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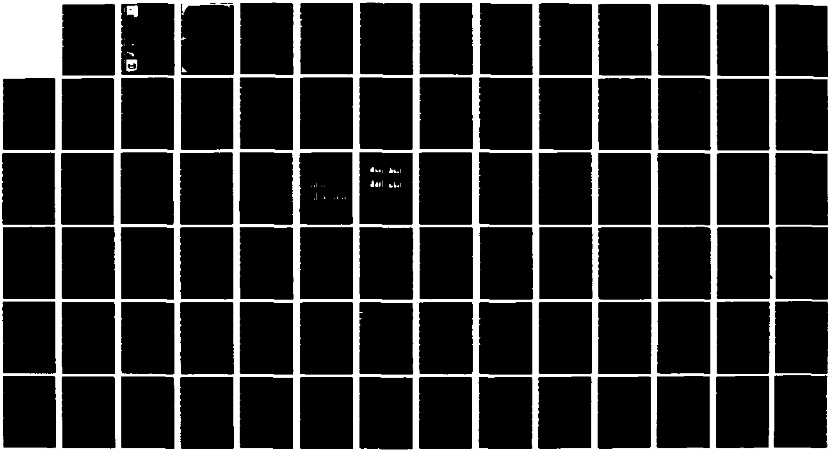

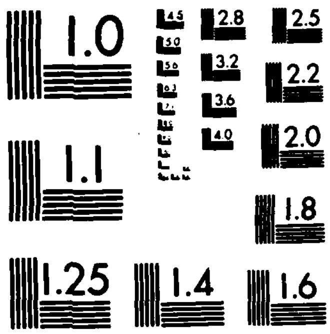

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ENVIRONMENTAL AND WATER QUALITY
OPERATIONAL STUDIES

TECHNICAL REPORT E-84-3

FISH OF TWO DIKE POOLS IN THE LOWER MISSISSIPPI RIVER

by

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March 1984
Final Report

Prepared for Office, Chief of Engineers, U. S. Army
Washington, D. C. 20314

Under EWQOS Work Units VA and VIIB

Unclassified

SECURITY CLASSIFICATION OF THIS PAGE (When Data Entered)

REPORT DOCUMENTATION PAGE		READ INSTRUCTIONS BEFORE COMPLETING FORM
1. REPORT NUMBER Technical Report E-84-3	2. GOVT ACCESSION NO. AD-A143636	3. RECIPIENT'S CATALOG NUMBER
4. TITLE (and Subtitle) FISH OF TWO DIKE POOLS IN THE LOWER MISSISSIPPI RIVER		5. TYPE OF REPORT & PERIOD COVERED Final report 6. PERFORMING ORG. REPORT NUMBER
7. AUTHOR(s) Robert W. Nailon, C. H. Pennington		8. CONTRACT OR GRANT NUMBER(s)
9. PERFORMING ORGANIZATION NAME AND ADDRESS U. S. Army Engineer Waterways Experiment Station Environmental Laboratory P. O. Box 631, Vicksburg, Miss. 39180		10. PROGRAM ELEMENT, PROJECT, TASK AREA & WORK UNIT NUMBERS EWQOS Work Units VA and VIIB
11. CONTROLLING OFFICE NAME AND ADDRESS Office, Chief of Engineers, U. S. Army Washington, D. C. 20314		12. REPORT DATE March 1984 13. NUMBER OF PAGES 77
14. MONITORING AGENCY NAME & ADDRESS(if different from Controlling Office)		15. SECURITY CLASS. (of this report) Unclassified 15a. DECLASSIFICATION/DOWNGRADING SCHEDULE

16. DISTRIBUTION STATEMENT (of this Report)

Approved for public release; distribution unlimited.

JUL 3 1 1984

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17. DISTRIBUTION STATEMENT (of the abstract entered in Block 20, if different from Report)

18. SUPPLEMENTARY NOTES

Available from National Technical Information Service, 5285 Port Royal Road, Springfield, Va. 22161.

