--	0.0	0.0	--	--	--	--	--	--	--	--	--	--
BLUNTNOSE MINNOW	20.9	12.7	19.1	9.6	15.0	6.9	18.1	5.4	59.4	21.9	110.8	16.1	11.8	7.8	14.8	6.3
FATHEAD MINNOW	--	--	--	--	--	--	--	--	0.0	0.0	0.6	0.1	--	--	--	--
BULLHEAD MINNOW	3.8	2.3	12.9	6.5	0.0	0.0	5.4	1.6	0.1	0.0	7.8	1.1	0.0	0.0	3.9	1.7
RIVER CARPSUCKER	0.3	0.2	0.8	0.4	0.5	0.2	0.4	0.1	0.2	0.1	0.4	0.1	0.1	0.1	1.4	0.6
QUILLBACK	0.2	0.1	0.8	0.4	0.2	0.1	0.3	0.1	0.2	0.1	0.3	0.0	0.6	0.4	0.4	0.2
HIGHFIN CARPSUCKER	--	--	--	--	--	--	--	--	--	--	--	--	0.0	0.0	--	--
UNID CARPIODES	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
WHITE SUCKER	0.1	0.1	--	--	0.1	0.0	--	--	0.5	0.2	--	--	0.2	0.1	--	--
SMALLMOUTH BUFFALO	2.5	1.5	3.2	1.6	2.9	1.3	3.1	0.9	2.8	1.0	2.0	0.3	2.9	1.9	2.5	1.1
BIGMOUTH BUFFALO	0.1	0.1	0.1	0.0	0.1	0.1	0.3	0.1	0.1	0.0	0.1	0.0	0.0	0.0	0.1	0.1
BLACK BUFFALO	0.1	0.1	0.1	0.0	0.0	0.0	--	--	0.2	0.1	0.4	0.1	0.0	0.0	--	--
SPOTTED SUCKER	0.0	0.0	0.1	0.0	--	--	0.1	0.0	--	--	--	--	0.0	0.0	--	--
SILVER REDHORSE	0.0	0.0	0.1	0.0	0.1	0.1	--	--	0.0	0.0	0.1	0.0	0.0	0.0	0.1	0.1
RIVER REDHORSE	--	--	--	--	--	--	--	--	0.0	0.0	--	--	--	--	--	--
BLACK REDHORSE	--	--	--	--	--	--	0.1	0.0	--	--	--	--	--	--	--	--
GOLDEN REDHORSE	--	--	0.3	0.1	0.3	0.1	0.9	0.3	0.2	0.1	2.7	0.4	0.5	0.3	0.7	0.3
SHORTHEAD REDHORSE	0.2	0.1	0.3	0.1	0.2	0.1	0.3	0.1	0.3	0.1	0.2	0.0	0.0	0.0	0.1	0.0
UNID MOXOSTOMA	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
BLACK BULLHEAD	--	--	--	--	--	--	--	--	--	--	0.1	0.0	0.0	0.0	--	--
YELLOW BULLHEAD	0.0	0.0	0.3	0.2	0.8	0.4	0.6	0.2	0.4	0.2	0.9	0.1	0.5	0.4	0.3	0.1
CHANNEL CATFISH	3.5	2.1	1.9	1.0	3.9	1.8	3.2	0.9	8.4	3.1	3.8	0.5	8.0	5.3	3.8	1.6
UNID AMEIURUS	0.0	0.0	--	--	--	--	--	--	--	--	--	--	--	--	--	--

TABLE 10 (cont.)

SPECIES	2001				2002				2003				2004			
	U/S I-55		D/S I-55		U/S I-55		D/S I-55		U/S I-55		D/S I-55		U/S I-55		D/S I-55	
	CPE	%	CPE	%	CPE	%	CPE	%	CPE	%	CPE	%	CPE	%	CPE	%
TADPOLE MADTOM	--	--	--	--	--	--	--	--	--	--	0.1	0.0	--	--	0.1	0.0
FLATHEAD CATFISH	0.0	0.0	--	--	0.1	0.0	--	--	0.3	0.1	--	--	0.1	0.1	0.1	0.0
BLACKSTRIPE TOPMINNOW	0.1	0.1	0.1	0.0	0.2	0.1	0.1	0.0	0.9	0.3	0.1	0.0	0.2	0.1	0.3	0.1
BROOK SILVERSIDE	--	--	0.4	0.2	0.1	0.0	0.9	0.3	0.4	0.2	1.1	0.2	--	--	0.4	0.2
WHITE BASS	0.2	0.1	--	--	0.5	0.2	0.1	0.0	0.3	0.1	0.4	0.1	0.2	0.1	0.1	0.1
YELLOW BASS	0.1	0.1	--	--	--	--	0.1	0.0	--	--	0.1	0.0	0.1	0.1	0.1	0.1
UNID MORONE	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
ROCK BASS	0.1	0.1	0.1	0.0	0.1	0.0	--	--	0.1	0.0	0.1	0.0	--	--	0.1	0.0
GREEN SUNFISH	16.9	10.3	7.0	3.5	31.4	14.5	25.0	7.4	53.3	19.6	74.2	10.8	28.5	18.9	39.7	16.9
PUMPKINSEED	--	--	--	--	--	--	0.3	0.1	0.0	0.0	0.7	0.1	--	--	0.2	0.1
WARMOUTH	--	--	--	--	--	--	0.1	0.0	--	--	--	--	0.1	0.1	0.1	0.0
ORANGESPOTTED SUNFISH	0.1	0.1	6.9	3.5	0.5	0.2	36.6	10.8	3.0	1.1	98.1	14.2	1.8	1.2	17.1	7.3
BLUEGILL	18.2	11.1	33.9	17.0	26.9	12.4	98.5	29.2	48.9	18.0	158.3	23.0	25.5	17.0	78.2	33.3
LONGEAR SUNFISH	0.8	0.5	0.6	0.3	1.0	0.5	0.1	0.0	1.4	0.5	0.2	0.0	0.3	0.2	0.1	0.1
HYBRID SUNFISH	2.1	1.3	0.7	0.3	4.1	1.9	1.2	0.4	24.4	9.0	3.1	0.5	15.0	10.0	2.4	1.0
UNID LEPOMIS	0.1	0.1	--	--	--	--	--	--	0.1	0.0	0.6	0.1	--	--	0.1	0.0
SMALLMOUTH BASS	1.0	0.6	0.9	0.5	2.4	1.1	1.5	0.4	2.7	1.0	3.4	0.5	2.4	1.6	2.3	1.0
LARGEMOUTH BASS	5.4	3.3	6.4	3.2	8.8	4.0	10.6	3.1	15.0	5.5	18.0	2.6	12.5	8.3	21.1	9.0
WHITE CRAPPIE	--	--	--	--	0.0	0.0	0.1	0.0	0.0	0.0	0.3	0.0	0.0	0.0	0.3	0.1
BLACK CRAPPIE	0.1	0.1	0.1	0.0	0.3	0.1	0.3	0.1	0.2	0.1	0.4	0.1	0.4	0.2	0.4	0.2
JOHNNY DARTER	--	--	--	--	--	--	--	--	0.0	0.0	--	--	--	--	--	--
YELLOW PERCH	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
LOGPERCH	0.0	0.0	0.3	0.2	0.1	0.0	0.6	0.2	--	--	0.3	0.0	--	--	0.5	0.2
BLACKSIDE DARTER	0.0	0.0	--	--	--	--	--	--	0.0	0.0	0.3	0.0	--	--	0.1	0.0
SLENDERHEAD DARTER	--	--	--	--	0.0	0.0	0.1	0.0	--	--	0.1	0.0	--	--	--	--
SAUGER	--	--	--	--	0.0	0.0	--	--	--	--	--	--	--	--	--	--
WALLEYE	--	--	--	--	--	--	--	--	--	--	0.1	0.0	0.1	0.1	0.1	0.1
FRESHWATER DRUM	3.0	1.8	2.4	1.2	3.6	1.7	1.9	0.6	3.4	1.2	2.4	0.4	3.5	2.4	3.1	1.3
TOTAL FISH	164.0	100.0	199.0	100.0	217.3	100.0	337.4	100.0	271.8	100.0	689.0	100.0	150.7	100.0	234.6	100.0
TOTAL SPECIES	43		33		44		39		43		45		41		39	

NOTE: 0.0 DENOTES VALUES LESS THAN 0.05.

Table 11. Segment vs. Segment Comparisons of Mean Electrofishing Catch Parameters for 1994, 1995, and 1997-2004.

CPEs-All Native Species[a]	Upstream I-55	Downstream I-55	Significant Difference[b]	F Value	P Value
2004	150.7	234.6	Yes	7.27	0.01
2003	271.8	689.0	Yes	9.08	<0.01
2002	217.3	337.4	Yes	5.02	0.03
2001	164.0	199.0	No	0.16	0.69
2000	117.0	267.0	Yes	20.01	<0.01
1999	125.0	195.1	Yes	10.52	<0.01
1998	197.4	275.7	No	2.93	0.09
1997	90.1	200.3	Yes	6.47	0.01
1995	55.2	111.1	Yes	9.17	<0.01
1994	47.7	168.8	Yes	6.83	0.01
CPEs-Excluding Selected spp.[a,c]					
2004	96.4	105.9	No	0.59	0.45
2003	199.3	274.6	No	0.82	0.37
2002	118.0	112.6	No	0.50	0.48
2000	69.6	103.8	No	1.01	0.32
1999	79.4	67.6	No	0.09	0.77
1997	64.2	57.5	No	0.33	0.57
1995	33.8	59.6	No	3.30	0.08
1994	39.8	48.2	No	0.92	0.35
IWBmod					
2004	7.2	7.5	No	1.98	0.16
2003	7.3	7.7	No	3.11	0.08
2002[a]	6.7	7.2	No	1.81	0.18
2001	6.5	6.8	No	0.97	0.33
2000[a]	6.7	7.2	No	3.14	0.08
1999	6.7	7.2	Yes	4.58	0.04
1998[a]	7.0	7.1	No	0.39	0.53
1997	6.3	6.7	No	1.45	0.23
1995	5.5	6.9	Yes	8.03	0.01
1994	5.5	6.0	No	1.08	0.31
Mean Native Species Richness					
2004	10.2	11.2	No	2.83	0.10
2003[a]	11.4	12.8	No	1.85	0.18
2002	10.4	11.2	No	1.05	0.31
2001	9.8	10.6	No	1.21	0.28
2000	9.5	10.2	No	0.71	0.40
1999	8.9	10.4	Yes	4.16	0.046
1998	11.2	11.5	No	0.17	0.68
1997[a]	8.8	10.2	No	2.49	0.12
1995	7.3	10.8	Yes	8.05	0.01
1994	7.4	9.1	No	1.88	0.18

(a) Data log transformed for statistical analyses because they are not normally distributed.
(b) Results of one-factor parametric Analysis of Variance tests (alpha=0.05).
(c) Comparisons exclude gizzard shad, bluegill, and orangespotted sunfish.

TABLE 12. NUMBER, CPE (No./Haul), AND RELATIVE ABUNDANCE OF NATIVE FISH COLLECTED SEINING WITHIN TWO SEGMENTS OF THE LOWER DES PLAINES RIVER, 2004.

SPECIES	UPSTREAM I-55			DOWNSTREAM I-55		
	#	CPE	%	#	CPE	%
GIZZARD SHAD	--	--	--	3	0.1	0.13
GRASS PICKEREL	--	--	--	1	0.0	0.04
GOLDEN SHINER	--	--	--	6	0.2	0.25
PALLID SHINER	--	--	--	26	0.8	1.10
EMERALD SHINER	51	1.3	3.86	81	2.5	3.43
GHOST SHINER	2	0.1	0.15	1	0.0	0.04
STRIPED SHINER	2	0.1	0.15	10	0.3	0.42
SPOTTAIL SHINER	8	0.2	0.61	7	0.2	0.30
SPOTFIN SHINER	94	2.4	7.11	138	4.3	5.84
SAND SHINER	10	0.3	0.76	1	0.0	0.04
BLUNTNOSE MINNOW	920	23.0	69.59	1,053	32.9	44.58
FATHEAD MINNOW	--	--	--	1	0.0	0.04
BULLHEAD MINNOW	51	1.3	3.86	219	6.8	9.27
SMALLMOUTH BUFFALO	1	0.0	0.08	--	--	--
GOLDEN REDHORSE	--	--	--	1	0.0	0.04
BLACKSTRIPE TOPMINNOW	42	1.1	3.18	27	0.8	1.14
BROOK SILVERSIDE	--	--	--	39	1.2	1.65
ROCK BASS	2	0.1	0.15	--	--	--
GREEN SUNFISH	3	0.1	0.23	2	0.1	0.08
ORANGESPOTTED SUNFISH	2	0.1	0.15	57	1.8	2.41
BLUEGILL	96	2.4	7.26	595	18.6	25.19
LONGEAR SUNFISH	2	0.1	0.15	4	0.1	0.17
HYBRID SUNFISH	--	--	--	2	0.1	0.08
UNID LEPOMIS	2	0.1	0.15	46	1.4	1.95
SMALLMOUTH BASS	2	0.1	0.15	7	0.2	0.30
LARGEMOUTH BASS	25	0.6	1.89	22	0.7	0.93
BLACK CRAPPIE	--	--	--	4	0.1	0.17
JOHNNY DARTER	1	0.0	0.08	5	0.2	0.21
ORANGETHROAT DARTER	1	0.0	0.08	--	--	--
LOGPERCH	--	--	--	4	0.1	0.17
BLACKSIDE DARTER	5	0.1	0.38	--	--	--
TOTAL FISH	1,322	33.0	100.00	2,362	73.8	100.00
TOTAL SPECIES	20			25		
MEAN NO. SPECIES	3			6		

NOTE: 0.0 DENOTES VALUES LESS THAN 0.05.

sampling locations was largely due to the differential abundance of bluegill, bullhead minnow, and bluntnose minnow. For example, when CPEs are recalculated and replotted excluding bluegill, bullhead minnow, and bluntnose minnow, the resulting values become similar among six of the nine locations, remaining highest at MCB location 412A and BW Locations 414 and 418 (Figure 8). Mean native species richness values for the period of study were higher at two locations downstream of I-55 than at all five locations upstream of it and conversely three of the upstream locations had species richness values lower than any of the four downstream locations (Figure 8; Appendix B). As such, the mean value for the Downstream I-55 segment (six species) was twice as high as the mean value observed for the Upstream I-55 segment (three species) (Table 12).

3.3.2.2 Comparisons of Spatial Trends Among 1994-2004

Seining catch rate and species richness values for native species were compared between the two segments to determine whether the spatial patterns of these parameters in 2004 were different that those observed in 1994, 1995, or 1997-2004 (Table 13). Again, data compared are from similar locations and the same seasons (see Section 3.2.2), and statistical testing was not applied to the seine data.

Spatial trends for seining CPEs (all native species) during seven of the past eight years (all years except 1998) have been consistent with those observed during 1994 and 1995, in that catch rates have either been similar between the two segments (i.e., differing by only 4 to 8 percent) or moderately to substantially higher downstream of I-55 (i.e., differing by 37 to 153 percent):

	2004	2003	2002	2001	2000	1999	1998	1997	1995	1994
Upstream I-55	35.9	143.6	25.9	52.3	9.9	17.3	58.9	25.6	42.5	63.7
Downstream I-55	73.8	197.7	35.5	48.4	25.0	18.0	24.5	39.2	175.8	66.9
Percent Difference	106	38	37	-7	153	4	-58	53	314	5

For the six years when CPEs were moderately to substantially higher downstream of I-55 than upstream of it, the disparities were primarily due to the Downstream I-55 segment producing noticeably higher catch rates of bluntnose minnow (1995, 1997 and 2004), largemouth bass (1995), bullhead minnow (1995, 1997, 2000, and 2004), bluegill (all six years), spottail shiner (2000), and/or gizzard shad (including YOY *Dorosoma* sp., 2003) (Table 13). For at least two of these instances, largemouth bass in 1995 and *Dorosoma* sp. in 2003, the disparity in catch rates was due to a very large catch of YOY in only one or two seine hauls (EA 1996c; Appendix B). This demonstrates the qualitative nature and patchiness of seine data.

Catches rates in 1998 exhibited an anomalous trend, as catches were markedly higher (by 140 percent) within the Upstream I-55 segment than within the Downstream I-55 segment. This between-segment difference was largely due to catch rates of bluntnose minnow and particularly emerald shiner being higher upstream of I-55 than downstream of it (Table 13).

Mean native species richness values have exhibited the same spatial trend among the ten past study years in that they have consistently been either identical between the two segments or slightly higher (i.e., typically by one or two species) within the Downstream I-55 segment (Table 13).

TABLE 13. CPE AND RELATIVE ABUNDANCE OF NATIVE FISH COLLECTED SEINING WITHIN TWO SEGMENTS OF THE LOWER DES PLAINES RIVER, MAY-SEPTEMBER 1994, 1995, AND 1997-2004.

SPECIES	1994				1995				1997				1998				1999				2000			
	U/S I-55		D/S I-55		U/S I-55		D/S I-55		U/S I-55		D/S I-55		U/S I-55		D/S I-55		U/S I-55		D/S I-55		U/S I-55		D/S I-55	
	CPE	%	CPE	%	CPE	%	CPE	%	CPE	%	CPE	%	CPE	%	CPE	%	CPE	%	CPE	%	CPE	%	CPE	%
LONGNOSE GAR	--	--	--	--	0.1	0.2	0.3	0.2	--	--	0.0	0.1	--	--	--	--	--	--	--	--	0.0	0.4	0.1	0.3
UNID CLUPEIDAE	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
SKIPJACK HERRING	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	0.0	0.1
GIZZARD SHAD	2.3	3.7	9.2	13.7	0.3	0.8	0.2	0.1	1.8	6.8	1.2	3.1	0.3	0.6	0.3	1.4	0.9	4.9	0.5	3.0	0.1	1.3	0.1	0.5
UNID DOROSOMA	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
GRASS PICKEREL	--	--	--	--	--	--	--	--	--	--	0.0	0.1	--	--	--	--	--	--	--	--	0.0	0.4	--	--
CENTRAL STONEROLLER	0.2	0.3	--	--	--	--	--	--	0.1	0.3	0.0	0.1	0.0	0.1	--	--	--	--	--	--	--	--	--	--
HORNYHEAD CHUB	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
GOLDEN SHINER	0.2	0.3	1.1	1.6	--	--	0.1	0.0	--	--	0.4	1.1	0.1	0.1	0.1	0.4	--	--	--	--	0.0	0.4	0.1	0.3
PALLID SHINER	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	0.0	0.1
EMERALD SHINER	6.7	10.5	11.3	16.9	0.9	2.2	1.5	0.9	6.0	23.3	4.2	10.8	27.2	46.2	2.0	8.2	6.8	39.0	1.1	6.3	0.8	8.4	0.4	1.6
GHOST SHINER	0.3	0.4	0.1	0.1	--	--	0.1	0.0	--	--	--	--	0.0	0.1	--	--	0.0	0.3	0.1	0.6	--	--	--	--
STRIPED SHINER	1.3	2.1	0.2	0.2	0.1	0.2	--	--	--	--	0.1	0.2	0.2	0.3	--	--	--	--	--	--	--	--	--	--
BIGMOUTH SHINER	--	--	--	--	--	--	--	--	--	--	--	--	0.0	0.1	--	--	0.0	0.3	--	--	--	--	--	--
SPOTTAIL SHINER	8.7	13.6	7.3	11.0	6.3	14.7	5.4	3.1	0.3	1.1	1.2	3.0	3.0	5.1	2.4	9.8	0.3	1.9	0.2	1.2	0.3	2.5	5.5	21.9
RED SHINER	--	--	--	--	--	--	--	--	--	--	--	--	--	--	0.1	0.3	--	--	--	--	--	--	0.0	0.1
SPOTFIN SHINER	--	--	0.9	1.4	0.3	0.6	0.8	0.4	0.0	0.2	0.7	1.7	0.3	0.6	0.4	1.7	0.2	1.1	0.9	5.0	0.1	1.3	0.7	2.6
SAND SHINER	1.3	2.1	--	--	0.6	1.4	--	--	0.3	1.3	0.2	0.6	0.6	1.1	--	--	0.2	1.4	--	--	0.1	0.8	--	--
REDFIN SHINER	--	--	--	--	--	--	0.1	0.0	--	--	0.0	0.1	0.0	0.1	--	--	--	--	--	--	--	--	--	--
MIMIC SHINER	0.8	1.2	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
CHANNEL SHINER	--	--	--	--	--	--	--	--	0.0	0.2	--	--	--	--	--	--	--	--	--	--	--	--	--	--
UNID NOTROPIS	--	--	--	--	0.1	0.2	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
BLUNTNOSE MINNOW	39.4	61.9	18.8	28.1	27.6	64.9	95.3	54.2	15.4	60.1	21.1	54.0	23.9	40.6	12.9	52.7	5.7	33.0	5.0	27.7	5.8	58.4	4.8	19.0
FATHEAD MINNOW	--	--	--	--	0.3	0.6	--	--	--	--	--	--	--	--	--	--	0.0	0.3	--	--	--	--	--	--
BULLHEAD MINNOW	0.2	0.3	3.7	5.5	0.3	0.6	15.5	8.8	0.0	0.2	2.9	7.3	0.5	0.9	1.8	7.4	0.0	0.3	2.0	11.3	0.0	0.4	1.8	7.0
CREEK CHUB	--	--	--	--	0.1	0.2	--	--	0.0	0.2	--	--	--	--	--	--	--	--	--	--	--	--	--	--
UNID CARPIODES	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
WHITE SUCKER	0.5	0.8	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
SMALLMOUTH BUFFALO	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
GOLDEN REDHORSE	--	--	--	--	--	--	--	--	--	--	0.1	0.2	--	--	--	--	0.0	0.3	--	--	--	--	--	--
SHORTHEAD REDHORSE	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
UNID ICTIOBINAE	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
YELLOW BULLHEAD	--	--	--	--	0.1	0.2	--	--	0.0	0.2	--	--	--	--	--	--	--	--	--	--	0.1	0.8	0.0	0.1
CHANNEL CATFISH	--	--	--	--	--	--	--	--	0.0	0.2	--	--	0.0	0.1	--	--	--	--	0.0	0.2	0.0	0.4	--	--
TADPOLE MADTOM	--	--	--	--	--	--	0.1	0.0	0.1	0.5	--	--	--	--	--	--	--	--	--	--	--	--	--	--
BLACKSTRIPE TOPMINNOW	0.7	1.0	0.1	0.1	0.1	0.2	0.3	0.1	0.1	0.3	0.1	0.2	--	--	0.0	0.1	0.6	3.6	0.1	0.4	0.3	2.5	0.4	1.5
BROOK SILVERSIDE	--	--	1.2	1.7	--	--	1.9	1.1	0.2	0.7	--	--	--	--	--	--	--	--	--	--	0.0	0.4	0.0	0.1
WHITE BASS	--	--	--	--	--	--	--	--	--	--	--	--	0.0	0.1	--	--	--	--	--	--	--	--	--	--
ROCK BASS	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	0.1	0.5
GREEN SUNFISH	0.1	0.1	--	--	--	--	--	--	0.0	0.2	0.1	0.2	0.1	0.2	0.1	0.3	0.1	0.5	--	--	0.1	0.8	0.1	0.3
PUMPKINSEED	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	0.1	0.6	--	--	--	--
ORANGESPOTTED SUNFISH	--	--	1.3	1.9	0.1	0.2	3.5	2.0	0.0	0.2	1.6	4.1	0.2	0.4	1.6	6.6	0.0	0.3	2.2	12.3	--	--	0.5	2.0
BLUEGILL	0.2	0.3	0.2	0.2	0.5	1.2	7.8	4.4	0.8	3.1	3.9	10.1	1.4	2.4	1.9	7.7	1.2	7.1	4.6	25.3	1.0	10.1	9.4	37.8
LONGEAR SUNFISH	0.1	0.1	--	--	0.1	0.2	--	--	--	--	--	--	--	--	0.0	0.1	--	--	--	--	--	--	--	--
HYBRID SUNFISH	--	--	--	--	--	--	--	--	--	--	--	--	--	--	0.0	0.1	0.2	1.4	--	--	--	--	0.0	0.1
UNID LEPOMIS	--	--	7.1	10.6	--	--	0.9	0.5	--	--	0.0	0.1	--	--	--	--	--	--	0.0	0.2	--	--	0.0	0.1
SMALLMOUTH BASS	0.3	0.4	0.3	0.5	0.3	0.6	0.3	0.2	--	--	0.0	0.1	0.1	0.2	0.1	0.4	0.0	0.3	--	--	--	--	0.0	0.1
LARGEMOUTH BASS	0.7	1.0	3.5	5.2	0.5	1.2	41.8	23.7	0.2	0.8	0.6	1.6	0.5	0.8	0.5	2.2	0.7	3.8	0.9	5.0	1.0	10.5	0.7	2.8
UNID MICROPTERUS	--	--	--	--	0.7	1.6	--	--	--	--	0.2	0.4	--	--	--	--	--	--	--	--	--	--	--	--
WHITE CRAPPIE	--	--	0.5	0.7	--	--	--	--	--	--	--	--	--	--	--	--	--	--	0.0	0.2	--	--	0.0	0.1
BLACK CRAPPIE	--	--	--	--	0.1	0.2	--	--	--	--	0.1	0.2	0.0	0.1	0.0	0.1	--	--	0.0	0.2	--	--	0.0	0.1
JOHNNY DARTER	--	--	0.2	0.2	3.4	8.0	0.2	0.1	--	--	--	--	--	--	--	--	--	--	0.0	0.2	--	--	--	--
ORANGETHROAT DARTER	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
LOGPERCH	--	--	0.1	0.1	--	--	--	--	0.1	0.3	0.3	0.9	--	--	0.1	0.4	0.0	0.3	0.0	0.2	--	--	0.2	0.6
BLACKSIDE DARTER	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
SLENDERHEAD DARTER	--	--	--	--	--	--	--	--	--	--	0.0	0.1	--	--	0.0	0.1	--	--	0.0	0.2	--	--	0.1	0.3
FRESHWATER DRUM	--	--	--	--	--	--	--	--	--	--	--	--	0.1	0.1	--	--	--	--	--	--	--	--	--	--
TOTAL FISH	63.7	100.0	66.9	100.0	42.5	100.0	175.8	100.0	25.6	100.0	39.2	100.0	58.9	100.0	24.5	100.0	17.3	100.0	18.0	100.0	9.9	100.0	25.0	100.0
TOTAL SPECIES	18		18		20		18		20		23		22		18		18		19		17		24	
MEAN NO. SPECIES	5		5		4		5		3		5		4		5		3		4		3		5	

TABLE 13 (cont.)

SPECIES	2001				2002				2003				2004			
	U/S I-55		D/S I-55		U/S I-55		D/S I-55		U/S I-55		D/S I-55		U/S I-55		D/S I-55	
	CPE	%	CPE	%	CPE	%	CPE	%	CPE	%	CPE	%	CPE	%	CPE	%
LONGNOSE GAR	--	--	0.0	0.1	--	--	--	--	--	--	0.1	0.0	--	--	--	--
UNID CLUPEIDAE	--	--	--	--	--	--	--	--	--	--	4.8	2.4	--	--	--	--
SKIPJACK HERRING	--	--	0.0	0.1	--	--	0.0	0.1	--	--	--	--	--	--	--	--
GIZZARD SHAD	1.3	2.5	1.6	3.4	1.0	3.7	2.3	6.6	0.6	0.4	5.3	2.7	--	--	0.1	0.1
UNID DOROSOMA	--	--	--	--	--	--	--	--	--	--	39.6	20.0	--	--	--	--
GRASS PICKEREL	0.0	0.1	0.1	0.2	--	--	--	--	--	--	--	--	--	--	0.0	0.0
CENTRAL STONEROLLER	0.5	0.9	--	--	--	--	--	--	0.1	0.0	--	--	--	--	--	--
HORNYHEAD CHUB	0.0	0.1	--	--	0.0	0.1	--	--	0.1	0.1	--	--	--	--	--	--
GOLDEN SHINER	0.0	0.1	0.2	0.4	0.0	0.1	0.1	0.2	0.0	0.0	--	--	--	--	0.2	0.3
PALLID SHINER	--	--	--	--	--	--	--	--	0.0	0.0	0.5	0.3	--	--	0.8	1.1
EMERALD SHINER	4.0	7.7	2.3	4.6	4.7	18.0	0.5	1.5	6.1	4.3	11.5	5.8	1.1	3.0	2.5	3.4
GHOST SHINER	0.0	0.1	--	--	--	--	--	--	0.4	0.3	1.8	0.9	0.1	0.2	0.0	0.0
STRIPED SHINER	0.6	1.2	--	--	1.2	4.5	0.1	0.3	1.8	1.3	--	--	0.1	0.2	0.3	0.4
BIGMOUTH SHINER	--	--	--	--	--	--	--	--	0.0	0.0	--	--	--	--	--	--
SPOTTAIL SHINER	10.6	20.4	1.0	2.1	0.8	3.3	1.2	3.3	5.3	3.7	3.9	2.0	0.3	0.7	0.2	0.3
RED SHINER	0.0	0.1	--	--	--	--	--	--	--	--	--	--	--	--	--	--
SPOTFIN SHINER	1.5	2.8	0.5	1.0	0.9	3.6	1.8	5.0	1.9	1.3	6.1	3.1	1.8	5.0	4.3	5.8
SAND SHINER	0.7	1.4	0.1	0.1	0.9	3.5	--	--	2.7	1.9	0.2	0.1	0.3	0.9	0.0	0.0
REDFIN SHINER	0.0	0.1	--	--	--	--	--	--	--	--	--	--	--	--	--	--
MIMIC SHINER	--	--	--	--	--	--	--	--	0.2	0.2	0.1	0.0	--	--	--	--
CHANNEL SHINER	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
UNID NOTROPIS	--	--	--	--	--	--	--	--	--	--	0.3	0.1	--	--	--	--
BLUNTNOSE MINNOW	25.8	49.3	12.8	26.3	12.1	46.5	8.3	23.4	101.3	70.6	63.6	32.2	25.1	69.9	32.9	44.6
FATHEAD MINNOW	0.0	0.1	--	--	--	--	--	--	0.1	0.1	0.3	0.2	--	--	0.0	0.0
BULLHEAD MINNOW	1.2	2.2	1.0	2.1	0.2	0.7	0.3	0.9	0.9	0.6	5.7	2.9	1.6	4.4	6.8	9.3
CREEK CHUB	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
UNID CARPIODES	--	--	--	--	--	--	--	--	0.0	0.0	--	--	--	--	--	--
WHITE SUCKER	0.0	0.1	--	--	--	--	--	--	--	--	--	--	--	--	--	--
SMALLMOUTH BUFFALO	--	--	0.2	0.5	0.0	0.1	--	--	--	--	--	--	0.0	0.1	--	--
GOLDEN REDHORSE	--	--	--	--	--	--	0.1	0.2	--	--	0.0	0.0	--	--	0.0	0.0
SHORTHEAD REDHORSE	0.1	0.2	0.0	0.1	--	--	--	--	--	--	--	--	--	--	--	--
UNID ICTIOBINAE	--	--	--	--	0.0	0.1	--	--	--	--	--	--	--	--	--	--
YELLOW BULLHEAD	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
CHANNEL CATFISH	0.1	0.2	0.1	0.1	0.1	0.5	0.0	0.1	0.0	0.0	--	--	--	--	--	--
TADPOLE MADTOM	0.0	0.1	0.0	0.1	0.1	0.2	--	--	--	--	--	--	--	--	--	--
BLACKSTRIPE TOPMINNOW	0.2	0.4	0.1	0.1	0.2	0.7	0.2	0.5	0.7	0.5	0.7	0.4	1.3	3.7	0.8	1.1
BROOK SILVERSIDE	0.0	0.1	0.0	0.1	--	--	--	--	0.1	0.1	0.6	0.3	--	--	1.2	1.7
WHITE BASS	0.0	0.1	--	--	--	--	--	--	0.0	0.0	--	--	--	--	--	--
ROCK BASS	0.1	0.1	0.0	0.1	0.1	0.4	0.0	0.1	--	--	0.0	0.0	0.1	0.2	--	--
GREEN SUNFISH	0.0	0.1	0.1	0.2	0.2	0.8	0.2	0.5	0.5	0.3	0.6	0.3	0.1	0.3	0.1	0.1
PUMPKINSEED	--	--	--	--	--	--	0.0	0.1	--	--	0.0	0.0	--	--	--	--
ORANGESPOTTED SUNFISH	--	--	0.8	1.5	0.0	0.1	4.2	11.9	0.1	0.1	4.1	2.1	0.1	0.2	1.8	2.4
BLUEGILL	4.6	8.9	25.9	53.5	2.7	10.5	14.7	41.4	16.0	11.1	43.0	21.7	2.9	8.1	18.6	25.2
LONGEAR SUNFISH	0.2	0.4	0.1	0.2	0.0	0.1	0.0	0.1	0.1	0.0	0.1	0.0	0.1	0.2	0.1	0.2
HYBRID SUNFISH	0.0	0.1	0.0	0.1	0.1	0.2	0.2	0.4	0.7	0.5	0.0	0.0	--	--	0.1	0.1
UNID LEPOMIS	--	--	0.9	1.8	--	--	0.3	0.7	0.6	0.4	3.3	1.7	0.1	0.2	1.4	1.9
SMALLMOUTH BASS	0.1	0.1	0.1	0.3	0.2	0.7	0.2	0.6	0.9	0.7	0.1	0.0	0.1	0.2	0.2	0.3
LARGEMOUTH BASS	0.1	0.2	0.3	0.6	0.3	1.1	0.6	1.6	1.8	1.2	0.8	0.4	0.8	2.1	0.7	0.9
UNID MICROPTERUS	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
WHITE CRAPPIE	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
BLACK CRAPPIE	--	--	--	--	0.1	0.2	0.1	0.4	--	--	--	--	--	--	0.1	0.2
JOHNNY DARTER	--	--	--	--	--	--	--	--	0.3	0.2	0.1	0.0	0.0	0.1	0.2	0.2
ORANGETHROAT DARTER	--	--	--	--	--	--	--	--	0.0	0.0	--	--	0.0	0.1	--	--
LOGPERCH	--	--	0.2	0.3	0.0	0.1	0.1	0.2	--	--	0.3	0.1	--	--	0.1	0.2
BLACKSIDE DARTER	--	--	--	--	--	--	--	--	0.0	0.0	0.1	0.0	0.2	0.4	--	--
SLENDERHEAD DARTER	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
FRESHWATER DRUM	0.0	0.1	--	--	--	--	--	--	0.0	0.0	--	--	--	--	--	--
TOTAL FISH	52.3	100.0	48.4	100.0	25.9	100.0	35.5	100.0	143.6	100.0	197.7	100.0	35.9	100.0	73.8	100.0
TOTAL SPECIES	30		25		23		22		31		26		20		25	
MEAN NO. SPECIES	4		5		4		4		6		8		3		6	

3.3.3 Summary

In 2004, electrofishing CPEs (all native fish) was significantly higher downstream of I-55 than upstream of it; whereas, IWBmod scores and mean native species richness values were similar between the two segments. With respect to electrofishing CPEs, the differential between the two segments was due primarily to the Downstream I-55 segment producing noticeably higher CPEs of green sunfish, orangespotted sunfish, and especially bluegill. IWBmod scores were not significantly higher ($P>0.05$) downstream of I-55 than upstream of it. Based on the mean IWBmod scores, the fish communities within both segments were classified as fair in 2004. The seine data corroborate the electrofishing data in that: 1) catch rates (all native species) were higher downstream of I-55 than upstream of it; 2) between-segment disparities in catch rates were largely due to the Downstream I-55 segment producing higher CPEs of bullhead minnow, bluntnose minnow, and bluegill; 3) mean species richness values were higher within the Downstream I-55 segment than within the Upstream I-55, although for electrofishing, the difference was not statistically significant; and 4) the backwater locations tended to be more productive, both in terms of numbers of fish and species, than the main channel border locations or the tailwater location.

Comparisons of the spatial patterns for electrofishing mean CPEs (with or without green sunfish, orangespotted sunfish, and bluegill), mean IWBmod scores, and mean native species richness among the past ten study years revealed that the patterns were similar during the past eight years (when the more liberal thermal limits were in effect) to those in 1994 and 1995 (when the thermal limits were more restrictive). The seine data again corroborate the electrofishing data in that the spatial trends for seining CPE and mean native species richness values have been similar among nine of the past ten years. These results indicate that the alternative thermal limits at the I-55 Bridge have not altered the spatial patterns of the community-level parameters based on electrofishing and seining data.

3.4 INTERYEAR ANALYSES OF ELECTROFISHING CATCH PARAMETERS

For the Upstream and Downstream I-55 segments, electrofishing data were compared among the past ten study years (i.e., 1994, 1995, and 1997-2004) to determine whether the alternative thermal limits at the I-55 bridge have had an adverse impact on the fish community during the past eight years (i.e., 1997-2004). Data used for comparative purposes were restricted to those collected between 15 June and the end of August, a period when the alternative thermal limits and the warmest summer temperatures coincide. Seining data are excluded and electrofishing data compared are from the same locations, except that Location 405 was not sampled during 1997-2000.

3.4.1 Upstream I-55

CPEs (all native species) during the past eight years (i.e., 1997-2004) were significantly higher compared to 1994 and 1995 (Tables 14 and 15). The mean CPE in 2004 was statistically similar to 1998, 2001, 2002 and 2003, and significantly higher ($P<0.05$) compared to 1994, 1995 and 1997. The significantly higher CPEs during most of the past eight years, compared to 1994 and 1995, were primarily due to higher catch rates of emerald shiner,

TABLE 14. INTERYEAR COMPARISONS OF ELECTROFISHING CATCHES (native species only) WITHIN THE UPSTREAM I-55 SEGMENT FOR THE PERIOD OF 15 JUNE THROUGH AUGUST.

SPECIES	1994		1995		1997		1998		1999		2000		2001		2002		2003		2004	
	CPE	%	CPE	%	CPE	%	CPE	%	CPE	%	CPE	%	CPE	%	CPE	%	CPE	%	CPE	%
LONGNOSE GAR	--	--	--	--	0.5	0.59	--	--	--	--	0.2	0.18	0.5	0.36	0.3	0.15	0.1	0.03	0.3	0.21
UNID GAR	--	--	--	--	--	--	--	--	--	--	--	--	--	--	0.1	0.04	--	--	--	--
SKIPJACK HERRING	0.2	0.47	--	--	0.1	0.12	--	--	0.1	0.10	--	--	0.1	0.06	0.1	0.04	--	--	0.2	0.10
GIZZARD SHAD	8.5	23.94	19.3	36.15	23.2	27.46	33.3	18.65	32.5	31.46	28.5	25.18	39.0	27.00	86.5	38.36	21.6	8.12	27.6	16.97
GRASS PICKEREL	--	--	--	--	0.1	0.12	--	--	--	--	0.1	0.09	--	--	0.1	0.04	--	--	--	--
NORTHERN PIKE	--	--	0.3	0.47	--	--	--	--	--	--	--	--	0.1	0.06	--	--	--	--	--	--
CENTRAL STONEROLLER	--	--	--	--	--	--	--	--	0.1	0.10	--	--	0.2	0.12	--	--	0.6	0.22	--	--
HORNYHEAD CHUB	--	--	--	--	--	--	--	--	--	--	--	--	0.1	0.06	--	--	--	--	--	--
GOLDEN SHINER	--	--	--	--	--	--	--	--	--	--	--	--	0.1	0.06	--	--	0.8	0.31	0.1	0.05
EMERALD SHINER	3.5	9.86	2.1	3.99	13.3	15.74	45.8	25.64	5.5	5.32	4.1	3.62	12.8	8.86	37.5	16.63	6.7	2.51	5.8	3.59
GHOST SHINER	--	--	--	--	--	--	0.1	0.06	--	--	--	--	--	--	--	--	--	--	0.1	0.05
STRIPED SHINER	--	--	--	--	--	--	0.2	0.11	--	--	--	--	0.1	0.06	--	--	0.5	0.19	--	--
BIGMOUTH SHINER	--	--	--	--	--	--	--	--	--	--	--	--	--	--	0.1	0.04	--	--	--	--
SPOTTAIL SHINER	1.5	4.23	0.8	1.41	0.3	0.36	0.7	0.39	0.4	0.39	--	--	6.7	4.64	3.1	1.37	3.5	1.32	0.8	0.46
SPOTFIN SHINER	--	--	--	--	0.4	0.47	1.1	0.62	0.3	0.29	0.3	0.27	2.0	1.39	1.9	0.85	5.6	2.10	1.8	1.08
SAND SHINER	--	--	0.1	0.23	--	--	0.2	0.11	--	--	--	--	0.2	0.12	0.5	0.22	0.7	0.25	0.1	0.05
REDFIN SHINER	--	--	--	--	--	--	0.1	0.06	--	--	--	--	--	--	--	--	--	--	0.1	0.05
SUCKERMOUTH MINNOW	--	--	--	--	--	--	0.2	0.11	0.1	0.10	--	--	--	--	0.1	0.04	--	--	--	--
BLUNTNOSE MINNOW	3.2	8.92	3.4	6.34	3.0	3.55	20.7	11.59	7.9	7.65	3.4	3.00	26.1	18.08	8.8	3.92	63.1	23.73	13.3	8.15
FATHEAD MINNOW	--	--	--	--	--	--	0.1	0.06	--	--	--	--	--	--	--	--	0.1	0.03	--	--
BULLHEAD MINNOW	--	--	--	--	0.9	1.07	0.3	0.17	0.2	0.19	--	--	1.8	1.27	0.1	0.04	--	--	0.1	0.05
RIVER CARPSUCKER	0.7	1.88	0.6	1.17	1.0	1.18	0.1	0.06	0.7	0.68	0.4	0.35	0.3	0.18	0.1	0.04	0.4	0.16	--	--
QUILLBACK	0.5	1.41	0.8	1.41	0.8	0.95	0.2	0.11	0.2	0.19	0.5	0.44	0.1	0.06	0.3	0.11	0.1	0.03	0.2	0.10
HIGHFIN CARPSUCKER	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	0.1	0.05
UNID CARPIODES	--	--	--	--	0.1	0.12	0.1	0.06	--	--	--	--	--	--	--	--	--	--	--	--
WHITE SUCKER	0.3	0.94	1.4	2.58	0.2	0.24	0.2	0.11	0.2	0.19	0.1	0.09	0.1	0.06	0.1	0.04	0.7	0.25	0.2	0.10
SMALLMOUTH BUFFALO	2.5	7.04	3.3	6.10	3.0	3.55	3.5	1.96	4.7	4.55	2.1	1.86	2.3	1.63	3.3	1.44	3.3	1.25	2.6	1.59
BIGMOUTH BUFFALO	--	--	0.1	0.23	0.1	0.12	--	--	0.1	0.10	0.3	0.27	--	--	0.3	0.11	--	--	--	--
BLACK BUFFALO	--	--	--	--	--	--	0.1	0.06	0.3	0.29	0.1	0.09	--	--	0.1	0.04	0.3	0.09	0.1	0.05
SPOTTED SUCKER	--	--	--	--	0.2	0.24	--	--	--	--	--	--	--	--	--	--	--	--	0.1	0.05
SILVER REDHORSE	--	--	--	--	--	--	--	--	0.1	0.10	--	--	--	--	0.1	0.04	--	--	0.1	0.05
GOLDEN REDHORSE	0.3	0.94	0.3	0.47	--	--	0.3	0.17	0.1	0.10	--	--	--	--	0.3	0.11	0.3	0.13	0.4	0.26
SHORTHEAD REDHORSE	0.3	0.94	0.9	1.64	0.2	0.24	0.6	0.34	0.5	0.48	0.6	0.53	0.3	0.18	0.1	0.04	0.3	0.09	--	--
UNID MOXOSTOMA	0.2	0.47	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
BLACK BULLHEAD	0.2	0.47	0.1	0.23	--	--	0.1	0.06	--	--	--	--	--	--	--	--	--	--	0.1	0.05
YELLOW BULLHEAD	--	--	0.1	0.23	0.3	0.36	0.2	0.11	0.2	0.19	0.6	0.53	0.1	0.06	0.4	0.18	0.6	0.22	0.5	0.31
CHANNEL CATFISH	2.8	7.98	1.6	3.05	4.4	5.21	3.1	1.74	2.1	2.03	2.8	2.47	2.1	1.45	2.8	1.22	7.3	2.76	6.3	3.90
FLATHEAD CATFISH	--	--	--	--	--	--	0.1	0.06	--	--	0.1	0.09	--	--	0.1	0.04	0.3	0.09	0.2	0.10
BLACKSTRIPE TOPMINNOW	0.2	0.47	--	--	--	--	--	--	--	--	0.1	0.09	0.1	0.06	--	--	0.4	0.16	0.3	0.15
BROOK SILVERSIDE	--	--	--	--	0.2	0.24	--	--	--	--	--	--	--	--	0.1	0.04	--	--	--	--
WHITE BASS	--	--	--	--	0.2	0.24	--	--	--	--	--	--	--	--	--	--	0.1	0.03	--	--
YELLOW BASS	--	--	0.1	0.23	--	--	--	--	0.2	0.19	--	--	--	--	--	--	--	--	0.1	0.05
ROCK BASS	--	--	--	--	--	--	--	--	0.2	0.19	0.2	0.18	--	--	0.2	0.07	0.1	0.03	--	--
GREEN SUNFISH	3.3	9.39	7.5	14.08	11.9	14.08	32.8	18.37	20.4	19.75	27.6	24.38	16.5	11.45	30.8	13.67	55.2	20.75	32.8	20.15
PUMPKINSEED	--	--	--	--	--	--	0.4	0.22	--	--	--	--	--	--	--	--	0.1	0.03	--	--
WARMOUTH	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	0.2	0.10
ORANGESPOTTED SUNFISH	0.2	0.47	0.5	0.94	2.2	2.60	3.4	1.90	0.8	0.77	1.0	0.88	0.1	0.06	0.5	0.22	2.3	0.88	1.6	0.97
BLUEGILL	0.7	1.88	2.9	5.40	4.0	4.73	10.0	5.60	9.1	8.81	22.1	19.52	20.3	14.04	27.3	12.12	41.6	15.64	32.7	20.10
LONGEAR SUNFISH	--	--	--	--	0.3	0.36	0.1	0.06	0.1	0.10	0.8	0.71	0.8	0.54	0.6	0.26	1.3	0.47	0.5	0.31
HYBRID SUNFISH	--	--	0.3	0.47	1.0	1.18	3.8	2.13	5.2	5.03	4.9	4.33	1.8	1.27	6.0	2.66	26.0	9.78	16.4	10.10
UNID LEPOMIS	--	--	--	--	--	--	--	--	--	--	--	--	0.2	0.12	--	--	0.3	0.09	--	--
SMALLMOUTH BASS	0.8	2.35	0.6	1.17	1.6	1.89	2.0	1.12	0.9	0.87	0.5	0.44	1.2	0.84	1.5	0.67	2.4	0.91	1.7	1.03
LARGEMOUTH BASS	2.0	5.63	3.6	6.81	5.5	6.51	10.1	5.66	7.2	6.97	7.7	6.80	5.5	3.80	8.2	3.62	15.8	5.92	12.9	7.95
WHITE CRAPPIE	--	--	--	--	--	--	0.2	0.11	--	--	0.2	0.18	--	--	--	--	0.1	0.03	--	--
BLACK CRAPPIE	--	--	--	--	--	--	0.2	0.11	0.2	0.19	0.3	0.27	0.1	0.06	0.3	0.15	0.2	0.06	0.6	0.36
JOHNNY DARTER	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	0.1	0.03	--	--
YELLOW PERCH	--	--	--	--	0.2	0.24	0.2	0.11	--	--	--	--	--	--	--	--	--	--	--	--
LOGPERCH	--	--	--	--	--	--	--	--	0.1	0.10	0.2	0.18	0.1	0.06	--	--	--	--	--	--
BLACKSIDE DARTER	--	--	--	--	--	--	--	--	--	--	--	--	0.1	0.06	--	--	--	--	--	--
SLENDERHEAD DARTER	--	--	--	--	--	--	--	--	--	--	--	--	--	--	0.1	0.04	--	--	--	--
SAUGER	--	--	--	--	--	--	--	--	--	--	--	--	--	--	0.1	0.04	--	--	--	--
FRESHWATER DRUM	3.7	10.33	2.8	5.16	5.3	6.27	4.0	2.24	2.6	2.52	3.4	3.00	2.7	1.87	3.0	1.33	3.4	1.29	2.1	1.28
TOTAL FISH	35.5	100.00	53.3	100.00	84.5	100.00	178.6	100.00	103.3	100.00	113.2	100.00	144.3	100.00	225.5	100.00	265.8	100.00	162.5	100.00
TOTAL SPECIES	20		23		28		34		31		28		32		36		35		35	

Table 15. Interyear Comparisons of Mean Electrofishing Catch Parameters Within the Upstream I-55 and Downstream I-55 Segments for the Period of 15 June through August.

Upstream I-55[a]	2004	2003	2002	2001	2000	1999	1998	1997	1995	1994	Significant Difference[b]	F Value	P Value
CPEs-all native fish	162.5 AB	265.8 A	225.5 AB	144.3 ABC	113.2 BC	103.3 BC	178.6 AB	84.5 C	53.3 D	35.5 D[c]	Yes	8.04	<0.01
CPEs-w/o selected taxa[d]	48.7	57.6	106.8	61.3	43.4	48.0	55.4	45.8	29.9	22.8	No	1.67	0.10
IWBmod	7.1 A	7.2 A	6.5 AB	6.2 AB	6.5 AB	6.6 AB	6.7 AB	6.3 AB	5.7 B	5.8 B	Yes	2.03	0.04
Native Species Richness	10.4 AB	11.2 A	9.5 ABC	9.5 ABC	9.0 ABCD	8.6 BCD	10.5 AB	8.6 BCD	7.2 D	7.4 CD	Yes	2.89	<0.01
Downstream I-55													
CPEs-all native fish[a]	242.3 ABC	789.3 A	348.4 AB	163.4 CD	252.5 ABC	186.2 BCD	227.3 BC	139.1 CD	119.8 CD	190.0 D	Yes	4.28	<0.01
CPEs-w/o selected taxa[a,e]	52.0	79.9	68.8	54.1	50.1	43.7	48.0	32.4	53.8	28.3	No	1.43	0.18
IWBmod	7.4 AB	7.9 A	7.5 AB	6.7 BC	7.4 AB	7.2 AB	7.1 AB	6.7 BC	7.2 AB	6.0 C	Yes	2.35	0.02
Native Species Richness[a]	11.6	13.1	11.9	10.4	10.3	10.7	11.3	9.9	11.6	8.5	No	1.66	0.10

(a) Data log transformed for statistical analyses because they are not normally distributed.
(b) Results of one-factor parametric Analysis of Variance tests (alpha=0.05).
(c) Results of Duncan's Multiple Range Test; values with the same letters are not significantly different (alpha=0.05).
(d) Comparison excludes emerald shiner, bluntnose minnow, green sunfish, bluegill, largemouth bass, and hybrid *Lepomis* .
(e) Comparison excludes gizzard shad (+*Dorosoma* sp.), bluntnose minnow, green sunfish, orangespotted sunfish, and bluegill.

bluntnose minnow (excluding 1997 and 2000), green sunfish, bluegill, largemouth bass, and hybrid *Lepomis* (Table 14). For example, if CPEs are recalculated and reanalyzed excluding these six taxa, CPEs become statistically similar among the past ten study years (Table 15). Although catch rates for a number of species decreased in 2004 in comparison with 2003, total CPE in 2004 was similar to 1998 and 2002 and higher than 1994-5 and 1997 (Table 14). Mean IWBmod scores were also higher during the past eight years and significantly higher in 2003 and 2004 when compared to 1994 and 1995 (Table 15). Ohio EPA (1987) uses IWBmod scores to assign streams or stream segments to the following classifications: Exceptional = >9.5; Good = 8.0-9.5; Fair = 6.4-7.9; Poor = 5.0-6.3; and Very Poor = <5.0. According to this classification scheme, the Upstream I-55 segment would have been considered poor during 1994, 1995, 1997, and 2001 and fair during 1998-2000 and 2002-2004. Following the consecutive annual declines in mean IWBmod scores from 1999 to 2001, they increased consecutively in 2002 and 2003 and decreased slightly in 2004.

As observed for CPE and IWBmod values, mean native species richness values were also higher during the past eight years than in 1994 and 1995 (Tables 14 and 15). The value for 2004 was significantly higher ($P<0.05$) than 1994, 1995, and statistically similar to each of the next seven years (Table 15).

As shown below, mean water temperatures do not appear to have influenced catch results from the Upstream I-55 segment, as no consistent pattern is evident among the past ten study years:

	2004	2003	2002	2001	2000	1999	1998	1997	1995	1994
Mean water temperature	28.7	29.7	31.9	30.8	30.7	29.8	29.5	28.8	30.7	26.7
CPEs	162.5	265.8	225.5	144.3	113.2	103.3	178.6	84.5	55.0	36.8
IWBmod	7.1	7.2	6.5	6.2	6.5	6.6	6.7	6.3	5.6	5.7
Species richness	10.4	11.2	9.5	9.5	9.0	8.6	10.5	8.6	7.2	7.4

Collectively, the data show that the fish community upstream of I-55 during the past eight years is better than it was during 1994 and 1995, and all three catch parameters during the past eight years were higher than their respective values in 1994 and 1995.

3.4.2 Downstream I-55

The electrofishing catch rate (all native species) in 2004, although markedly lower than in 2003, was typical of the rates observed during the other years since 1997 (Table 16). CPE in 2004 was significantly higher ($P<0.05$) than 1994 and statistically similar to all other years (Table 15). The differences in catch rates among the past ten study years were primarily due to the variability in the abundance of gizzard shad (including YOY *Dorosoma* sp. in 2003), bluntnose minnow, green sunfish, orangespotted sunfish, and bluegill (Table 16). For example, if CPEs are recalculated and reanalyzed excluding these five taxa, they become statistically similar among the past ten study years (Table 15). Although catch rates for a number of species (e.g. YOY *Dorosoma* sp, bluntnose minnow, and orangespotted sunfish) decreased from the high levels observed in 2003, the 2004 catch rate for largemouth bass was the highest to date (Table 16). Catch rates for freshwater drum in 2004 increased to levels observed in 1995 and 1997. Conversely, catch rates of shorthead redhorse during the past seven years have been lower than in 1994, 1995, and 1997.

TABLE 16. INTERYEAR COMPARISONS OF ELECTROFISHING CATCHES (native species only) WITHIN THE DOWNSTREAM I-55 SEGMENT FOR THE PERIOD OF 15 JUNE THROUGH AUGUST.

SPECIES	1994		1995		1997		1998		1999		2000		2001		2002		2003		2004	
	CPE	%	CPE	%	CPE	%	CPE	%	CPE	%	CPE	%	CPE	%	CPE	%	CPE	%	CPE	%
LONGNOSE GAR	--	--	0.4	0.33	0.9	0.63	0.3	0.11	--	--	--	--	0.3	0.15	0.9	0.25	0.3	0.03	--	--
SKIPJACK HERRING	0.5	0.26	--	--	0.1	0.09	0.3	0.11	0.4	0.20	--	--	0.6	0.38	0.3	0.07	--	--	0.3	0.10
GIZZARD SHAD	150.8	79.34	32.6	27.21	70.6	50.76	91.3	40.15	47.9	25.74	62.3	24.65	37.3	22.80	80.9	23.21	78.6	9.96	38.6	15.94
UNID DOROSOMA	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	194.4	24.63	--	--
GRASS PICKEREL	--	--	--	--	--	--	0.1	0.06	--	--	--	--	--	--	--	--	--	--	--	--
GOLDEN SHINER	--	--	0.2	0.17	--	--	--	--	0.1	0.07	0.3	0.10	0.4	0.23	0.5	0.14	0.8	0.10	0.3	0.10
PALLID SHINER	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	1.0	0.13	0.3	0.10
EMERALD SHINER	3.3	1.71	--	--	6.4	4.58	5.3	2.31	2.1	1.15	0.9	0.35	11.5	7.04	26.9	7.71	1.5	0.19	5.0	2.06
GHOST SHINER	0.3	0.13	--	--	--	--	0.6	0.28	--	--	--	--	--	--	--	--	0.3	0.03	--	--
STRIPED SHINER	--	--	--	--	--	--	0.1	0.06	--	--	--	--	--	--	--	--	--	--	--	--
SPOTTAIL SHINER	0.8	0.39	2.4	2.00	0.6	0.45	2.4	1.05	0.5	0.27	8.4	3.32	1.9	1.15	2.4	0.68	6.1	0.78	0.5	0.21
ROSYFACE SHINER	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	1.9	0.24	--	--
SPOTFIN SHINER	0.3	0.13	--	--	0.6	0.45	0.4	0.17	1.8	0.94	0.5	0.20	3.3	1.99	2.1	0.61	4.5	0.57	1.4	0.57
SAND SHINER	--	--	--	--	--	--	--	--	--	--	--	--	--	--	0.1	0.04	--	--	--	--
REDFIN SHINER	--	--	--	--	--	--	0.1	0.06	--	--	--	--	--	--	--	--	--	--	--	--
MIMIC SHINER	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	4.8	0.60	--	--
UNID NOTROPIS	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	0.1	0.02	--	--
BLUNTNOSE MINNOW	1.8	0.92	8.8	7.35	4.9	3.50	19.4	8.53	16.6	8.89	22.5	8.91	25.4	15.53	26.6	7.64	151.5	19.20	19.5	8.05
FATHEAD MINNOW	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	1.1	0.14	--	--
BULLHEAD MINNOW	3.0	1.58	1.4	1.17	2.1	1.53	12.5	5.50	9.9	5.32	11.0	4.36	17.5	10.71	3.1	0.90	8.5	1.08	2.6	1.08
RIVER CARPSUCKER	0.8	0.39	2.0	1.67	1.5	1.08	0.8	0.33	0.8	0.40	1.0	0.40	0.4	0.23	0.5	0.14	0.4	0.05	1.5	0.62
QUILLBACK	1.0	0.53	1.8	1.50	1.0	0.72	0.3	0.11	0.6	0.34	0.4	0.15	1.0	0.61	0.4	0.11	0.3	0.03	0.3	0.10
WHITE SUCKER	--	--	0.4	0.33	--	--	0.1	0.06	--	--	--	--	--	--	--	--	--	--	--	--
SMALLMOUTH BUFFALO	1.5	0.79	2.8	2.34	2.6	1.89	1.8	0.77	4.0	2.16	3.1	1.24	3.5	2.14	4.4	1.26	2.3	0.29	2.8	1.14
BIGMOUTH BUFFALO	--	--	--	--	0.9	0.63	0.3	0.11	0.3	0.13	0.3	0.10	0.1	0.08	0.4	0.11	0.1	0.02	--	--
BLACK BUFFALO	--	--	0.4	0.33	--	--	--	--	--	--	0.3	0.10	--	--	--	--	0.6	0.08	--	--
SPOTTED SUCKER	--	--	--	--	--	--	--	--	--	--	--	--	--	--	0.1	0.04	--	--	--	--
SILVER REDHORSE	0.3	0.13	0.4	0.33	--	--	--	--	--	--	--	--	0.1	0.08	--	--	--	--	0.3	0.10
BLACK REDHORSE	--	--	--	--	--	--	--	--	--	--	--	--	--	--	0.1	0.04	--	--	--	--
GOLDEN REDHORSE	0.8	0.39	3.4	2.84	1.4	0.99	2.5	1.10	0.4	0.20	--	--	0.3	0.15	1.1	0.32	4.3	0.54	0.5	0.21
SHORTHEAD REDHORSE	1.3	0.66	3.4	2.84	0.8	0.54	0.6	0.28	0.5	0.27	0.3	0.10	0.1	0.08	0.1	0.04	0.3	0.03	--	--
BLACK BULLHEAD	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	0.1	0.02	--	--
YELLOW BULLHEAD	0.5	0.26	--	--	0.3	0.18	0.3	0.11	0.5	0.27	1.0	0.40	0.4	0.23	0.5	0.14	0.8	0.10	0.3	0.10
CHANNEL CATFISH	0.3	0.13	1.2	1.00	1.8	1.26	0.6	0.28	1.0	0.54	1.4	0.54	1.4	0.84	3.9	1.11	5.1	0.65	2.9	1.19
UNID AMEIURUS	--	--	--	--	--	--	--	--	0.1	0.07	--	--	--	--	--	--	--	--	--	--
TADPOLE MADTOM	--	--	--	--	--	--	0.1	0.06	--	--	0.1	0.05	--	--	--	--	0.1	0.02	--	--
FLATHEAD CATFISH	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	0.1	0.05
BLACKSTRIPE TOPMINNOW	--	--	--	--	0.1	0.09	0.1	0.06	--	--	0.3	0.10	0.1	0.08	0.1	0.04	0.3	0.03	0.5	0.21
BROOK SILVERSIDE	--	--	--	--	0.1	0.09	0.1	0.06	0.3	0.13	--	--	0.4	0.23	0.9	0.25	1.4	0.17	0.5	0.21
WHITE BASS	--	--	--	--	--	--	0.1	0.06	0.1	0.07	0.1	0.05	--	--	0.1	0.04	0.8	0.10	0.1	0.05
YELLOW BASS	--	--	0.4	0.33	0.1	0.09	0.1	0.06	--	--	--	--	--	--	0.1	0.04	0.1	0.02	0.1	0.05
UNID MORONE	0.5	0.26	--	--	--	--	--	--	0.1	0.07	--	--	--	--	--	--	--	--	--	--
ROCK BASS	--	--	--	--	0.1	0.09	--	--	--	--	--	--	--	--	--	--	0.1	0.02	0.1	0.05
GREEN SUNFISH	3.0	1.58	2.0	1.67	3.5	2.52	7.1	3.14	8.2	4.38	18.4	7.28	5.1	3.14	29.1	8.36	56.6	7.17	36.8	15.17
PUMPKINSEED	--	--	0.2	0.17	--	--	0.8	0.33	0.1	0.07	--	--	--	--	0.4	0.11	0.9	0.11	0.3	0.10
WARMOUTH	--	--	--	--	--	--	--	--	--	--	0.1	0.05	--	--	--	--	--	--	--	--
ORANGESPOTTED SUNFISH	4.5	2.37	14.4	12.02	15.6	11.23	31.5	13.86	20.6	11.05	16.6	6.58	5.8	3.52	27.8	7.97	89.9	11.39	10.1	4.18
BLUEGILL	1.8	0.92	8.2	6.84	12.1	8.72	30.0	13.20	49.2	26.42	82.6	32.72	35.8	21.88	115.3	33.08	138.4	17.53	85.3	35.19
LONGEAR SUNFISH	0.3	0.13	--	--	--	--	--	--	--	--	0.1	0.05	0.1	0.08	--	--	0.1	0.02	--	--
HYBRID SUNFISH	--	--	--	--	0.1	0.09	0.4	0.17	1.1	0.61	1.5	0.59	0.9	0.54	1.4	0.39	2.5	0.32	2.1	0.88
UNID LEPOMIS	0.8	0.39	20.0	16.69	--	--	--	--	--	--	0.3	0.10	--	--	--	--	1.0	0.13	0.1	0.05
SMALLMOUTH BASS	1.0	0.53	3.6	3.01	1.1	0.81	2.1	0.94	0.8	0.40	1.5	0.59	0.6	0.38	1.8	0.50	4.3	0.54	2.8	1.14
LARGEMOUTH BASS	1.0	0.53	4.4	3.67	4.5	3.23	10.3	4.51	13.3	7.14	13.4	5.30	6.4	3.90	12.1	3.48	18.9	2.39	21.0	8.67
WHITE CRAPPIE	--	--	--	--	--	--	0.4	0.17	0.3	0.13	0.4	0.15	--	--	0.3	0.07	0.4	0.05	0.1	0.05
BLACK CRAPPIE	--	--	0.2	0.17	0.3	0.18	0.4	0.17	0.4	0.20	1.0	0.40	0.1	0.08	0.4	0.11	0.5	0.06	0.5	0.21
LOGPERCH	--	--	0.8	0.67	1.3	0.90	0.5	0.22	1.0	0.54	0.1	0.05	0.5	0.31	0.9	0.25	0.4	0.05	1.0	0.41
BLACKSIDE DARTER	--	--	--	--	--	--	--	--	0.1	0.07	--	--	--	--	--	--	0.6	0.08	0.1	0.05
SLENDERHEAD DARTER	--	--	--	--	--	--	--	--	--	--	--	--	--	--	0.1	0.04	0.1	0.02	--	--
FRESHWATER DRUM	10.5	5.53	4.0	3.34	3.8	2.70	3.5	1.54	3.3	1.75	2.6	1.04	2.4	1.45	2.5	0.72	2.6	0.33	3.9	1.60
TOTAL FISH	190.0	100.00	119.8	100.00	139.1	100.00	227.3	100.00	186.2	100.00	252.5	100.00	163.4	100.00	348.4	100.00	789.3	100.00	242.3	100.00
TOTAL SPECIES	24		25		28		36		29		29		30		35		42		33	

The mean IWBmod score in 2004 was statistically similar to all previous years except 1994, which was significantly lower than 2004 ($P<0.05$). In previous years, the following comparisons of mean IWBmod and species richness values with concomitant mean water temperatures suggested that a direct relationship existed, in that higher mean native species richness and IWBmod values have typically coincided with higher mean water temperatures and vice versa. However in 2003 and 2004, these two parameters were at higher levels and mean water temperatures were lower.

	2004	2003	2002	2001	2000	1999	1998	1997	1995	1994
Mean water temperature	26.6	27.3	29.4	30.1	29.2	29.0	28.3	27.4	30.3	25.7
IWBmod	7.4	7.9	7.5	6.7	7.4	7.2	7.1	6.7	7.2	6.0
Species richness	11.6	13.1	11.9	10.4	10.3	10.7	11.3	9.9	11.6	8.5

Based on Ohio EPA's narrative classifications of IWBmod scores, this segment would have been considered poor in 1994, but fair during the past nine study years.

These data indicate that the fish community downstream of I-55 is still maintaining the "status quo". This conclusion is based on the fact that the species richness value in 2004 was not significantly different from the previous nine years (including 1994 and 1995); and mean 2004 IWBmod was not significantly different than the values in eight of the previous nine years (including 1995).

3.4.3 Summary

Interyear analyses of the electrofishing data revealed that the fish community in the Upstream I-55 segment during the past eight years (when the more liberal thermal limits were in effect) is better than the one that was present during 1994 and 1995 (when the thermal limits were more restrictive). These analyses also revealed that the fish community in the Downstream I-55 segment appears to be maintaining the "status quo", but the data do suggest that it has improved somewhat during the past three years, compared to 1994-1995 and 1997.

It is apparent that the alternative thermal limits for the I-55 bridge that went into effect in 1997 have not adversely impacted the fish communities in the Upstream or Downstream I-55 segments during the past eight years.

3.5 FISH CONDITION

Inherent in the development of the Ws equations used to calculate Wr is the objective of modeling the growth form of a species for fish in better than average condition. A mean Wr value close to 100 for a broad range of size groups may reflect ecological and physiological optimality for populations. When mean Wr values are considerably less than 100, problems may exist in food availability and/or feeding relationships (Anderson and Neumann 1996).

3.5.1 2004

In 2004, a total of 3983 fish, representing 24 native species, was collected that met the minimum length criteria of published Ws equations (Tables 1 and 17). Sixteen of these 24 species were represented by 10 fewer individuals in either or both segments, precluding them from further analyses due to low sample sizes. As such, the following spatial and interyear analyses will be

TABLE 17. COMPARISONS OF ANNUAL MEAN RELATIVE WEIGHTS FOR NATIVE SPECIES BETWEEN TWO SEGMENTS OF THE LOWER DES PLAINES RIVER, 2004.

SPECIES	UPSTREAM I-55		DOWNSTREAM I-55		SEGMENTS COMBINED	
	N	MEAN	N	MEAN	N	MEAN
LONGNOSE GAR	7	79	--	--	7	79
GIZZARD SHAD	578	91	339	91	917	91
RIVER CARPSUCKER	2	94	22	94	24	94
WHITE SUCKER	4	79	--	--	4	79
SMALLMOUTH BUFFALO	66	85	39	91	105	88
BIGMOUTH BUFFALO	1	98	2	103	3	101
SHORTHEAD REDHORSE	2	96	1	84	3	92
BLACK BULLHEAD	1	113	--	--	1	113
YELLOW BULLHEAD	13	100	4	96	17	99
CHANNEL CATFISH	208	101	59	104	267	102
FLATHEAD CATFISH	3	78	--	--	3	78
WHITE BASS	4	91	2	115	6	99
YELLOW BASS	2	98	2	117	4	107
ROCK BASS	--	--	1	96	1	96
GREEN SUNFISH	485	110	329	106	814	108
PUMPKINSEED	--	--	3	109	3	109
WARMOUTH	2	108	1	100	3	106
BLUEGILL	462	100	542	101	1004	101
SMALLMOUTH BASS	62	87	33	85	95	87
LARGEMOUTH BASS	288	100	251	103	539	102
WHITE CRAPPIE	--	--	4	102	4	102
BLACK CRAPPIE	9	95	7	107	16	100
WALLEYE	6	88	2	110	8	93
FRESHWATER DRUM	86	108	49	103	135	106
TOTAL FISH	2291	99	1692	100	3983	100

confined to the following eight native species: gizzard shad, smallmouth buffalo, channel catfish, green sunfish, bluegill, smallmouth bass, largemouth bass, and freshwater drum. Exotic species are not discussed in the following section; however, Wr values were calculated for all species that have published Ws equations (Table 1) and the 2004 results are contained in Appendix E. Fish collected during October/November of 1994, 1995, and 1999 are also omitted from the following analyses.

The 2004 composite (segments combined) mean Wr values for, channel catfish, green sunfish, bluegill, largemouth bass, and freshwater drum ranged from 101 to 108 (Table 17). Values of this magnitude indicate that the populations of these five species were in average or better than average condition, and that there did not appear to be significant health, food availability, and/or feeding relationship problems for them. Conversely, mean Wr values for gizzard shad, smallmouth buffalo, and smallmouth bass ranged from 87 to 91, suggesting that health, food availability, and/or feeding relationship problems may have existed for these three species during 2004.

Between-segment statistical analyses of mean Wr values for gizzard shad, channel catfish, bluegill, smallmouth bass, and freshwater drum revealed that their values were similar between the Upstream and Downstream I-55 segments (Table 18). Conversely, mean Wr values were significantly higher ($P < 0.05$) downstream of I-55 for smallmouth buffalo and largemouth bass, but significantly higher ($P < 0.05$) upstream of I-55 for green sunfish.

3.5.2 Comparisons of Spatial Trends Among 1994-2003

The following discussion compares mean Wr values for the eight common native species between the Upstream and Downstream I-55 segments for the past ten study years (i.e., 1994, 1995, and 1997-2004). The objective of these comparisons is to determine if the spatial patterns of fish condition during the past eight years (i.e., 1997-2004), the period for which the alternative thermal limits have been applicable at the I-55 bridge, have changed with respect to 1994 or 1995.

The spatial relationships for gizzard shad have been inconsistent among the ten years compared (Table 18). Mean Wr values were similar between segments in 1994, 1998, and 2002-2004, but significantly different ($P<0.05$) between them during the remaining five study years. Among these five years, mean values were significantly higher upstream of I-55 than downstream of it in 1995, 1997, and 2001, but vice versa in 1999 and 2000.

Unlike gizzard shad, the spatial patterns for smallmouth buffalo, channel catfish, green sunfish, largemouth bass, and freshwater drum have been consistent during at least five of the past eight years compared to 1994 and/or 1995 (Table 18). For example, mean Wr values for smallmouth buffalo were similar between segments during six of the past ten years, all except 1994, 2000, 2003, and 2004. In 1994, 2003, and 2004, mean Wr values for this species were significantly higher ($P<0.05$) within the Downstream I-55 segment than within the Upstream I-55 segment, but vice versa in 2000. Mean Wr values for channel catfish were similar between segments during all years except 1997, when values within the Upstream I-55 segment were significantly higher than the Downstream I-55 segment. For green sunfish, mean values were similar between segments during the period of 1995-2002, but significantly higher

Table 18. Spatial Comparisons of Mean Relative Weight Values for Selected Native Species, 1994, 1995, and 1997-2004.

Species	Year	Composite Mean	Upstream I-55	Downstream I-55	Significant Difference[a]	F Value	P Value
Gizzard shad	2004[b]	91	91	91	No	0.02	0.88
	2003[b]	90	89	91	No	3.19	0.07
	2002[b]	99	99	100	No	1.19	0.28
	2001[b]	100	102	99	Yes	5.59	0.02
	2000[b]	88	87	89	Yes	4.96	0.03
	1999[b]	100	99	101	Yes	4.31	0.04
	1998	96	96	96	No	0.04	0.85
	1997	111	113	110	Yes	4.14	0.04
	1995	108	111	105	Yes	5.04	0.03
	1994[b]	102	99	104	No	1.26	0.27
Smallmouth buffalo	2004[b]	88	85	91	Yes	11.99	<0.01
	2003	90	88	94	Yes	6.41	0.01
	2002	92	93	91	No	0.65	0.42
	2001	93	93	91	No	0.94	0.34
	2000	90	93	88	Yes	4.74	0.03
	1999	92	91	93	No	0.30	0.58
	1998	90	90	91	No	0.22	0.64
	1997	91	91	91	No	0.08	0.78
	1995	94	95	93	No	0.43	0.52
	1994	86	82	89	Yes	7.15	0.01
Channel catfish	2004	102	101	104	No	1.43	0.23
	2003	105	104	106	No	1.01	0.32
	2002[b]	105	104	108	No	3.57	0.06
	2001[b]	107	106	111	No	3.89	0.051
	2000[b]	103	103	103	No	0.08	0.78
	1999[b]	109	107	114	No	1.33	0.25
	1998	98	99	103	No	2.39	0.12
	1997	102	103	96	Yes	7.35	0.01
	1995	106	105	107	No	0.42	0.52
	1994[b]	104	103	105	No	0.12	0.73
Green sunfish	2004[b]	108	110	106	Yes	7.01	0.01
	2003[b]	113	112	115	Yes	13.97	<0.01
	2002[b]	124	123	124	No	0.00	0.98
	2001	121	121	122	No	0.01	0.93
	2000[b]	116	115	117	No	1.25	0.26
	1999[b]	120	119	121	No	0.80	0.37
	1998[b]	122	123	119	No	3.52	0.06
	1997[b]	125	124	126	No	0.55	0.46
	1995	124	123	127	No	0.60	0.44
	1994	121	118	127	Yes	10.97	<0.01

Table 18 (cont.)

Species	Year	Composite Mean	Upstream I-55	Downstream I-55	Significant Difference[a]	F Value	P Value
Bluegill	2004[b]	101	100	101	No	1.34	0.25
	2003[b]	106	106	106	No	0.30	0.58
	2002	113	114	113	No	0.46	0.50
	2001[b]	111	110	111	No	0.80	0.37
	2000[b]	106	104	106	Yes	5.60	0.02
	1999[b]	110	108	111	Yes	6.02	0.01
	1998[b]	115	108	118	Yes	17.49	<0.01
	1997[b]	115	114	116	No	1.23	0.27
	1995	126	123	128	No	0.98	0.33
Smallmouth bass	2004[b]	87	87	85	No	0.52	0.47
	2003	87	88	90	No	0.70	0.41
	2002	95	96	93	No	0.32	0.57
	1998	83	81	85	No	0.86	0.36
	1997	87	86	88	No	0.62	0.44
Largemouth bass	2004[b]	102	100	103	Yes	7.39	0.01
	2003[b]	103	101	105	Yes	14.47	<0.01
	2002	108	107	110	No	3.20	0.07
	2001[b]	108	105	112	Yes	12.73	<0.01
	2000[b]	103	101	105	Yes	4.12	0.04
	1999[b]	107	105	108	No	3.36	0.07
	1998	110	106	113	Yes	18.72	<0.01
	1997	107	105	110	Yes	4.85	0.03
	1995[b]	109	108	110	No	0.11	0.74
Freshwater drum	2004[b]	106	108	103	Yes	4.50	0.04
	2003[b]	105	106	103	No	1.92	0.17
	2002	108	110	103	Yes	8.44	<0.01
	2001	108	110	104	Yes	5.80	0.02
	2000	102	105	97	Yes	5.14	0.03
	1999	102	104	100	No	2.91	0.09
	1998[b]	111	111	112	No	0.61	0.44
	1997[b]	113	112	115	No	1.13	0.29
	1995	109	114	105	Yes	8.94	<0.01
	1994	112	114	110	No	1.52	0.22

(a) Results of one-factor parametric Analysis of Variance tests (alpha=0.05).
(b) Wr data log transformed for statistical analyses because they are not normally distributed.

downstream of I-55 in 1994, 2003, and 2004. The spatial pattern for largemouth bass has been the same for the past ten years, in that values have consistently been higher downstream of I-55 and significantly so in 1997, 1998, 2000, 2001, 2003, and 2004. Between-segment comparisons for this species were not conducted for 1994 because of the small sample size within the Downstream I-55 segment (EA 1996b). The spatial pattern for freshwater drum has also been the same for the past ten years, with values either being similar between the two segments (1994, 1997-1999, and 2003) or significantly higher upstream of I-55 (1995, 2000-2002, and 2004). The mean Wr pattern over the past ten years for channel catfish, green sunfish, and largemouth bass was for values to be typically higher in the downstream segment, whereas freshwater drum was typically higher in the upstream segment. The smallmouth buffalo pattern was less consistent; 50% of the values were higher downstream of I-55, 40% of the values were higher upstream, and one year the values were the same.

As observed for gizzard shad, the spatial patterns for bluegill have also not been very consistent during the past eight years compared to 1995 (Table 18); there was either no pattern or values were higher upstream. For example, mean Wr values were similar between segments in 1995, as well as during 1997 and 2001-2004. Conversely, values during 1998-2000 were significantly higher downstream of I-55 than upstream of it. Small sample sizes precluded spatial analysis of the 1994 data for this species (EA 1996b).

Spatial comparisons for smallmouth bass were confined to 1997-1998 and 2002-2004 due to small sample sizes in either or both segments during the other five study years (EA 1996b, 1996c, and 2000-2002). The spatial trend was the same among these five years, in that mean Wr values were similar between the two segments (Table 18).

3.5.3 Interyear Analyses

Interyear analyses were performed for both segments to determine if there have been any significant differences in mean Wr values over the past ten study years (i.e., 1994, 1995, and 1997-2004). Analyses were performed for the eight native species discussed in the previous section. Again, exotic species and October/November data are excluded from the analyses.

Gizzard shad mean Wr values for both segments in 2004 were significantly lower ($P<0.05$) than each of the previous nine study years, except for 2000 and 2003 (Table 19). The mean Wr values from both segments in 2000, 2003, and 2004 ranged from 87 to 91, which indicates that the condition of those gizzard shad populations were below average compared to populations in other years being in average to above average condition (96 to 113). The lower mean Wr values in 2000, 2003, and 2004 were likely due to greater competition for food. For example, the relative weight sample sizes for both segments in 2000, 2003, and 2004 were the highest among the past ten study years (Table 17; EA 1996b, 1996c, and 1998-2004). This indicates that the populations of fish greater than 180 mm were highest within the study area during 2000, 2003, and 2004. Typically, the annual pattern (increase or decrease in the Wr values) is the same for the upstream and downstream segments, indicating that the pattern does not appear to be temperature driven.

Mean smallmouth buffalo Wr values from both segments during the past eight years have been within the range of values reported for 1994 and 1995 (Table 19). For the Upstream I-55

Table 19. Interyear Comparisons of Mean Relative Weight Values for Selected Native Species.