19. KEY WORDS (Continue on reverse side if necessary and identify by block number)

Aquatic ecology--Lower Mississippi River (LC)
Catfishes--Lower Mississippi River--Ecology. (LC)
Dikes (Engineering)--Lower Mississippi River--Environmental aspects. (LC)
Fishes--Effect of water levels on. (LC)
Fishes--Effect of water quality on. (LC)
Fishes--Lower Mississippi River--Ecology. (LC)

20. ABSTRACT (Continue on reverse side if necessary and identify by block number)

Dike structures, designed and installed by the U. S. Army Corps of Engineers in the Lower Mississippi River, can modify river geomorphology, discharge rates, and sediment movements within the river. These changes in the river's characteristics, plus the presence of the dikes themselves, result in shifts in types, sizes, and variety of aquatic habitats on a yearly basis. At low water river stages, isolated dike pools bordered by bars are formed, creating distinct aquatic habitats which are quite variable in size and depth.

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20. ABSTRACT (Continued).

Fish and water samples collected in two such dike pools as well as from the adjacent river border were used to determine the importance of dike pool habitats to fish communities during a low water period of 1980.

Hydrological results indicate that overall differences in water quality were easily distinguishable once stratification began. Surface readings of dissolved oxygen, temperature, and pH were generally higher in the pool habitats than in the main channel. As depth increased, the opposite was true for dissolved oxygen, temperature, and pH. Conductivity at the bottom in the pools during isolation was much higher than in the main channel.

Fish population characteristics were similar in the two pools, but were different from those in the river border. Mean catch per effort values were generally greater in pool habitats with all gear types--seines, hoop nets, and electroshocker. Catch in pool habitats was dominated by threadfin shad and gizzard shad in numerical abundance and total biomass, respectively. River border catch was dominated by typical riverine species such as minnows and shiners. The degree of similarity in fish community structure between any pair of habitats was most closely related to their location within the dike field. Condition factors, calculated for blue catfish, were consistently higher in the pool habitats than along the river border. Catch analyses indicated that stone dikes created suitable habitat for the growth and development of many species of fish.

PREFACE

The study described in this report was sponsored by the Office, Chief of Engineers, U. S. Army, under the Environmental and Water Quality Operational Studies (EWQOS) Program, Work Units VA, Environmental Impact of Selected Channel Alignment and Bank Revetment Alternatives in Waterways, and VIIB, Waterway Field Studies. The EWQOS Program has been assigned to the U. S. Army Engineer Waterways Experiment Station (WES) under the direction of the Environmental Laboratory (EL). The OCE Technical Monitors for EWQOS were Mr. Earl Eiker, Dr. John Bushman, and Mr. James L. Gottesman.

This report presents results of a study designed to document the distribution and relative abundance of fish associated with dike field habitats found within the main-line levees along the Lower Mississippi River. Fish were collected from the Lower Cracraft dikes during the summer of 1980.

The report was prepared by Mr. Robert W. Nailon and Dr. C. H. Pennington under the supervison of Dr. Thomas D. Wright, Chief, Aquatic Habitat Group; Dr. C. J. Kirby, Chief, Environmental Resources Division; Dr. Jerome L. Mahloch, Program Manager, EWQOS; and Dr. John Harrison, Chief, EL.

Special appreciation is expressed to Messrs. Michael Potter and Michael McCoy, EL, for field support. Dr. Michael P. Farrell, Oak Ridge National Laboratory, is thanked for assistance with data analyses.

Commanders and Directors of WES during the study and the preparation of this report were COL Nelson P. Conover, CE, and COL Tilford C. Creel, CE. Technical Director was Mr. F. R. Brown.

This report should be cited as follows:

Nailon, R. W., and Pennington, C. H. 1984. "Fish of Two Dike Pools in the Lower Mississippi River," Technical Report E-84-3, U. S. Army Engineer Waterways Experiment Station, CE, Vicksburg, Miss.

CONTENTS

FISH OF TWO DIKE POOLS IN THE LOWER MISSISSIPPI RIVER

PART I: INTRODUCTION

Background

1. No river has played a greater part in the development and expansion of the United States than the Mississippi River. It has been, and will remain, a vital factor in the economic growth of this country. Billions of dollars have been invested in industrial developments along the river (Anonymous 1977). As the industrial base continues to expand, and as the population continues to grow, the importance of the river as a source for agriculture and industry and as an expressway to markets of the Nation and the world becomes apparent.