Species	Segment	2004	2003	2002	2001	2000	1999	1998	1997	1995	1994	Significant Difference[a]	F Value	P Value
Gizzard shad	US I-55[b]	91 E	89 DE	99 BC	102 B	87 E	99 BC	96 C	113 A	111 A	99 BC[c]	Yes	68.52	<0.01
	DS I-55[b]	91 E	91 E	100 C	99 CD	89 E	101 C	96 D	110 A	105 B	104 C	Yes	66.71	<0.01
Smallmouth buffalo	US I-55[b]	85 CD	88 BC	93 AB	93 AB	93 AB	91 AB	90 ABC	91 AB	95 A	82 D	Yes	4.94	<0.01
	DS I-55[b]	91	94	91	91	88	93	91	91	93	89	No	1.12	0.34
Channel catfish	US I-55[b]	101 BC	104 AB	104 ABC	106 A	103 ABC	107 AB	99 C	103 ABC	105 AB	103 ABC	Yes	2.85	<0.01
	DS I-55[b]	104 A	106 A	108 A	111 A	103 A	114 A	103 A	96 B	107 A	105 A	Yes	2.40	0.01
Green sunfish	US I-55[b]	110 E	112 DE	123 A	121 ABC	115 D	119 BC	123 AB	124 A	123 A	118 C	Yes	34.13	<0.01
	DS I-55[b]	106 D	115 C	124 AB	122 ABC	117 C	121 ABC	119 BC	126 A	127 A	127 A	Yes	24.30	<0.01
Bluegill	US I-55[b]	101 E	106 CB	114 B	110 BC	104 DE	108 CD	108 CD	114 B	123 A	++[d]	Yes	27.48	<0.01
	DS I-55[b]	100 E	106 D	113 BC	111 C	106 D	111 C	118 B	116 B	128 A	113 BC	Yes	44.24	<0.01
Smallmouth bass	US I-55	87 B	88 B	96 A	++	++	++	81 B	86 B	++	++	Yes	4.75	<0.01
	DS I-55[b]	85 B	90 B	93 AB	++	89 B	++	85 B	88 B	102 A	++	Yes	3.11	0.01
Largemouth bass	US I-55[b]	100 CD	101 BCD	107 A	105 ABCD	101 BCD	105 ABCD	106 AB	105 ABC	108 A	100 D	Yes	6.14	<0.01
	DS I-55[b]	103 E	105 CDE	110 ABC	112 AB	105 DE	108 BCD	113 A	110 ABC	110 ABC	++	Yes	10.86	<0.01
Freshwater drum	US I-55[b]	108 BCD	106 CD	110 ABC	110 ABC	105 D	104 D	111 ABC	112 AB	114 AB	114 A	Yes	3.44	<0.01
	DS I-55[b]	103 C	103 C	103 C	104 C	97 D	100 BC	112 A	115 A	105 BC	110 AB	Yes	7.90	<0.01

(a) Results of one-factor parametric Analysis of Variance tests (alpha=0.05).
(b) Wr data log transformed for statistical analyses because they are not normally distributed.
(c) Results of Duncan's Multiple Range Test; values with the same letters are not significantly different (alpha=0.05)
(d) Small sample sizes precluded interyear analyses.

segment, the mean Wr for 2004 (85) was similar to those from 1994, 1998, and 2003 (82, 90, 88, respectively). However, it was significantly lower ($P<0.05$) than 1995 (95), 1997 (91), and 1999-2002 (91-93). Mean Wr values for the Downstream I-55 segment have been similar (88-94) among the past ten years.

Smallmouth bass mean Wr values from the Upstream I-55 segment were significantly higher in 2002 (96) than in 1997, 1998, 2003 or 2004 (81-88) (Table 19). For the Downstream I-55 segment, mean Wr values were similar among the past six years compared (85-93). However, values during all these years were significantly lower ($P<0.05$) than in 1995 (102).

Although interyear differences for channel catfish, green sunfish, bluegill, largemouth bass, and freshwater drum were significant for both segments, mean Wr values for all five of these species have been consistently greater than or equal to 96, and typically greater than 100 (Table 19). This indicates that when significant interyear differences occurred, they were due primarily to the extent in which Wr values exceeded the target value of 100 and not to suboptimal fish condition. Mean Wr values for each of these five species were greater than 100 within both segments during 2003; however, values for green sunfish, bluegill, and largemouth bass were either the lowest or among the lowest to date (Table 19). The lower values for these three species in 2004 are not surprising since their catch rates and Wr sample sizes from both segments were typically in the same order of magnitude to those observed in 2003, which were the highest among the past ten study years (Tables 14, 16, and 17; EA 1996b, 1996c, and 1998-2004), . As such, intra-species competition for food would have also been higher in 2003 and 2004 than during the previous study years, which likely accounts for the lower than normal mean Wr values during 2003 and 2004. In addition, catch rates for hybrid *Lepomis* from the Upstream I-55 segment and orangespotted sunfish from the Downstream I-55 segment were also highest to date in 2003 and, although reduced in 2004, were still higher than other recent years(Tables 14 and 16). This suggests that inter-taxa competition among the insectivorous *Lepomis* sp. (including bluegill) would have also been more prevalent in 2003 and 2004 than during the previous study years.

3.5.4 Summary

Analyses of fish condition data over the past ten years show that there have been significant spatial and interyear differences in mean Wr values for those species compared. However, since 79 percent of the spatial means (Table 18) and 77 percent of the interyear means (Table 19) were greater or equal to 95, it is apparent that the significant differences were primarily due to the extent in which Wr values exceeded the target value of 100 and not to suboptimal fish condition. In fact, there were only 19 instances over the past ten study years for which mean Wr values suggest that there may have been a health, food availability, and/or feeding relationship problem. These instances were as follows: 1) gizzard shad from both segments in 2000, 2003, and 2004 (as previously discussed); 2) smallmouth buffalo from both segments in 1994, downstream of I-55 in 2000, upstream of I-55 in 2003 and 2004; and 3) smallmouth bass from both segments in 1997, 1998, and 2004 downstream of I-55 in 2000, and upstream of I-55 in 2003 (Table 19).

3.6 INCIDENCE OF DELT ANOMALIES

DELT anomalies (deformities, erosion, lesions, and tumors; Ohio EPA 1987, 1989, and 1996) are the group of anomalies most relevant for this study because a clear relationship has been

established between the incidence (percentage) of DELT anomalies and water quality (Ohio EPA 1989). The extent to which parasites and "other" anomalies (e.g., emaciation, regenerated scales, etc.) reflect water quality is unclear. Therefore, only the DELT anomaly data are summarized herein. Affliction rate data regarding parasites and "other" abnormalities for 2004 are presented in Appendix F.

In contrast to our evaluation of the fish community as a whole where we eliminated exotic taxa, we included them in the DELT comparisons because of the extent to which they (particularly common carp) are affected by DELT anomalies. Seine data were not used for comparative purposes because this gear collects primarily small fish that often lack anomalies. In addition, data collected during October/November of 1994, 1995, and 1999 are also omitted from the following analyses.

3.6.1 2004

A total of 910 fish (11.3 percent of the electrofishing catch), representing 25 taxa (46 percent of all taxa collected), exhibited DELT anomalies within the study area (Table 20). Only 20 of the 54 taxa listed in Table 20 had sufficient samples sizes (≥ 20 total fish examined) to allow for meaningful interpretation of the data. Among these 20 taxa, the incidences of DELT anomalies were highest on channel catfish (91.1 percent), common carp (58.1 percent), smallmouth buffalo (47.4 percent), golden redhorse (50.0 percent), largemouth bass (41.2 percent), freshwater drum (40.1 percent), and smallmouth bass (17.3 percent) river carpsucker (16.7 percent), quillback (13.0 percent). Seven of these nine species (all except largemouth and smallmouth bass) are bottom feeders. The disproportionately higher rates of affliction for bottom feeders suggest that the substrates within the study area likely contain contaminants that are responsible for many of the DELTs observed on these species (Bertrand and Sallee 1992; Burton 1995; EA 1996d, EA 1996e; Midwest Generation and EA 2004). Conversely, incidence rates were noticeably lower (≤ 3.6 percent) or absent for the other 11 taxa (none of which are bottom feeders) (Table 20).

Erosion (98.8 percent) accounted for the vast majority of the DELT anomalies observed (Table 21). For example, erosion accounted for greater than 97.0 percent of the DELTs for 13 of the 20 taxa that exhibited DELT anomalies. Deformities, lesions, and tumors each composed 2.1 percent or less of the DELT anomalies observed (Appendix F).

Spatially, the incidence rates of DELT anomalies were twice as high within the Upstream I-55 segment (15.0 percent) than within the Downstream I-55 segment (7.2 percent) (Table 20). Erosion accounted for 98.7 to 98.9 percent of the DELT anomalies observed in each segment (Table 21). Between-segment differences were also observed for the nine disproportionately affected species. Affliction rates for six of the nine species; common carp, smallmouth buffalo, golden redhorse, channel catfish, smallmouth bass, and largemouth bass were slightly to moderately higher upstream of I-55, whereas rates for river carpsucker (small upstream sample size) and freshwater drum were more than twice as high upstream of I-55 whereas the rate for quillback was slightly higher downstream of I-55.

A high incidence of DELT anomalies is an indication of stress, which may be caused by a variety of environmental factors including chemically contaminated substrates (Ohio EPA 1987, 1989, and 1996). Ohio EPA (1987) uses percent DELT anomalies as an IBI (Index of Biotic Integrity) metric. For large river sites like the lower Des Plaines, the IBI scoring criteria is as follows:

TABLE 20. COMPARISONS OF THE INCIDENCE OF DELT ANOMALIES BETWEEN TWO SEGMENTS OF THE LOWER DES PLAINES RIVER, 2004.

	UPSTREAM I-55			DOWNSTREAM I-55			TOTAL		
SPECIES	DELT #	EXAM #	DELT %	DELT #	EXAM #	DELT %	DELT #	EXAM #	DELT %
LONGNOSE GAR	--	8	--	--	--	--	--	8	--
SKIPJACK HERRING	--	4	--	--	2	--	--	6	--
GIZZARD SHAD	9	739	1.2	4	533	0.8	13	1272	1.0
THREADFIN SHAD	--	25	--	2	35	5.7	2	60	3.3
COMMON CARP	86	135	63.7	29	63	46.0	115	198	58.1
CARP X GOLDFISH HYBRID	2	4	50.0	--	--	--	2	4	50.0
GOLDEN SHINER	1	1	100.0	--	6	--	1	7	14.3
PALLID SHINER	--	--	--	--	6	--	--	6	--
EMERALD SHINER	--	129	--	--	53	--	--	182	--
GHOST SHINER	--	1	--	--	--	--	--	1	--
SPOTTAIL SHINER	--	23	--	--	15	--	--	38	--
SPOTFIN SHINER	--	70	--	--	20	--	--	90	--
SAND SHINER	--	3	--	--	--	--	--	3	--
REDFIN SHINER	--	1	--	--	--	--	--	1	--
BLUNTNOSE MINNOW	1	390	0.3	--	237	--	1	627	0.2
BULLHEAD MINNOW	--	1	--	--	63	--	--	64	--
RIVER CARPSUCKER	1	2	50.0	3	22	13.6	4	24	16.7
QUILLBACK	2	16	12.5	1	7	14.3	3	23	13.0
HIGHFIN CARPSUCKER	--	1	--	--	--	--	--	1	--
WHITE SUCKER	1	4	25.0	--	--	--	1	4	25.0
SMALLMOUTH BUFFALO	36	74	48.6	18	40	45.0	54	114	47.4
BIGMOUTH BUFFALO	--	1	--	--	2	--	--	3	--
BLACK BUFFALO	--	1	--	--	--	--	--	1	--
SPOTTED SUCKER	1	1	100.0	--	--	--	1	1	100.0
SILVER REDHORSE	1	2	50.0	--	2	--	1	4	25.0
GOLDEN REDHORSE	10	17	58.8	4	11	36.4	14	28	50.0
SHORTHEAD REDHORSE	1	3	33.3	--	1	--	1	4	25.0
BLACK BULLHEAD	--	1	--	--	--	--	--	1	--
YELLOW BULLHEAD	3	13	23.1	--	4	--	3	17	17.6
CHANNEL CATFISH	195	210	92.9	52	61	85.2	247	271	91.1
TADPOLE MADTOM	--	--	--	--	1	--	--	1	--
FLATHEAD CATFISH	1	3	33.3	1	1	100.0	2	4	50.0
BLACKSTRIPE TOPMINNOW	--	5	--	--	5	--	--	10	--
BROOK SILVERSIDE	--	--	--	--	6	--	--	6	--
WHITE BASS	--	4	--	--	2	--	--	6	--
YELLOW BASS	1	2	50.0	--	2	--	1	4	25.0
ROCK BASS	--	1	--	--	1	--	--	2	--
GREEN SUNFISH	25	706	3.5	23	635	3.6	48	1341	3.6
PUMPKINSEED	--	--	--	--	3	--	--	3	--
WARMOUTH	--	2	--	--	1	--	--	3	--
ORANGESPOTTED SUNFISH	--	44	--	--	274	--	--	318	--
BLUEGILL	19	667	2.8	17	1251	1.4	36	1918	1.9
LONGEAR SUNFISH	--	7	--	--	2	--	--	9	--
HYBRID SUNFISH	--	371	--	1	39	2.6	1	410	0.2
UNID LEPOMIS	--	--	--	--	1	--	--	1	--
SMALLMOUTH BASS	13	67	19.4	5	37	13.5	18	104	17.3
LARGEMOUTH BASS	177	352	50.3	107	337	31.8	284	689	41.2
WHITE CRAPPIE	--	1	--	--	4	--	--	5	--
BLACK CRAPPIE	--	9	--	--	6	--	--	15	--
LOGPERCH	--	--	--	--	8	--	--	8	--
BLACKSIDE DARTER	--	--	--	--	1	--	--	1	--
WALLEYE	2	6	33.3	--	2	--	2	8	25.0
FRESHWATER DRUM	45	88	51.1	10	49	20.4	55	137	40.1
ROUND GOBY	--	11	--	--	2	--	--	13	--
TOTAL FISH	633	4226	15.0	277	3853	7.2	910	8079	11.3

TABLE 21. COMPARISONS OF THE NUMBER AND PERCENTAGE OF FISH WITH EROSION BETWEEN TWO SEGMENTS OF THE LOWER DES PLAINES RIVER AND THE PERCENTAGE THAT EROSION CONTRIBUTED TO ALL DELT ANOMALIES COMBINED, 2004.

SPECIES	UPSTREAM I-55		DOWNSTREAM I-55		TOTAL WITH EROSION	TOTAL WITH DELT ANOMALIES	PERCENT WITH EROSION
	#	%	#	%			
LONGNOSE GAR	--	--	--	--	--	--	--
SKIPJACK HERRING	--	--	--	--	--	--	--
GIZZARD SHAD	9	100.0	4	100.0	13	13	100.0
THREADFIN SHAD	--	--	2	100.0	2	2	100.0
COMMON CARP	84	97.7	29	100.0	113	115	98.3
CARP X GOLDFISH HYBRID	2	100.0	--	--	2	2	100.0
GOLDEN SHINER	1	100.0	--	--	1	1	100.0
PALLID SHINER	--	--	--	--	--	--	--
EMERALD SHINER	--	--	--	--	--	--	--
GHOST SHINER	--	--	--	--	--	--	--
SPOTTAIL SHINER	--	--	--	--	--	--	--
SPOTFIN SHINER	--	--	--	--	--	--	--
SAND SHINER	--	--	--	--	--	--	--
REDFIN SHINER	--	--	--	--	--	--	--
BLUNTNOSE MINNOW	1	100.0	--	--	1	1	100.0
BULLHEAD MINNOW	--	--	--	--	--	--	--
RIVER CARPSUCKER	1	100.0	3	100.0	4	4	100.0
QUILLBACK	2	100.0	--	--	2	3	66.7
HIGHFIN CARPSUCKER	--	--	--	--	--	--	--
WHITE SUCKER	1	100.0	--	--	1	1	100.0
SMALLMOUTH BUFFALO	35	97.2	18	100.0	53	54	98.1
BIGMOUTH BUFFALO	--	--	--	--	--	--	--
BLACK BUFFALO	--	--	--	--	--	--	--
SPOTTED SUCKER	1	100.0	--	--	1	1	100.0
SILVER REDHORSE	1	100.0	--	--	1	1	100.0
GOLDEN REDHORSE	10	100.0	4	100.0	14	14	100.0
SHORTHEAD REDHORSE	1	100.0	--	--	1	1	100.0
BLACK BULLHEAD	--	--	--	--	--	--	--
YELLOW BULLHEAD	3	100.0	--	--	3	3	100.0
CHANNEL CATFISH	195	100.0	52	100.0	247	247	100.0
TADPOLE MADTOM	--	--	--	--	--	--	--
FLATHEAD CATFISH	1	100.0	1	100.0	2	2	100.0
BLACKSTRIPE TOPMINNOW	--	--	--	--	--	--	--
BROOK SILVERSIDE	--	--	--	--	--	--	--
WHITE BASS	--	--	--	--	--	--	--
YELLOW BASS	--	--	--	--	--	1	--
ROCK BASS	--	--	--	--	--	--	--
GREEN SUNFISH	25	100.0	22	95.7	47	48	97.9
PUMPKINSEED	--	--	--	--	--	--	--
WARMOUTH	--	--	--	--	--	--	--
ORANGESPOTTED SUNFISH	--	--	--	--	--	--	--
BLUEGILL	18	94.7	17	100.0	35	36	97.2
LONGEAR SUNFISH	--	--	--	--	--	--	--
HYBRID SUNFISH	--	--	1	100.0	1	1	100.0
UNID LEPOMIS	--	--	--	--	--	--	--
SMALLMOUTH BASS	12	92.3	4	80.0	16	18	88.9
LARGEMOUTH BASS	175	98.9	107	100.0	282	284	99.3
WHITE CRAPPIE	--	--	--	--	--	--	--
BLACK CRAPPIE	--	--	--	--	--	--	--
LOGPERCH	--	--	--	--	--	--	--
BLACKSIDE DARTER	--	--	--	--	--	--	--
WALLEYE	2	100.0	--	--	2	2	100.0
FRESHWATER DRUM	45	100.0	10	100.0	55	55	100.0
ROUND GOBY	--	--	--	--	--	--	--
TOTAL FISH	625	98.7	274	98.9	899	910	98.8

<0.5% = 5 (good), 0.5-3.0% = 3 (fair), and >3.0% = 1 (poor). Thus, the incidence rates within both segments would place them in the poor category.

3.6.2 Comparisons of Spatial Trends Among 1994-2003

Between-segment comparisons of DELT incidence rates among the past ten study years (i.e., 1994, 1995, and 1997-2004) are provided below. The objective of these comparisons is to determine if the spatial patterns of DELT affliction rates during the past eight years (i.e., 1997-2004), the period for which the alternative thermal limits have been applicable at the I-55 bridge, have changed with respect to 1994 or 1995. The spatial patterns for the incidence rates of DELT anomalies have been consistent among the past ten study years, higher upstream of I-55 than downstream of it:

Year	Upstream I-55	Downstream I-55	Difference
2004	15.0	7.2	7.8
2003	6.2	2.0	4.2
2002	5.7	2.4	3.3
2001	6.5	3.0	3.5
2000	9.4	2.9	6.5
1999	8.9	2.8	6.1
1998	7.3	2.1	5.2
1997	16.2	3.3	12.9
1995	21.3	10.0	11.3
1994	23.0	7.4	15.6

Generally, upstream rates are two-three times higher than downstream rates. However, the magnitude of the between-segment differences has been variable. In 2004, incidence rates of DELT anomalies both upstream of I-55 and downstream increased to near pre 1998 levels and pre 1997 levels respectively.

3.6.3 Interyear Analyses

Interyear comparisons of DELT affliction rates were made for both segments to determine if there have been any noticeable differences among the past ten study years (i.e., 1994, 1995, and 1997-2004), particularly with respect to the past eight years when the alternative thermal limits have been effect at the I-55 bridge.

For both segments, the DELT affliction rates during the past eight years (particularly the past six) have been consistently lower compared to 1994 and 1995 (Tables 22 and 23), however in 2004 affliction rates increased :

	2004	2003	2002	2001	2000	1999	1998	1997	1995	1994
Upstream I-55	15.0	6.2	5.7	6.5	9.4	8.9	7.3	16.2	21.3	23.0
Downstream I-55	7.2	2.0	2.4	3.0	2.9	2.8	2.1	3.3	10.0	7.4

The lower affliction rates during the previous seven years for these two segments have been due, at least in part, to higher numbers of bluntnose minnow, emerald shiner, and/or gizzard shad

TABLE 22. INCIDENCE OF DELT ANOMALIES WITHIN THE UPSTREAM I-55 SEGMENT, 1994, 1995, AND 1997-2004.

SPECIES	1994			1995			1997			1998			1999		
	DELT #	EXAM #	DELT %	DELT #	EXAM #	DELT %	DELT #	EXAM #	DELT %	DELT #	EXAM #	DELT %	DELT #	EXAM #	DELT %
LONGNOSE GAR	--	--	--	1	7	14.3	--	5	--	--	10	--	--	2	--
UNID GAR	--	1	--	--	--	--	--	--	--	--	--	--	--	--	--
BOWFIN	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
SKIPJACK HERRING	--	5	--	--	2	--	--	1	--	--	2	--	--	2	--
ALEWIFE	--	--	--	--	--	--	--	--	--	--	1	--	--	--	--
GIZZARD SHAD	2	67	3.0	4	219	1.8	1	358	0.3	6	739	0.8	2	562	0.4
THREADFIN SHAD	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
GOLDEYE	--	1	--	--	--	--	--	--	--	--	--	--	--	--	--
GRASS PICKEREL	--	--	--	--	--	--	--	1	--	--	--	--	--	--	--
NORTHERN PIKE	--	3	--	--	2	--	--	--	--	--	1	--	--	--	--
CENTRAL STONEROLLER	--	--	--	--	--	--	--	--	--	--	1	--	--	1	--
GOLDFISH	--	4	--	1	4	25.0	--	3	--	2	2	100.0	--	--	--
GRASS CARP	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
COMMON CARP	85	177	48.0	105	207	50.7	159	409	38.9	102	307	33.2	56	191	29.3
CARP X GOLDFISH HYBRID	8	51	15.7	8	66	12.1	16	87	18.4	7	71	9.9	4	32	12.5
HORNYHEAD CHUB	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
GOLDEN SHINER	--	--	--	--	--	--	--	--	--	--	10	--	--	1	--
PALLID SHINER	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
EMERALD SHINER	--	29	--	--	24	--	--	259	--	--	771	--	--	176	--
GHOST SHINER	--	--	--	--	--	--	--	1	--	--	1	--	--	--	--
STRIPED SHINER	--	3	--	--	--	--	--	--	--	--	2	--	--	--	--
BIGMOUTH SHINER	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
SPOTTAIL SHINER	--	9	--	--	18	--	1	7	14.3	--	14	--	--	6	--
RED SHINER	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
SPOTFIN SHINER	--	2	--	--	5	--	--	8	--	--	21	--	--	9	--
SAND SHINER	--	--	--	--	1	--	--	1	--	--	8	--	--	--	--
REDFIN SHINER	--	--	--	--	--	--	--	--	--	--	1	--	--	--	--
MIMIC SHINER	--	--	--	--	4	--	--	--	--	--	--	--	--	--	--
SUCKERMOUTH MINNOW	--	--	--	--	--	--	--	--	--	--	2	--	--	1	--
BLUNTNOSE MINNOW	--	79	--	1	77	1.3	--	185	--	--	654	--	--	146	--
FATHEAD MINNOW	--	--	--	--	--	--	--	--	--	--	2	--	--	--	--
BULLHEAD MINNOW	--	--	--	--	3	--	--	13	--	--	13	--	--	2	--
RIVER CARPSUCKER	7	11	63.6	4	11	36.4	5	21	23.8	1	8	12.5	3	11	27.3
QUILLBACK	4	10	40.0	3	10	30.0	3	18	16.7	2	11	18.2	3	4	75.0
HIGHFIN CARPSUCKER	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
UNID CARPIODES	--	--	--	--	--	--	--	1	--	--	1	--	--	--	--
WHITE SUCKER	1	4	25.0	5	16	31.3	--	3	--	2	6	33.3	--	2	--
SMALLMOUTH BUFFALO	8	19	42.1	13	31	41.9	25	59	42.4	23	60	38.3	18	60	30.0
BIGMOUTH BUFFALO	--	--	--	1	2	50.0	--	1	--	--	--	--	--	1	--
BLACK BUFFALO	1	4	25.0	1	1	100.0	--	--	--	2	2	100.0	1	3	33.3
SPOTTED SUCKER	--	--	--	--	--	--	--	2	--	--	--	--	--	--	--
SILVER REDHORSE	--	--	--	--	--	--	--	--	--	4	4	100.0	1	1	100.0
RIVER REDHORSE	--	1	--	--	--	--	--	--	--	--	--	--	--	--	--
GOLDEN REDHORSE	2	2	100.0	3	3	100.0	1	1	100.0	--	3	--	--	1	--
SHORTHEAD REDHORSE	2	4	50.0	4	7	57.1	5	13	38.5	4	6	66.7	3	7	42.9
UNID MOXOSTOMA	--	1	--	--	--	--	--	--	--	--	--	--	--	--	--
BLACK BULLHEAD	1	1	100.0	--	2	--	--	--	--	--	5	--	--	--	--
YELLOW BULLHEAD	1	1	100.0	--	1	--	1	6	16.7	--	3	--	--	6	--
CHANNEL CATFISH	25	32	78.1	29	44	65.9	80	98	81.6	71	100	71.0	33	56	58.9
UNID AMEIURUS	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
FLATHEAD CATFISH	--	--	--	--	--	--	1	1	100.0	--	1	--	--	--	--
BLACKSTRIPE TOPMINNOW	--	1	--	--	--	--	--	4	--	--	12	--	--	1	--
WESTERN MOSQUITOFISH	--	--	--	--	--	--	--	--	--	--	--	--	--	1	--
BROOK SILVERSIDE	--	--	--	--	--	--	--	2	--	--	--	--	--	1	--
WHITE PERCH	--	--	--	--	--	--	--	1	--	--	1	--	--	4	--
WHITE BASS	--	1	--	--	1	--	--	3	--	--	3	--	--	3	--
YELLOW BASS	--	--	--	--	1	--	--	--	--	--	--	--	--	3	--
HYBRID MORONE	--	--	--	--	--	--	--	--	--	--	1	--	--	1	--
UNID MORONE	--	--	--	--	1	--	--	--	--	--	--	--	--	--	--
ROCK BASS	--	--	--	--	--	--	--	1	--	--	3	--	1	3	33.3
GREEN SUNFISH	5	102	4.9	5	82	6.1	18	297	6.1	32	764	4.2	31	519	6.0
PUMPKINSEED	--	--	--	--	--	--	--	--	--	--	6	--	--	1	--
WARMOUTH	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
ORANGESPOTTED SUNFISH	--	3	--	--	7	--	--	56	--	1	58	1.7	2	50	4.0
BLUEGILL	2	9	22.2	1	30	3.3	4	103	3.9	7	257	2.7	3	186	1.6
LONGEAR SUNFISH	--	4	--	--	--	--	--	6	--	--	3	--	--	1	--
REDEAR SUNFISH	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
HYBRID SUNFISH	--	2	--	--	3	--	--	24	--	--	74	--	3	142	2.1
UNID LEPOMIS	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
SMALLMOUTH BASS	--	7	--	--	8	--	3	29	10.3	--	38	--	1	21	4.8
LARGEMOUTH BASS	1	20	5.0	9	37	24.3	10	116	8.6	13	174	7.5	20	138	14.5
WHITE CRAPPIE	--	--	--	1	3	33.3	--	--	--	--	2	--	--	1	--
BLACK CRAPPIE	--	--	--	--	3	--	--	1	--	2	8	25.0	--	4	--
JOHNNY DARTER	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
YELLOW PERCH	--	--	--	--	--	--	--	2	--	--	2	--	--	--	--
LOGPERCH	--	--	--	--	--	--	--	1	--	--	1	--	1	1	100.0
BLACKSIDE DARTER	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
SLENDERHEAD DARTER	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
SAUGER	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
WALLEYE	--	--	--	--	1	--	--	--	--	--	--	--	--	--	--
FRESHWATER DRUM	5	27	18.5	8	26	30.8	41	94	43.6	35	80	43.8	29	52	55.8
ROUND GOBY	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
TOTAL FISH	160	697	23.0	207	970	21.3	374	2302	16.2	316	4330	7.3	215	2416	8.9

TABLE 22 (cont.)

SPECIES	2000			2001			2002			2003			2004		
	DELT #	EXAM #	DELT %	DELT #	EXAM #	DELT %	DELT #	EXAM #	DELT %	DELT #	EXAM #	DELT %	DELT #	EXAM #	DELT %
LONGNOSE GAR	--	8	--	--	12	--	--	8	--	--	22	--	--	8	--
UNID GAR	--	1	--	--	--	--	--	1	--	--	--	--	--	--	--
BOWFIN	--	--	--	--	1	--	--	--	--	--	--	--	--	--	--
SKIPJACK HERRING	--	1	--	--	7	--	--	6	--	--	--	--	--	4	--
ALEWIFE	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
GIZZARD SHAD	9	539	1.7	4	1620	0.2	7	1856	0.4	4	589	0.7	9	739	1.2
THREADFIN SHAD	--	22	--	--	11	--	--	10	--	--	--	--	--	25	--
GOLDEYE	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
GRASS PICKEREL	--	1	--	--	--	--	--	1	--	--	--	--	--	--	--
NORTHERN PIKE	--	--	--	--	1	--	--	--	--	--	--	--	--	--	--
CENTRAL STONEROLLER	--	--	--	--	3	--	--	--	--	--	7	--	--	--	--
GOLDFISH	--	4	--	1	5	20.0	--	4	--	2	8	25.0	--	--	--
GRASS CARP	--	--	--	--	2	--	--	1	--	--	1	--	--	--	--
COMMON CARP	68	184	37.0	115	310	37.1	97	253	38.3	79	186	42.5	86	135	63.7
CARP X GOLDFISH HYBRID	4	26	15.4	6	21	28.6	--	18	--	5	12	41.7	2	4	50.0
HORNYHEAD CHUB	--	--	--	--	1	--	--	--	--	--	--	--	--	--	--
GOLDEN SHINER	--	--	--	--	1	--	--	5	--	--	16	--	1	1	100.0
PALLID SHINER	--	--	--	--	--	--	--	--	--	--	1	--	--	--	--
EMERALD SHINER	2	153	1.3	--	485	--	--	920	--	--	298	--	--	129	--
GHOST SHINER	--	--	--	--	1	--	--	3	--	--	1	--	--	1	--
STRIPED SHINER	--	--	--	--	1	--	--	1	--	--	6	--	--	--	--
BIGMOUTH SHINER	--	--	--	--	--	--	--	1	--	--	--	--	--	--	--
SPOTTAIL SHINER	--	8	--	--	122	--	--	62	--	1	102	1.0	--	23	--
RED SHINER	--	--	--	--	--	--	--	1	--	--	--	--	--	--	--
SPOTFIN SHINER	--	25	--	--	45	--	--	68	--	--	248	--	--	70	--
SAND SHINER	--	8	--	--	6	--	--	12	--	--	19	--	--	3	--
REDFIN SHINER	--	--	--	--	1	--	--	1	--	--	--	--	--	1	--
MIMIC SHINER	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
SUCKERMOUTH MINNOW	--	--	--	--	--	--	--	1	--	--	--	--	--	--	--
BLUNTNOSE MINNOW	--	123	--	--	584	--	1	435	0.2	--	1784	--	1	390	0.3
FATHEAD MINNOW	--	--	--	--	--	--	--	--	--	--	2	--	--	--	--
BULLHEAD MINNOW	--	11	--	--	107	--	--	3	--	--	3	--	--	1	--
RIVER CARPSUCKER	4	11	36.4	1	9	11.1	1	12	8.3	2	5	40.0	1	2	50.0
QUILLBACK	3	11	27.3	4	11	36.4	--	10	--	1	5	20.0	2	16	12.5
HIGHFIN CARPSUCKER	--	--	--	--	--	--	--	--	--	--	--	--	--	1	--
UNID CARPIODES	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
WHITE SUCKER	--	1	--	--	4	--	--	2	--	1	12	8.3	1	4	25.0
SMALLMOUTH BUFFALO	15	48	31.3	22	62	35.5	33	76	43.4	26	70	37.1	36	74	48.6
BIGMOUTH BUFFALO	1	3	33.3	--	2	--	2	3	66.7	--	2	--	--	1	--
BLACK BUFFALO	2	2	100.0	1	2	50.0	--	1	--	4	5	80.0	--	1	--
SPOTTED SUCKER	--	--	--	--	1	--	--	--	--	--	--	--	1	1	100.0
SILVER REDHORSE	1	1	100.0	1	1	100.0	3	5	60.0	1	1	100.0	1	2	50.0
RIVER REDHORSE	--	--	--	--	--	--	--	--	--	1	1	100.0	--	--	--
GOLDEN REDHORSE	1	1	100.0	--	--	--	1	6	16.7	2	7	28.6	10	17	58.8
SHORTHEAD REDHORSE	5	12	41.7	2	5	40.0	1	4	25.0	5	9	55.6	1	3	33.3
UNID MOXOSTOMA	--	1	--	--	--	--	--	--	--	--	--	--	--	--	--
BLACK BULLHEAD	1	1	100.0	--	--	--	--	--	--	--	--	--	--	1	--
YELLOW BULLHEAD	--	9	--	--	1	--	--	19	--	2	11	18.2	3	13	23.1
CHANNEL CATFISH	40	72	55.6	67	88	76.1	74	108	68.5	173	219	79.0	195	210	92.9
UNID AMEIURUS	--	--	--	--	1	--	--	--	--	--	--	--	--	--	--
FLATHEAD CATFISH	2	2	100.0	1	1	100.0	--	2	--	5	8	62.5	1	3	33.3
BLACKSTRIPE TOPMINNOW	--	5	--	--	2	--	--	5	--	--	21	--	--	5	--
WESTERN MOSQUITOFISH	--	1	--	--	1	--	--	1	--	--	3	--	--	--	--
BROOK SILVERSIDE	--	--	--	--	--	--	--	2	--	--	10	--	--	--	--
WHITE PERCH	--	5	--	--	3	--	--	6	--	1	2	50.0	--	--	--
WHITE BASS	--	4	--	--	5	--	1	12	8.3	--	7	--	--	4	--
YELLOW BASS	--	2	--	--	2	--	--	--	--	--	--	--	1	2	50.0
HYBRID MORONE	--	--	--	--	1	--	--	--	--	--	1	--	--	--	--
UNID MORONE	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
ROCK BASS	--	3	--	--	3	--	--	2	--	--	3	--	--	1	--
GREEN SUNFISH	24	490	4.9	23	404	5.7	15	769	2.0	50	1302	3.8	25	706	3.5
PUMPKINSEED	--	--	--	--	--	--	--	--	--	--	1	--	--	--	--
WARMOUTH	--	--	--	--	--	--	--	1	--	--	--	--	--	2	--
ORANGESPOTTED SUNFISH	1	29	3.4	--	3	--	--	22	--	1	78	1.3	--	44	--
BLUEGILL	14	380	3.7	5	480	1.0	13	705	1.8	30	1253	2.4	19	667	2.8
LONGEAR SUNFISH	--	25	--	--	19	--	--	25	--	--	34	--	--	7	--
REDEAR SUNFISH	--	--	--	--	--	--	--	3	--	1	2	50.0	--	--	--
HYBRID SUNFISH	2	98	2.0	2	50	4.0	--	101	--	4	598	0.7	--	371	--
UNID LEPOMIS	--	--	--	--	2	--	--	--	--	--	3	--	--	--	--
SMALLMOUTH BASS	--	7	--	1	24	4.2	4	62	6.5	2	80	2.5	13	67	19.4
LARGEMOUTH BASS	17	144	11.8	21	145	14.5	41	226	18.1	50	397	12.6	177	352	50.3
WHITE CRAPPIE	--	2	--	--	--	--	--	1	--	--	1	--	--	1	--
BLACK CRAPPIE	--	4	--	--	2	--	2	7	28.6	--	7	--	--	9	--
JOHNNY DARTER	--	1	--	--	--	--	--	--	--	--	1	--	--	--	--
YELLOW PERCH	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
LOGPERCH	--	2	--	--	1	--	--	2	--	--	--	--	--	--	--
BLACKSIDE DARTER	--	--	--	--	1	--	--	--	--	--	1	--	--	--	--
SLENDERHEAD DARTER	--	--	--	--	--	--	--	1	--	--	--	--	--	--	--
SAUGER	--	--	--	--	--	--	--	1	--	--	--	--	--	--	--
WALLEYE	--	--	--	--	--	--	--	--	--	--	--	--	2	6	33.3
FRESHWATER DRUM	26	91	28.6	33	71	46.5	45	90	50.0	17	84	20.2	45	88	51.1
ROUND GOBY	--	--	--	--	1	--	--	--	--	1	9	11.1	--	11	--
TOTAL FISH	242	2582	9.4	310	4755	6.5	341	5963	5.7	471	7558	6.2	633	4226	15.0

TABLE 23. INCIDENCE OF DELT ANOMALIES WITHIN THE DOWNSTREAM I-55 SEGMENT, 1994, 1995, AND 1997-2004.

SPECIES	1994			1995			1997			1998			1999		
	DELT #	EXAM #	DELT %	DELT #	EXAM #	DELT %	DELT #	EXAM #	DELT %	DELT #	EXAM #	DELT %	DELT #	EXAM #	DELT %
LONGNOSE GAR	--	6	--	--	13	--	--	7	--	--	5	--	--	--	--
SHORTNOSE GAR	--	--	--	--	--	--	--	--	--	--	--	--	--	1	--
UNID GAR	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
SKIPJACK HERRING	--	4	--	--	--	--	--	1	--	--	3	--	--	3	--
GIZZARD SHAD	1	655	0.2	11	301	3.7	3	1805	0.2	6	1192	0.5	6	713	0.8
THREADFIN SHAD	--	--	--	--	--	--	--	--	--	--	--	--	--	17	--
UNID DOROSOMA	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
GRASS PICKEREL	--	--	--	--	--	--	--	--	--	--	3	--	--	--	--
GOLDFISH	1	3	33.3	1	2	50.0	1	2	50.0	1	1	100.0	--	--	--
GRASS CARP	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
COMMON CARP	43	145	29.7	28	103	27.2	26	141	18.4	24	119	20.2	9	82	11.0
CARP X GOLDFISH HYBRID	4	62	6.5	6	57	10.5	1	17	5.9	1	7	14.3	--	4	--
BIGHEAD CARP	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
GOLDEN SHINER	--	--	--	--	1	--	--	3	--	--	--	--	--	1	--
PALLID SHINER	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
EMERALD SHINER	--	43	--	--	8	--	--	132	--	--	152	--	--	45	--
GHOST SHINER	--	1	--	--	1	--	--	--	--	--	7	--	--	--	--
STRIPED SHINER	--	1	--	--	1	--	--	2	--	--	1	--	--	--	--
SPOTTAIL SHINER	--	4	--	--	17	--	--	11	--	--	59	--	--	8	--
RED SHINER	--	--	--	--	--	--	--	--	--	--	1	--	--	--	--
ROSYFACE SHINER	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
SPOTFIN SHINER	--	1	--	--	4	--	--	6	--	--	17	--	--	16	--
SAND SHINER	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
REDFIN SHINER	--	--	--	--	--	--	--	--	--	--	1	--	--	--	--
MIMIC SHINER	--	--	--	--	1	--	--	--	--	--	--	--	--	--	--
UNID NOTROPIS	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
BLUNTNOSE MINNOW	--	30	--	--	95	--	--	271	--	--	435	--	--	169	--
FATHEAD MINNOW	--	--	--	--	--	--	--	1	--	--	--	--	--	--	--
BULLHEAD MINNOW	--	13	--	--	7	--	--	76	--	--	268	--	--	121	--
RIVER CARPSUCKER	3	13	23.1	4	15	26.7	5	24	20.8	2	15	13.3	1	9	11.1
QUILLBACK	2	11	18.2	4	16	25.0	2	13	15.4	--	5	--	1	6	16.7
UNID CARPIODES	--	--	--	--	1	--	--	--	--	--	--	--	--	--	--
WHITE SUCKER	--	1	--	--	8	--	--	--	--	--	1	--	--	--	--
SMALLMOUTH BUFFALO	3	18	16.7	11	31	35.5	9	39	23.1	5	28	17.9	11	52	21.2
BIGMOUTH BUFFALO	--	2	--	1	1	100.0	1	7	14.3	1	3	33.3	3	3	100.0
BLACK BUFFALO	--	--	--	--	2	--	--	--	--	--	1	--	--	--	--
SPOTTED SUCKER	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
SILVER REDHORSE	1	2	50.0	1	4	25.0	1	1	100.0	--	--	--	--	--	--
BLACK REDHORSE	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
GOLDEN REDHORSE	--	4	--	8	21	38.1	11	25	44.0	4	24	16.7	4	10	40.0
SHORTHEAD REDHORSE	12	27	44.4	9	21	42.9	5	12	41.7	1	14	7.1	--	6	--
BLACK BULLHEAD	--	3	--	--	--	--	--	--	--	--	--	--	--	--	--
YELLOW BULLHEAD	--	4	--	--	--	--	1	3	33.3	--	3	--	--	6	--
CHANNEL CATFISH	13	22	59.1	15	36	41.7	15	21	71.4	14	18	77.8	14	27	51.9
UNID AMEIURUS	--	--	--	--	--	--	--	--	--	--	--	--	--	1	--
TADPOLE MADTOM	--	--	--	--	--	--	--	--	--	--	1	--	--	--	--
FLATHEAD CATFISH	--	1	--	1	1	100.0	--	--	--	--	--	--	--	--	--
TROUT-PERCH	--	1	--	--	--	--	--	--	--	--	--	--	--	--	--
BLACKSTRIPE TOPMINNOW	--	--	--	--	--	--	--	1	--	--	3	--	--	--	--
BROOK SILVERSIDE	--	--	--	--	--	--	--	1	--	--	1	--	--	3	--
WHITE PERCH	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
WHITE BASS	--	--	--	1	14	7.1	--	1	--	--	1	--	--	1	--
YELLOW BASS	--	2	--	--	4	--	--	1	--	--	1	--	--	2	--
HYBRID MORONE	--	1	--	--	1	--	--	--	--	--	--	--	--	--	--
UNID MORONE	--	4	--	--	--	--	--	--	--	--	--	--	--	1	--
ROCK BASS	--	--	--	--	--	--	--	2	--	--	--	--	--	--	--
GREEN SUNFISH	3	66	4.5	--	16	--	1	60	1.7	8	192	4.2	8	176	4.5
PUMPKINSEED	--	3	--	--	1	--	--	--	--	--	10	--	--	5	--
WARMOUTH	--	--	--	--	--	--	--	--	--	--	2	--	--	--	--
ORANGESPOTTED SUNFISH	--	83	--	--	129	--	3	279	1.1	--	1104	--	3	357	0.8
BLUEGILL	4	30	13.3	4	47	8.5	3	202	1.5	8	515	1.6	8	711	1.1
LONGEAR SUNFISH	--	3	--	--	--	--	--	1	--	--	--	--	--	--	--
REDEAR SUNFISH	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
HYBRID SUNFISH	--	2	--	--	--	--	--	3	--	--	3	--	--	15	--
UNID LEPOMIS	--	3	--	--	100	--	--	--	--	--	--	--	--	--	--
SMALLMOUTH BASS	2	11	18.2	--	19	--	1	23	4.3	--	25	--	--	9	--
LARGEMOUTH BASS	2	8	25.0	6	32	18.8	10	90	11.1	16	219	7.3	6	195	3.1
WHITE CRAPPIE	--	--	--	--	--	--	--	1	--	--	6	--	--	2	--
BLACK CRAPPIE	--	1	--	--	2	--	1	3	33.3	--	5	--	--	4	--
YELLOW PERCH	--	--	--	--	--	--	--	--	--	--	1	--	--	--	--
LOGPERCH	--	--	--	--	4	--	--	27	--	--	14	--	--	9	--
BLACKSIDE DARTER	--	--	--	--	--	--	--	--	--	--	--	--	--	1	--
SLENDERHEAD DARTER	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
WALLEYE	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
FRESHWATER DRUM	5	50	10.0	6	37	16.2	10	50	20.0	6	52	11.5	4	37	10.8
ROUND GOBY	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
TOTAL FISH	99	1344	7.4	117	1174	10.0	110	3365	3.3	97	4538	2.1	78	2828	2.8

TABLE 23 (cont.)

SPECIES	2000			2001			2002			2003			2004		
	DELT #	EXAM #	DELT %	DELT #	EXAM #	DELT %	DELT #	EXAM #	DELT %	DELT #	EXAM #	DELT %	DELT #	EXAM #	DELT %
LONGNOSE GAR	--	--	--	2	2	100.0	--	7	--	--	2	--	--	--	--
SHORTNOSE GAR	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
UNID GAR	--	2	--	--	--	--	--	--	--	--	--	--	--	--	--
SKIPJACK HERRING	--	--	--	--	7	--	--	3	--	--	--	--	--	2	--
GIZZARD SHAD	9	997	0.9	5	1359	0.4	5	1436	0.3	9	974	0.9	4	533	0.8
THREADFIN SHAD	1	95	1.1	--	66	--	1	50	2.0	--	251	--	2	35	5.7
UNID DOROSOMA	--	--	--	--	--	--	--	--	--	--	1555	--	--	--	--
GRASS PICKEREL	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
GOLDFISH	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
GRASS CARP	--	--	--	--	1	--	--	--	--	--	--	--	--	--	--
COMMON CARP	24	111	21.6	28	134	20.9	20	56	35.7	32	83	38.6	29	63	46.0
CARP X GOLDFISH HYBRID	--	6	--	--	1	--	--	--	--	1	3	33.3	--	--	--
BIGHEAD CARP	--	--	--	--	--	--	--	2	--	--	--	--	--	--	--
GOLDEN SHINER	--	5	--	--	3	--	--	6	--	--	36	--	--	6	--
PALLID SHINER	--	1	--	--	--	--	--	2	--	--	12	--	--	6	--
EMERALD SHINER	--	28	--	--	147	--	--	510	--	--	309	--	--	53	--
GHOST SHINER	--	--	--	--	1	--	--	1	--	--	30	--	--	--	--
STRIPED SHINER	--	--	--	--	--	--	--	--	--	--	1	--	--	--	--
SPOTTAIL SHINER	--	92	--	--	39	--	--	38	--	--	88	--	--	15	--
RED SHINER	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
ROSYFACE SHINER	--	--	--	--	--	--	--	--	--	--	15	--	--	--	--
SPOTFIN SHINER	1	24	4.2	--	34	--	1	24	4.2	1	88	1.1	--	20	--
SAND SHINER	--	--	--	--	--	--	--	1	--	--	--	--	--	--	--
REDFIN SHINER	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
MIMIC SHINER	--	--	--	--	--	--	--	--	--	--	39	--	--	--	--
UNID NOTROPIS	--	--	--	--	--	--	--	--	--	--	1	--	--	--	--
BLUNTNOSE MINNOW	2	427	0.5	--	305	--	--	290	--	1	1773	0.1	--	237	--
FATHEAD MINNOW	--	--	--	--	--	--	--	--	--	--	9	--	--	--	--
BULLHEAD MINNOW	--	179	--	1	207	0.5	--	87	--	--	124	--	--	63	--
RIVER CARPSUCKER	1	11	9.1	2	13	15.4	--	7	--	1	7	14.3	3	22	13.6
QUILLBACK	--	4	--	--	12	--	2	4	50.0	2	4	50.0	1	7	14.3
UNID CARPIODES	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
WHITE SUCKER	--	1	--	--	--	--	--	--	--	--	--	--	--	--	--
SMALLMOUTH BUFFALO	13	38	34.2	13	51	25.5	12	49	24.5	10	32	31.3	18	40	45.0
BIGMOUTH BUFFALO	1	2	50.0	--	1	--	1	4	25.0	--	1	--	--	2	--
BLACK BUFFALO	1	3	33.3	--	1	--	--	--	--	4	6	66.7	--	--	--
SPOTTED SUCKER	--	--	--	1	1	100.0	--	1	--	--	--	--	--	--	--
SILVER REDHORSE	--	--	--	1	1	100.0	--	--	--	--	1	--	--	2	--
BLACK REDHORSE	--	--	--	--	--	--	--	1	--	--	--	--	--	--	--
GOLDEN REDHORSE	1	1	100.0	1	4	25.0	1	15	6.7	9	43	20.9	4	11	36.4
SHORTHEAD REDHORSE	6	11	54.5	--	4	--	--	4	--	1	3	33.3	--	1	--
BLACK BULLHEAD	--	--	--	--	--	--	--	--	--	--	1	--	--	--	--
YELLOW BULLHEAD	3	14	21.4	--	5	--	1	9	11.1	1	14	7.1	--	4	--
CHANNEL CATFISH	16	32	50.0	22	31	71.0	31	51	60.8	51	60	85.0	52	61	85.2
UNID AMEIURUS	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
TADPOLE MADTOM	--	3	--	--	--	--	--	--	--	--	1	--	--	1	--
FLATHEAD CATFISH	--	--	--	--	--	--	--	--	--	--	--	--	1	1	100.0
TROUT-PERCH	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
BLACKSTRIPE TOPMINNOW	--	3	--	--	1	--	--	1	--	--	2	--	--	5	--
BROOK SILVERSIDE	--	2	--	--	7	--	--	15	--	--	17	--	--	6	--
WHITE PERCH	--	1	--	--	2	--	--	--	--	--	3	--	--	--	--
WHITE BASS	--	1	--	--	--	--	--	2	--	--	6	--	--	2	--
YELLOW BASS	--	1	--	--	--	--	--	1	--	--	2	--	--	2	--
HYBRID MORONE	--	--	--	--	1	--	--	--	--	--	--	--	--	--	--
UNID MORONE	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
ROCK BASS	--	--	--	--	1	--	--	--	--	--	2	--	--	1	--
GREEN SUNFISH	11	463	2.4	4	112	3.6	12	400	3.0	26	1187	2.2	23	635	3.6
PUMPKINSEED	--	1	--	--	--	--	--	5	--	--	11	--	--	3	--
WARMOUTH	--	1	--	--	--	--	--	1	--	--	--	--	--	1	--
ORANGESPOTTED SUNFISH	4	232	1.7	--	111	--	--	585	--	2	1569	0.1	--	274	--
BLUEGILL	18	1382	1.3	7	542	1.3	19	1576	1.2	26	2532	1.0	17	1251	1.4
LONGEAR SUNFISH	--	3	--	--	9	--	--	2	--	--	3	--	--	2	--
REDEAR SUNFISH	--	--	--	--	--	--	--	1	--	--	2	--	--	--	--
HYBRID SUNFISH	--	30	--	--	11	--	--	19	--	1	50	2.0	1	39	2.6
UNID LEPOMIS	--	2	--	--	--	--	--	--	--	--	9	--	--	1	--
SMALLMOUTH BASS	--	18	--	--	15	--	--	24	--	3	55	5.5	5	37	13.5
LARGEMOUTH BASS	16	219	7.3	6	103	5.8	18	169	10.7	39	288	13.5	107	337	31.8
WHITE CRAPPIE	--	4	--	--	--	--	--	2	--	2	5	40.0	--	4	--
BLACK CRAPPIE	--	8	--	--	1	--	--	5	--	1	7	14.3	--	6	--
YELLOW PERCH	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
LOGPERCH	--	2	--	--	5	--	--	10	--	--	4	--	--	8	--
BLACKSIDE DARTER	--	--	--	--	--	--	--	--	--	--	5	--	--	1	--
SLENDERHEAD DARTER	--	--	--	--	--	--	--	1	--	--	1	--	--	--	--
WALLEYE	--	--	--	--	--	--	--	--	--	--	1	--	--	2	--
FRESHWATER DRUM	3	25	12.0	10	38	26.3	6	31	19.4	4	39	10.3	10	49	20.4
ROUND GOBY	--	--	--	--	--	--	--	--	--	--	--	--	--	2	--
TOTAL FISH	131	4485	2.9	103	3389	3.0	130	5508	2.4	227	11366	2.0	277	3853	7.2

(including YOY *Dorosoma* sp. in 2003) being collected (Tables 22 and 23). In 2004, lower numbers of these three species were collected in the downstream segment and, with the exception of gizzard shad, whose numbers were higher, the same trend was observed in the upstream segment. If these taxa are excluded from the calculations, the affliction rates during the previous seven years (particularly the previous six) would have still been lower than those observed in 1994 and 1995. This is also true in 2004; however the 2004 rates were closer to the higher levels observed in 1994, 1995, and 1997.

	2004	2003	2002	2001	2000	1999	1998	1997	1995	1994
Upstream I-55	21.0	9.6	12.1	14.8	13.1	13.9	14.3	24.9	31.1	30.3
Downstream I-55	9.0	3.2	3.8	6.2	4.0	3.8	3.3	9.2	13.8	15.9

An examination of annual DELT affliction rates for common and abundant taxa collected from the Upstream and Downstream I-55 segments reveals the following trends over the past ten study years: 1) affliction rates of river carpsucker and bluegill during the past eight years were lower than in 1994 and 1995; 2) affliction rates of quillback, golden redhorse, shorthead redhorse, and green sunfish in 2004 were either similar to or within the range of affliction rates reported during the previous nine study years; 3) affliction rates of gizzard shad, emerald shiner, spottail shiner, bluntnose minnow, bullhead minnow, and orangespotted sunfish have been consistently low; 4) the incidence rates for freshwater drum with the exception of 2000 and 2003, which were lower, have been similar in the last eight years; and 5) the incidence rates for common carp, smallmouth buffalo, smallmouth bass, largemouth bass, and channel catfish in 2004 were among the highest to date (Table 24).

3.6.4 Summary

The spatial pattern for DELT incidence rates has been consistent among the past ten study years, higher within the Upstream I-55 segment than within the Downstream I-55 segment.

The reason(s) for the increase in incidence rate of DELT anomalies in 2004 is unclear. Temperature is not likely to have been a major factor since the 2004 mean water temperature during the summer months was the among the lowest observed in the past ten study years, although mean springtime water temperatures were higher than during previous nine study years. In 2005 as part of the ongoing monitoring program, fish will be examined for DELT anomalies and incidence rates will be determined. The results of the 2005 study will help place the 2004 results into perspective (e.g., was this the beginning of a trend or limited to 2004?).

Comparisons of DELT affliction rates among the past ten study years revealed that they have been lower in both segments during the past eight years than in 1994 and 1995. Thus, it is apparent that the alternative thermal limits at the I-55 bridge have not had an adverse affect on DELT affliction rates during the past eight years within either segment.

Based upon Ohio EPA's percent DELT metric in its Index of Biotic Integrity, the incidence rates within the Upstream I-55 segment for the past ten study years were in the poor category. The Downstream I-55 segment was in the fair category for six of the past ten years, but in the poor category in 1994, 1995, 1997, and 2004. Thus, affliction rates of DELT anomalies within the entire study area continue to be abnormally high. Since bottom feeders exhibit disproportionately higher rates of affliction, the study area sediments likely contain contaminants that are responsible for the abnormally high DELT affliction rates.

TABLE 24. INCIDENCE OF DELT ANOMALIES FOR COMMON AND ABUNDANT TAXA COLLECTED WITHIN THE UPSTREAM AND DOWNSTREAM I-55 SEGMENTS, 1994, 1995, AND 1997-2004.

	1994			1995			1997			1998			1999			2000		
SPECIES	DELT #_	EXAM #_	DELT %_	DELT #_	EXAM #_	DELT %_	DELT #_	EXAM #_	DELT %_	DELT #_	EXAM #_	DELT %_	DELT #_	EXAM #_	DELT %_	DELT #_	EXAM #_	DELT %_
GIZZARD SHAD	3	722	0.4	15	520	2.9	4	2163	0.2	12	1931	0.6	8	1275	0.6	18	1536	1.2
COMMON CARP	128	322	39.8	133	310	42.9	185	550	33.6	126	426	29.6	65	273	23.8	92	295	31.2
EMERALD SHINER	--	72	--	--	32	--	--	391	--	--	923	--	--	221	--	2	181	1.1
SPOTTAIL SHINER	--	13	--	--	35	--	1	18	5.6	--	73	--	--	14	--	--	100	--
BLUNTNOSE MINNOW	--	109	--	1	172	0.6	--	456	--	--	1089	--	--	315	--	2	550	0.4
BULLHEAD MINNOW	--	13	--	--	10	--	--	89	--	--	281	--	--	123	--	--	190	--
RIVER CARPSUCKER	10	24	41.7	8	26	30.8	10	45	22.2	3	23	13.0	4	20	20.0	5	22	22.7
QUILLBACK	6	21	28.6	7	26	26.9	5	31	16.1	2	16	12.5	4	10	40.0	3	15	20.0
SMALLMOUTH BUFFALO	11	37	29.7	24	62	38.7	34	98	34.7	28	88	31.8	29	112	25.9	28	86	32.6
GOLDEN REDHORSE	2	6	33.3	11	24	45.8	12	26	46.2	4	27	14.8	4	11	36.4	2	2	100.0
SHORTHEAD REDHORSE	14	31	45.2	13	28	46.4	10	25	40.0	5	20	25.0	3	13	23.1	11	23	47.8
CHANNEL CATFISH	38	54	70.4	44	80	55.0	95	119	79.8	85	118	72.0	47	83	56.6	56	104	53.8
GREEN SUNFISH	8	168	4.8	5	98	5.1	19	357	5.3	40	956	4.2	39	695	5.6	35	953	3.7
ORANGESPOTTED SUNFISH	--	86	--	--	136	--	3	335	0.9	1	1162	0.1	5	407	1.2	5	261	1.9
BLUEGILL	6	39	15.4	5	77	6.5	7	305	2.3	15	772	1.9	11	897	1.2	32	1762	1.8
SMALLMOUTH BASS	2	18	11.1	--	27	--	4	52	7.7	--	63	--	1	30	3.3	--	25	--
LARGEMOUTH BASS	3	28	10.7	15	69	21.7	20	206	9.7	29	393	7.4	26	333	7.8	33	363	9.1
FRESHWATER DRUM	10	77	13.0	14	63	22.2	51	144	35.4	41	132	31.1	33	89	37.1	29	116	25.0

	2001			2002			2003			2004		
SPECIES	DELT #_	EXAM #_	DELT %_	DELT #_	EXAM #_	DELT %_	DELT #_	EXAM #_	DELT %_	DELT #_	EXAM #_	DELT %_
GIZZARD SHAD	9	2979	0.3	12	3292	0.4	13	1563	0.8	13	1272	1.0
COMMON CARP	143	444	32.2	117	309	37.9	111	269	41.3	115	198	58.1
EMERALD SHINER	--	632	--	--	1430	--	--	607	--	--	182	--
SPOTTAIL SHINER	--	161	--	--	100	--	1	190	0.5	--	38	--
BLUNTNOSE MINNOW	--	889	--	1	725	0.1	1	3557	0.0	1	627	0.2
BULLHEAD MINNOW	1	314	0.3	--	90	--	--	127	--	--	64	--
RIVER CARPSUCKER	3	22	13.6	1	19	5.3	3	12	25.0	4	24	16.7
QUILLBACK	4	23	17.4	2	14	14.3	3	9	33.3	3	23	13.0
SMALLMOUTH BUFFALO	35	113	31.0	45	125	36.0	36	102	35.3	54	114	47.4
GOLDEN REDHORSE	1	4	25.0	2	21	9.5	11	50	22.0	14	28	50.0
SHORTHEAD REDHORSE	2	9	22.2	1	8	12.5	6	12	50.0	1	4	25.0
CHANNEL CATFISH	89	119	74.8	105	159	66.0	224	279	80.3	247	271	91.1
GREEN SUNFISH	27	516	5.2	27	1169	2.3	76	2489	3.1	48	1341	3.6
ORANGESPOTTED SUNFISH	--	114	--	--	607	--	3	1647	0.2	--	318	--
BLUEGILL	12	1022	1.2	32	2281	1.4	56	3785	1.5	36	1918	1.9
SMALLMOUTH BASS	1	39	2.6	4	86	4.7	5	135	3.7	18	104	17.3
LARGEMOUTH BASS	27	248	10.9	59	395	14.9	89	685	13.0	284	689	41.2
FRESHWATER DRUM	43	109	39.4	51	121	42.1	21	123	17.1	55	137	40.1

0.0 DENOTES VALUES LESS THAN 0.05.

4 REFERENCES

AccuWeather.com. 2004. Climatology for Chicago, IL as measured at Chicago's Midway Airport, May-September 2004. http://www.accuweather.com/adcbin/public/climo_local.asp?partner=accuweather&zipcode=60623.

Anderson, R.O. and S.J. Gutreuter. 1983. Length, Weight, and Associated Structural Indices. Pages 283-300. In (Nielsen, L.A. and D.L. Johnson, eds.) Fisheries Techniques. Southern Printing Company, Inc., Blacksburg, VA.

Anderson, R.O. and R.M. Neumann. 1996. Length, Weight, and Associated Structural Indices. Pages 447-482. In (Murphy, B.R. and D.W. Willis, eds.) Fisheries Techniques, 2nd Edition. Am. Fish. Soc., Bethesda, MD.

Baumann, P.C., W.D. Smith, and W.K. Parland. 1987. Tumor frequencies and contaminant concentrations in brown bullhead from an industrialized river and a recreational lake. Trans. Am. Fish. Soc. 116(1):79-86.

Becker, G.C. 1983. Fishes in Wisconsin. The University of Wisconsin Press. Madison, WI.

Bertrand, B.A. and D. Sallee. 1992. Results and analysis of fish monitoring by the Department of Conservation at seven locations on the Upper Illinois Waterway. Illinois Department of Conservation, Division of Fisheries.

Bister, T.J., D.W. Willis, M.L. Brown. 2000. Proposed standard weight (Ws) equations and standard length categories for 18 warmwater nongame and riverine fish species. N. Am. Jour. Fish. Mgt. 20:570-574.

Burton, G.A. 1995. Upper Illinois Waterway Study Interim Report: 1994-1995 Sediment Contamination Assessment. Prepared for Commonwealth Edison Company. Prepared by The Institute for Environmental Quality, Wright State University, Dayton, OH.

EA Engineering, Science, and Technology, Inc. (EA). 1995. The Upper Illinois Waterway study: Interim Report: 1994 fisheries investigation RM 270.2-323.2. Report by EA to Commonwealth Edison Company, Chicago, IL.

_____. 1996a. Chapter 2.0-Habitat Evaluation, in Aquatic Ecological Study of the Upper Illinois Waterway (ComEd, ed.), Vol. I, pp. 2.1-1 through 2.7-3.

_____. 1996b. Chapter 8.0-Ichthyoplankton, in Aquatic Ecological Study of the Upper Illinois Waterway (ComEd, ed.), Vol. II, pp. 8.1-1 through 8.7-3.

_____. 1996c. 1995 Upper Illinois Waterway fisheries investigation RM 270.2-323.2. Report by EA to Commonwealth Edison Company, Chicago, IL.

_____. 1996d. Chapter 4.0-Anthropogenic chemicals and sediment quality, in Aquatic Ecological Study of the Upper Illinois Waterway (ComEd, ed.), Vol. I, pp. 4.1-1 through 4.8-2.

_____. 1996e. Chapter 9.0-Fisheries, in Aquatic Ecological Study of the Upper Illinois Waterway (ComEd, ed.), Vol. II, pp. 9.1-1 through 9.12-6.

_____. 1998. 1997 Upper Illinois Waterway fisheries investigation RM 272.1-285.5. Report by EA to Commonwealth Edison Company, Chicago, IL.

_____. 1999. 1998 Upper Illinois Waterway fisheries investigation RM 272.1-285.5. Report by EA to Commonwealth Edison Company, Chicago, IL.

_____. 2000. 1999 Upper Illinois Waterway fisheries investigation RM 272.1-285.5. Report by EA to Midwest Generation and Commonwealth Edison Company, Chicago, IL.

_____. 2001. 2000 Upper Illinois Waterway fisheries investigation RM 274.4-296.4. Report by EA to Midwest Generation EME, LLC, Chicago, IL.

_____. 2002. 2001 Upper Illinois Waterway fisheries investigation RM 274.4-296.4. Report by EA to Midwest Generation EME, LLC, Chicago, IL.

_____. 2003. 2002 Upper Illinois Waterway fisheries investigation RM 274.4-296.4. Report by EA to Midwest Generation EME, LLC, Chicago, IL.

_____. 2004. 2003 Lower Des Plaines River fisheries investigation RM 274.4-285.5. Report by EA to Midwest Generation EME, LLC, Chicago, IL.

Emery, E.B., T.P Simon, F.H. McCormick, P.L.Angermeier, J.E. Deshon, C.O. Yoder, R.E. Sanders, W.D. Pearson, G.D. Hickman, R.J. Reash, and J.A. Thomas. 2003. Development of a multimetric index for assessing the biological condition of the Ohio River. Trans. Am. Fish. Soc. 132:791-808.

Gammon, J.R. 1976. The fish populations of the middle 340 km of the Wabash River. Purdue Univ. Water Resources Res. Cen. Tech. Rep. 86.

Hughes, R.M. and J.R. Gammon. 1987. Longitudinal changes in fish assemblages and water quality in the Willamette River, OR. Trans. Am. Fish. Soc. 116:196-209.

Illinois Environmental Protection Agency. 1992. Illinois water quality report 1990-1991. IEPA/WPC/92-055. Illinois EPA, Springfield, IL.

Karr, J.R., K.D. Fausch, P.L. Angermeier, P.R. Yant, and I.J. Schlosser. 1986. Assessing biological integrity in running waters: a method and its rationale. Ill. Nat. Hist. Surv. Sp. Publ. 5.

Lyons, J. 1992. Using the index of biotic integrity (IBI) to measure environmental quality in warmwater streams of Wisconsin. U. S. Dept. of Agriculture, Forest Service, North Central Forest Experiment Station. General Technical Report NC-149.

Midwest Generation and EA. 2003. Appropriate thermal water quality standards for the lower Des Plaines River. Report by Midwest Generation and EA to Illinois EPA.

Murphy, B.R., D.W. Willis, and T.A. Springer. 1991. The relative weight index in fisheries management: status and needs. Fisheries 16(2): 30-28.

Ohio Environmental Protection Agency. 1987. Biological criteria for the protection of aquatic life: Vol. II. Users manual for biological field assessment of Ohio surface waters. Div. Water Quality Monitoring and Assess., Surface Water Sect., Columbus, OH.

_____. 1989. Biological criteria for the protection of aquatic life: Vol. III. Standardized field and laboratory methods for assessing fish and macroinvertebrate communities. Div. Water Quality Monitoring and Assess., Surface Water Sect., Columbus, OH.

_____. 1996. Ohio EPA's guide to DELT anomalies. Working Copy/Ohio EPA DSW-MAS-EAU, Columbus, Ohio. 15 pp.

Page, L.M., K.S. Cummings, C.A. Mayer, A.L. Post, and M.E. Retzer. 1992. Biologically significant Illinois streams: an evaluation of the streams of Illinois based on aquatic biodiversity. Ill. Dept. of Cons. and Ill. Dept. of Energy and Nat. Res. Project Completion Rept., Enhancement of Biological Stream Characterization, F-110-R.

Post, G. 1983. Textbook of fish health. TFH Publication, Inc. Neptune City. 256 pp.

Smith, P. 1979. The Fishes of Illinois. Univ. of Illinois Press, Urbana, IL.

Sparks, R.E. and P.E. Ross. 1992. Identification of toxic substances in the Upper Illinois River, Final Report. Report by Illinois Natural History Survey to Illinois Dept. of Energy and Nat. Res., Springfield, IL. ILENR/RE-WR-92/07.

Talkington, L. 1991. Illinois River working for our state. Misc. Publication 128. Illinois State Water Survey, Champaign, IL.

Wege, G.J. and R.O. Anderson. 1978. Relative weight (W_r): A new index of condition for largemouth bass. Pages 79-91 in Novinger G.D. and J.G. Dillard, eds. New approaches to the management of small impoundments. North Central Division, Am. Fish. Soc., Special Publication 5.

APPENDIX A

PHYSICOCHEMICAL MEASUREMENTS

LOWER DES PLAINES RIVER -- 2004

APPENDIX A
LOWER DES PLAINES RIVER - MIDWEST GENERATION
PHYSICAL MEASUREMENTS RECORDED AT EACH ELECTROFISHING LOCATION, 2004.

LOCATION	DATE	DEPTH	TEMP (C)	D.O. (mg/l)	D.O. (% SAT)	COND (uS/cm)	SECCHI (cm)
402	12MAY	MID	21.5	9.2	106	1217	53
	08JUN	MID	24.0	8.7	104	950	89
	07JUL	MID	24.8	8.1	98	700	57
	20JUL	MID	28.4	7.2	98	770	66
	10AUG	MID	25.7	7.0	86	661	55
	26AUG	MID	26.4	7.7	95	729	45
	09SEP	MID	26.7	7.8	98	796	57
	27SEP	MID	25.3	8.7	107	765	53
402A	12MAY	SUR	21.8	9.0	102	1195	58
		1.0	21.7	9.0	102		
		1.8	21.7	9.0	102		
	08JUN	SUR	24.5	8.9	107	941	94
		1.0	24.4	8.9	107		
		1.8	24.3	8.9	108		
	07JUL	SUR	24.9	7.2	88	688	57
		1.0	24.9	7.2	88		
		2.0	24.9	7.2	88		
	20JUL	SUR	28.3	6.9	89	762	69
		1.0	28.3	6.9	89		
		1.5	28.3	6.9	89		
	10AUG	MID	25.6	6.7	86	670	60
	26AUG	SUR	27.5	7.2	91	739	64
		1.0	27.0	7.1	89		
		1.8	26.2	7.1	88		
	09SEP	SUR	27.7	6.7	86	816	71
		1.0	27.7	6.6	84		
		1.5	27.6	6.7	84		
	27SEP	SUR	26.9	8.3	105	805	58
		1.0	27.2	8.6	108		
		1.5	27.1	8.6	108		
403 UNIT 29	12MAY	MID	28.8	10.9	143	1204	57
UNIT 9	12MAY	SUR	27.7	9.9	126	1215	54
		1.0	27.7	9.9	126		
		2.0	27.6	10.0	127		
		2.2	27.6	10.0	127		
UNIT 29	08JUN	MID	32.9	7.4	102	943	65
UNIT 9	08JUN	MID	29.8	8.8	117	950	77
UNIT 29	07JUL	MID	29.3	6.8	90	709	56
UNIT 9	07JUL	MID	27.4	7.4	94	709	56
UNIT 29	20JUL	SUR	36.1	7.2	106	773	68
		1.0	36.1	7.2	106		
		2.0	36.2	6.4	105		
UNIT 9	20JUL	SUR	34.3	7.0	100	775	79
		1.0	34.3	7.1	101		
		2.0	34.3	7.1	101		
UNIT 29	10AUG	MID	29.3	6.2	85	698	56
UNIT 9	10AUG	MID	27.4	7.1	91	682	59
UNIT 29	26AUG	MID	35.0	6.7	97	756	40
UNIT 9	26AUG	MID	33.2	7.1	99	758	52
UNIT 29	09SEP	MID	30.8	7.2	97	814	58
UNIT 9	09SEP	MID	31.4	7.0	94	820	57
UNIT 29	27SEP	MID	29.5	8.7	114	819	58
UNIT 9	27SEP	MID	32.1	8.0	110	812	61
403A	12MAY	MID	28.6	10.6	138	1202	58
	08JUN	MID	29.3	9.0	117	938	85
	07JUL	MID	28.6	6.8	89	687	60
	20JUL	MID	34.6	7.2	94	770	81
	10AUG	MID	27.1	7.1	91	679	64
	26AUG	MID	32.9	6.6	92	747	56
	09SEP	MID	31.5	8.3	111	812	53
	27SEP	MID	31.5	10.2	138	791	56

APPENDIX A (cont.)

LOCATION	DATE	DEPTH	TEMP (C)	D.O. (mg/l)	D.O. (% SAT)	COND (uS/cm)	SECCHI (cm)
404A	12MAY	MID	27.9	11.0	144	1578	56
	08JUN	MID	28.0	8.5	111	946	64
	07JUL	MID	27.1	6.9	88	667	57
	20JUL	MID	31.9	8.0	112	786	71
	10AUG	MID	27.0	6.8	86	695	77
	26AUG	MID	28.1	7.4	96	713	53
	09SEP	MID	29.3	9.2	121	808	66
	27SEP	MID	29.6	10.6	138	817	59
405	12MAY	MID	26.9	12.2	155	1162	56
	08JUN	MID	28.2	9.8	125	934	69
	07JUL	MID	27.1	7.0	89	647	66
	20JUL	MID	31.7	8.2	113	775	68
	10AUG	MID	27.3	7.2	91	688	88
	27AUG	MID	28.3	6.0	77	709	37
	09SEP	MID	28.0	8.3	107	812	66
	27SEP	MID	29.8	11.0	145	829	59
408	11MAY	MID	26.2	8.5	105	1198	72
	08JUN	MID	27.9	10.0	127	937	71
	07JUL	MID	26.6	6.8	85	645	57
	20JUL	MID	31.9	7.9	110	763	72
	10AUG	MID	26.9	6.8	99	685	72
	27AUG	MID	28.7	5.0	66	726	50
	09SEP	MID	28.3	7.6	98	808	62
	27SEP	MID	29.8	11.0	146	822	58
412A	11MAY	SUR	25.7	12.9	170	1185	54
		1.0	25.4	12.1	155		
	09JUN	MID	27.6	8.2	105	961	78
	08JUL	MID	27.2	8.6	109	694	53
	21JUL	MID	30.6	7.7	103	790	81
	11AUG	MID	24.6	8.0	91	699	71
	27AUG	MID	28.1	6.3	81	707	37
	08SEP	MID	26.9	8.5	107	841	57
	28SEP	MID	24.3	9.7	115	863	57
414	11MAY	MID	25.9	16.1	196	1152	45
	09JUN	MID	26.3	7.7	95	918	32
	08JUL	MID	27.9	9.5	123	696	53
	21JUL	MID	29.3	12.4	163	776	49
	11AUG	MID	20.3	13.0	139	715	34
	27AUG	MID	26.3	6.1	76	685	46
	08SEP	MID	26.7	8.7	109	843	46
	28SEP	MID	25.3	10.2	124	851	51
418	11MAY	MID	23.1	11.2	132	859	35
	09JUN	MID	27.6	12.7	156	610	48
	08JUL	MID	24.4	10.8	128	695	42
	21JUL	MID	28.5	8.9	115	734	33
	11AUG	MID	21.9	10.0	112	682	32
	27AUG	MID	26.8	8.8	110	644	44
	08SEP	MID	23.5	10.7	123	688	39
	28SEP	MID	20.2	10.4	116	775	35
419A	11MAY	SUR	24.5	10.7	138	1187	63
		1.0	24.7	10.7	131		
		1.5	24.0	10.6	123		
	09JUN	SUR	27.8	8.6	109	954	67
		1.0	27.7	8.4	106		
		2.0	27.6	8.2	103		
		2.5	27.5	8.0	101		
	08JUL	MID	25.7	6.5	78	695	47
	21JUL	MID	30.2	6.3	85	789	67
	11AUG	MID	24.8	6.3	72	696	71
	27AUG	MID	29.2	6.4	83	716	51
	08SEP	MID	27.3	7.3	92	810	57
	28SEP	MID	27.0	7.8	98	845	49

APPENDIX B

CATCH-PER-EFFORT AND RELATIVE ABUNDANCE SUMMARIES
(native species only)

LOWER DES PLAINES RIVER -- 2004

TABLE B-1. TOTAL NUMBER, CATCH-PER-EFFORT (#/km), AND RELATIVE ABUNDANCE OF NATIVE FISH COLLECTED BY ELECTROFISHING AT EACH LOCATION IN THE UPPER ILLINOIS WATERWAY, 2004.

	LOCATION											
	402			402A			403			403A		
SPECIES	#	CPE	%	#	CPE	%	#	CPE	%	#	CPE	%
LONGNOSE GAR	3	0.8	0.89	--	--	--	4	1.0	0.94	--	--	--
SKIPJACK HERRING	--	--	--	1	0.3	0.18	--	--	--	--	--	--
GIZZARD SHAD	46	11.5	13.65	190	47.5	34.17	30	7.5	7.03	46	11.5	19.09
GOLDEN SHINER	--	--	--	1	0.3	0.18	--	--	--	--	--	--
PALLID SHINER	--	--	--	--	--	--	--	--	--	--	--	--
EMERALD SHINER	8	2.0	2.37	60	15.0	10.79	23	5.8	5.39	3	0.8	1.24
GHOST SHINER	--	--	--	--	--	--	--	--	--	--	--	--
SPOTTAIL SHINER	1	0.3	0.30	10	2.5	1.80	--	--	--	1	0.3	0.41
SPOTFIN SHINER	5	1.3	1.48	17	4.3	3.06	18	4.5	4.22	5	1.3	2.07
SAND SHINER	--	--	--	1	0.3	0.18	--	--	--	--	--	--
REDFIN SHINER	--	--	--	--	--	--	--	--	--	--	--	--
BLUNTNOSE MINNOW	4	1.0	1.19	61	15.3	10.97	23	5.8	5.39	19	4.8	7.88
BULLHEAD MINNOW	--	--	--	--	--	--	--	--	--	--	--	--
RIVER CARPSUCKER	--	--	--	2	0.5	0.36	--	--	--	--	--	--
QUILLBACK	--	--	--	4	1.0	0.72	--	--	--	8	2.0	3.32
HIGHFIN CARPSUCKER	--	--	--	--	--	--	1	0.3	0.23	--	--	--
WHITE SUCKER	3	0.8	0.89	1	0.3	0.18	--	--	--	--	--	--
SMALLMOUTH BUFFALO	27	6.8	8.01	9	2.3	1.62	8	2.0	1.87	5	1.3	2.07
BIGMOUTH BUFFALO	--	--	--	--	--	--	--	--	--	--	--	--
BLACK BUFFALO	--	--	--	--	--	--	1	0.3	0.23	--	--	--
SPOTTED SUCKER	--	--	--	1	0.3	0.18	--	--	--	--	--	--
SILVER REDHORSE	--	--	--	1	0.3	0.18	--	--	--	--	--	--
GOLDEN REDHORSE	2	0.5	0.59	2	0.5	0.36	--	--	--	--	--	--
SHORTHEAD REDHORSE	1	0.3	0.30	--	--	--	--	--	--	--	--	--
BLACK BULLHEAD	1	0.3	0.30	--	--	--	--	--	--	--	--	--
YELLOW BULLHEAD	5	1.3	1.48	3	0.8	0.54	1	0.3	0.23	--	--	--
CHANNEL CATFISH	43	10.8	12.76	20	5.0	3.60	92	23.0	21.55	6	1.5	2.49
TADPOLE MADTOM	--	--	--	--	--	--	--	--	--	--	--	--
FLATHEAD CATFISH	1	0.3	0.30	--	--	--	1	0.3	0.23	--	--	--
BLACKSTRIPE TOPMINNOW	--	--	--	1	0.3	0.18	2	0.5	0.47	--	--	--
BROOK SILVERSIDE	--	--	--	--	--	--	--	--	--	--	--	--
WHITE BASS	4	1.0	1.19	--	--	--	--	--	--	--	--	--
YELLOW BASS	1	0.3	0.30	--	--	--	--	--	--	--	--	--
ROCK BASS	--	--	--	--	--	--	--	--	--	--	--	--
GREEN SUNFISH	18	4.5	5.34	31	7.8	5.58	116	29.0	27.17	23	5.8	9.54
PUMPKINSEED	--	--	--	--	--	--	--	--	--	--	--	--
WARMOUTH	--	--	--	--	--	--	--	--	--	--	--	--
ORANGESPOTTED SUNFISH	6	1.5	1.78	--	--	--	6	1.5	1.41	2	0.5	0.83
BLUEGILL	24	6.0	7.12	36	9.0	6.47	64	16.0	14.99	77	19.3	31.95
LONGEAR SUNFISH	--	--	--	--	--	--	7	1.8	1.64	--	--	--
HYBRID SUNFISH	7	1.8	2.08	9	2.3	1.62	15	3.8	3.51	8	2.0	3.32
UNID LEPOMIS	--	--	--	--	--	--	--	--	--	--	--	--
SMALLMOUTH BASS	34	8.5	10.09	8	2.0	1.44	3	0.8	0.70	3	0.8	1.24
LARGEMOUTH BASS	47	11.8	13.95	67	16.8	12.05	8	2.0	1.87	28	7.0	11.62
WHITE CRAPPIE	1	0.3	0.30	--	--	--	--	--	--	--	--	--
BLACK CRAPPIE	1	0.3	0.30	--	--	--	--	--	--	--	--	--
LOGPERCH	--	--	--	--	--	--	--	--	--	--	--	--
BLACKSIDE DARTER	--	--	--	--	--	--	--	--	--	--	--	--
WALLEYE	2	0.5	0.59	--	--	--	1	0.3	0.23	--	--	--
FRESHWATER DRUM	42	10.5	12.46	20	5.0	3.60	3	0.8	0.70	7	1.8	2.90
TOTAL FISH	337	84.3	100.00	556	139.0	100.00	427	106.8	100.00	241	60.3	100.00
TOTAL SPECIES	25			23			20			14		
MEAN NO. OF SPECIES	11			11			10			8		
MEAN IWBmod	7.84			7.50			6.56			6.08		

TABLE B-1 (cont.)