2. The Mississippi River and Tributaries Project founded under the auspices of the Mississippi River Commission provides for flood control in the alluvial valley and for navigation improvement of the Lower Mississippi River (Anonymous 1977). The open channel method of navigation control employed on the Lower Mississippi River consists of articulated concrete mattresses for bank revetment to control erosion and eventual channel misalignment, and stone dikes for channel contraction and secondary channel closure. The adoption of a stone dike design to replace the long-used timber pile dike has been a successful effort to build a structure better able to withstand the river's forces.

3. The dike structures, designed and installed by the U. S. Army Corps of Engineers in the Lower Mississippi River, can modify river geomorphology, discharge rates, and sediment movements within the river. These changes in the river's characteristics plus the presence of the dikes themselves result in shifts in the types, sizes, and variety of aquatic habitats on a yearly basis. At low water river stages, isolated dike pools bordered by middle bars are formed creating distinct aquatic habitats which are quite variable in size and depth.

4. Presently, there are approximately 400 dikes in the Lower

Mississippi River having a combined length of over 295 lin km (Anonymous 1980). Despite the large numbers of dikes present in the Lower Mississippi River and its tributaries, the ecological effects of these structures are poorly known. Dike fields and individual dikes are distinct habitats within river systems where these structures are numerous. Data on environmental quality characteristics of dikes and methods for designing and modifying present structures are needed to enhance their value as habitat for the fish communities.

Objectives

5. This research was conducted to determine the importance of dike pool habitats to fish communities during a low water period on the Lower Mississippi River. Specific objectives of the study were to:

   a. Determine fish species composition within two dike pools and adjacent river border.

   b. Determine biomass and condition of blue catfish within two dike pools.

   c. Document variations in water quality characteristics.

PART II: DESCRIPTION OF STUDY AREA

6. The Mississippi River flows some 3545 km from Lake Itasca in northern Minnesota to the Gulf of Mexico below New Orleans, La. It is the third longest river in the world with a drainage basin including all or parts of 31 states and two Canadian provinces. The river is arbitrarily subdivided into the Upper, Middle, and Lower sections. The Lower Mississippi River is defined as that section of the river extending from Head of Passes, Louisiana, upstream 1580 km to the mouth of the Ohio River at Cairo, Ill. Average discharge of the river at Vicksburg, Miss., is approximately 15,900 m^3/sec. Mean current flow within the main channel varies from 1 to 2 m/sec with a maximum recorded velocity of 5 m/sec at extremely high river stages. Hydrographs depict the greatest discharges to occur from February through March and the least discharges to occur from July through October.

7. The selected site for the dike pool studies was the Lower Cracraft Dike Field. This dike field consists of three transverse dikes located on the right bank between river mile 506.5-510.4 (Figure 1). These riprap dikes were constructed for the dual purpose of secondary channel closure and point bar stabilization (Anonymous 1978). The dike field has a stepped-down design. Dike 1 (numbered sequentially from upstream to downstream) is 564 m long with elevations of +6.1 m low water reference point (LWRP) and +4.6 m LWRP at the bank and main channel ends, respectively. Dike 2 is 1114 m long with elevations of +5.5 and +4.0 m LWRP at the bank and main channel ends, respectively. Dike 3 is 1329 m long with elevations of +4.6 and +3.0 m LWRP at the bank and main channel ends, respectively. Dikes 1 and 2 were constructed in 1971; Dike 3 was constructed in 1972. Extensive sand and gravel bars occur between succeeding dikes and over a 4-km reach of the river downstream from the third dike. These bars, the main axes of which are parallel to the main channel flows, isolate extensive pools between the riverbank and the bar during low flow stages. This study was conducted during a low water stage in the pools below Dikes 2 and 3 (Figure 1).

8. Each study pool was unique. Pool 2 was isolated from the main

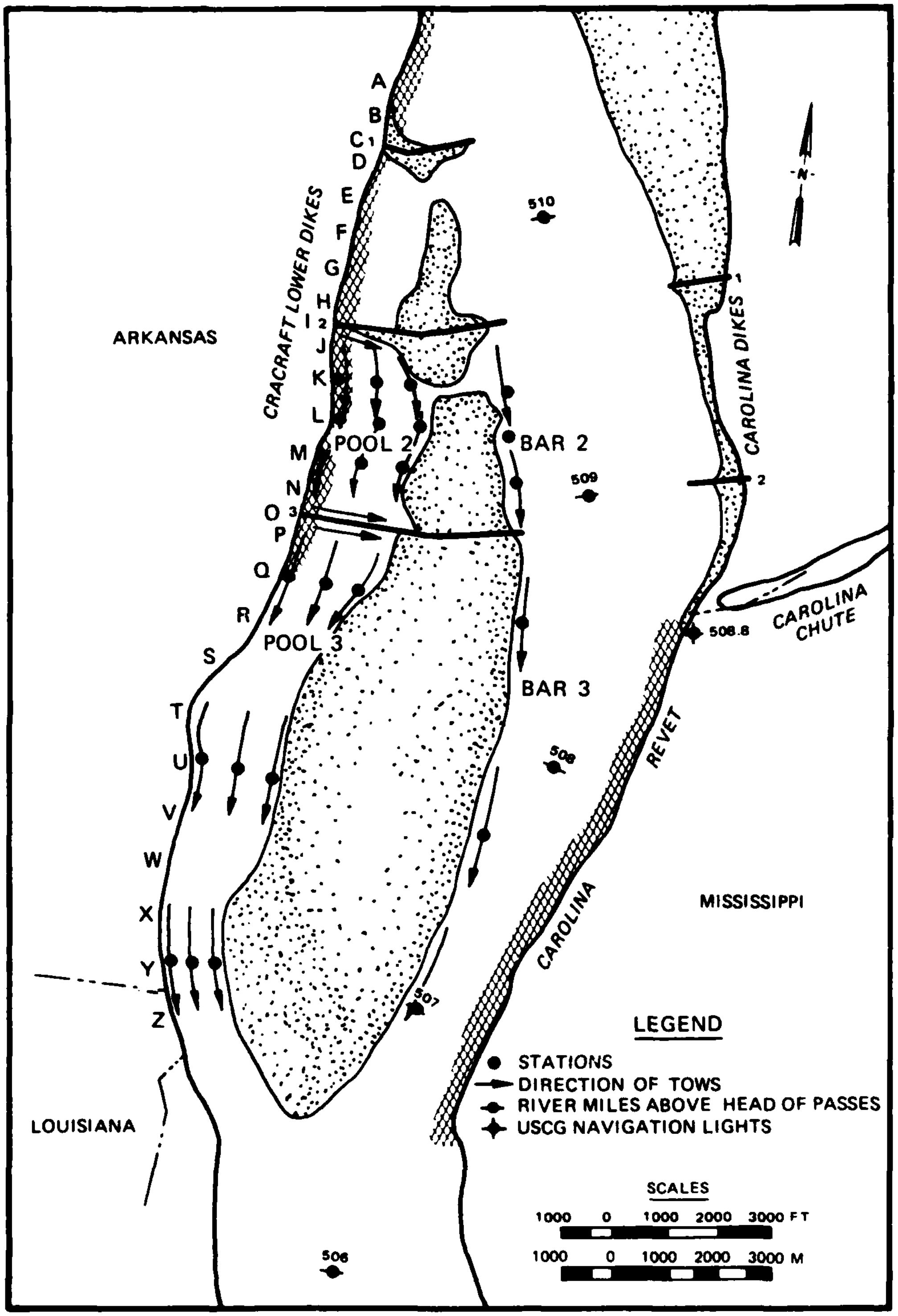

Figure 1. Map of Cracraft Dike Field with water quality and fish sampling stations indicated (USCG = U. S. Coast Guard)