SPECIES	LOCATION 404A #	404A CPE	404A %	405 #	405 CPE	405 %	408 #	408 CPE	408 %	412A #	412A CPE	412A %
LONGNOSE GAR	--	--	--	1	0.3	0.13	--	--	--	--	--	--
SKIPJACK HERRING	--	--	--	1	0.3	0.13	2	0.5	0.16	2	0.5	0.45
GIZZARD SHAD	92	23.0	21.15	185	46.3	23.63	150	37.5	11.79	68	17.0	15.18
GOLDEN SHINER	--	--	--	--	--	--	--	--	--	--	--	--
PALLID SHINER	--	--	--	--	--	--	--	--	--	1	0.3	0.22
EMERALD SHINER	23	5.8	5.29	5	1.3	0.64	7	1.8	0.55	5	1.3	1.12
GHOST SHINER	--	--	--	--	--	--	1	0.3	0.08	--	--	--
SPOTTAIL SHINER	8	2.0	1.84	--	--	--	3	0.8	0.24	2	0.5	0.45
SPOTFIN SHINER	14	3.5	3.22	2	0.5	0.26	9	2.3	0.71	3	0.8	0.67
SAND SHINER	2	0.5	0.46	--	--	--	--	--	--	--	--	--
REDFIN SHINER	--	--	--	1	0.3	0.13	--	--	--	--	--	--
BLUNTNOSE MINNOW	108	27.0	24.83	56	14.0	7.15	119	29.8	9.36	95	23.8	21.21
BULLHEAD MINNOW	--	--	--	--	--	--	1	0.3	0.08	1	0.3	0.22
RIVER CARPSUCKER	--	--	--	--	--	--	--	--	--	2	0.5	0.45
QUILLBACK	2	0.5	0.46	2	0.5	0.26	--	--	--	--	--	--
HIGHFIN CARPSUCKER	--	--	--	--	--	--	--	--	--	--	--	--
WHITE SUCKER	--	--	--	--	--	--	--	--	--	--	--	--
SMALLMOUTH BUFFALO	4	1.0	0.92	14	3.5	1.79	7	1.8	0.55	4	1.0	0.89
BIGMOUTH BUFFALO	--	--	--	--	--	--	1	0.3	0.08	--	--	--
BLACK BUFFALO	--	--	--	--	--	--	--	--	--	--	--	--
SPOTTED SUCKER	--	--	--	--	--	--	--	--	--	--	--	--
SILVER REDHORSE	1	0.3	0.23	--	--	--	--	--	--	--	--	--
GOLDEN REDHORSE	6	1.5	1.38	7	1.8	0.89	--	--	--	3	0.8	0.67
SHORTHEAD REDHORSE	2	0.5	0.46	--	--	--	--	--	--	--	--	--
BLACK BULLHEAD	--	--	--	--	--	--	--	--	--	--	--	--
YELLOW BULLHEAD	--	--	--	3	0.8	0.38	1	0.3	0.08	1	0.3	0.22
CHANNEL CATFISH	18	4.5	4.14	12	3.0	1.53	19	4.8	1.49	14	3.5	3.13
TADPOLE MADTOM	--	--	--	--	--	--	--	--	--	--	--	--
FLATHEAD CATFISH	--	--	--	1	0.3	0.13	--	--	--	--	--	--
BLACKSTRIPE TOPMINNOW	--	--	--	2	0.5	0.26	--	--	--	2	0.5	0.45
BROOK SILVERSIDE	--	--	--	--	--	--	--	--	--	1	0.3	0.22
WHITE BASS	--	--	--	--	--	--	--	--	--	--	--	--
YELLOW BASS	--	--	--	--	--	--	1	0.3	0.08	1	0.3	0.22
ROCK BASS	1	0.3	0.23	--	--	--	--	--	--	--	--	--
GREEN SUNFISH	21	5.3	4.83	148	37.0	18.90	349	87.3	27.44	31	7.8	6.92
PUMPKINSEED	--	--	--	--	--	--	--	--	--	--	--	--
WARMOUTH	--	--	--	--	--	--	2	0.5	0.16	--	--	--
ORANGESPOTTED SUNFISH	1	0.3	0.23	--	--	--	29	7.3	2.28	6	1.5	1.34
BLUEGILL	54	13.5	12.41	159	39.8	20.31	253	63.3	19.89	126	31.5	28.13
LONGEAR SUNFISH	--	--	--	--	--	--	--	--	--	1	0.3	0.22
HYBRID SUNFISH	10	2.5	2.30	91	22.8	11.62	231	57.8	18.16	9	2.3	2.01
UNID LEPOMIS	--	--	--	--	--	--	--	--	--	--	--	--
SMALLMOUTH BASS	10	2.5	2.30	7	1.8	0.89	2	0.5	0.16	6	1.5	1.34
LARGEMOUTH BASS	52	13.0	11.95	78	19.5	9.96	72	18.0	5.66	55	13.8	12.28
WHITE CRAPPIE	--	--	--	--	--	--	--	--	--	--	--	--
BLACK CRAPPIE	--	--	--	2	0.5	0.26	6	1.5	0.47	--	--	--
LOGPERCH	--	--	--	--	--	--	--	--	--	--	--	--
BLACKSIDE DARTER	--	--	--	--	--	--	--	--	--	--	--	--
WALLEYE	3	0.8	0.69	--	--	--	--	--	--	--	--	--
FRESHWATER DRUM	3	0.8	0.69	6	1.5	0.77	7	1.8	0.55	9	2.3	2.01
TOTAL FISH	435	108.8	100.00	783	195.8	100.00	1272	318.0	100.00	448	112.0	100.00
TOTAL SPECIES	20			20			21			23		
MEAN NO. OF SPECIES	10			10			11			9		
MEAN IWBmod	6.78			7.60			7.62			6.65		

TABLE B-1 (cont.)

SPECIES	LOCATION 414 #	414 CPE	414 %	418 #	418 CPE	418 %	419A #	419A CPE	419A %
LONGNOSE GAR	--	--	--	--	--	--	--	--	--
SKIPJACK HERRING	--	--	--	--	--	--	--	--	--
GIZZARD SHAD	67	16.8	5.55	327	81.8	19.18	71	17.8	18.07
GOLDEN SHINER	--	--	--	6	1.5	0.35	--	--	--
PALLID SHINER	5	1.3	0.41	--	--	--	--	--	--
EMERALD SHINER	12	3.0	0.99	23	5.8	1.35	13	3.3	3.31
GHOST SHINER	--	--	--	--	--	--	--	--	--
SPOTTAIL SHINER	12	3.0	0.99	--	--	--	1	0.3	0.25
SPOTFIN SHINER	1	0.3	0.08	9	2.3	0.53	7	1.8	1.78
SAND SHINER	--	--	--	--	--	--	--	--	--
REDFIN SHINER	--	--	--	--	--	--	--	--	--
BLUNTNOSE MINNOW	52	13.0	4.31	54	13.5	3.17	36	9.0	9.16
BULLHEAD MINNOW	29	7.3	2.40	33	8.3	1.94	--	--	--
RIVER CARPSUCKER	10	2.5	0.83	10	2.5	0.59	--	--	--
QUILLBACK	--	--	--	7	1.8	0.41	--	--	--
HIGHFIN CARPSUCKER	--	--	--	--	--	--	--	--	--
WHITE SUCKER	--	--	--	--	--	--	--	--	--
SMALLMOUTH BUFFALO	23	5.8	1.91	10	2.5	0.59	3	0.8	0.76
BIGMOUTH BUFFALO	2	0.5	0.17	--	--	--	--	--	--
BLACK BUFFALO	--	--	--	--	--	--	--	--	--
SPOTTED SUCKER	--	--	--	--	--	--	--	--	--
SILVER REDHORSE	--	--	--	--	--	--	2	0.5	0.51
GOLDEN REDHORSE	--	--	--	1	0.3	0.06	7	1.8	1.78
SHORTHEAD REDHORSE	--	--	--	1	0.3	0.06	--	--	--
BLACK BULLHEAD	--	--	--	--	--	--	--	--	--
YELLOW BULLHEAD	1	0.3	0.08	1	0.3	0.06	1	0.3	0.25
CHANNEL CATFISH	14	3.5	1.16	23	5.8	1.35	10	2.5	2.54
TADPOLE MADTOM	--	--	--	1	0.3	0.06	--	--	--
FLATHEAD CATFISH	1	0.3	0.08	--	--	--	--	--	--
BLACKSTRIPE TOPMINNOW	2	0.5	0.17	--	--	--	1	0.3	0.25
BROOK SILVERSIDE	--	--	--	3	0.8	0.18	2	0.5	0.51
WHITE BASS	1	0.3	0.08	1	0.3	0.06	--	--	--
YELLOW BASS	1	0.3	0.08	--	--	--	--	--	--
ROCK BASS	--	--	--	--	--	--	1	0.3	0.25
GREEN SUNFISH	105	26.3	8.70	446	111.5	26.16	53	13.3	13.49
PUMPKINSEED	--	--	--	3	0.8	0.18	--	--	--
WARMOUTH	1	0.3	0.08	--	--	--	--	--	--
ORANGESPOTTED SUNFISH	134	33.5	11.10	134	33.5	7.86	--	--	--
BLUEGILL	593	148.3	49.13	438	109.5	25.69	94	23.5	23.92
LONGEAR SUNFISH	--	--	--	1	0.3	0.06	--	--	--
HYBRID SUNFISH	11	2.8	0.91	10	2.5	0.59	9	2.3	2.29
UNID LEPOMIS	--	--	--	1	0.3	0.06	--	--	--
SMALLMOUTH BASS	--	--	--	2	0.5	0.12	29	7.3	7.38
LARGEMOUTH BASS	105	26.3	8.70	131	32.8	7.68	46	11.5	11.70
WHITE CRAPPIE	1	0.3	0.08	3	0.8	0.18	--	--	--
BLACK CRAPPIE	5	1.3	0.41	1	0.3	0.06	--	--	--
LOGPERCH	--	--	--	8	2.0	0.47	--	--	--
BLACKSIDE DARTER	--	--	--	1	0.3	0.06	--	--	--
WALLEYE	--	--	--	--	--	--	2	0.5	0.51
FRESHWATER DRUM	19	4.8	1.57	16	4.0	0.94	5	1.3	1.27
TOTAL FISH	1207	301.8	100.00	1705	426.3	100.00	393	98.3	100.00
TOTAL SPECIES	24			28			19		
MEAN NO. OF SPECIES	13			14			9		
MEAN IWBmod	8.03			8.55			6.80		

TABLE B-2. TOTAL NUMBER, CATCH-PER-EFFORT (#/haul), AND RELATIVE ABUNDANCE OF NATIVE FISH COLLECTED BY SEINING AT EACH LOCATION IN THE UPPER ILLINOIS WATERWAY, 2004.

	LOCATION											
	402			403A			404A			405		
SPECIES	#	CPE	%	#	CPE	%	#	CPE	%	#	CPE	%
GIZZARD SHAD	--	--	--	--	--	--	--	--	--	--	--	--
GRASS PICKEREL	--	--	--	--	--	--	--	--	--	--	--	--
GOLDEN SHINER	--	--	--	--	--	--	--	--	--	--	--	--
PALLID SHINER	--	--	--	--	--	--	--	--	--	--	--	--
EMERALD SHINER	1	0.1	0.42	9	1.1	2.95	16	2.0	9.30	25	3.1	6.46
GHOST SHINER	2	0.3	0.84	--	--	--	--	--	--	--	--	--
STRIPED SHINER	--	--	--	--	--	--	--	--	--	2	0.3	0.52
SPOTTAIL SHINER	--	--	--	6	0.8	1.97	--	--	--	2	0.3	0.52
SPOTFIN SHINER	42	5.3	17.57	8	1.0	2.62	36	4.5	20.93	8	1.0	2.07
SAND SHINER	2	0.3	0.84	1	0.1	0.33	--	--	--	7	0.9	1.81
BLUNTNOSE MINNOW	188	23.5	78.66	208	26.0	68.20	116	14.5	67.44	307	38.4	79.33
FATHEAD MINNOW	--	--	--	--	--	--	--	--	--	--	--	--
BULLHEAD MINNOW	--	--	--	4	0.5	1.31	--	--	--	9	1.1	2.33
SMALLMOUTH BUFFALO	1	0.1	0.42	--	--	--	--	--	--	--	--	--
GOLDEN REDHORSE	--	--	--	--	--	--	--	--	--	--	--	--
BLACKSTRIPE TOPMINNOW	2	0.3	0.84	35	4.4	11.48	--	--	--	3	0.4	0.78
BROOK SILVERSIDE	--	--	--	--	--	--	--	--	--	--	--	--
ROCK BASS	--	--	--	--	--	--	--	--	--	2	0.3	0.52
GREEN SUNFISH	--	--	--	1	0.1	0.33	--	--	--	1	0.1	0.26
ORANGESPOTTED SUNFISH	--	--	--	2	0.3	0.66	--	--	--	--	--	--
BLUEGILL	--	--	--	12	1.5	3.93	3	0.4	1.74	11	1.4	2.84
LONGEAR SUNFISH	--	--	--	--	--	--	--	--	--	2	0.3	0.52
HYBRID SUNFISH	--	--	--	--	--	--	--	--	--	--	--	--
UNID LEPOMIS	--	--	--	--	--	--	--	--	--	--	--	--
SMALLMOUTH BASS	--	--	--	1	0.1	0.33	--	--	--	1	0.1	0.26
LARGEMOUTH BASS	--	--	--	16	2.0	5.25	1	0.1	0.58	4	0.5	1.03
BLACK CRAPPIE	--	--	--	--	--	--	--	--	--	--	--	--
JOHNNY DARTER	--	--	--	--	--	--	--	--	--	1	0.1	0.26
ORANGETHROAT DARTER	1	0.1	0.42	--	--	--	--	--	--	--	--	--
LOGPERCH	--	--	--	--	--	--	--	--	--	--	--	--
BLACKSIDE DARTER	--	--	--	2	0.3	0.66	--	--	--	2	0.3	0.52
TOTAL FISH	239	29.9	100.00	305	38.1	100.00	172	21.5	100.00	387	48.4	100.00
TOTAL SPECIES	8			13			5			16		
MEAN NO. OF SPECIES	2			5			2			5		

	LOCATION											
	408			412A			414			418		
SPECIES	#	CPE	%	#	CPE	%	#	CPE	%	#	CPE	%
GIZZARD SHAD	--	--	--	1	0.1	0.13	--	--	--	2	0.3	0.45
GRASS PICKEREL	--	--	--	--	--	--	--	--	--	1	0.1	0.23
GOLDEN SHINER	--	--	--	--	--	--	--	--	--	6	0.8	1.36
PALLID SHINER	--	--	--	1	0.1	0.13	25	3.1	2.47	--	--	--
EMERALD SHINER	--	--	--	48	6.0	6.37	12	1.5	1.18	18	2.3	4.09
GHOST SHINER	--	--	--	--	--	--	--	--	--	1	0.1	0.23
STRIPED SHINER	--	--	--	6	0.8	0.80	4	0.5	0.39	--	--	--
SPOTTAIL SHINER	--	--	--	--	--	--	3	0.4	0.30	--	--	--
SPOTFIN SHINER	--	--	--	108	13.5	14.32	4	0.5	0.39	6	0.8	1.36
SAND SHINER	--	--	--	1	0.1	0.13	--	--	--	--	--	--
BLUNTNOSE MINNOW	101	12.6	46.12	460	57.5	61.01	427	53.4	42.11	81	10.1	18.41
FATHEAD MINNOW	--	--	--	1	0.1	0.13	--	--	--	--	--	--
BULLHEAD MINNOW	38	4.8	17.35	2	0.3	0.27	133	16.6	13.12	75	9.4	17.05
SMALLMOUTH BUFFALO	--	--	--	--	--	--	--	--	--	--	--	--
GOLDEN REDHORSE	--	--	--	--	--	--	--	--	--	--	--	--
BLACKSTRIPE TOPMINNOW	2	0.3	0.91	9	1.1	1.19	15	1.9	1.48	1	0.1	0.23
BROOK SILVERSIDE	--	--	--	8	1.0	1.06	3	0.4	0.30	28	3.5	6.36
ROCK BASS	--	--	--	--	--	--	--	--	--	--	--	--
GREEN SUNFISH	1	0.1	0.46	--	--	--	--	--	--	2	0.3	0.45
ORANGESPOTTED SUNFISH	--	--	--	--	--	--	50	6.3	4.93	7	0.9	1.59
BLUEGILL	70	8.8	31.96	86	10.8	11.41	318	39.8	31.36	170	21.3	38.64
LONGEAR SUNFISH	--	--	--	--	--	--	2	0.3	0.20	1	0.1	0.23
HYBRID SUNFISH	--	--	--	--	--	--	1	0.1	0.10	--	--	--
UNID LEPOMIS	2	0.3	0.91	2	0.3	0.27	4	0.5	0.39	39	4.9	8.86
SMALLMOUTH BASS	--	--	--	6	0.8	0.80	--	--	--	--	--	--
LARGEMOUTH BASS	4	0.5	1.83	9	1.1	1.19	8	1.0	0.79	1	0.1	0.23
BLACK CRAPPIE	--	--	--	4	0.5	0.53	--	--	--	--	--	--
JOHNNY DARTER	--	--	--	--	--	--	5	0.6	0.49	--	--	--
ORANGETHROAT DARTER	--	--	--	--	--	--	--	--	--	--	--	--
LOGPERCH	--	--	--	2	0.3	0.27	--	--	--	1	0.1	0.23
BLACKSIDE DARTER	1	0.1	0.46	--	--	--	--	--	--	--	--	--
TOTAL FISH	219	27.4	100.00	754	94.3	100.00	1014	126.8	100.00	440	55.0	100.00
TOTAL SPECIES	7			16			14			16		
MEAN NO. OF SPECIES	3			7			7			5		

TABLE B-2 (cont.)

SPECIES	LOCATION 419A #	CPE	%
GIZZARD SHAD	--	--	--
GRASS PICKEREL	--	--	--
GOLDEN SHINER	--	--	--
PALLID SHINER	--	--	--
EMERALD SHINER	3	0.4	1.95
GHOST SHINER	--	--	--
STRIPED SHINER	--	--	--
SPOTTAIL SHINER	4	0.5	2.60
SPOTFIN SHINER	20	2.5	12.99
SAND SHINER	--	--	--
BLUNTNOSE MINNOW	85	10.6	55.19
FATHEAD MINNOW	--	--	--
BULLHEAD MINNOW	9	1.1	5.84
SMALLMOUTH BUFFALO	--	--	--
GOLDEN REDHORSE	1	0.1	0.65
BLACKSTRIPE TOPMINNOW	2	0.3	1.30
BROOK SILVERSIDE	--	--	--
ROCK BASS	--	--	--
GREEN SUNFISH	--	--	--
ORANGESPOTTED SUNFISH	--	--	--
BLUEGILL	21	2.6	13.64
LONGEAR SUNFISH	1	0.1	0.65
HYBRID SUNFISH	1	0.1	0.65
UNID LEPOMIS	1	0.1	0.65
SMALLMOUTH BASS	1	0.1	0.65
LARGEMOUTH BASS	4	0.5	2.60
BLACK CRAPPIE	--	--	--
JOHNNY DARTER	--	--	--
ORANGETHROAT DARTER	--	--	--
LOGPERCH	1	0.1	0.65
BLACKSIDE DARTER	--	--	--
TOTAL FISH	154	19.3	100.00
TOTAL SPECIES	12		
MEAN NO. OF SPECIES	4		

2004 LOWER DES PLAINES RIVER FISH STUDY -- CPE AND COMPOSITION SUMMARIES FOR EACH SURVEY (ELECTRO=No./Km)

GEAR: ELECTRO
and LOCATION: 402

	11-12 MAY		8-9 JUN		7 JUL-8 JUL		20-21 JUL		10-11 AUG		26-27 AUG		8-9 SEP		27-28 SEP	
SPECIES	CPE	%	CPE	%	CPE	%	CPE	%	CPE	%	CPE	%	CPE	%	CPE	%
LONGNOSE GAR	--	--	--	--	2.0	5.6	2.0	2.8	--	--	2.0	2.2	--	--	--	--
GIZZARD SHAD	46.0	33.3	4.0	3.5	4.0	11.1	8.0	11.1	2.0	3.8	4.0	4.4	10.0	12.5	14.0	15.2
EMERALD SHINER	10.0	7.2	--	--	--	--	--	--	--	--	6.0	6.7	--	--	--	--
SPOTTAIL SHINER	--	--	--	--	--	--	--	--	--	--	2.0	2.2	--	--	--	--
SPOTFIN SHINER	2.0	1.4	2.0	1.8	--	--	--	--	--	--	4.0	4.4	2.0	2.5	--	--
BLUNTNOSE MINNOW	--	--	2.0	1.8	--	--	2.0	2.8	--	--	2.0	2.2	2.0	2.5	--	--
WHITE SUCKER	--	--	2.0	1.8	--	--	2.0	2.8	--	--	--	--	2.0	2.5	--	--
SMALLMOUTH BUFFALO	2.0	1.4	8.0	7.0	8.0	22.2	--	--	4.0	7.7	10.0	11.1	8.0	10.0	14.0	15.2
GOLDEN REDHORSE	2.0	1.4	--	--	--	--	--	--	2.0	3.8	--	--	--	--	--	--
SHORTHEAD REDHORSE	--	--	2.0	1.8	--	--	--	--	--	--	--	--	--	--	--	--
BLACK BULLHEAD	--	--	--	--	--	--	--	--	2.0	3.8	--	--	--	--	--	--
YELLOW BULLHEAD	2.0	1.4	--	--	--	--	2.0	2.8	--	--	2.0	2.2	2.0	2.5	2.0	2.2
CHANNEL CATFISH	6.0	4.3	22.0	19.3	6.0	16.7	16.0	22.2	--	--	14.0	15.6	12.0	15.0	10.0	10.9
FLATHEAD CATFISH	--	--	--	--	2.0	5.6	--	--	--	--	--	--	--	--	--	--
WHITE BASS	6.0	4.3	2.0	1.8	--	--	--	--	--	--	--	--	--	--	--	--
YELLOW BASS	--	--	--	--	--	--	--	--	--	--	2.0	2.2	--	--	--	--
GREEN SUNFISH	6.0	4.3	--	--	--	--	10.0	13.9	6.0	11.5	6.0	6.7	4.0	5.0	4.0	4.3
ORANGESPOTTED SUNFISH	--	--	8.0	7.0	--	--	--	--	4.0	7.7	--	--	--	--	--	--
BLUEGILL	4.0	2.9	12.0	10.5	--	--	--	--	14.0	26.9	10.0	11.1	6.0	7.5	2.0	2.2
HYBRID SUNFISH	2.0	1.4	2.0	1.8	--	--	--	--	--	--	--	--	4.0	5.0	6.0	6.5
SMALLMOUTH BASS	16.0	11.6	14.0	12.3	--	--	16.0	22.2	--	--	4.0	4.4	4.0	5.0	14.0	15.2
LARGEMOUTH BASS	4.0	2.9	16.0	14.0	10.0	27.8	10.0	13.9	10.0	19.2	14.0	15.6	16.0	20.0	14.0	15.2
WHITE CRAPPIE	--	--	2.0	1.8	--	--	--	--	--	--	--	--	--	--	--	--
BLACK CRAPPIE	--	--	2.0	1.8	--	--	--	--	--	--	--	--	--	--	--	--
WALLEYE	4.0	2.9	--	--	--	--	--	--	--	--	--	--	--	--	--	--
FRESHWATER DRUM	26.0	18.8	14.0	12.3	4.0	11.1	4.0	5.6	8.0	15.4	8.0	8.9	8.0	10.0	12.0	13.0
TOTAL FISH	138.0	100.0	114.0	100.0	36.0	100.0	72.0	100.0	52.0	100.0	90.0	100.0	80.0	100.0	92.0	100.0

GEAR: ELECTRO
and LOCATION: 402A

	11-12 MAY		8-9 JUN		7 JUL-8 JUL		20-21 JUL		10-11 AUG		26-27 AUG		8-9 SEP		27-28 SEP	
SPECIES	CPE	%	CPE	%	CPE	%	CPE	%	CPE	%	CPE	%	CPE	%	CPE	%
SKIPJACK HERRING	--	--	--	--	--	--	--	--	--	--	--	--	--	--	2.0	3.7
GIZZARD SHAD	54.0	45.0	66.0	36.3	26.0	25.0	46.0	34.3	104.0	54.2	26.0	18.8	40.0	21.3	18.0	33.3
GOLDEN SHINER	--	--	--	--	--	--	--	--	--	--	2.0	1.4	--	--	--	--
EMERALD SHINER	2.0	1.7	6.0	3.3	8.0	7.7	22.0	16.4	34.0	17.7	30.0	21.7	18.0	9.6	--	--
SPOTTAIL SHINER	--	--	--	--	--	--	4.0	3.0	4.0	2.1	--	--	12.0	6.4	--	--
SPOTFIN SHINER	--	--	2.0	1.1	2.0	1.9	--	--	2.0	1.0	--	--	28.0	14.9	--	--
SAND SHINER	--	--	--	--	2.0	1.9	--	--	--	--	--	--	--	--	--	--
BLUNTNOSE MINNOW	--	--	36.0	19.8	12.0	11.5	8.0	6.0	12.0	6.3	22.0	15.9	32.0	17.0	--	--
RIVER CARPSUCKER	--	--	4.0	2.2	--	--	--	--	--	--	--	--	--	--	--	--
QUILLBACK	4.0	3.3	2.0	1.1	--	--	2.0	1.5	--	--	--	--	--	--	--	--
WHITE SUCKER	--	--	--	--	--	--	2.0	1.5	--	--	--	--	--	--	--	--
SMALLMOUTH BUFFALO	4.0	3.3	--	--	6.0	5.8	2.0	1.5	2.0	1.0	2.0	1.4	--	--	2.0	3.7
SPOTTED SUCKER	--	--	--	--	--	--	2.0	1.5	--	--	--	--	--	--	--	--
SILVER REDHORSE	--	--	--	--	2.0	1.9	--	--	--	--	--	--	--	--	--	--
GOLDEN REDHORSE	--	--	--	--	--	--	2.0	1.5	--	--	--	--	2.0	1.1	--	--
YELLOW BULLHEAD	--	--	--	--	--	--	2.0	1.5	--	--	--	--	--	--	4.0	7.4
CHANNEL CATFISH	12.0	10.0	8.0	4.4	4.0	3.8	--	--	--	--	4.0	2.9	8.0	4.3	4.0	7.4
BLACKSTRIPE TOPMINNOW	--	--	--	--	2.0	1.9	--	--	--	--	--	--	--	--	--	--
GREEN SUNFISH	2.0	1.7	6.0	3.3	8.0	7.7	4.0	3.0	14.0	7.3	8.0	5.8	14.0	7.4	6.0	11.1
BLUEGILL	4.0	3.3	14.0	7.7	12.0	11.5	8.0	6.0	10.0	5.2	14.0	10.1	6.0	3.2	4.0	7.4
HYBRID SUNFISH	6.0	5.0	--	--	--	--	--	--	--	--	6.0	4.3	4.0	2.1	2.0	3.7
SMALLMOUTH BASS	6.0	5.0	2.0	1.1	--	--	--	--	4.0	2.1	--	--	4.0	2.1	--	--
LARGEMOUTH BASS	16.0	13.3	26.0	14.3	14.0	13.5	28.0	20.9	6.0	3.1	22.0	15.9	14.0	7.4	8.0	14.8
FRESHWATER DRUM	10.0	8.3	10.0	5.5	6.0	5.8	2.0	1.5	--	--	2.0	1.4	6.0	3.2	4.0	7.4
TOTAL FISH	120.0	100.0	182.0	100.0	104.0	100.0	134.0	100.0	192.0	100.0	138.0	100.0	188.0	100.0	54.0	100.0

2004 LOWER DES PLAINES RIVER FISH STUDY -- CPE AND COMPOSITION SUMMARIES FOR EACH SURVEY (ELECTRO=No./Km)

GEAR: ELECTRO
and LOCATION: 403

	11-12 MAY		8-9 JUN		7 JUL-8 JUL		20-21 JUL		10-11 AUG		26-27 AUG		8-9 SEP		27-28 SEP	
SPECIES	CPE	%	CPE	%	CPE	%	CPE	%	CPE	%	CPE	%	CPE	%	CPE	%
LONGNOSE GAR	--	--	6.0	6.7	--	--	--	--	2.0	2.3	--	--	--	--	--	--
GIZZARD SHAD	10.0	11.1	2.0	2.2	16.0	14.8	8.0	5.4	10.0	11.6	2.0	2.3	10.0	5.5	2.0	3.1
EMERALD SHINER	16.0	17.8	4.0	4.4	14.0	13.0	--	--	--	--	4.0	4.7	8.0	4.4	--	--
SPOTFIN SHINER	--	--	22.0	24.4	--	--	4.0	2.7	2.0	2.3	4.0	4.7	4.0	2.2	--	--
BLUNTNOSE MINNOW	--	--	--	--	--	--	--	--	--	--	2.0	2.3	38.0	20.9	6.0	9.4
HIGHFIN CARPSUCKER	--	--	--	--	--	--	--	--	--	--	2.0	2.3	--	--	--	--
SMALLMOUTH BUFFALO	4.0	4.4	4.0	4.4	2.0	1.9	--	--	2.0	2.3	2.0	2.3	2.0	1.1	--	--
BLACK BUFFALO	--	--	--	--	--	--	--	--	--	--	2.0	2.3	--	--	--	--
YELLOW BULLHEAD	--	--	2.0	2.2	--	--	--	--	--	--	--	--	--	--	--	--
CHANNEL CATFISH	20.0	22.2	8.0	8.9	18.0	16.7	--	--	48.0	55.8	6.0	7.0	54.0	29.7	30.0	46.9
FLATHEAD CATFISH	2.0	2.2	--	--	--	--	--	--	--	--	--	--	--	--	--	--
BLACKSTRIPE TOPMINNOW	--	--	--	--	--	--	--	--	--	--	--	--	2.0	1.1	2.0	3.1
GREEN SUNFISH	22.0	24.4	8.0	8.9	30.0	27.8	72.0	48.6	8.0	9.3	30.0	34.9	42.0	23.1	20.0	31.3
ORANGESPOTTED SUNFISH	--	--	6.0	6.7	2.0	1.9	--	--	--	--	--	--	4.0	2.2	--	--
BLUEGILL	6.0	6.7	26.0	28.9	12.0	11.1	50.0	33.8	8.0	9.3	16.0	18.6	8.0	4.4	2.0	3.1
LONGEAR SUNFISH	--	--	2.0	2.2	2.0	1.9	4.0	2.7	2.0	2.3	4.0	4.7	--	--	--	--
HYBRID SUNFISH	2.0	2.2	--	--	10.0	9.3	8.0	5.4	--	--	6.0	7.0	4.0	2.2	--	--
SMALLMOUTH BASS	2.0	2.2	--	--	--	--	--	--	--	--	4.0	4.7	--	--	--	--
LARGEMOUTH BASS	2.0	2.2	--	--	2.0	1.9	2.0	1.4	2.0	2.3	2.0	2.3	4.0	2.2	2.0	3.1
WALLEYE	2.0	2.2	--	--	--	--	--	--	--	--	--	--	--	--	--	--
FRESHWATER DRUM	2.0	2.2	--	--	--	--	--	--	2.0	2.3	--	--	2.0	1.1	--	--
TOTAL FISH	90.0	100.0	90.0	100.0	108.0	100.0	148.0	100.0	86.0	100.0	86.0	100.0	182.0	100.0	64.0	100.0

GEAR: ELECTRO
and LOCATION: 403A

	11-12 MAY		8-9 JUN		7 JUL-8 JUL		20-21 JUL		10-11 AUG		26-27 AUG		8-9 SEP		27-28 SEP	
SPECIES	CPE	%	CPE	%	CPE	%	CPE	%	CPE	%	CPE	%	CPE	%	CPE	%
GIZZARD SHAD	44.0	59.5	--	--	4.0	6.7	24.0	32.4	10.0	27.8	4.0	8.3	4.0	4.8	2.0	3.2
EMERALD SHINER	2.0	2.7	--	--	2.0	3.3	--	--	2.0	5.6	--	--	--	--	--	--
SPOTTAIL SHINER	--	--	--	--	--	--	--	--	2.0	5.6	--	--	--	--	--	--
SPOTFIN SHINER	--	--	--	--	2.0	3.3	--	--	--	--	--	--	4.0	4.8	4.0	6.5
BLUNTNOSE MINNOW	2.0	2.7	--	--	--	--	--	--	2.0	5.6	2.0	4.2	30.0	35.7	2.0	3.2
QUILLBACK	12.0	16.2	4.0	9.1	--	--	--	--	--	--	--	--	--	--	--	--
SMALLMOUTH BUFFALO	--	--	8.0	18.2	--	--	--	--	--	--	2.0	4.2	--	--	--	--
CHANNEL CATFISH	2.0	2.7	2.0	4.5	2.0	3.3	2.0	2.7	--	--	--	--	2.0	2.4	2.0	3.2
GREEN SUNFISH	--	--	--	--	16.0	26.7	2.0	2.7	6.0	16.7	6.0	12.5	8.0	9.5	8.0	12.9
ORANGESPOTTED SUNFISH	--	--	--	--	--	--	--	--	--	--	4.0	8.3	--	--	--	--
BLUEGILL	4.0	5.4	16.0	36.4	20.0	33.3	36.0	48.6	10.0	27.8	20.0	41.7	24.0	28.6	24.0	38.7
HYBRID SUNFISH	--	--	4.0	9.1	2.0	3.3	--	--	--	--	2.0	4.2	4.0	4.8	4.0	6.5
SMALLMOUTH BASS	2.0	2.7	--	--	2.0	3.3	--	--	--	--	--	--	2.0	2.4	--	--
LARGEMOUTH BASS	2.0	2.7	8.0	18.2	6.0	10.0	10.0	13.5	2.0	5.6	8.0	16.7	6.0	7.1	14.0	22.6
FRESHWATER DRUM	4.0	5.4	2.0	4.5	4.0	6.7	--	--	2.0	5.6	--	--	--	--	2.0	3.2
TOTAL FISH	74.0	100.0	44.0	100.0	60.0	100.0	74.0	100.0	36.0	100.0	48.0	100.0	84.0	100.0	62.0	100.0

2004 LOWER DES PLAINES RIVER FISH STUDY -- CPE AND COMPOSITION SUMMARIES FOR EACH SURVEY (ELECTRO=No./Km)

GEAR: ELECTRO
and LOCATION: 404A

	11-12 MAY		8-9 JUN		7 JUL-8 JUL		20-21 JUL		10-11 AUG		26-27 AUG		8-9 SEP		27-28 SEP	
SPECIES	CPE	%	CPE	%	CPE	%	CPE	%	CPE	%	CPE	%	CPE	%	CPE	%
GIZZARD SHAD	40.0	69.0	28.0	51.9	16.0	14.5	36.0	33.3	12.0	8.8	14.0	10.3	18.0	13.4	20.0	14.9
EMERALD SHINER	--	--	--	--	2.0	1.8	--	--	--	--	8.0	5.9	36.0	26.9	--	--
SPOTTAIL SHINER	--	--	--	--	--	--	4.0	3.7	10.0	7.4	2.0	1.5	--	--	--	--
SPOTFIN SHINER	--	--	--	--	14.0	12.7	4.0	3.7	--	--	--	--	2.0	1.5	8.0	6.0
SAND SHINER	--	--	--	--	--	--	--	--	2.0	1.5	--	--	--	--	2.0	1.5
BLUNTNOSE MINNOW	6.0	10.3	--	--	4.0	3.6	--	--	76.0	55.9	56.0	41.2	14.0	10.4	60.0	44.8
QUILLBACK	--	--	2.0	3.7	--	--	--	--	--	--	--	--	2.0	1.5	--	--
SMALLMOUTH BUFFALO	--	--	2.0	3.7	2.0	1.8	--	--	--	--	4.0	2.9	--	--	--	--
SILVER REDHORSE	--	--	--	--	--	--	--	--	--	--	--	--	--	--	2.0	1.5
GOLDEN REDHORSE	--	--	4.0	7.4	--	--	--	--	2.0	1.5	2.0	1.5	2.0	1.5	2.0	1.5
SHORTHEAD REDHORSE	--	--	--	--	--	--	--	--	2.0	1.5	2.0	1.5	--	--	--	--
CHANNEL CATFISH	--	--	--	--	10.0	9.1	10.0	9.3	2.0	1.5	8.0	5.9	4.0	3.0	2.0	1.5
ROCK BASS	--	--	--	--	2.0	1.8	--	--	--	--	--	--	--	--	--	--
GREEN SUNFISH	--	--	--	--	12.0	10.9	2.0	1.9	2.0	1.5	2.0	1.5	12.0	9.0	12.0	9.0
ORANGESPOTTED SUNFISH	--	--	--	--	--	--	2.0	1.9	--	--	--	--	--	--	--	--
BLUEGILL	--	--	4.0	7.4	22.0	20.0	28.0	25.9	14.0	10.3	20.0	14.7	14.0	10.4	6.0	4.5
HYBRID SUNFISH	--	--	2.0	3.7	4.0	3.6	4.0	3.7	--	--	2.0	1.5	8.0	6.0	--	--
SMALLMOUTH BASS	--	--	--	--	2.0	1.8	6.0	5.6	2.0	1.5	6.0	4.4	2.0	1.5	2.0	1.5
LARGEMOUTH BASS	10.0	17.2	8.0	14.8	16.0	14.5	12.0	11.1	12.0	8.8	8.0	5.9	20.0	14.9	18.0	13.4
WALLEYE	2.0	3.4	4.0	7.4	--	--	--	--	--	--	--	--	--	--	--	--
FRESHWATER DRUM	--	--	--	--	4.0	3.6	--	--	--	--	2.0	1.5	--	--	--	--
TOTAL FISH	58.0	100.0	54.0	100.0	110.0	100.0	108.0	100.0	136.0	100.0	136.0	100.0	134.0	100.0	134.0	100.0

GEAR: ELECTRO
and LOCATION: 405

	11-12 MAY		8-9 JUN		7 JUL-8 JUL		20-21 JUL		10-11 AUG		26-27 AUG		8-9 SEP		27-28 SEP	
SPECIES	CPE	%	CPE	%	CPE	%	CPE	%	CPE	%	CPE	%	CPE	%	CPE	%
LONGNOSE GAR	2.0	2.1	--	--	--	--	--	--	--	--	--	--	--	--	--	--
SKIPJACK HERRING	--	--	--	--	--	--	--	--	--	--	2.0	0.7	--	--	--	--
GIZZARD SHAD	44.0	45.8	8.0	10.0	34.0	14.5	44.0	16.3	30.0	19.2	64.0	23.9	126.0	39.6	20.0	13.9
EMERALD SHINER	--	--	--	--	--	--	2.0	0.7	--	--	4.0	1.5	--	--	4.0	2.8
SPOTFIN SHINER	--	--	--	--	2.0	0.9	--	--	2.0	1.3	--	--	--	--	--	--
REDFIN SHINER	--	--	--	--	2.0	0.9	--	--	--	--	--	--	--	--	--	--
BLUNTNOSE MINNOW	2.0	2.1	4.0	5.0	10.0	4.3	60.0	22.2	10.0	6.4	--	--	10.0	3.1	16.0	11.1
QUILLBACK	--	--	2.0	2.5	--	--	2.0	0.7	--	--	--	--	--	--	--	--
SMALLMOUTH BUFFALO	4.0	4.2	6.0	7.5	2.0	0.9	2.0	0.7	6.0	3.8	2.0	0.7	--	--	6.0	4.2
GOLDEN REDHORSE	2.0	2.1	--	--	2.0	0.9	--	--	4.0	2.6	--	--	4.0	1.3	2.0	1.4
YELLOW BULLHEAD	--	--	--	--	--	--	--	--	--	--	4.0	1.5	--	--	2.0	1.4
CHANNEL CATFISH	4.0	4.2	2.0	2.5	2.0	0.9	8.0	3.0	--	--	2.0	0.7	6.0	1.9	--	--
FLATHEAD CATFISH	--	--	--	--	--	--	--	--	--	--	2.0	0.7	--	--	--	--
BLACKSTRIPE TOPMINNOW	--	--	--	--	--	--	--	--	--	--	4.0	1.5	--	--	--	--
GREEN SUNFISH	2.0	2.1	10.0	12.5	36.0	15.4	32.0	11.9	38.0	24.4	74.0	27.6	80.0	25.2	24.0	16.7
BLUEGILL	14.0	14.6	20.0	25.0	70.0	29.9	60.0	22.2	42.0	26.9	54.0	20.1	40.0	12.6	18.0	12.5
HYBRID SUNFISH	2.0	2.1	2.0	2.5	30.0	12.8	36.0	13.3	14.0	9.0	34.0	12.7	38.0	11.9	26.0	18.1
SMALLMOUTH BASS	4.0	4.2	--	--	2.0	0.9	2.0	0.7	2.0	1.3	2.0	0.7	2.0	0.6	--	--
LARGEMOUTH BASS	12.0	12.5	22.0	27.5	42.0	17.9	22.0	8.1	6.0	3.8	16.0	6.0	12.0	3.8	24.0	16.7
BLACK CRAPPIE	--	--	--	--	--	--	--	--	2.0	1.3	2.0	0.7	--	--	--	--
FRESHWATER DRUM	4.0	4.2	4.0	5.0	--	--	--	--	--	--	2.0	0.7	--	--	2.0	1.4
TOTAL FISH	96.0	100.0	80.0	100.0	234.0	100.0	270.0	100.0	156.0	100.0	268.0	100.0	318.0	100.0	144.0	100.0

2004 LOWER DES PLAINES RIVER FISH STUDY -- CPE AND COMPOSITION SUMMARIES FOR EACH SURVEY (ELECTRO=No./Km)

GEAR: ELECTRO
and LOCATION: 408

	11-12 MAY		8-9 JUN		7 JUL-8 JUL		20-21 JUL		10-11 AUG		26-27 AUG		8-9 SEP		27-28 SEP	
SPECIES	CPE	%	CPE	%	CPE	%	CPE	%	CPE	%	CPE	%	CPE	%	CPE	%
SKIPJACK HERRING	--	--	--	--	--	--	--	--	--	--	2.0	0.4	2.0	0.6	--	--
GIZZARD SHAD	28.0	6.1	8.0	7.0	10.0	2.2	42.0	12.4	24.0	13.6	116.0	21.9	62.0	19.7	10.0	6.7
EMERALD SHINER	2.0	0.4	--	--	10.0	2.2	--	--	--	--	2.0	0.4	--	--	--	--
GHOST SHINER	--	--	--	--	2.0	0.4	--	--	--	--	--	--	--	--	--	--
SPOTTAIL SHINER	--	--	--	--	2.0	0.4	--	--	--	--	4.0	0.8	--	--	--	--
SPOTFIN SHINER	--	--	--	--	--	--	--	--	2.0	1.1	16.0	3.0	--	--	--	--
BLUNTNOSE MINNOW	32.0	7.0	6.0	5.3	20.0	4.3	14.0	4.1	18.0	10.2	122.0	23.0	26.0	8.3	--	--
BULLHEAD MINNOW	--	--	--	--	--	--	--	--	--	--	2.0	0.4	--	--	--	--
SMALLMOUTH BUFFALO	2.0	0.4	2.0	1.8	2.0	0.4	2.0	0.6	2.0	1.1	2.0	0.4	2.0	0.6	--	--
BIGMOUTH BUFFALO	--	--	2.0	1.8	--	--	--	--	--	--	--	--	--	--	--	--
YELLOW BULLHEAD	--	--	--	--	--	--	2.0	0.6	--	--	--	--	--	--	--	--
CHANNEL CATFISH	8.0	1.7	2.0	1.8	6.0	1.3	4.0	1.2	2.0	1.1	8.0	1.5	--	--	8.0	5.3
YELLOW BASS	--	--	--	--	--	--	--	--	--	--	--	--	--	--	2.0	1.3
GREEN SUNFISH	152.0	33.2	22.0	19.3	136.0	29.4	108.0	31.8	34.0	19.3	102.0	19.2	90.0	28.7	54.0	36.0
WARMOUTH	--	--	--	--	2.0	0.4	--	--	2.0	1.1	--	--	--	--	--	--
ORANGESPOTTED SUNFISH	28.0	6.1	--	--	6.0	1.3	12.0	3.5	4.0	2.3	6.0	1.1	--	--	2.0	1.3
BLUEGILL	90.0	19.7	24.0	21.1	120.0	26.0	90.0	26.5	44.0	25.0	64.0	12.1	44.0	14.0	30.0	20.0
HYBRID SUNFISH	90.0	19.7	38.0	33.3	116.0	25.1	48.0	14.1	16.0	9.1	66.0	12.5	56.0	17.8	32.0	21.3
SMALLMOUTH BASS	--	--	--	--	--	--	2.0	0.6	--	--	--	--	--	--	2.0	1.3
LARGEMOUTH BASS	24.0	5.2	6.0	5.3	22.0	4.8	14.0	4.1	24.0	13.6	16.0	3.0	28.0	8.9	10.0	6.7
BLACK CRAPPIE	--	--	2.0	1.8	2.0	0.4	2.0	0.6	4.0	2.3	2.0	0.4	--	--	--	--
FRESHWATER DRUM	2.0	0.4	2.0	1.8	6.0	1.3	--	--	--	--	--	--	4.0	1.3	--	--
TOTAL FISH	458.0	100.0	114.0	100.0	462.0	100.0	340.0	100.0	176.0	100.0	530.0	100.0	314.0	100.0	150.0	100.0

GEAR: ELECTRO
and LOCATION: 412A

	11-12 MAY		8-9 JUN		7 JUL-8 JUL		20-21 JUL		10-11 AUG		26-27 AUG		8-9 SEP		27-28 SEP	
SPECIES	CPE	%	CPE	%	CPE	%	CPE	%	CPE	%	CPE	%	CPE	%	CPE	%
SKIPJACK HERRING	--	--	--	--	2.0	2.4	2.0	1.0	--	--	--	--	--	--	--	--
GIZZARD SHAD	22.0	21.2	--	--	46.0	54.8	14.0	7.1	18.0	11.4	18.0	13.6	18.0	23.7	--	--
PALLID SHINER	--	--	--	--	--	--	--	--	--	--	--	--	2.0	2.6	--	--
EMERALD SHINER	--	--	--	--	--	--	4.0	2.0	6.0	3.8	--	--	--	--	--	--
SPOTTAIL SHINER	--	--	--	--	--	--	--	--	--	--	4.0	3.0	--	--	--	--
SPOTFIN SHINER	--	--	2.0	2.2	--	--	--	--	4.0	2.5	--	--	--	--	--	--
BLUNTNOSE MINNOW	20.0	19.2	8.0	8.9	2.0	2.4	128.0	64.6	18.0	11.4	8.0	6.1	6.0	7.9	--	--
BULLHEAD MINNOW	--	--	2.0	2.2	--	--	--	--	--	--	--	--	--	--	--	--
RIVER CARPSUCKER	--	--	--	--	--	--	--	--	2.0	1.3	--	--	2.0	2.6	--	--
SMALLMOUTH BUFFALO	--	--	--	--	4.0	4.8	--	--	--	--	2.0	1.5	2.0	2.6	--	--
GOLDEN REDHORSE	2.0	1.9	--	--	--	--	--	--	2.0	1.3	--	--	2.0	2.6	--	--
YELLOW BULLHEAD	--	--	--	--	--	--	--	--	--	--	2.0	1.5	--	--	--	--
CHANNEL CATFISH	8.0	7.7	--	--	--	--	2.0	1.0	2.0	1.3	--	--	12.0	15.8	4.0	7.4
BLACKSTRIPE TOPMINNOW	--	--	--	--	--	--	--	--	4.0	2.5	--	--	--	--	--	--
BROOK SILVERSIDE	--	--	--	--	--	--	2.0	1.0	--	--	--	--	--	--	--	--
YELLOW BASS	--	--	--	--	--	--	--	--	--	--	2.0	1.5	--	--	--	--
GREEN SUNFISH	2.0	1.9	8.0	8.9	--	--	14.0	7.1	6.0	3.8	10.0	7.6	8.0	10.5	14.0	25.9
ORANGESPOTTED SUNFISH	--	--	--	--	--	--	--	--	4.0	2.5	6.0	4.5	2.0	2.6	--	--
BLUEGILL	28.0	26.9	52.0	57.8	20.0	23.8	26.0	13.1	62.0	39.2	48.0	36.4	6.0	7.9	10.0	18.5
LONGEAR SUNFISH	--	--	--	--	--	--	--	--	--	--	--	--	--	--	2.0	3.7
HYBRID SUNFISH	2.0	1.9	4.0	4.4	2.0	2.4	--	--	4.0	2.5	--	--	2.0	2.6	4.0	7.4
SMALLMOUTH BASS	4.0	3.8	--	--	2.0	2.4	2.0	1.0	4.0	2.5	--	--	--	--	--	--
LARGEMOUTH BASS	14.0	13.5	14.0	15.6	2.0	2.4	4.0	2.0	16.0	10.1	32.0	24.2	14.0	18.4	14.0	25.9
FRESHWATER DRUM	2.0	1.9	--	--	4.0	4.8	--	--	6.0	3.8	--	--	--	--	6.0	11.1
TOTAL FISH	104.0	100.0	90.0	100.0	84.0	100.0	198.0	100.0	158.0	100.0	132.0	100.0	76.0	100.0	54.0	100.0

2004 LOWER DES PLAINES RIVER FISH STUDY -- CPE AND COMPOSITION SUMMARIES FOR EACH SURVEY (ELECTRO=No./Km)

GEAR: ELECTRO
and LOCATION: 414

SPECIES	11-12 MAY		8-9 JUN		7 JUL-8 JUL		20-21 JUL		10-11 AUG		26-27 AUG		8-9 SEP		27-28 SEP	
	CPE	%	CPE	%	CPE	%	CPE	%	CPE	%	CPE	%	CPE	%	CPE	%
GIZZARD SHAD	60.0	16.4	2.0	0.8	6.0	1.5	6.0	2.1	4.0	2.1	18.0	4.8	24.0	9.8	14.0	4.6
PALLID SHINER	--	--	--	--	--	--	--	--	4.0	2.1	--	--	4.0	1.6	2.0	0.7
EMERALD SHINER	4.0	1.1	2.0	0.8	--	--	2.0	0.7	10.0	5.3	6.0	1.6	--	--	--	--
SPOTTAIL SHINER	--	--	--	--	--	--	--	--	--	--	4.0	1.1	10.0	4.1	10.0	3.3
SPOTFIN SHINER	--	--	--	--	--	--	--	--	2.0	1.1	--	--	--	--	--	--
BLUNTNOSE MINNOW	18.0	4.9	6.0	2.4	22.0	5.4	16.0	5.7	8.0	4.3	18.0	4.8	10.0	4.1	6.0	2.0
BULLHEAD MINNOW	--	--	--	--	--	--	--	--	--	--	28.0	7.4	12.0	4.9	18.0	5.9
RIVER CARPSUCKER	4.0	1.1	--	--	6.0	1.5	--	--	2.0	1.1	4.0	1.1	--	--	4.0	1.3
SMALLMOUTH BUFFALO	6.0	1.6	6.0	2.4	16.0	3.9	2.0	0.7	--	--	8.0	2.1	8.0	3.3	--	--
BIGMOUTH BUFFALO	4.0	1.1	--	--	--	--	--	--	--	--	--	--	--	--	--	--
YELLOW BULLHEAD	--	--	--	--	--	--	--	--	--	--	2.0	0.5	--	--	--	--
CHANNEL CATFISH	10.0	2.7	2.0	0.8	2.0	0.5	4.0	1.4	--	--	6.0	1.6	2.0	0.8	2.0	0.7
FLATHEAD CATFISH	--	--	--	--	--	--	--	--	--	--	2.0	0.5	--	--	--	--
BLACKSTRIPE TOPMINNOW	--	--	--	--	--	--	2.0	0.7	2.0	1.1	--	--	--	--	--	--
WHITE BASS	2.0	0.5	--	--	--	--	--	--	--	--	--	--	--	--	--	--
YELLOW BASS	--	--	--	--	--	--	--	--	--	--	--	--	2.0	0.8	--	--
GREEN SUNFISH	8.0	2.2	94.0	38.2	20.0	4.9	30.0	10.7	8.0	4.3	10.0	2.7	18.0	7.4	22.0	7.2
WARMOUTH	--	--	--	--	--	--	--	--	--	--	--	--	--	--	2.0	0.7
ORANGESPOTTED SUNFISH	46.0	12.6	72.0	29.3	34.0	8.3	--	--	6.0	3.2	46.0	12.2	30.0	12.3	34.0	11.1
BLUEGILL	174.0	47.5	40.0	16.3	236.0	57.8	168.0	60.0	122.0	64.9	200.0	53.2	88.0	36.1	158.0	51.6
HYBRID SUNFISH	4.0	1.1	6.0	2.4	4.0	1.0	2.0	0.7	--	--	2.0	0.5	--	--	4.0	1.3
LARGEMOUTH BASS	24.0	6.6	16.0	6.5	56.0	13.7	34.0	12.1	16.0	8.5	12.0	3.2	28.0	11.5	24.0	7.8
WHITE CRAPPIE	--	--	--	--	--	--	--	--	--	--	2.0	0.5	--	--	--	--
BLACK CRAPPIE	--	--	--	--	2.0	0.5	2.0	0.7	--	--	2.0	0.5	2.0	0.8	2.0	0.7
FRESHWATER DRUM	2.0	0.5	--	--	4.0	1.0	12.0	4.3	4.0	2.1	6.0	1.6	6.0	2.5	4.0	1.3
TOTAL FISH	366.0	100.0	246.0	100.0	408.0	100.0	280.0	100.0	188.0	100.0	376.0	100.0	244.0	100.0	306.0	100.0

GEAR: ELECTRO
and LOCATION: 418

SPECIES	11-12 MAY		8-9 JUN		7 JUL-8 JUL		20-21 JUL		10-11 AUG		26-27 AUG		8-9 SEP		27-28 SEP	
	CPE	%	CPE	%	CPE	%	CPE	%	CPE	%	CPE	%	CPE	%	CPE	%
GIZZARD SHAD	98.0	21.5	28.0	8.4	100.0	17.9	114.0	35.2	180.0	39.6	8.0	2.8	58.0	12.6	68.0	12.7
GOLDEN SHINER	8.0	1.8	--	--	4.0	0.7	--	--	--	--	--	--	--	--	--	--
EMERALD SHINER	8.0	1.8	10.0	3.0	6.0	1.1	2.0	0.6	16.0	3.5	2.0	0.7	2.0	0.4	--	--
SPOTFIN SHINER	--	--	12.0	3.6	2.0	0.4	2.0	0.6	--	--	--	--	--	--	2.0	0.4
BLUNTNOSE MINNOW	28.0	6.1	6.0	1.8	24.0	4.3	8.0	2.5	16.0	3.5	8.0	2.8	2.0	0.4	16.0	3.0
BULLHEAD MINNOW	--	--	2.0	0.6	2.0	0.4	--	--	--	--	12.0	4.2	18.0	3.9	32.0	6.0
RIVER CARPSUCKER	--	--	--	--	2.0	0.4	--	--	4.0	0.9	4.0	1.4	2.0	0.4	8.0	1.5
QUILLBACK	4.0	0.9	4.0	1.2	--	--	2.0	0.6	2.0	0.4	--	--	2.0	0.4	--	--
SMALLMOUTH BUFFALO	6.0	1.3	--	--	2.0	0.4	--	--	4.0	0.9	4.0	1.4	4.0	0.9	--	--
GOLDEN REDHORSE	--	--	--	--	--	--	--	--	--	--	--	--	--	--	2.0	0.4
SHORTHEAD REDHORSE	--	--	--	--	--	--	--	--	--	--	--	--	2.0	0.4	--	--
YELLOW BULLHEAD	2.0	0.4	--	--	--	--	--	--	--	--	--	--	--	--	--	--
CHANNEL CATFISH	6.0	1.3	16.0	4.8	8.0	1.4	--	--	8.0	1.8	6.0	2.1	--	--	2.0	0.4
TADPOLE MADTOM	2.0	0.4	--	--	--	--	--	--	--	--	--	--	--	--	--	--
BROOK SILVERSIDE	--	--	--	--	2.0	0.4	4.0	1.2	--	--	--	--	--	--	--	--
WHITE BASS	--	--	--	--	--	--	2.0	0.6	--	--	--	--	--	--	--	--
GREEN SUNFISH	62.0	13.6	112.0	33.7	224.0	40.1	62.0	19.1	82.0	18.1	78.0	27.1	140.0	30.3	132.0	24.6
PUMPKINSEED	--	--	2.0	0.6	4.0	0.7	--	--	--	--	--	--	--	--	--	--
ORANGESPOTTED SUNFISH	74.0	16.2	36.0	10.8	20.0	3.6	20.0	6.2	14.0	3.1	12.0	4.2	28.0	6.1	64.0	11.9
BLUEGILL	124.0	27.2	72.0	21.7	110.0	19.7	80.0	24.7	84.0	18.5	94.0	32.6	164.0	35.5	148.0	27.6
LONGEAR SUNFISH	--	--	2.0	0.6	--	--	--	--	--	--	--	--	--	--	--	--
HYBRID SUNFISH	4.0	0.9	--	--	6.0	1.1	4.0	1.2	--	--	2.0	0.7	2.0	0.4	2.0	0.4
UNID LEPOMIS	--	--	--	--	2.0	0.4	--	--	--	--	--	--	--	--	--	--
SMALLMOUTH BASS	--	--	--	--	2.0	0.4	--	--	--	--	--	--	--	--	2.0	0.4
LARGEMOUTH BASS	24.0	5.3	28.0	8.4	34.0	6.1	18.0	5.6	34.0	7.5	36.0	12.5	36.0	7.8	52.0	9.7
WHITE CRAPPIE	2.0	0.4	--	--	--	--	--	--	--	--	--	--	--	--	4.0	0.7
BLACK CRAPPIE	--	--	--	--	--	--	--	--	2.0	0.4	--	--	--	--	--	--
LOGPERCH	--	--	--	--	--	--	2.0	0.6	--	--	14.0	4.9	--	--	--	--
BLACKSIDE DARTER	--	--	--	--	--	--	--	--	--	--	2.0	0.7	--	--	--	--
FRESHWATER DRUM	4.0	0.9	2.0	0.6	4.0	0.7	4.0	1.2	8.0	1.8	6.0	2.1	2.0	0.4	2.0	0.4
TOTAL FISH	456.0	100.0	332.0	100.0	558.0	100.0	324.0	100.0	454.0	100.0	288.0	100.0	462.0	100.0	536.0	100.0

2004 LOWER DES PLAINES RIVER FISH STUDY -- CPE AND COMPOSITION SUMMARIES FOR EACH SURVEY (ELECTRO=No./Km)

GEAR: ELECTRO
and LOCATION: 419A

	11-12 MAY		8-9 JUN		7 JUL-8 JUL		20-21 JUL		10-11 AUG		26-27 AUG		8-9 SEP		27-28 SEP	
SPECIES	CPE	%	CPE	%	CPE	%	CPE	%	CPE	%	CPE	%	CPE	%	CPE	%
GIZZARD SHAD	20.0	19.2	6.0	15.8	24.0	35.3	52.0	32.5	10.0	10.9	--	--	22.0	28.2	8.0	5.8
EMERALD SHINER	--	--	--	--	--	--	8.0	5.0	18.0	19.6	--	--	--	--	--	--
SPOTTAIL SHINER	--	--	--	--	--	--	--	--	--	--	--	--	2.0	2.6	--	--
SPOTFIN SHINER	--	--	--	--	2.0	2.9	10.0	6.3	--	--	--	--	--	--	2.0	1.4
BLUNTNOSE MINNOW	2.0	1.9	--	--	--	--	--	--	6.0	6.5	30.0	27.8	--	--	34.0	24.6
SMALLMOUTH BUFFALO	2.0	1.9	2.0	5.3	--	--	--	--	--	--	2.0	1.9	--	--	--	--
SILVER REDHORSE	--	--	--	--	--	--	--	--	4.0	4.3	--	--	--	--	--	--
GOLDEN REDHORSE	--	--	--	--	--	--	--	--	4.0	4.3	2.0	1.9	6.0	7.7	2.0	1.4
YELLOW BULLHEAD	2.0	1.9	--	--	--	--	--	--	--	--	--	--	--	--	--	--
CHANNEL CATFISH	8.0	7.7	2.0	5.3	2.0	2.9	4.0	2.5	2.0	2.2	--	--	2.0	2.6	--	--
BLACKSTRIPE TOPMINNOW	--	--	--	--	--	--	--	--	--	--	--	--	2.0	2.6	--	--
BROOK SILVERSIDE	--	--	--	--	--	--	--	--	--	--	--	--	--	--	4.0	2.9
ROCK BASS	--	--	--	--	--	--	--	--	--	--	2.0	1.9	--	--	--	--
GREEN SUNFISH	14.0	13.5	4.0	10.5	6.0	8.8	16.0	10.0	10.0	10.9	12.0	11.1	6.0	7.7	38.0	27.5
BLUEGILL	22.0	21.2	10.0	26.3	16.0	23.5	38.0	23.8	28.0	30.4	32.0	29.6	18.0	23.1	24.0	17.4
HYBRID SUNFISH	--	--	--	--	--	--	2.0	1.3	--	--	6.0	5.6	6.0	7.7	4.0	2.9
SMALLMOUTH BASS	10.0	9.6	4.0	10.5	2.0	2.9	20.0	12.5	6.0	6.5	6.0	5.6	6.0	7.7	4.0	2.9
LARGEMOUTH BASS	14.0	13.5	10.0	26.3	16.0	23.5	10.0	6.3	2.0	2.2	14.0	13.0	8.0	10.3	18.0	13.0
WALLEYE	4.0	3.8	--	--	--	--	--	--	--	--	--	--	--	--	--	--
FRESHWATER DRUM	6.0	5.8	--	--	--	--	--	--	2.0	2.2	2.0	1.9	--	--	--	--
TOTAL FISH	104.0	100.0	38.0	100.0	68.0	100.0	160.0	100.0	92.0	100.0	108.0	100.0	78.0	100.0	138.0	100.0

2004 LOWER DES PLAINES RIVER FISH STUDY -- CPE AND COMPOSITION SUMMARIES FOR EACH SURVEY (SEINE=No./Haul)

GEAR: SEINE
and LOCATION: 402

	11-12 MAY		8-9 JUN		7 JUL-8 JUL		20-21 JUL		10-11 AUG		26-27 AUG		8-9 SEP		27-28 SEP	
SPECIES	CPE	%	CPE	%	CPE	%	CPE	%	CPE	%	CPE	%	CPE	%	CPE	%
EMERALD SHINER	--	--	--	--	--	--	--	--	--	--	1.0	50.0	--	--	--	--
GHOST SHINER	2.0	0.9	--	--	--	--	--	--	--	--	--	--	--	--	--	--
SPOTFIN SHINER	41.0	18.5	--	--	1.0	25.0	--	--	--	--	--	--	--	--	--	--
SAND SHINER	2.0	0.9	--	--	--	--	--	--	--	--	--	--	--	--	--	--
BLUNTNOSE MINNOW	176.0	79.3	11.0	100.0	1.0	25.0	--	--	--	--	--	--	--	--	--	--
SMALLMOUTH BUFFALO	--	--	--	--	1.0	25.0	--	--	--	--	--	--	--	--	--	--
BLACKSTRIPE TOPMINNOW	1.0	0.5	--	--	--	--	--	--	--	--	1.0	50.0	--	--	--	--
ORANGETHROAT DARTER	--	--	--	--	1.0	25.0	--	--	--	--	--	--	--	--	--	--
TOTAL FISH	222.0	100.0	11.0	100.0	4.0	100.0	0.0	--	0.0	--	2.0	100.0	0.0	--	0.0	--

GEAR: SEINE
and LOCATION: 403A

	11-12 MAY		8-9 JUN		7 JUL-8 JUL		20-21 JUL		10-11 AUG		26-27 AUG		8-9 SEP		27-28 SEP	
SPECIES	CPE	%	CPE	%	CPE	%	CPE	%	CPE	%	CPE	%	CPE	%	CPE	%
EMERALD SHINER	--	--	3.0	15.8	--	--	3.0	27.3	1.0	1.3	--	--	2.0	8.3	--	--
SPOTTAIL SHINER	--	--	1.0	5.3	--	--	--	--	--	--	--	--	--	--	5.0	5.2
SPOTFIN SHINER	--	--	1.0	5.3	--	--	1.0	9.1	--	--	--	--	--	--	6.0	6.3
SAND SHINER	--	--	--	--	1.0	1.5	--	--	--	--	--	--	--	--	--	--
BLUNTNOSE MINNOW	--	--	7.0	36.8	53.0	80.3	2.0	18.2	67.0	88.2	--	--	1.0	4.2	78.0	81.3
BULLHEAD MINNOW	--	--	--	--	--	--	--	--	--	--	--	--	--	--	4.0	4.2
BLACKSTRIPE TOPMINNOW	--	--	1.0	5.3	--	--	2.0	18.2	4.0	5.3	6.0	66.7	20.0	83.3	2.0	2.1
GREEN SUNFISH	--	--	--	--	--	--	1.0	9.1	--	--	--	--	--	--	--	--
ORANGESPOTTED SUNFISH	--	--	1.0	5.3	1.0	1.5	--	--	--	--	--	--	--	--	--	--
BLUEGILL	2.0	50.0	3.0	15.8	1.0	1.5	--	--	4.0	5.3	1.0	11.1	--	--	1.0	1.0
SMALLMOUTH BASS	--	--	--	--	--	--	--	--	--	--	--	--	1.0	4.2	--	--
LARGEMOUTH BASS	2.0	50.0	--	--	10.0	15.2	2.0	18.2	--	--	2.0	22.2	--	--	--	--
BLACKSIDE DARTER	--	--	2.0	10.5	--	--	--	--	--	--	--	--	--	--	--	--
TOTAL FISH	4.0	100.0	19.0	100.0	66.0	100.0	11.0	100.0	76.0	100.0	9.0	100.0	24.0	100.0	96.0	100.0

2004 LOWER DES PLAINES RIVER FISH STUDY -- CPE AND COMPOSITION SUMMARIES FOR EACH SURVEY (SEINE=No./Haul)

GEAR: SEINE
and LOCATION: 404A

SPECIES	11-12 MAY		8-9 JUN		7 JUL-8 JUL		20-21 JUL		10-11 AUG		26-27 AUG		8-9 SEP		27-28 SEP	
	CPE	%	CPE	%	CPE	%	CPE	%	CPE	%	CPE	%	CPE	%	CPE	%
EMERALD SHINER	1.0	100.0	--	--	2.0	66.7	--	--	12.0	80.0	--	--	--	--	1.0	1.4
SPOTFIN SHINER	--	--	--	--	--	--	--	--	--	--	3.0	4.3	13.0	92.9	20.0	29.0
BLUNTNOSE MINNOW	--	--	--	--	--	--	--	--	2.0	13.3	65.0	94.2	1.0	7.1	48.0	69.6
BLUEGILL	--	--	1.0	100.0	--	--	--	--	1.0	6.7	1.0	1.4	--	--	--	--
LARGEMOUTH BASS	--	--	--	--	1.0	33.3	--	--	--	--	--	--	--	--	--	--
TOTAL FISH	1.0	100.0	1.0	100.0	3.0	100.0	0.0	--	15.0	100.0	69.0	100.0	14.0	100.0	69.0	100.0

GEAR: SEINE
and LOCATION: 405

SPECIES	11-12 MAY		8-9 JUN		7 JUL-8 JUL		20-21 JUL		10-11 AUG		26-27 AUG		8-9 SEP		27-28 SEP	
	CPE	%	CPE	%	CPE	%	CPE	%	CPE	%	CPE	%	CPE	%	CPE	%
EMERALD SHINER	2.0	100.0	1.0	7.7	5.0	29.4	--	--	9.0	64.3	5.0	6.9	3.0	2.6	--	--
STRIPED SHINER	--	--	--	--	--	--	--	--	--	--	--	--	1.0	0.9	1.0	0.6
SPOTTAIL SHINER	--	--	--	--	--	--	--	--	--	--	1.0	1.4	1.0	0.9	--	--
SPOTFIN SHINER	--	--	--	--	2.0	11.8	--	--	--	--	2.0	2.8	2.0	1.7	2.0	1.3
SAND SHINER	--	--	--	--	--	--	--	--	--	--	3.0	4.2	1.0	0.9	3.0	1.9
BLUNTNOSE MINNOW	--	--	6.0	46.2	5.0	29.4	--	--	--	--	58.0	80.6	100.0	87.0	138.0	89.6
BULLHEAD MINNOW	--	--	--	--	--	--	--	--	--	--	--	--	4.0	3.5	5.0	3.2
BLACKSTRIPE TOPMINNOW	--	--	--	--	--	--	--	--	3.0	21.4	--	--	--	--	--	--
ROCK BASS	--	--	--	--	--	--	--	--	1.0	7.1	1.0	1.4	--	--	--	--
GREEN SUNFISH	--	--	--	--	1.0	5.9	--	--	--	--	--	--	--	--	--	--
BLUEGILL	--	--	5.0	38.5	1.0	5.9	--	--	1.0	7.1	2.0	2.8	1.0	0.9	1.0	0.6
LONGEAR SUNFISH	--	--	1.0	7.7	1.0	5.9	--	--	--	--	--	--	--	--	--	--
SMALLMOUTH BASS	--	--	--	--	--	--	--	--	--	--	--	--	1.0	0.9	--	--
LARGEMOUTH BASS	--	--	--	--	2.0	11.8	--	--	--	--	--	--	1.0	0.9	1.0	0.6
JOHNNY DARTER	--	--	--	--	--	--	--	--	--	--	--	--	--	--	1.0	0.6
BLACKSIDE DARTER	--	--	--	--	--	--	--	--	--	--	--	--	--	--	2.0	1.3
TOTAL FISH	2.0	100.0	13.0	100.0	17.0	100.0	0.0	--	14.0	100.0	72.0	100.0	115.0	100.0	154.0	100.0

GEAR: SEINE
and LOCATION: 408

SPECIES	11-12 MAY		8-9 JUN		7 JUL-8 JUL		20-21 JUL		10-11 AUG		26-27 AUG		8-9 SEP		27-28 SEP	
	CPE	%	CPE	%	CPE	%	CPE	%	CPE	%	CPE	%	CPE	%	CPE	%
BLUNTNOSE MINNOW	8.0	57.1	1.0	10.0	5.0	29.4	44.0	83.0	34.0	59.6	8.0	47.1	--	--	1.0	100.0
BULLHEAD MINNOW	--	--	--	--	--	--	--	--	--	--	--	--	38.0	76.0	--	--
BLACKSTRIPE TOPMINNOW	1.0	7.1	--	--	--	--	--	--	--	--	--	--	1.0	2.0	--	--
GREEN SUNFISH	--	--	--	--	1.0	5.9	--	--	--	--	--	--	--	--	--	--
BLUEGILL	4.0	28.6	8.0	80.0	8.0	47.1	9.0	17.0	22.0	38.6	9.0	52.9	10.0	20.0	--	--
UNID LEPOMIS	--	--	--	--	2.0	11.8	--	--	--	--	--	--	--	--	--	--
LARGEMOUTH BASS	1.0	7.1	1.0	10.0	1.0	5.9	--	--	1.0	1.8	--	--	--	--	--	--
BLACKSIDE DARTER	--	--	--	--	--	--	--	--	--	--	--	--	1.0	2.0	--	--
TOTAL FISH	14.0	100.0	10.0	100.0	17.0	100.0	53.0	100.0	57.0	100.0	17.0	100.0	50.0	100.0	1.0	100.0

2004 LOWER DES PLAINES RIVER FISH STUDY -- CPE AND COMPOSITION SUMMARIES FOR EACH SURVEY (SEINE=No./Haul)

GEAR: SEINE
and LOCATION: 412A

SPECIES	11-12 MAY		8-9 JUN		7 JUL-8 JUL		20-21 JUL		10-11 AUG		26-27 AUG		8-9 SEP		27-28 SEP	
	CPE	%	CPE	%	CPE	%	CPE	%	CPE	%	CPE	%	CPE	%	CPE	%
GIZZARD SHAD	--	--	--	--	--	--	--	--	--	--	--	--	1.0	1.5	--	--
PALLID SHINER	--	--	--	--	--	--	--	--	1.0	0.6	--	--	--	--	--	--
EMERALD SHINER	--	--	--	--	3.0	2.8	--	--	34.0	18.8	2.0	1.0	--	--	9.0	11.5
STRIPED SHINER	--	--	--	--	--	--	--	--	4.0	2.2	--	--	2.0	3.0	--	--
SPOTFIN SHINER	3.0	13.6	6.0	24.0	19.0	17.4	3.0	3.7	29.0	16.0	19.0	9.9	23.0	34.3	6.0	7.7
SAND SHINER	--	--	--	--	1.0	0.9	--	--	--	--	--	--	--	--	--	--
BLUNTNOSE MINNOW	13.0	59.1	13.0	52.0	83.0	76.1	65.0	80.2	66.0	36.5	137.0	71.7	24.0	35.8	59.0	75.6
FATHEAD MINNOW	--	--	1.0	4.0	--	--	--	--	--	--	--	--	--	--	--	--
BULLHEAD MINNOW	--	--	--	--	--	--	--	--	--	--	--	--	1.0	1.5	1.0	1.3
BLACKSTRIPE TOPMINNOW	--	--	--	--	1.0	0.9	--	--	1.0	0.6	4.0	2.1	2.0	3.0	1.0	1.3
BROOK SILVERSIDE	--	--	--	--	--	--	1.0	1.2	7.0	3.9	--	--	--	--	--	--
BLUEGILL	4.0	18.2	4.0	16.0	1.0	0.9	8.0	9.9	38.0	21.0	18.0	9.4	12.0	17.9	1.0	1.3
UNID LEPOMIS	--	--	--	--	--	--	--	--	--	--	2.0	1.0	--	--	--	--
SMALLMOUTH BASS	1.0	4.5	1.0	4.0	--	--	--	--	--	--	4.0	2.1	--	--	--	--
LARGEMOUTH BASS	1.0	4.5	--	--	1.0	0.9	4.0	4.9	--	--	--	--	2.0	3.0	1.0	1.3
BLACK CRAPPIE	--	--	--	--	--	--	--	--	--	--	4.0	2.1	--	--	--	--
LOGPERCH	--	--	--	--	--	--	--	--	1.0	0.6	1.0	0.5	--	--	--	--
TOTAL FISH	22.0	100.0	25.0	100.0	109.0	100.0	81.0	100.0	181.0	100.0	191.0	100.0	67.0	100.0	78.0	100.0

GEAR: SEINE
and LOCATION: 414

SPECIES	11-12 MAY		8-9 JUN		7 JUL-8 JUL		20-21 JUL		10-11 AUG		26-27 AUG		8-9 SEP		27-28 SEP	
	CPE	%	CPE	%	CPE	%	CPE	%	CPE	%	CPE	%	CPE	%	CPE	%
PALLID SHINER	--	--	--	--	--	--	--	--	--	--	16.0	6.3	4.0	2.6	5.0	4.5
EMERALD SHINER	--	--	--	--	--	--	2.0	1.2	5.0	4.1	3.0	1.2	1.0	0.6	1.0	0.9
STRIPED SHINER	--	--	--	--	--	--	--	--	1.0	0.8	1.0	0.4	1.0	0.6	1.0	0.9
SPOTTAIL SHINER	--	--	--	--	--	--	--	--	2.0	1.6	1.0	0.4	--	--	--	--
SPOTFIN SHINER	--	--	1.0	4.3	--	--	--	--	--	--	--	--	3.0	1.9	--	--
BLUNTNOSE MINNOW	77.0	80.2	3.0	13.0	72.0	82.8	102.0	62.2	72.0	59.0	65.0	25.6	20.0	12.8	16.0	14.3
BULLHEAD MINNOW	--	--	--	--	--	--	--	--	5.0	4.1	19.0	7.5	49.0	31.4	60.0	53.6
BLACKSTRIPE TOPMINNOW	--	--	--	--	--	--	2.0	1.2	1.0	0.8	6.0	2.4	6.0	3.8	--	--
BROOK SILVERSIDE	--	--	--	--	--	--	--	--	3.0	2.5	--	--	--	--	--	--
ORANGESPOTTED SUNFISH	13.0	13.5	10.0	43.5	6.0	6.9	10.0	6.1	--	--	2.0	0.8	2.0	1.3	7.0	6.3
BLUEGILL	6.0	6.3	7.0	30.4	4.0	4.6	46.0	28.0	30.0	24.6	137.0	53.9	68.0	43.6	20.0	17.9
LONGEAR SUNFISH	--	--	--	--	--	--	--	--	--	--	1.0	0.4	1.0	0.6	--	--
HYBRID SUNFISH	--	--	1.0	4.3	--	--	--	--	--	--	--	--	--	--	--	--
UNID LEPOMIS	--	--	--	--	3.0	3.4	--	--	1.0	0.8	--	--	--	--	--	--
LARGEMOUTH BASS	--	--	1.0	4.3	2.0	2.3	2.0	1.2	--	--	2.0	0.8	--	--	1.0	0.9
JOHNNY DARTER	--	--	--	--	--	--	--	--	2.0	1.6	1.0	0.4	1.0	0.6	1.0	0.9
TOTAL FISH	96.0	100.0	23.0	100.0	87.0	100.0	164.0	100.0	122.0	100.0	254.0	100.0	156.0	100.0	112.0	100.0

GEAR: SEINE
and LOCATION: 418

SPECIES	11-12 MAY		8-9 JUN		7 JUL-8 JUL		20-21 JUL		10-11 AUG		26-27 AUG		8-9 SEP		27-28 SEP	
	CPE	%	CPE	%	CPE	%	CPE	%	CPE	%	CPE	%	CPE	%	CPE	%
GIZZARD SHAD	--	--	--	--	--	--	--	--	--	--	--	--	--	--	2.0	5.3
GRASS PICKEREL	--	--	--	--	1.0	3.8	--	--	--	--	--	--	--	--	--	--
GOLDEN SHINER	2.0	16.7	--	--	4.0	15.4	--	--	--	--	--	--	--	--	--	--
EMERALD SHINER	--	--	--	--	--	--	3.0	5.5	1.0	1.5	--	--	6.0	4.6	8.0	21.1
GHOST SHINER	--	--	--	--	--	--	--	--	--	--	--	--	--	--	1.0	2.6
SPOTFIN SHINER	1.0	8.3	5.0	23.8	--	--	--	--	--	--	--	--	--	--	--	--
BLUNTNOSE MINNOW	1.0	8.3	9.0	42.9	1.0	3.8	5.0	9.1	4.0	5.9	3.0	3.4	54.0	41.2	4.0	10.5
BULLHEAD MINNOW	--	--	3.0	14.3	--	--	--	--	4.0	5.9	4.0	4.5	51.0	38.9	13.0	34.2
BLACKSTRIPE TOPMINNOW	1.0	8.3	--	--	--	--	--	--	--	--	--	--	--	--	--	--
BROOK SILVERSIDE	--	--	--	--	--	--	21.0	38.2	7.0	10.3	--	--	--	--	--	--
GREEN SUNFISH	--	--	--	--	2.0	7.7	--	--	--	--	--	--	--	--	--	--
ORANGESPOTTED SUNFISH	4.0	33.3	2.0	9.5	1.0	3.8	--	--	--	--	--	--	--	--	--	--
BLUEGILL	3.0	25.0	--	--	--	--	26.0	47.3	39.0	57.4	75.0	84.3	17.0	13.0	10.0	26.3
LONGEAR SUNFISH	--	--	1.0	4.8	--	--	--	--	--	--	--	--	--	--	--	--
UNID LEPOMIS	--	--	1.0	4.8	16.0	61.5	--	--	13.0	19.1	6.0	6.7	3.0	2.3	--	--
LARGEMOUTH BASS	--	--	--	--	1.0	3.8	--	--	--	--	--	--	--	--	--	--
LOGPERCH	--	--	--	--	--	--	--	--	--	--	1.0	1.1	--	--	--	--
TOTAL FISH	12.0	100.0	21.0	100.0	26.0	100.0	55.0	100.0	68.0	100.0	89.0	100.0	131.0	100.0	38.0	100.0

2004 LOWER DES PLAINES RIVER FISH STUDY -- CPE AND COMPOSITION SUMMARIES FOR EACH SURVEY (SEINE=No./Haul)

GEAR: SEINE
and LOCATION: 419A

	11-12 MAY		8-9 JUN		7 JUL-8 JUL		20-21 JUL		10-11 AUG		26-27 AUG		8-9 SEP		27-28 SEP	
SPECIES	CPE	%	CPE	%	CPE	%	CPE	%	CPE	%	CPE	%	CPE	%	CPE	%
EMERALD SHINER	2.0	16.7	--	--	--	--	1.0	4.8	--	--	--	--	--	--	--	--
SPOTTAIL SHINER	--	--	--	--	1.0	3.6	--	--	2.0	8.3	--	--	1.0	3.8	--	--
SPOTFIN SHINER	2.0	16.7	12.0	80.0	2.0	7.1	--	--	--	--	--	--	--	--	4.0	50.0
BLUNTNOSE MINNOW	1.0	8.3	--	--	20.0	71.4	18.0	85.7	22.0	91.7	13.0	65.0	10.0	38.5	1.0	12.5
BULLHEAD MINNOW	--	--	--	--	3.0	10.7	--	--	--	--	3.0	15.0	1.0	3.8	2.0	25.0
GOLDEN REDHORSE	1.0	8.3	--	--	--	--	--	--	--	--	--	--	--	--	--	--
BLACKSTRIPE TOPMINNOW	2.0	16.7	--	--	--	--	--	--	--	--	--	--	--	--	--	--
BLUEGILL	3.0	25.0	2.0	13.3	1.0	3.6	1.0	4.8	--	--	1.0	5.0	13.0	50.0	--	--
LONGEAR SUNFISH	1.0	8.3	--	--	--	--	--	--	--	--	--	--	--	--	--	--
HYBRID SUNFISH	--	--	1.0	6.7	--	--	--	--	--	--	--	--	--	--	--	--
UNID LEPOMIS	--	--	--	--	--	--	--	--	--	--	1.0	5.0	--	--	--	--
SMALLMOUTH BASS	--	--	--	--	--	--	--	--	--	--	1.0	5.0	--	--	--	--
LARGEMOUTH BASS	--	--	--	--	1.0	3.6	--	--	--	--	1.0	5.0	1.0	3.8	1.0	12.5
LOGPERCH	--	--	--	--	--	--	1.0	4.8	--	--	--	--	--	--	--	--
TOTAL FISH	12.0	100.0	15.0	100.0	28.0	100.0	21.0	100.0	24.0	100.0	20.0	100.0	26.0	100.0	8.0	100.0

APPENDIX C

RAW DATA LISTING

LOWER DES PLAINES RIVER -- 2004

The enclosed computer disk (on inside of back cover) contains the raw data listing in the file entitled APPENDIX C.TXT. The following example presents the format and types of data included in the raw data listing.

APPENDIX C

SPECIES	LIFE STAGE	SEX	MATURITY	LENGTH	WEIGHT			PLUS COUNT	BATCH WEIGHT
SITE: DESPLAINES	GEAR: ELECTRO	DATE: 12MAY04	LOCATION: 402			MESOHABITAT: TAILWATER			
GIZZARD SHAD	.			292	260			.	.
GIZZARD SHAD	.			323	380			.	.
GIZZARD SHAD	.			306	270			.	.
GIZZARD SHAD	.			277	175			.	.
GIZZARD SHAD	.			219	104			.	.
GIZZARD SHAD	.			282	230			.	.
GIZZARD SHAD	.			298	275			.	.
GIZZARD SHAD	.			312	295			.	.
GIZZARD SHAD	.			245	115			.	.
GIZZARD SHAD	.			266	160			.	.
GIZZARD SHAD	.			242	120			.	.
GIZZARD SHAD	.			361	490			.	.
GIZZARD SHAD	.			332	370			.	.
GIZZARD SHAD	.			228	98			.	.
GIZZARD SHAD	.			258	150			.	.
GIZZARD SHAD	.			239	110			.	.
GIZZARD SHAD	.			256	120			.	.
GIZZARD SHAD	.			326	350			.	.
GIZZARD SHAD	.			244	130			.	.
GIZZARD SHAD	.			237	135			.	.
GIZZARD SHAD	.			297	230			.	.
GIZZARD SHAD	.			237	102			.	.
GIZZARD SHAD	.			264	172			.	.
COMMON CARP	.			562	3260			.	.
EMERALD SHINER	.			.	.			4	20
EMERALD SHINER	.			.	.			1	3
SPOTFIN SHINER	.			.	.			1	4
SMALLMOUTH BUFFALO	.			484	2070			.	.
GOLDEN REDHORSE	.			300	360			.	.
YELLOW BULLHEAD	.			305	370			.	.
CHANNEL CATFISH	.			508	1280			.	.
CHANNEL CATFISH	.			507	1570			.	.
CHANNEL CATFISH	.			390	340			.	.
WHITE BASS	.			345	450			.	.
WHITE BASS	.			326	400			.	.
WHITE BASS	.			311	410			.	.
GREEN SUNFISH	.			77	9			.	.
GREEN SUNFISH	.			89	12			.	.
GREEN SUNFISH	.			92	17			.	.
BLUEGILL	.			128	50			.	.
BLUEGILL	.			105	21			.	.
HYBRID SUNFISH	.			.	.			1	32
SMALLMOUTH BASS	.			246	160			.	.
SMALLMOUTH BASS	.			241	180			.	.
SMALLMOUTH BASS	.			257	200			.	.
SMALLMOUTH BASS	.			256	205			.	.
SMALLMOUTH BASS	.			172	68			.	.
SMALLMOUTH BASS	.			207	98			.	.
SMALLMOUTH BASS	.			216	106			.	.
SMALLMOUTH BASS	.			124	24			.	.
LARGEMOUTH BASS	.			325	570			.	.
LARGEMOUTH BASS	.			138	37			.	.
WALLEYE	.			512	1320			.	.
WALLEYE	.			522	1430			.	.
FRESHWATER DRUM	.			513	2830			.	.
FRESHWATER DRUM	.			352	640			.	.
FRESHWATER DRUM	.			365	800			.	.
FRESHWATER DRUM	.			345	620			.	.
FRESHWATER DRUM	.			319	440			.	.
FRESHWATER DRUM	.			378	730			.	.
FRESHWATER DRUM	.			397	810			.	.
FRESHWATER DRUM	.			477	1680			.	.
FRESHWATER DRUM	.			381	780			.	.
FRESHWATER DRUM	.			364	700			.	.
FRESHWATER DRUM	.			395	900			.	.
FRESHWATER DRUM	.			422	1160			.	.
FRESHWATER DRUM	.			427	1360			.	.
SITE: DESPLAINES	GEAR: ELECTRO	DATE: 12MAY04	LOCATION: 402A			MESOHABITAT: MAIN CHANNEL BORDER			
GIZZARD SHAD	.			276	170			.	.
GIZZARD SHAD	.			311	330			.	.
GIZZARD SHAD	.			258	150			.	.
GIZZARD SHAD	.			262	150			.	.
GIZZARD SHAD	.			239	150			.	.
GIZZARD SHAD	.			206	139			.	.
GIZZARD SHAD	.			296	210			.	.
GIZZARD SHAD	.			272	178			.	.
GIZZARD SHAD	.			162	70			.	.
GIZZARD SHAD	.			249	168			.	.
GIZZARD SHAD	.			298	272			.	.

APPENDIX D

INDEX OF WELL BEING SCORES

LOWER DES PLAINES RIVER -- 2004

APPENDIX D. INDEX OF WELL BEING (IWB & IWBmod) SUMMARY - 2004 LOWER DES PLAINES RIVER

METHOD	DATE	LOCATION	DISTANCE	IWB	IWBMOD	TOTCNT	TOTWGT	INTCNT	INTWGT	DIVERCNT	DIVERWGT
BOAT	12MAY04	402	500	8.673	8.570	140.00	66.734	128.00	59.334	2.189	1.913
BOAT	08JUN04	402	500	8.984	8.679	130.00	115.888	108.00	75.850	2.527	1.647
BOAT	07JUL04	402	500	7.419	7.322	38.00	36.610	36.00	31.790	1.910	1.891
BOAT	20JUL04	402	500	7.755	6.978	88.00	71.860	56.00	23.898	2.127	1.252
BOAT	10AUG04	402	500	7.195	6.442	66.00	50.554	46.00	16.094	2.075	1.063
BOAT	26AUG04	402	500	8.794	8.506	104.00	58.718	80.00	42.908	2.634	1.801
BOAT	09SEP04	402	500	8.655	8.007	104.00	86.222	66.00	37.218	2.506	1.598
BOAT	27SEP04	402	500	8.691	8.192	112.00	118.420	80.00	61.040	2.280	1.665
BOAT	12MAY04	402A	500	8.129	7.854	124.00	61.120	112.00	39.012	1.925	1.738
BOAT	08JUN04	402A	500	8.001	7.852	186.00	33.976	140.00	33.484	1.981	1.645
BOAT	07JUL04	402A	500	8.378	8.008	112.00	41.036	84.00	26.100	2.363	1.798
BOAT	20JUL04	402A	500	7.694	7.607	136.00	19.818	118.00	19.186	2.024	1.720
BOAT	10AUG04	402A	500	6.057	5.977	192.00	8.412	166.00	8.292	1.521	0.842
BOAT	26AUG04	402A	500	7.939	7.381	146.00	27.956	100.00	13.358	2.152	1.630
BOAT	09SEP04	402A	500	8.328	8.087	192.00	26.208	138.00	22.476	2.336	1.730
BOAT	27SEP04	402A	500	7.592	7.269	56.00	19.970	42.00	13.952	2.112	1.970
BOAT	12MAY04	403	500	8.044	7.622	98.00	55.746	66.00	35.540	2.171	1.570
BOAT	08JUN04	403	500	7.541	7.348	94.00	27.478	80.00	21.956	2.115	1.498
BOAT	07JUL04	403	500	7.213	6.862	130.00	30.128	68.00	28.522	2.136	0.940
BOAT	20JUL04	403	500	6.039	5.065	150.00	3.822	68.00	1.202	1.340	1.523
BOAT	10AUG04	403	500	6.616	6.536	88.00	62.312	78.00	59.828	1.616	0.696
BOAT	26AUG04	403	500	7.449	7.033	88.00	7.620	48.00	6.074	2.207	1.988
BOAT	09SEP04	403	500	7.077	6.760	182.00	76.582	98.00	75.378	1.944	0.362
BOAT	27SEP04	403	500	5.532	5.263	64.00	37.428	38.00	36.836	1.374	0.268
BOAT	12MAY04	403A	500	6.988	6.821	78.00	25.696	72.00	19.932	1.538	1.649
BOAT	08JUN04	403A	500	6.781	6.461	48.00	12.594	40.00	7.970	1.850	1.729
BOAT	07JUL04	403A	500	6.587	6.064	62.00	8.410	42.00	4.362	1.959	1.500
BOAT	20JUL04	403A	500	5.901	5.817	76.00	6.804	72.00	6.076	1.272	1.505
BOAT	10AUG04	403A	500	5.353	5.201	36.00	2.566	28.00	2.436	1.813	1.277
BOAT	26AUG04	403A	500	6.339	5.989	52.00	4.408	38.00	2.998	1.872	1.749
BOAT	09SEP04	403A	500	6.491	5.843	88.00	5.088	42.00	2.920	1.856	1.582
BOAT	27SEP04	403A	500	7.143	6.479	70.00	17.224	48.00	6.660	1.982	1.613
BOAT	12MAY04	404A	500	5.590	5.306	62.00	13.414	52.00	9.074	1.091	1.138
BOAT	08JUN04	404A	500	6.351	6.324	54.00	8.702	52.00	8.562	1.568	1.707
BOAT	07JUL04	404A	500	7.714	7.594	110.00	14.618	90.00	14.044	2.258	1.765
BOAT	20JUL04	404A	500	7.043	7.003	108.00	15.570	102.00	15.208	1.855	1.474
BOAT	10AUG04	404A	500	6.704	6.266	136.00	5.140	58.00	5.024	1.552	1.877
BOAT	26AUG04	404A	500	8.027	7.573	140.00	22.062	76.00	16.412	2.068	1.941
BOAT	09SEP04	404A	500	7.670	7.489	134.00	11.102	100.00	10.356	2.119	1.899
BOAT	27SEP04	404A	500	7.112	6.699	134.00	7.550	62.00	7.140	1.751	1.902
BOAT	12MAY04	405	500	8.156	7.892	102.00	49.266	90.00	32.930	1.947	1.948
BOAT	08JUN04	405	500	7.702	7.330	86.00	28.616	64.00	18.254	2.078	1.720
BOAT	07JUL04	405	500	8.194	7.756	242.00	41.198	158.00	26.316	1.963	1.627
BOAT	20JUL04	405	500	8.507	7.982	276.00	38.328	142.00	26.062	2.002	1.871
BOAT	10AUG04	405	500	7.926	7.352	164.00	25.662	94.00	14.212	2.020	1.733
BOAT	27AUG04	405	500	8.633	8.077	278.00	41.216	156.00	24.136	1.981	1.979
BOAT	09SEP04	405	500	7.988	7.324	330.00	41.046	190.00	18.856	1.720	1.511
BOAT	27SEP04	405	500	7.789	7.094	148.00	17.684	76.00	8.584	2.162	1.692
BOAT	11MAY04	408	500	8.655	7.711	472.00	65.728	184.00	25.524	1.909	1.575
BOAT	08JUN04	408	500	8.125	7.378	124.00	40.138	48.00	23.294	1.993	1.876
BOAT	07JUL04	408	500	8.877	8.099	480.00	45.606	190.00	24.306	1.919	1.962
BOAT	20JUL04	408	500	8.373	7.837	342.00	23.714	168.00	16.528	1.830	2.043
BOAT	10AUG04	408	500	8.238	7.792	180.00	25.462	108.00	17.412	2.096	1.927
BOAT	27AUG04	408	500	8.500	8.013	554.00	25.768	240.00	22.460	2.063	1.654
BOAT	09SEP04	408	500	8.053	7.593	316.00	25.698	142.00	22.812	1.830	1.722
BOAT	27SEP04	408	500	7.000	6.499	150.00	15.676	64.00	13.486	1.709	1.409
BOAT	11MAY04	412A	500	7.637	7.298	106.00	25.022	80.00	16.822	1.953	1.742
BOAT	09JUN04	412A	500	6.060	5.524	94.00	11.800	70.00	5.428	1.463	1.091
BOAT	08JUL04	412A	500	6.897	6.664	92.00	20.388	80.00	14.694	1.580	1.550
BOAT	21JUL04	412A	500	6.503	5.851	198.00	7.712	56.00	7.390	1.267	1.571
BOAT	11AUG04	412A	500	7.838	7.719	158.00	19.116	130.00	18.328	2.098	1.733
BOAT	27AUG04	412A	500	7.008	6.371	134.00	22.394	112.00	7.500	1.836	1.168
BOAT	08SEP04	412A	500	7.386	7.253	76.00	13.960	60.00	13.572	2.156	1.746
BOAT	28SEP04	412A	500	6.902	6.500	58.00	20.222	36.00	14.574	1.893	1.475

APPENDIX D (cont.)

METHOD	DATE	LOCATION	DISTANCE	IWB	IWBMOD	TOTCNT	TOTWGT	INTCNT	INTWGT	DIVERCNT	DIVERWGT
BOAT	11MAY04	414	500	9.110	8.981	372.00	78.914	336.00	67.436	1.796	2.171
BOAT	09JUN04	414	500	7.874	7.387	248.00	27.920	140.00	18.680	1.623	1.829
BOAT	08JUL04	414	500	8.611	8.357	424.00	89.244	362.00	62.986	1.614	1.726
BOAT	21JUL04	414	500	7.702	7.588	286.00	26.770	232.00	26.306	1.492	1.738
BOAT	11AUG04	414	500	7.129	6.848	192.00	14.740	172.00	9.382	1.488	1.668
BOAT	27AUG04	414	500	9.054	8.835	414.00	54.682	344.00	42.484	1.981	2.059
BOAT	08SEP04	414	500	8.484	8.286	252.00	35.164	216.00	27.618	2.185	1.754
BOAT	28SEP04	414	500	8.289	7.936	314.00	34.364	274.00	19.458	1.846	1.799
BOAT	11MAY04	418	500	9.410	9.190	462.00	73.504	352.00	62.196	2.072	2.121
BOAT	09JUN04	418	500	8.864	8.414	344.00	58.246	214.00	38.060	2.059	1.853
BOAT	08JUL04	418	500	8.973	8.567	562.00	45.014	300.00	37.508	1.855	2.048
BOAT	21JUL04	418	500	8.370	7.956	336.00	47.510	250.00	27.862	1.886	1.645
BOAT	11AUG04	418	500	9.134	8.862	470.00	63.236	356.00	48.478	1.909	2.076
BOAT	27AUG04	418	500	8.574	8.321	298.00	40.182	200.00	36.060	2.077	1.802
BOAT	08SEP04	418	500	8.711	8.386	472.00	32.656	318.00	25.294	1.772	2.118
BOAT	28SEP04	418	500	9.020	8.686	548.00	62.634	386.00	45.542	2.013	1.786
BOAT	11MAY04	419A	500	8.101	7.987	104.00	31.724	86.00	30.538	2.126	1.924
BOAT	09JUN04	419A	500	6.198	6.131	38.00	8.176	34.00	7.996	1.778	1.551
BOAT	08JUL04	419A	500	6.231	6.161	70.00	10.548	62.00	10.344	1.659	1.270
BOAT	21JUL04	419A	500	7.248	7.164	160.00	14.864	142.00	14.146	1.840	1.521
BOAT	11AUG04	419A	500	7.350	6.753	96.00	17.088	76.00	6.542	2.159	1.490
BOAT	27AUG04	419A	500	7.195	6.835	108.00	8.994	60.00	7.880	1.842	1.914
BOAT	08SEP04	419A	500	6.968	6.806	80.00	5.848	66.00	5.124	2.067	1.827
BOAT	28SEP04	419A	500	7.105	6.546	140.00	6.130	62.00	4.524	1.914	1.813

APPENDIX E

RELATIVE WEIGHTS

LOWER DES PLAINES RIVER -- 2004

The enclosed computer disk (on inside of back cover) contains the relative weight data in the file entitled APPENDIX E.TXT. The following example presents the format and types of data included in this file.

APPENDIX E. LINE LISTING OF RELATIVE WEIGHT DATA BY SEGMENT, SPECIES, AND DATE, 2004

SEGMENT	LOCATION	DATE	SPECIES	TOTAL LENGTH (mm)	WEIGHT (g)	RELATIVE WEIGHT
UPSTREAM I-55	405	12MAY04	LONGNOSE GAR	744	930	75.1
UPSTREAM I-55	403	08JUN04	LONGNOSE GAR	665	635	75.5
UPSTREAM I-55	403	08JUN04	LONGNOSE GAR	522	260	71.2
UPSTREAM I-55	403	08JUN04	LONGNOSE GAR	661	760	92.2
UPSTREAM I-55	402	07JUL04	LONGNOSE GAR	745	1000	80.3
UPSTREAM I-55	402	20JUL04	LONGNOSE GAR	646	540	70.9
UPSTREAM I-55	403	10AUG04	LONGNOSE GAR	646	690	90.6
UPSTREAM I-55	408	11MAY04	GIZZARD SHAD	272	215	97.9
UPSTREAM I-55	408	11MAY04	GIZZARD SHAD	315	300	85.8
UPSTREAM I-55	408	11MAY04	GIZZARD SHAD	251	195	114.6
UPSTREAM I-55	408	11MAY04	GIZZARD SHAD	205	95	106.0
UPSTREAM I-55	408	11MAY04	GIZZARD SHAD	215	65	62.4
UPSTREAM I-55	408	11MAY04	GIZZARD SHAD	201	75	89.1
UPSTREAM I-55	408	11MAY04	GIZZARD SHAD	270	210	97.9
UPSTREAM I-55	408	11MAY04	GIZZARD SHAD	276	205	89.1
UPSTREAM I-55	408	11MAY04	GIZZARD SHAD	260	195	102.5
UPSTREAM I-55	408	11MAY04	GIZZARD SHAD	274	205	91.2
UPSTREAM I-55	408	11MAY04	GIZZARD SHAD	239	115	78.9
UPSTREAM I-55	408	11MAY04	GIZZARD SHAD	194	72	95.7
UPSTREAM I-55	408	11MAY04	GIZZARD SHAD	266	240	117.3
UPSTREAM I-55	408	11MAY04	GIZZARD SHAD	228	155	123.5
UPSTREAM I-55	402	12MAY04	GIZZARD SHAD	292	260	94.6
UPSTREAM I-55	402	12MAY04	GIZZARD SHAD	323	380	100.4
UPSTREAM I-55	402	12MAY04	GIZZARD SHAD	306	270	84.6
UPSTREAM I-55	402	12MAY04	GIZZARD SHAD	277	175	75.2
UPSTREAM I-55	402	12MAY04	GIZZARD SHAD	219	104	94.2
UPSTREAM I-55	402	12MAY04	GIZZARD SHAD	282	230	93.4
UPSTREAM I-55	402	12MAY04	GIZZARD SHAD	298	275	93.8
UPSTREAM I-55	402	12MAY04	GIZZARD SHAD	312	295	87.0
UPSTREAM I-55	402	12MAY04	GIZZARD SHAD	245	115	73.0
UPSTREAM I-55	402	12MAY04	GIZZARD SHAD	266	160	78.2
UPSTREAM I-55	402	12MAY04	GIZZARD SHAD	242	120	79.2
UPSTREAM I-55	402	12MAY04	GIZZARD SHAD	361	490	91.0
UPSTREAM I-55	402	12MAY04	GIZZARD SHAD	332	370	89.6
UPSTREAM I-55	402	12MAY04	GIZZARD SHAD	228	98	78.1
UPSTREAM I-55	402	12MAY04	GIZZARD SHAD	258	150	80.8
UPSTREAM I-55	402	12MAY04	GIZZARD SHAD	239	110	75.5
UPSTREAM I-55	402	12MAY04	GIZZARD SHAD	256	120	66.2
UPSTREAM I-55	402	12MAY04	GIZZARD SHAD	326	350	89.8
UPSTREAM I-55	402	12MAY04	GIZZARD SHAD	244	130	83.5
UPSTREAM I-55	402	12MAY04	GIZZARD SHAD	237	135	95.1
UPSTREAM I-55	402	12MAY04	GIZZARD SHAD	297	230	79.3
UPSTREAM I-55	402	12MAY04	GIZZARD SHAD	237	102	71.9
UPSTREAM I-55	402	12MAY04	GIZZARD SHAD	264	172	86.1
UPSTREAM I-55	402A	12MAY04	GIZZARD SHAD	276	170	73.9
UPSTREAM I-55	402A	12MAY04	GIZZARD SHAD	311	330	98.3
UPSTREAM I-55	402A	12MAY04	GIZZARD SHAD	258	150	80.8
UPSTREAM I-55	402A	12MAY04	GIZZARD SHAD	262	150	76.9
UPSTREAM I-55	402A	12MAY04	GIZZARD SHAD	239	150	102.9
UPSTREAM I-55	402A	12MAY04	GIZZARD SHAD	206	139	152.8
UPSTREAM I-55	402A	12MAY04	GIZZARD SHAD	296	210	73.2
UPSTREAM I-55	402A	12MAY04	GIZZARD SHAD	272	178	81.1
UPSTREAM I-55	402A	12MAY04	GIZZARD SHAD	249	168	101.2
UPSTREAM I-55	402A	12MAY04	GIZZARD SHAD	298	272	92.7
UPSTREAM I-55	402A	12MAY04	GIZZARD SHAD	245	130	82.5
UPSTREAM I-55	402A	12MAY04	GIZZARD SHAD	268	188	89.7
UPSTREAM I-55	402A	12MAY04	GIZZARD SHAD	252	128	74.3
UPSTREAM I-55	402A	12MAY04	GIZZARD SHAD	241	132	88.2
UPSTREAM I-55	402A	12MAY04	GIZZARD SHAD	255	124	69.3
UPSTREAM I-55	402A	12MAY04	GIZZARD SHAD	257	136	74.1
UPSTREAM I-55	402A	12MAY04	GIZZARD SHAD	298	245	83.5
UPSTREAM I-55	402A	12MAY04	GIZZARD SHAD	235	136	98.5
UPSTREAM I-55	402A	12MAY04	GIZZARD SHAD	272	174	79.2
UPSTREAM I-55	402A	12MAY04	GIZZARD SHAD	245	134	85.0
UPSTREAM I-55	402A	12MAY04	GIZZARD SHAD	192	62	85.2
UPSTREAM I-55	402A	12MAY04	GIZZARD SHAD	238	112	77.9
UPSTREAM I-55	402A	12MAY04	GIZZARD SHAD	246	139	87.0
UPSTREAM I-55	402A	12MAY04	GIZZARD SHAD	278	192	81.6
UPSTREAM I-55	402A	12MAY04	GIZZARD SHAD	210	90	93.1
UPSTREAM I-55	402A	12MAY04	GIZZARD SHAD	255	172	96.1
UPSTREAM I-55	403	12MAY04	GIZZARD SHAD	242	112	73.9
UPSTREAM I-55	403	12MAY04	GIZZARD SHAD	275	197	86.7
UPSTREAM I-55	403	12MAY04	GIZZARD SHAD	214	86	83.8
UPSTREAM I-55	403	12MAY04	GIZZARD SHAD	298	250	85.2
UPSTREAM I-55	403	12MAY04	GIZZARD SHAD	212	90	90.3
UPSTREAM I-55	403A	12MAY04	GIZZARD SHAD	342	350	77.1
UPSTREAM I-55	403A	12MAY04	GIZZARD SHAD	296	250	87.1
UPSTREAM I-55	403A	12MAY04	GIZZARD SHAD	295	220	77.5
UPSTREAM I-55	403A	12MAY04	GIZZARD SHAD	256	152	83.9
UPSTREAM I-55	403A	12MAY04	GIZZARD SHAD	257	178	97.0
UPSTREAM I-55	403A	12MAY04	GIZZARD SHAD	268	152	72.6
UPSTREAM I-55	403A	12MAY04	GIZZARD SHAD	275	192	84.5

APPENDIX F

INCIDENCE OF DISEASE, PARASITISM, AND ABNORMALITIES OF FISH

LOWER DES PLAINES RIVER -- 2004

TABLE OF CONTENTS

APPENDIX F

TABLE F-1. COMPARISONS OF THE NUMBER AND PERCENTAGE OF FISH WITH DEFORMITIES BETWEEN TWO SEGMENTS OF THE LOWER DES PLAINES RIVER AND THE PERCENTAGE THAT DEFORMITIES CONTRIBUTED TO ALL DELT ANOMALIES COMBINED, 2004.

SPECIES	UPSTREAM I-55		DOWNSTREAM I-55		TOTAL WITH DEFORMS	TOTAL WITH DELT ANOMALIES	PERCENT WITH DEFORMS
	#	%	#	%			
LONGNOSE GAR	--	--	--	--	--	--	--
SKIPJACK HERRING	--	--	--	--	--	--	--
GIZZARD SHAD	--	--	--	--	--	13	--
THREADFIN SHAD	--	--	--	--	--	2	--
COMMON CARP	4	4.7	1	3.4	5	115	4.3
CARP X GOLDFISH HYBRID	--	--	--	--	--	2	--
GOLDEN SHINER	--	--	--	--	--	1	--
PALLID SHINER	--	--	--	--	--	--	--
EMERALD SHINER	--	--	--	--	--	--	--
GHOST SHINER	--	--	--	--	--	--	--
SPOTTAIL SHINER	--	--	--	--	--	--	--
SPOTFIN SHINER	--	--	--	--	--	--	--
SAND SHINER	--	--	--	--	--	--	--
REDFIN SHINER	--	--	--	--	--	--	--
BLUNTNOSE MINNOW	--	--	--	--	--	1	--
BULLHEAD MINNOW	--	--	--	--	--	--	--
RIVER CARPSUCKER	--	--	--	--	--	4	--
QUILLBACK	--	--	--	--	--	3	--
HIGHFIN CARPSUCKER	--	--	--	--	--	--	--
WHITE SUCKER	--	--	--	--	--	1	--
SMALLMOUTH BUFFALO	2	5.6	--	--	2	54	3.7
BIGMOUTH BUFFALO	--	--	--	--	--	--	--
BLACK BUFFALO	--	--	--	--	--	--	--
SPOTTED SUCKER	--	--	--	--	--	1	--
SILVER REDHORSE	--	--	--	--	--	1	--
GOLDEN REDHORSE	--	--	--	--	--	14	--
SHORTHEAD REDHORSE	--	--	--	--	--	1	--
BLACK BULLHEAD	--	--	--	--	--	--	--
YELLOW BULLHEAD	--	--	--	--	--	3	--
CHANNEL CATFISH	--	--	1	1.9	1	247	0.4
TADPOLE MADTOM	--	--	--	--	--	--	--
FLATHEAD CATFISH	--	--	--	--	--	2	--
BLACKSTRIPE TOPMINNOW	--	--	--	--	--	--	--
BROOK SILVERSIDE	--	--	--	--	--	--	--
WHITE BASS	--	--	--	--	--	--	--
YELLOW BASS	1	100.0	--	--	1	1	100.0
ROCK BASS	--	--	--	--	--	--	--
GREEN SUNFISH	--	--	1	4.3	1	48	2.1
PUMPKINSEED	--	--	--	--	--	--	--
WARMOUTH	--	--	--	--	--	--	--
ORANGESPOTTED SUNFISH	--	--	--	--	--	--	--
BLUEGILL	1	5.3	--	--	1	36	2.8
LONGEAR SUNFISH	--	--	--	--	--	--	--
HYBRID SUNFISH	--	--	--	--	--	1	--
UNID LEPOMIS	--	--	--	--	--	--	--
SMALLMOUTH BASS	--	--	1	20.0	1	18	5.6
LARGEMOUTH BASS	--	--	1	0.9	1	284	0.4
WHITE CRAPPIE	--	--	--	--	--	--	--
BLACK CRAPPIE	--	--	--	--	--	--	--
LOGPERCH	--	--	--	--	--	--	--
BLACKSIDE DARTER	--	--	--	--	--	--	--
WALLEYE	--	--	--	--	--	2	--
FRESHWATER DRUM	--	--	--	--	--	55	--
ROUND GOBY	--	--	--	--	--	--	--
TOTAL FISH	8	1.3	5	1.8	13	910	1.4

TABLE F-2. COMPARISONS OF THE NUMBER AND PERCENTAGE OF FISH WITH LESIONS BETWEEN TWO SEGMENTS OF THE LOWER DES PLAINES RIVER AND THE PERCENTAGE THAT LESIONS CONTRIBUTED TO ALL DELT ANOMALIES COMBINED, 2004.

SPECIES	UPSTREAM I-55		DOWNSTREAM I-55		TOTAL WITH LESIONS	TOTAL WITH DELT ANOMALIES	PERCENT WITH LESIONS
	#	%	#	%			
LONGNOSE GAR	--	--	--	--	--	--	--
SKIPJACK HERRING	--	--	--	--	--	--	--
GIZZARD SHAD	--	--	--	--	--	13	--
THREADFIN SHAD	--	--	--	--	--	2	--
COMMON CARP	1	1.2	--	--	1	115	0.9
CARP X GOLDFISH HYBRID	--	--	--	--	--	2	--
GOLDEN SHINER	--	--	--	--	--	1	--
PALLID SHINER	--	--	--	--	--	--	--
EMERALD SHINER	--	--	--	--	--	--	--
GHOST SHINER	--	--	--	--	--	--	--
SPOTTAIL SHINER	--	--	--	--	--	--	--
SPOTFIN SHINER	--	--	--	--	--	--	--
SAND SHINER	--	--	--	--	--	--	--
REDFIN SHINER	--	--	--	--	--	--	--
BLUNTNOSE MINNOW	--	--	--	--	--	1	--
BULLHEAD MINNOW	--	--	--	--	--	--	--
RIVER CARPSUCKER	--	--	--	--	--	4	--
QUILLBACK	--	--	1	100.0	1	3	33.3
HIGHFIN CARPSUCKER	--	--	--	--	--	--	--
WHITE SUCKER	--	--	--	--	--	1	--
SMALLMOUTH BUFFALO	1	2.8	--	--	1	54	1.9
BIGMOUTH BUFFALO	--	--	--	--	--	--	--
BLACK BUFFALO	--	--	--	--	--	--	--
SPOTTED SUCKER	--	--	--	--	--	1	--
SILVER REDHORSE	--	--	--	--	--	1	--
GOLDEN REDHORSE	--	--	--	--	--	14	--
SHORTHEAD REDHORSE	--	--	--	--	--	1	--
BLACK BULLHEAD	--	--	--	--	--	--	--
YELLOW BULLHEAD	--	--	--	--	--	3	--
CHANNEL CATFISH	8	4.1	2	3.8	10	247	4.0
TADPOLE MADTOM	--	--	--	--	--	--	--
FLATHEAD CATFISH	--	--	--	--	--	2	--
BLACKSTRIPE TOPMINNOW	--	--	--	--	--	--	--
BROOK SILVERSIDE	--	--	--	--	--	--	--
WHITE BASS	--	--	--	--	--	--	--
YELLOW BASS	--	--	--	--	--	1	--
ROCK BASS	--	--	--	--	--	--	--
GREEN SUNFISH	--	--	--	--	--	48	--
PUMPKINSEED	--	--	--	--	--	--	--
WARMOUTH	--	--	--	--	--	--	--
ORANGESPOTTED SUNFISH	--	--	--	--	--	--	--
BLUEGILL	--	--	--	--	--	36	--
LONGEAR SUNFISH	--	--	--	--	--	--	--
HYBRID SUNFISH	--	--	--	--	--	1	--
UNID LEPOMIS	--	--	--	--	--	--	--
SMALLMOUTH BASS	1	7.7	--	--	1	18	5.6
LARGEMOUTH BASS	3	1.7	2	1.9	5	284	1.8
WHITE CRAPPIE	--	--	--	--	--	--	--
BLACK CRAPPIE	--	--	--	--	--	--	--
LOGPERCH	--	--	--	--	--	--	--
BLACKSIDE DARTER	--	--	--	--	--	--	--
WALLEYE	--	--	--	--	--	2	--
FRESHWATER DRUM	--	--	--	--	--	55	--
ROUND GOBY	--	--	--	--	--	--	--
TOTAL FISH	14	2.2	5	1.8	19	910	2.1

TABLE F-3. COMPARISONS OF THE NUMBER AND PERCENTAGE OF FISH WITH TUMORS BETWEEN TWO SEGMENTS OF THE LOWER DES PLAINES RIVER AND THE PERCENTAGE THAT TUMORS CONTRIBUTED TO ALL DELT ANOMALIES COMBINED, 2004.

SPECIES	UPSTREAM I-55		DOWNSTREAM I-55		TOTAL WITH TUMORS	TOTAL WITH DELT ANOMALIES	PERCENT WITH TUMORS
	#	%	#	%			
LONGNOSE GAR	--	--	--	--	--	--	--
SKIPJACK HERRING	--	--	--	--	--	--	--
GIZZARD SHAD	--	--	--	--	--	13	--
THREADFIN SHAD	--	--	--	--	--	2	--
COMMON CARP	1	1.2	--	--	1	115	0.9
CARP X GOLDFISH HYBRID	--	--	--	--	--	2	--
GOLDEN SHINER	--	--	--	--	--	1	--
PALLID SHINER	--	--	--	--	--	--	--
EMERALD SHINER	--	--	--	--	--	--	--
GHOST SHINER	--	--	--	--	--	--	--
SPOTTAIL SHINER	--	--	--	--	--	--	--
SPOTFIN SHINER	--	--	--	--	--	--	--
SAND SHINER	--	--	--	--	--	--	--
REDFIN SHINER	--	--	--	--	--	--	--
BLUNTNOSE MINNOW	--	--	--	--	--	1	--
BULLHEAD MINNOW	--	--	--	--	--	--	--
RIVER CARPSUCKER	--	--	--	--	--	4	--
QUILLBACK	--	--	--	--	--	3	--
HIGHFIN CARPSUCKER	--	--	--	--	--	--	--
WHITE SUCKER	--	--	--	--	--	1	--
SMALLMOUTH BUFFALO	--	--	--	--	--	54	--
BIGMOUTH BUFFALO	--	--	--	--	--	--	--
BLACK BUFFALO	--	--	--	--	--	--	--
SPOTTED SUCKER	--	--	--	--	--	1	--
SILVER REDHORSE	--	--	--	--	--	1	--
GOLDEN REDHORSE	--	--	--	--	--	14	--
SHORTHEAD REDHORSE	--	--	--	--	--	1	--
BLACK BULLHEAD	--	--	--	--	--	--	--
YELLOW BULLHEAD	--	--	--	--	--	3	--
CHANNEL CATFISH	--	--	--	--	--	247	--
TADPOLE MADTOM	--	--	--	--	--	--	--
FLATHEAD CATFISH	--	--	--	--	--	2	--
BLACKSTRIPE TOPMINNOW	--	--	--	--	--	--	--
BROOK SILVERSIDE	--	--	--	--	--	--	--
WHITE BASS	--	--	--	--	--	--	--
YELLOW BASS	--	--	--	--	--	1	--
ROCK BASS	--	--	--	--	--	--	--
GREEN SUNFISH	--	--	--	--	--	48	--
PUMPKINSEED	--	--	--	--	--	--	--
WARMOUTH	--	--	--	--	--	--	--
ORANGESPOTTED SUNFISH	--	--	--	--	--	--	--
BLUEGILL	--	--	--	--	--	36	--
LONGEAR SUNFISH	--	--	--	--	--	--	--
HYBRID SUNFISH	--	--	--	--	--	1	--
UNID LEPOMIS	--	--	--	--	--	--	--
SMALLMOUTH BASS	--	--	--	--	--	18	--
LARGEMOUTH BASS	--	--	--	--	--	284	--
WHITE CRAPPIE	--	--	--	--	--	--	--
BLACK CRAPPIE	--	--	--	--	--	--	--
LOGPERCH	--	--	--	--	--	--	--
BLACKSIDE DARTER	--	--	--	--	--	--	--
WALLEYE	--	--	--	--	--	2	--
FRESHWATER DRUM	--	--	--	--	--	55	--
ROUND GOBY	--	--	--	--	--	--	--
TOTAL FISH	1	0.2	--	--	1	910	0.1

TABLE F-4. COMPARISONS OF THE NUMBER AND PERCENT OF FISH WITH ALL ANOMALIES BETWEEN TWO SEGMENTS OF THE LOWER DES PLAINES RIVER, 2004.

SPECIES	UPSTREAM I-55		DOWNSTREAM I-55		TOTAL NUMBER AFFECTED	TOTAL NUMBER EXAMINED	TOTAL PERCENT AFFECTED
	#	%	#	%			
LONGNOSE GAR	--	--	--	--	--	8	--
SKIPJACK HERRING	--	--	--	--	--	6	--
GIZZARD SHAD	14	1.9	7	1.3	21	1272	1.7
THREADFIN SHAD	--	--	2	5.7	2	60	3.3
COMMON CARP	85	63.0	30	47.6	115	198	58.1
CARP X GOLDFISH HYBRID	2	50.0	--	--	2	4	50.0
GOLDEN SHINER	1	100.0	1	16.7	2	7	28.6
PALLID SHINER	--	--	--	--	--	6	--
EMERALD SHINER	--	--	--	--	--	182	--
GHOST SHINER	--	--	--	--	--	1	--
SPOTTAIL SHINER	--	--	--	--	--	38	--
SPOTFIN SHINER	2	2.9	--	--	2	90	2.2
SAND SHINER	--	--	--	--	--	3	--
REDFIN SHINER	--	--	--	--	--	1	--
BLUNTNOSE MINNOW	3	0.8	--	--	3	627	0.5
BULLHEAD MINNOW	--	--	--	--	--	64	--
RIVER CARPSUCKER	1	50.0	5	22.7	6	24	25.0
QUILLBACK	4	25.0	3	42.9	7	23	30.4
HIGHFIN CARPSUCKER	1	100.0	--	--	1	1	100.0
WHITE SUCKER	1	25.0	--	--	1	4	25.0
SMALLMOUTH BUFFALO	42	56.8	22	55.0	64	114	56.1
BIGMOUTH BUFFALO	1	100.0	--	--	1	3	33.3
BLACK BUFFALO	1	100.0	--	--	1	1	100.0
SPOTTED SUCKER	1	100.0	--	--	1	1	100.0
SILVER REDHORSE	1	50.0	--	--	1	4	25.0
GOLDEN REDHORSE	10	58.8	4	36.4	14	28	50.0
SHORTHEAD REDHORSE	1	33.3	--	--	1	4	25.0
BLACK BULLHEAD	--	--	--	--	--	1	--
YELLOW BULLHEAD	3	23.1	--	--	3	17	17.6
CHANNEL CATFISH	196	93.3	54	88.5	250	271	92.3
TADPOLE MADTOM	--	--	--	--	--	1	--
FLATHEAD CATFISH	2	66.7	1	100.0	3	4	75.0
BLACKSTRIPE TOPMINNOW	--	--	--	--	--	10	--
BROOK SILVERSIDE	--	--	--	--	--	6	--
WHITE BASS	--	--	--	--	--	6	--
YELLOW BASS	1	50.0	--	--	1	4	25.0
ROCK BASS	--	--	--	--	--	2	--
GREEN SUNFISH	32	4.5	28	4.4	60	1341	4.5
PUMPKINSEED	--	--	--	--	--	3	--
WARMOUTH	--	--	--	--	--	3	--
ORANGESPOTTED SUNFISH	2	4.5	--	--	2	318	0.6
BLUEGILL	21	3.1	19	1.5	40	1918	2.1
LONGEAR SUNFISH	--	--	--	--	--	9	--
HYBRID SUNFISH	--	--	1	2.6	1	410	0.2
UNID LEPOMIS	--	--	--	--	--	1	--
SMALLMOUTH BASS	20	29.9	8	21.6	28	104	26.9
LARGEMOUTH BASS	175	49.7	113	33.5	288	689	41.8
WHITE CRAPPIE	--	--	--	--	--	5	--
BLACK CRAPPIE	--	--	--	--	--	15	--
LOGPERCH	--	--	--	--	--	8	--
BLACKSIDE DARTER	--	--	--	--	--	1	--
WALLEYE	2	33.3	1	50.0	3	8	37.5
FRESHWATER DRUM	46	52.3	12	24.5	58	137	42.3
ROUND GOBY	--	--	--	--	--	13	--
TOTAL FISH	671	15.9	311	8.1	982	8079	12.2

NOTE: SEINE DATA ARE EXCLUDED.

TABLE F-5. COMPARISONS OF THE NUMBER AND PERCENT OF FISH WITH DELT ANOMALIES, PARASITES, AND "OTHER" ABNORMALITIES IN TWO SEGMENTS OF THE LOWER DES PLAINES RIVER, 2004.

SEGMENT: UPSTREAM I-55

SPECIES	DELT #	DELT %	PARST #	PARST %	OTHER #	OTHER %	TOTAL NUMBER AFFECTED	TOTAL NUMBER EXAMINED	TOTAL PERCENT AFFECTED
LONGNOSE GAR	--	--	--	--	--	--	--	8	--
SKIPJACK HERRING	--	--	--	--	--	--	--	4	--
GIZZARD SHAD	9	1.2	--	--	5	0.7	14	739	1.9
THREADFIN SHAD	--	--	--	--	--	--	--	25	--
COMMON CARP	86	63.7	1	0.7	85	63.0	85	135	63.0
CARP X GOLDFISH HYBRID	2	50.0	--	--	1	25.0	2	4	50.0
GOLDEN SHINER	1	100.0	--	--	--	--	1	1	100.0
EMERALD SHINER	--	--	--	--	--	--	--	129	--
GHOST SHINER	--	--	--	--	--	--	--	1	--
SPOTTAIL SHINER	--	--	--	--	--	--	--	23	--
SPOTFIN SHINER	--	--	2	2.9	--	--	2	70	2.9
SAND SHINER	--	--	--	--	--	--	--	3	--
REDFIN SHINER	--	--	--	--	--	--	--	1	--
BLUNTNOSE MINNOW	1	0.3	2	0.5	--	--	3	390	0.8
BULLHEAD MINNOW	--	--	--	--	--	--	--	1	--
RIVER CARPSUCKER	1	50.0	--	--	--	--	1	2	50.0
QUILLBACK	2	12.5	--	--	3	18.8	4	16	25.0
HIGHFIN CARPSUCKER	--	--	--	--	1	100.0	1	1	100.0
WHITE SUCKER	1	25.0	--	--	--	--	1	4	25.0
SMALLMOUTH BUFFALO	36	48.6	--	--	19	25.7	42	74	56.8
BIGMOUTH BUFFALO	--	--	--	--	1	100.0	1	1	100.0
BLACK BUFFALO	--	--	--	--	1	100.0	1	1	100.0
SPOTTED SUCKER	1	100.0	--	--	--	--	1	1	100.0
SILVER REDHORSE	1	50.0	--	--	--	--	1	2	50.0
GOLDEN REDHORSE	10	58.8	--	--	--	--	10	17	58.8
SHORTHEAD REDHORSE	1	33.3	--	--	--	--	1	3	33.3
BLACK BULLHEAD	--	--	--	--	--	--	--	1	--
YELLOW BULLHEAD	3	23.1	--	--	--	--	3	13	23.1
CHANNEL CATFISH	195	92.9	35	16.7	14	6.7	196	210	93.3
FLATHEAD CATFISH	1	33.3	--	--	1	33.3	2	3	66.7
BLACKSTRIPE TOPMINNOW	--	--	--	--	--	--	--	5	--
WHITE BASS	--	--	--	--	--	--	--	4	--
YELLOW BASS	1	50.0	--	--	--	--	1	2	50.0
ROCK BASS	--	--	--	--	--	--	--	1	--
GREEN SUNFISH	25	3.5	6	0.8	4	0.6	32	706	4.5
WARMOUTH	--	--	--	--	--	--	--	2	--
ORANGESPOTTED SUNFISH	--	--	2	4.5	--	--	2	44	4.5
BLUEGILL	19	2.8	--	--	2	0.3	21	667	3.1
LONGEAR SUNFISH	--	--	--	--	--	--	--	7	--
HYBRID SUNFISH	--	--	--	--	--	--	--	371	--
SMALLMOUTH BASS	13	19.4	1	1.5	11	16.4	20	67	29.9
LARGEMOUTH BASS	177	50.3	--	--	10	2.8	175	352	49.7
WHITE CRAPPIE	--	--	--	--	--	--	--	1	--
BLACK CRAPPIE	--	--	--	--	--	--	--	9	--
WALLEYE	2	33.3	--	--	--	--	2	6	33.3
FRESHWATER DRUM	45	51.1	--	--	4	4.5	46	88	52.3
ROUND GOBY	--	--	--	--	--	--	--	11	--
TOTAL FISH	633	15.0	49	1.2	162	3.8	671	4226	15.9

TABLE F-5 (cont.)

SEGMENT: DOWNSTREAM I-55

SPECIES	DELT #	DELT %	PARST #	PARST %	OTHER #	OTHER %	TOTAL NUMBER AFFECTED	TOTAL NUMBER EXAMINED	TOTAL PERCENT AFFECTED
SKIPJACK HERRING	--	--	--	--	--	--	--	2	--
GIZZARD SHAD	4	0.8	--	--	3	0.6	7	533	1.3
THREADFIN SHAD	2	5.7	--	--	--	--	2	35	5.7
COMMON CARP	29	46.0	--	--	28	44.4	30	63	47.6
GOLDEN SHINER	--	--	1	16.7	--	--	1	6	16.7
PALLID SHINER	--	--	--	--	--	--	--	6	--
EMERALD SHINER	--	--	--	--	--	--	--	53	--
SPOTTAIL SHINER	--	--	--	--	--	--	--	15	--
SPOTFIN SHINER	--	--	--	--	--	--	--	20	--
BLUNTNOSE MINNOW	--	--	--	--	--	--	--	237	--
BULLHEAD MINNOW	--	--	--	--	--	--	--	63	--
RIVER CARPSUCKER	3	13.6	--	--	2	9.1	5	22	22.7
QUILLBACK	1	14.3	--	--	2	28.6	3	7	42.9
SMALLMOUTH BUFFALO	18	45.0	--	--	16	40.0	22	40	55.0
BIGMOUTH BUFFALO	--	--	--	--	--	--	--	2	--
SILVER REDHORSE	--	--	--	--	--	--	--	2	--
GOLDEN REDHORSE	4	36.4	--	--	--	--	4	11	36.4
SHORTHEAD REDHORSE	--	--	--	--	--	--	--	1	--
YELLOW BULLHEAD	--	--	--	--	--	--	--	4	--
CHANNEL CATFISH	52	85.2	16	26.2	2	3.3	54	61	88.5
TADPOLE MADTOM	--	--	--	--	--	--	--	1	--
FLATHEAD CATFISH	1	100.0	--	--	--	--	1	1	100.0
BLACKSTRIPE TOPMINNOW	--	--	--	--	--	--	--	5	--
BROOK SILVERSIDE	--	--	--	--	--	--	--	6	--
WHITE BASS	--	--	--	--	--	--	--	2	--
YELLOW BASS	--	--	--	--	--	--	--	2	--
ROCK BASS	--	--	--	--	--	--	--	1	--
GREEN SUNFISH	23	3.6	5	0.8	1	0.2	28	635	4.4
PUMPKINSEED	--	--	--	--	--	--	--	3	--
WARMOUTH	--	--	--	--	--	--	--	1	--
ORANGESPOTTED SUNFISH	--	--	--	--	--	--	--	274	--
BLUEGILL	17	1.4	1	0.1	1	0.1	19	1251	1.5
LONGEAR SUNFISH	--	--	--	--	--	--	--	2	--
HYBRID SUNFISH	1	2.6	--	--	--	--	1	39	2.6
UNID LEPOMIS	--	--	--	--	--	--	--	1	--
SMALLMOUTH BASS	5	13.5	--	--	4	10.8	8	37	21.6
LARGEMOUTH BASS	107	31.8	4	1.2	7	2.1	113	337	33.5
WHITE CRAPPIE	--	--	--	--	--	--	--	4	--
BLACK CRAPPIE	--	--	--	--	--	--	--	6	--
LOGPERCH	--	--	--	--	--	--	--	8	--
BLACKSIDE DARTER	--	--	--	--	--	--	--	1	--
WALLEYE	--	--	--	--	1	50.0	1	2	50.0
FRESHWATER DRUM	10	20.4	1	2.0	2	4.1	12	49	24.5
ROUND GOBY	--	--	--	--	--	--	--	2	--
TOTAL FISH	277	7.2	28	0.7	69	1.8	311	3853	8.1

TABLE F-6. COMPARISONS OF THE NUMBERS OF FISH EXHIBITING SLIGHT, MODERATE, AND SEVERE FIN EROSION IN TWO SEGMENTS OF THE LOWER DES PLAINES RIVER AND THE PERCENTAGE THAT EACH CATEGORY OF FIN EROSION CONTRIBUTED TO ALL FIN EROSION COMBINED, 2004.

SEGMENT: UPSTREAM I-55

SPECIES	SLIGHT #	MODERATE #	SEVERE #	TOTAL EROSION #	SLIGHT %	MODERATE %	SEVERE %
GIZZARD SHAD	8	1	0	9	88.9	11.1	0.0
COMMON CARP	77	4	2	83	92.8	4.8	2.4
CARP X GOLDFISH HYBRID	1	1	0	2	50.0	50.0	0.0
GOLDEN SHINER	1	0	0	1	100.0	0.0	0.0
BLUNTNOSE MINNOW	0	0	1	1	0.0	0.0	100.0
RIVER CARPSUCKER	1	0	0	1	100.0	0.0	0.0
QUILLBACK	0	1	1	2	0.0	50.0	50.0
WHITE SUCKER	1	0	0	1	100.0	0.0	0.0
SMALLMOUTH BUFFALO	20	6	9	35	57.1	17.1	25.7
SPOTTED SUCKER	1	0	0	1	100.0	0.0	0.0
SILVER REDHORSE	0	1	0	1	0.0	100.0	0.0
GOLDEN REDHORSE	7	3	0	10	70.0	30.0	0.0
SHORTHEAD REDHORSE	0	0	1	1	0.0	0.0	100.0
YELLOW BULLHEAD	2	0	0	2	100.0	0.0	0.0
CHANNEL CATFISH	5	5	2	12	41.7	41.7	16.7
FLATHEAD CATFISH	0	1	0	1	0.0	100.0	0.0
GREEN SUNFISH	20	3	2	25	80.0	12.0	8.0
BLUEGILL	16	1	1	18	88.9	5.6	5.6
SMALLMOUTH BASS	12	0	0	12	100.0	0.0	0.0
LARGEMOUTH BASS	168	5	2	175	96.0	2.9	1.1
WALLEYE	2	0	0	2	100.0	0.0	0.0
FRESHWATER DRUM	27	16	2	45	60.0	35.6	4.4
TOTAL FISH	369	48	23	440	83.9	10.9	5.2

SEGMENT: DOWNSTREAM I-55

SPECIES	SLIGHT #	MODERATE #	SEVERE #	TOTAL EROSION #	SLIGHT %	MODERATE %	SEVERE %
GIZZARD SHAD	4	0	0	4	100.0	0.0	0.0
THREADFIN SHAD	1	0	1	2	50.0	0.0	50.0
COMMON CARP	26	2	1	29	89.7	6.9	3.4
RIVER CARPSUCKER	1	2	0	3	33.3	66.7	0.0
SMALLMOUTH BUFFALO	14	3	1	18	77.8	16.7	5.6
GOLDEN REDHORSE	3	1	0	4	75.0	25.0	0.0
CHANNEL CATFISH	0	1	0	1	0.0	100.0	0.0
FLATHEAD CATFISH	0	0	1	1	0.0	0.0	100.0
GREEN SUNFISH	21	0	1	22	95.5	0.0	4.5
BLUEGILL	16	1	0	17	94.1	5.9	0.0
HYBRID SUNFISH	1	0	0	1	100.0	0.0	0.0
SMALLMOUTH BASS	4	0	0	4	100.0	0.0	0.0
LARGEMOUTH BASS	107	0	0	107	100.0	0.0	0.0
FRESHWATER DRUM	9	1	0	10	90.0	10.0	0.0
TOTAL FISH	207	11	5	223	92.8	4.9	2.2

APPENDIX F. RAW DATA LISTING OF FISH WITH AMONALIES, 2004.

TRIP 11-12 MAY

SPECIES	ANOMALY	LOCATION 402 #	402A #	403 #	403A #	404A #	405 #	408 #	412A #	414 #	418 #	419A #	TOTAL #
GIZZARD SHAD	Eroded fin-slight	1	1	1	2	-	1	-	-	-	-	-	6
	Emaciated	-	-	-	-	-	-	-	-	1	-	-	1
COMMON CARP	Eroded fin-slight	1	-	3	1	1	3	7	1	2	-	-	19
	Eroded fin-severe	-	-	-	1	-	-	-	-	-	-	-	1
	Deformed fin rays	1	-	3	2	1	3	7	1	2	1	-	21
	Scoliosis	-	-	-	-	-	-	1	-	-	-	-	1
GOLDEN SHINER	Blackspot	-	-	-	-	-	-	-	-	-	1	-	1
SPOTFIN SHINER	Blackspot	1	-	-	-	-	-	-	-	-	1	-	2
RIVER CARPSUCKER	Eroded fin-slight	-	-	-	-	-	-	-	-	1	-	-	1
QUILLBACK	Eroded fin-moderate	-	-	-	1	-	-	-	-	-	-	-	1
	Lesion	-	-	-	-	-	-	-	-	-	1	-	1
	Regenerated scales	-	-	-	2	-	-	-	-	-	1	-	3
SMALLMOUTH BUFFALO	Eroded fin-slight	1	-	2	-	-	1	-	-	-	1	-	5
	Eroded fin-moderate	-	-	-	-	-	-	-	-	1	-	-	1
	Deformed fin rays	-	-	-	-	-	-	-	-	1	1	-	2
	Regenerated scales	-	-	2	-	-	-	-	-	1	1	-	4
	Missing body part	-	-	-	-	-	-	1	-	-	-	-	1
GOLDEN REDHORSE	Eroded fin-slight	-	-	-	-	-	-	-	-	-	-	1	1
YELLOW BULLHEAD	Eroded fin-slight	1	-	-	-	-	-	-	-	-	-	-	1
CHANNEL CATFISH	Eroded fin-slight	-	-	1	-	-	-	-	-	-	-	-	1
	Eroded fin-moderate	-	2	1	-	-	-	-	-	-	-	-	3
	Deformed fin rays	-	1	-	-	-	-	-	-	-	-	-	1
	Parasite	1	-	1	-	-	-	-	-	-	1	-	3
	Lesion	-	-	1	-	-	1	-	-	-	1	-	3
	Eroded barbels	3	4	8	1	-	2	4	4	5	3	3	37
	Emaciated	1	-	-	-	-	-	-	-	-	-	-	1
FLATHEAD CATFISH	Eroded fin-moderate	-	-	1	-	-	-	-	-	-	-	-	1
GREEN SUNFISH	Eroded fin-slight	-	-	-	-	-	-	-	-	-	4	2	6
	Blackspot	-	-	-	-	-	-	1	-	-	-	-	1
ORANGESPOTTED SUNFISH	Blackspot	-	-	-	-	-	-	1	-	-	-	-	1
BLUEGILL	Eroded fin-slight	-	-	-	-	-	-	-	1	-	-	1	2
	Eroded fin-severe	-	-	-	-	-	-	1	-	-	-	-	1
	Deformed body	-	-	-	-	-	-	1	-	-	-	-	1
SMALLMOUTH BASS	Eroded fin-slight	1	-	-	1	-	2	-	-	-	-	-	4
	Emaciated	-	1	-	-	-	-	-	-	-	-	-	1
LARGEMOUTH BASS	Eroded fin-slight	-	4	-	-	2	4	1	-	2	1	4	18
	Eroded fin-severe	-	-	-	-	-	1	1	-	-	-	-	2
	Parasite	-	-	-	-	-	-	-	-	1	1	-	2
	Lesion	-	-	-	-	-	-	1	-	1	-	-	2
	Regenerated scales	-	-	-	-	-	-	-	-	-	2	-	2
	Emaciated	-	-	-	1	-	-	-	-	-	-	-	1
WALLEYE	Eroded fin-slight	2	-	-	-	-	-	-	-	-	-	-	2
	Regenerated scales	-	-	-	-	-	-	-	-	-	-	1	1
FRESHWATER DRUM	Eroded fin-slight	7	2	-	-	-	1	-	1	-	-	1	12
	Eroded fin-moderate	3	-	-	-	-	-	1	-	-	-	-	4
	Regenerated scales	-	1	-	-	-	-	-	-	-	-	-	1

TRIP 8-9 JUN

SPECIES	ANOMALY	LOCATION 402 #	402A #	403 #	403A #	404A #	405 #	408 #	412A #	414 #	418 #	419A #	TOTAL #
GIZZARD SHAD	Eroded fin-slight	-	-	-	-	-	1	-	-	-	-	-	1
	Emaciated	1	1	-	-	-	-	-	-	-	-	-	2
COMMON CARP	Eroded fin-slight	5	-	1	-	-	1	1	1	-	2	-	11
	Eroded fin-severe	-	-	-	-	-	-	1	1	-	-	-	2
	Deformed fin rays	5	-	1	-	-	1	1	2	-	1	-	11
	Deformed body	-	-	-	1	-	-	-	1	-	-	-	2
	Regenerated scales	1	-	-	-	-	-	-	-	-	-	-	1
	Scoliosis	-	-	1	-	-	-	-	-	-	-	-	1

TRIP 8-9 JUN (cont.)

SPECIES	ANOMALY	LOCATION 402 #	402A #	403 #	403A #	404A #	405 #	408 #	412A #	414 #	418 #	419A #	TOTAL #
SPOTFIN SHINER	Blackspot	-	-	2	-	-	-	-	-	-	-	-	2
RIVER CARPSUCKER	Eroded fin-slight	-	1	-	-	-	-	-	-	-	-	-	1
QUILLBACK	Regenerated scales	-	-	-	-	-	-	-	-	-	1	-	1
SMALLMOUTH BUFFALO	Eroded fin-slight	3	-	1	2	1	-	-	-	-	-	-	7
	Eroded fin-moderate	-	-	-	-	-	1	-	-	1	-	-	2
	Eroded fin-severe	1	-	-	-	-	1	1	-	-	-	-	3
	Deformed fin rays	1	-	1	-	-	-	-	-	1	-	-	3
BIGMOUTH BUFFALO	Deformed fin rays	-	-	-	-	-	-	1	-	-	-	-	1
GOLDEN REDHORSE	Eroded fin-slight	-	-	-	-	2	-	-	-	-	-	-	2
SHORTHEAD REDHORSE	Eroded fin-severe	1	-	-	-	-	-	-	-	-	-	-	1
CHANNEL CATFISH	Parasite	1	-	-	-	-	-	1	-	-	4	-	6
	Lesion	-	-	-	-	-	-	-	-	-	-	1	1
	Eroded barbels	11	4	4	1	-	1	1	-	-	8	1	31
GREEN SUNFISH	Blackspot	-	-	-	-	-	-	-	-	-	2	-	2
ORANGESPOTTED SUNFISH	Parasite	1	-	-	-	-	-	-	-	-	-	-	1
BLUEGILL	Eroded fin-slight	2	1	1	-	-	-	1	-	1	-	-	6
	Eroded fin-severe	-	-	-	-	-	-	-	-	1	-	-	1
SMALLMOUTH BASS	Lesion	1	-	-	-	-	-	-	-	-	-	-	1
	Emaciated	3	-	-	-	-	-	-	-	-	-	-	3
LARGEMOUTH BASS	Eroded fin-slight	2	4	-	-	-	9	2	-	1	6	2	26
FRESHWATER DRUM	Eroded fin-moderate	1	2	-	-	-	-	-	-	-	1	-	4
	Eroded fin-severe	-	-	-	-	-	1	-	-	-	-	-	1
	Emaciated	-	-	-	-	-	-	-	-	-	1	-	1

TRIP 7-8 JUL

SPECIES	ANOMALY	LOCATION 402 #	402A #	403 #	403A #	404A #	405 #	408 #	412A #	414 #	418 #	419A #	TOTAL #
GIZZARD SHAD	Eroded fin-slight	-	-	-	-	-	-	-	-	1	1	-	2
	Emaciated	-	1	-	-	-	1	-	-	-	-	-	2
COMMON CARP	Eroded fin-slight	1	3	-	-	-	2	4	1	4	-	-	15
	Deformed fin rays	1	3	-	-	-	2	4	1	4	-	-	15
SPOTFIN SHINER	Blackspot	1	-	-	-	-	-	-	-	-	-	1	2
BLUNTNOSE MINNOW	Blackspot	-	-	-	1	1	-	-	-	-	-	-	2
RIVER CARPSUCKER	Eroded fin-moderate	-	-	-	-	-	-	-	-	1	-	-	1
SMALLMOUTH BUFFALO	Eroded fin-slight	2	-	-	-	-	-	-	-	6	-	-	8
	Eroded fin-severe	1	2	-	-	-	-	-	-	-	-	-	3
	Deformed fin rays	2	2	1	-	-	-	-	-	6	-	-	11
	Deformed body	-	1	-	-	-	-	-	-	-	-	-	1
GOLDEN REDHORSE	Eroded fin-slight	-	-	-	-	-	1	-	-	-	-	-	1
CHANNEL CATFISH	Eroded fin-slight	-	-	1	-	-	-	1	-	-	-	-	2
	Parasite	-	1	1	1	2	1	2	-	1	2	1	12
	Lesion	-	-	2	-	-	-	-	-	-	-	-	2
	Eroded barbels	3	2	9	1	5	1	2	-	1	2	-	26
	Emaciated	1	-	1	-	-	-	-	-	-	-	1	3
GREEN SUNFISH	Eroded fin-slight	-	-	1	-	-	-	3	-	1	3	-	8
	Eroded fin-moderate	-	-	-	-	-	-	1	-	-	-	-	1
	Eroded fin-severe	-	-	-	-	-	-	1	-	-	-	-	1
	Blackspot	-	-	-	-	-	-	2	-	-	2	-	4
	Emaciated	-	-	-	-	-	-	-	-	-	1	-	1
BLUEGILL	Eroded fin-slight	-	-	1	-	-	1	5	-	2	2	1	12
	Emaciated	-	-	-	-	-	1	-	-	-	-	-	1
SMALLMOUTH BASS	Emaciated	-	-	-	-	-	-	-	-	-	1	-	1
LARGEMOUTH BASS	Eroded fin-slight	4	6	1	1	5	17	8	-	10	9	5	66
	Eroded fin-moderate	-	-	-	-	-	1	-	-	-	-	-	1
	Deformed fin rays	-	-	-	-	-	-	-	-	-	1	-	1
	Fungus	-	-	-	-	-	-	-	-	-	-	1	1
	Emaciated	-	-	-	-	-	-	-	-	-	-	1	1

TRIP 7-8 JUL (cont.)

SPECIES	ANOMALY	LOCATION 402 #	402A #	403 #	403A #	404A #	405 #	408 #	412A #	414 #	418 #	419A #	TOTAL #
FRESHWATER DRUM	Eroded fin-slight	1	1	-	1	-	-	2	1	-	-	-	6
	Deformed fin rays	1	-	-	-	-	-	-	-	-	-	-	1
	Regenerated scales	1	-	-	-	-	-	-	-	-	-	-	1

TRIP 20-21 JUL

SPECIES	ANOMALY	LOCATION 402 #	402A #	403 #	403A #	404A #	405 #	408 #	412A #	414 #	418 #	419A #	TOTAL #
GIZZARD SHAD	Emaciated	-	-	-	-	-	-	1	-	-	1	-	2
COMMON CARP	Eroded fin-slight	2	-	-	-	-	2	1	-	-	-	-	5
	Eroded fin-moderate	-	-	-	-	-	1	-	-	-	-	-	1
	Deformed fin rays	2	-	-	-	-	3	1	-	-	-	-	6
SPOTFIN SHINER	Blackspot	-	-	-	-	-	-	-	1	-	-	-	1
QUILLBACK	Eroded fin-severe	-	-	-	-	-	1	-	-	-	-	-	1
	Regenerated scales	-	1	-	-	-	-	-	-	-	-	-	1
SMALLMOUTH BUFFALO	Eroded fin-slight	-	-	-	-	-	-	-	-	1	-	-	1
SPOTTED SUCKER	Eroded fin-slight	-	1	-	-	-	-	-	-	-	-	-	1
CHANNEL CATFISH	Parasite	4	-	-	1	1	-	1	-	-	-	1	8
	Lesion	-	-	-	-	1	-	-	-	-	-	-	1
	Fungus	1	-	-	-	-	-	-	-	-	-	-	1
	Eroded barbels	6	-	-	1	5	4	2	1	2	-	2	23
	Emaciated	1	-	-	-	-	-	-	-	1	-	-	2
GREEN SUNFISH	Eroded fin-slight	-	-	2	-	-	3	1	2	1	2	-	11
	Eroded fin-moderate	-	-	-	-	-	-	1	-	-	-	-	1
	Scoliosis	-	-	-	-	-	-	-	-	1	-	-	1
	Emaciated	-	-	-	-	-	-	1	-	-	-	-	1
ORANGESPOTTED SUNFISH	Eroded fin-moderate	-	-	-	-	-	-	-	-	1	-	-	1
BLUEGILL	Eroded fin-slight	-	1	-	-	1	-	-	2	2	4	2	12
	Eroded fin-moderate	-	-	-	-	-	-	-	-	1	-	-	1
	Parasite	-	-	-	-	-	-	-	-	-	-	1	1
SMALLMOUTH BASS	Eroded fin-slight	3	-	-	-	2	-	-	1	-	-	1	7
	Parasite	1	-	-	-	-	-	-	-	-	-	-	1
	Scoliosis	-	-	-	-	-	-	-	-	-	-	1	1
	Emaciated	-	-	-	-	2	-	-	-	-	-	-	2
LARGEMOUTH BASS	Eroded fin-slight	1	6	-	2	3	7	3	1	6	2	1	32
	Emaciated	-	-	-	-	-	-	-	-	-	-	1	1
LOGPERCH	Blackspot	-	-	-	-	-	-	-	-	-	-	1	1
FRESHWATER DRUM	Eroded fin-slight	1	-	-	-	-	-	-	-	1	-	-	2
	Eroded fin-moderate	1	-	-	-	-	-	-	-	-	-	-	1
	Emaciated	1	-	-	-	-	-	-	-	-	-	-	1

TRIP 10-11 AUG

SPECIES	ANOMALY	LOCATION 402 #	402A #	403 #	404A #	405 #	408 #	412A #	414 #	418 #	419A #	TOTAL #
COMMON CARP	Eroded fin-moderate	-	-	-	-	-	-	-	1	-	-	1
	Other	-	-	-	-	-	1	-	-	-	-	1
BLUNTNOSE MINNOW	Blackspot	-	1	-	-	-	-	-	-	-	-	1
SMALLMOUTH BUFFALO	Regenerated scales	-	1	-	-	2	-	-	-	-	-	3
GOLDEN REDHORSE	Eroded fin-moderate	1	-	-	-	-	-	-	-	-	-	1
CHANNEL CATFISH	Eroded fin-slight	-	-	1	-	-	-	-	-	-	-	1
	Parasite	-	-	-	-	-	-	-	-	1	-	1
	Lesion	-	-	1	-	-	-	-	-	-	-	1
	Eroded barbels	-	-	20	1	-	1	1	-	3	-	26
GREEN SUNFISH	Eroded fin-slight	-	-	-	-	-	-	-	-	2	-	2
	Blackspot	1	-	-	-	1	-	-	-	1	-	3

TRIP 10-11 AUG (cont.)

SPECIES	ANOMALY	LOCATION 402 #	402A #	403 #	404A #	405 #	408 #	412A #	414 #	418 #	419A #	TOTAL #
BLUEGILL	Eroded fin-slight	-	-	-	-	-	-	2	1	-	-	3
SMALLMOUTH BASS	Emaciated	-	1	-	-	-	-	-	-	-	-	1
LARGEMOUTH BASS	Eroded fin-slight	1	-	-	1	-	3	3	-	-	-	8
	Eroded fin-moderate	-	-	-	-	-	1	-	-	-	-	1
FRESHWATER DRUM	Eroded fin-slight	-	-	-	-	-	-	1	1	-	1	3
	Eroded fin-moderate	1	-	1	-	-	-	-	-	-	-	2
	Parasite	-	-	-	-	-	-	1	-	-	-	1

TRIP 26-27 AUG

SPECIES	ANOMALY	LOCATION 402 #	402A #	403 #	403A #	404A #	405 #	408 #	412A #	414 #	418 #	419A #	TOTAL #
GIZZARD SHAD	Eroded fin-slight	-	1	-	-	-	-	-	-	-	-	-	1
	Eroded fin-moderate	-	-	-	-	-	-	1	-	-	-	-	1
THREADFIN SHAD	Eroded fin-slight	-	-	-	-	-	-	-	-	1	-	-	1
	Eroded fin-severe	-	-	-	-	-	-	-	-	1	-	-	1
COMMON CARP	Eroded fin-slight	1	4	-	-	2	3	-	1	3	-	-	14
	Deformed fin rays	1	4	-	-	2	3	-	1	3	-	-	14
	Regenerated scales	1	1	-	-	-	-	-	-	-	-	-	2
	Tumors	-	1	-	-	-	-	-	-	-	-	-	1
GOLDEN SHINER	Eroded fin-slight	-	1	-	-	-	-	-	-	-	-	-	1
RIVER CARPSUCKER	Eroded fin-moderate	-	-	-	-	-	-	-	-	1	-	-	1
	Regenerated scales	-	-	-	-	-	-	-	-	-	1	-	1
HIGHFIN CARPSUCKER	Regenerated scales	-	-	1	-	-	-	-	-	-	-	-	1
SMALLMOUTH BUFFALO	Eroded fin-slight	2	-	-	-	-	-	-	1	1	1	1	6
	Eroded fin-moderate	-	-	-	-	-	-	-	-	1	-	-	1
	Eroded fin-severe	1	1	-	-	-	-	-	-	1	-	-	3
	Deformed fin rays	-	-	-	-	-	-	-	1	1	-	1	3
	Lesion	1	-	-	-	-	-	-	-	-	-	-	1
	Regenerated scales	3	-	-	-	1	-	-	-	-	-	-	4
BLACK BUFFALO	Deformed fin rays	-	-	1	-	-	-	-	-	-	-	-	1
	Regenerated scales	-	-	1	-	-	-	-	-	-	-	-	1
GOLDEN REDHORSE	Eroded fin-moderate	-	-	-	-	1	-	-	-	-	-	-	1
CHANNEL CATFISH	Eroded fin-moderate	-	-	-	-	-	-	1	-	-	-	-	1
	Eroded fin-severe	-	1	-	-	-	-	-	-	-	-	-	1
	Parasite	6	1	-	-	-	-	1	-	2	1	-	11
	Eroded barbels	6	2	2	-	3	1	-	-	3	3	-	20
	Regenerated scales	-	-	-	-	-	-	4	-	-	-	-	4
	Scoliosis	-	-	-	-	-	-	-	-	1	-	-	1
FLATHEAD CATFISH	Eroded fin-severe	-	-	-	-	-	-	-	-	1	-	-	1
	Eroded barbels	-	-	-	-	-	-	-	-	1	-	-	1
	Emaciated	-	-	-	-	-	1	-	-	-	-	-	1
GREEN SUNFISH	Eroded fin-slight	-	1	-	-	-	1	1	-	-	-	-	3
	Eroded fin-severe	-	-	-	-	-	-	-	1	-	-	-	1
	Blackspot	-	-	-	-	-	1	-	-	-	-	-	1
BLUEGILL	Eroded fin-slight	-	-	-	-	-	1	-	-	3	-	-	4
	Emaciated	-	-	-	-	-	1	-	-	1	-	-	2
SMALLMOUTH BASS	Eroded fin-slight	1	-	-	-	1	-	-	-	-	-	-	2
	Regenerated scales	-	-	-	-	-	1	-	-	-	-	-	1
	Emaciated	-	-	-	-	2	-	-	-	-	-	1	3
LARGEMOUTH BASS	Eroded fin-slight	4	8	-	2	3	8	4	6	3	8	3	49
	Eroded fin-moderate	1	1	-	-	-	-	-	-	-	-	-	2
	Lesion	-	1	-	-	-	-	-	-	-	-	-	1
	Regenerated scales	-	-	-	-	-	1	-	-	-	-	-	1
	Emaciated	-	1	-	1	-	1	-	-	-	1	-	4
FRESHWATER DRUM	Eroded fin-slight	2	1	-	-	1	-	-	-	-	-	-	4
	Eroded fin-moderate	1	-	-	-	-	1	-	-	-	-	-	2

TRIP 8-9 SEP

SPECIES	ANOMALY	LOCATION 402 #	402A #	403 #	403A #	404A #	405 #	408 #	412A #	414 #	418 #	419A #	TOTAL #
GIZZARD SHAD	Eroded fin-slight	-	-	-	-	-	-	-	-	-	1	1	2
	Emaciated	-	-	-	-	-	-	-	-	1	-	-	1
COMMON CARP	Eroded fin-slight	8	1	-	1	-	5	-	-	2	1	-	18
	Eroded fin-moderate	1	-	-	-	-	-	-	-	-	-	-	1
	Deformed fin rays	9	1	-	1	-	5	-	-	2	1	-	19
	Lesion	1	-	-	-	-	-	-	-	-	-	-	1
	Missing body part	-	-	-	-	-	1	-	-	-	-	-	1
WHITE SUCKER	Eroded fin-slight	1	-	-	-	-	-	-	-	-	-	-	1
SMALLMOUTH BUFFALO	Eroded fin-slight	1	-	-	-	-	-	-	-	2	-	-	3
	Eroded fin-moderate	1	-	-	-	-	-	-	-	-	-	-	1
	Deformed fin rays	2	-	-	-	-	-	-	-	2	-	-	4
	Regenerated scales	-	-	-	-	-	-	-	1	-	-	-	1
GOLDEN REDHORSE	Eroded fin-slight	-	-	-	-	-	2	-	-	-	-	2	4
	Eroded fin-moderate	-	-	-	-	1	-	-	1	-	-	-	2
CHANNEL CATFISH	Eroded fin-moderate	-	-	-	-	-	-	-	1	-	-	-	1
	Eroded fin-severe	-	1	-	-	-	-	-	-	-	-	-	1
	Parasite	-	2	-	-	-	1	-	1	-	-	1	5
	Lesion	1	-	1	-	-	-	-	-	-	-	-	2
	Eroded barbels	6	4	26	1	2	3	-	5	1	-	1	49
	Emaciated	-	-	2	-	-	-	-	-	-	-	-	2
GREEN SUNFISH	Eroded fin-slight	-	-	-	-	-	-	1	-	-	-	-	1
	Eroded fin-severe	-	-	-	-	1	-	-	-	-	-	-	1
	Fungus	-	1	-	-	-	-	-	-	-	-	-	1
	Emaciated	-	-	-	-	-	-	1	-	-	-	-	1
BLUEGILL	Eroded fin-slight	-	-	-	1	-	1	-	-	-	-	-	2
	Eroded fin-moderate	-	-	-	-	-	-	1	-	-	-	-	1
SMALLMOUTH BASS	Eroded fin-slight	1	-	-	-	-	-	-	-	-	-	1	2
	Emaciated	-	1	-	-	-	-	-	-	-	-	-	1
LARGEMOUTH BASS	Eroded fin-slight	8	1	1	-	4	5	9	5	4	9	-	46
	Eroded fin-moderate	-	-	-	-	1	-	-	-	-	-	-	1
	Lesion	-	-	-	-	1	-	-	-	-	1	-	2
	Scoliosis	-	-	-	-	-	-	-	-	1	-	-	1
	Emaciated	-	-	-	-	1	-	4	-	-	-	-	5
BLACKSIDE DARTER	Eroded fin-slight	-	-	-	-	-	-	1	-	-	-	-	1
	Blackspot	-	-	-	-	-	-	1	-	-	-	-	1
FRESHWATER DRUM	Eroded fin-slight	1	2	-	-	-	-	2	-	1	-	-	6
	Eroded fin-moderate	3	-	1	-	-	-	-	-	-	-	-	4
	Emaciated	-	1	-	-	-	-	-	-	1	-	-	2

TRIP 27-28 SEP

SPECIES	ANOMALY	LOCATION 402 #	402A #	403 #	403A #	404A #	405 #	408 #	412A #	414 #	418 #	419A #	TOTAL #
COMMON CARP	Eroded fin-slight	6	1	-	1	-	2	-	1	2	5	-	18
	Eroded fin-moderate	1	-	-	-	-	-	-	-	1	-	-	2
	Deformed fin rays	7	1	-	1	-	2	-	1	3	5	-	20
	Parasite	-	-	-	1	-	-	-	-	-	-	-	1
	Eroded barbels	-	-	-	1	-	-	-	-	-	-	-	1
	Emaciated	1	-	-	-	-	-	-	-	-	-	-	1
CARP X GOLDFISH	Eroded fin-slight	1	-	-	-	-	-	-	-	-	-	-	1
HYBRID	Eroded fin-moderate	-	-	-	1	-	-	-	-	-	-	-	1
	Deformed fin rays	1	-	-	-	-	-	-	-	-	-	-	1
BLUNTNOSE MINNOW	Eroded fin-severe	-	-	-	1	-	-	-	-	-	-	-	1
RIVER CARPSUCKER	Regenerated scales	-	-	-	-	-	-	-	-	-	1	-	1
SMALLMOUTH BUFFALO	Eroded fin-slight	2	1	-	-	-	1	-	-	-	-	-	4
	Eroded fin-moderate	3	-	-	-	-	1	-	-	-	-	-	4
	Eroded fin-severe	-	-	-	-	-	1	-	-	-	-	-	1
	Regenerated scales	-	-	-	-	-	1	-	-	-	-	-	1
SILVER REDHORSE	Eroded fin-moderate	-	-	-	-	1	-	-	-	-	-	-	1
GOLDEN REDHORSE	Eroded fin-slight	-	-	-	-	1	1	-	-	-	-	1	3

TRIP 27-28 SEP (cont.)

SPECIES	ANOMALY	LOCATION 402 #	402A #	403 #	403A #	404A #	405 #	408 #	412A #	414 #	418 #	419A #	TOTAL #
YELLOW BULLHEAD	Eroded fin-slight	-	1	-	-	-	-	-	-	-	-	-	1
	Eroded barbels	-	2	-	-	-	-	-	-	-	-	-	2
CHANNEL CATFISH	Eroded fin-slight	-	-	1	-	-	-	-	-	-	-	-	1
	Eroded fin-moderate	-	-	1	-	-	-	-	-	-	-	-	1
	Parasite	-	1	3	-	-	-	-	-	-	-	-	4
	Eroded barbels	5	2	15	1	-	-	4	2	1	-	-	30
	Emaciated	1	-	1	-	-	-	-	-	-	-	-	2
YELLOW BASS	Deformed body	-	-	-	-	-	-	1	-	-	-	-	1
GREEN SUNFISH	Eroded fin-slight	-	-	-	-	1	2	3	-	-	2	2	10
	Eroded fin-moderate	-	-	-	-	-	-	1	-	-	-	-	1
	Emaciated	-	-	-	-	-	-	1	-	-	-	-	1
HYBRID SUNFISH	Eroded fin-slight	-	-	-	-	-	-	-	-	-	-	1	1
SMALLMOUTH BASS	Eroded fin-slight	-	-	-	-	-	-	-	-	-	-	1	1
	Emaciated	-	-	-	-	-	-	-	-	-	1	1	2
LARGEMOUTH BASS	Eroded fin-slight	2	1	1	3	2	3	1	2	2	10	3	30
	Deformed body	-	-	-	-	-	-	-	-	1	-	-	1
	Parasite	-	-	-	-	-	-	-	-	-	1	1	2
	Emaciated	-	-	-	1	-	-	-	-	-	-	-	1
FRESHWATER DRUM	Eroded fin-slight	-	2	-	-	-	-	-	-	1	-	-	3
	Eroded fin-severe	-	-	-	-	-	1	-	-	-	-	-	1