channel and Pool 3 at low water stages, while Pool 3 remained open at the downstream end year-round. The shoreline adjacent to the river in both pools was firm silt and sand and gradually sloped; the opposite shore was a steep bank. Asphalt revetment was present along a portion of the steep bank in Pool 2, and stone riprap revetment was present at the upstream end of Pool 3. No submerged vascular plants were present at any time during the study in Pool 2. Isolated areas of standing timber and stumps were present at the lower end of Pool 3 along the natural bank. Dense stands of willows (*Salix* spp.) occur along the natural bank of Pool 3 and are inundated at higher flows. Pool 2 was approximately 29.8 ha in area during isolation. Pool 3 was approximately 118.9 ha in size. Pool 2 was deep at the upstream end, with depths between 6.5 and 11.0 m, while Pool 3 maintained these depths along its entire length.

9. A grid system was employed for location of all sampling stations. Lettered markers (alphabetic notation) placed along the bank depict imaginary lines in the pools running from the bank toward the main channel (Figure 1). Equidistant stations were placed along these imaginary transects with locations dependent on river stage and geomorphology. Three transects were established below each dike. Four stations were positioned along each transect as follows:

a. Adjacent to the steep natural bank.

b. Adjacent to the inner side of the middle bar.

c. Midway between stations described in a and b.

d. Adjacent to the riverside of the middle bar (river border).

These stations were established to investigate both longitudinal and transverse distribution of fish within the dike field. Exact location of stations along each transect fluctuated with river stage, but the relative positions, as described above, remained the same.

PART III: METHODS AND MATERIALS

10. Samples of water and fish were collected from Pools 2 and 3 of the Cracraft Dike Field and from the adjacent river border. Sampling began on 2 July 1980 and continued through 25 September 1980.

Water Quality

11. Surface and bottom water quality data were collected from the nine stations in each dike pool. Water quality measurements were measured at the surface only from a single station on the riverside of the middle bar. A Hydrolab Model 6D was used to make in situ measurements of pH, temperature, dissolved oxygen, and conductivity. Water samples, preserved on ice, were returned to the laboratory for analysis of total hardness, and total alkalinity (American Public Health Association 1975). Measurements of water quality were conducted weekly except during 17 July through 2 August when sampling was conducted on alternate days.

Fish

Collecting methods

12. Fish were collected monthly with seines, gill nets, electroshocking equipment, and hoop nets. Gill nets were not employed in pool habitats during 31 July-10 August. During this time, a mark-recapture study was attempted in Pools 2 and 3, but was later abandoned when recapture numbers were low and river levels rose to reflood the pools. Rotenone, in conjunction with block netting, was used during 30 July-1 August to collect fish from Pools 2 and 3 only.

13. Fish were captured with a 4.6- by 0.9-m "common sense" seine having a square mesh size of 3.2 mm from three stations in each pool along the inner side of the middle bar and from six stations on the riverside of the middle bar. Seine hauls at each station were parallel to shoreline in a downstream direction and 32 m long.

14. Experimental gill nets used were 45.7 m long, 2.4 m deep, and had six panels 7.6 m in length with square mesh sizes of 25, 38, 50, 63, 75, and 89 mm, respectively. They were set at a randomly selected station positioned on each of the three transects in Pools 2 and 3 only. Gill nets were fished for two consecutive 24-hr periods.

15. Electroshocking was done with a commercially built, 230-V, pulsed DC, boat-mounted boom shocker. There were eight electroshocking transects in Pool 2, ten in Pool 3, and five along the riverside of the middle bar (Figure 1).

16. Double-throated hoop nets, 0.9-m mouth diameter with 25.4-mm-square mesh netting, were set at each of the nine stations in Pools 2 and 3 and at the six stations along the riverside of the middle bar. The nets were set parallel to shoreline and fished unbaited for two consecutive 24-hr periods.

17. A single 0.26-ha plot set in each pool was sampled for fish using rotenone midway through the study (30 July-2 August). Block nets 2.7 m deep, 152 m long, with a square mesh size of 6.4 mm were used to block off each plot. Rotenone was applied to each plot at a concentration of 1 mg/ℓ. Potassium permanganate was applied around the outside perimeter of each plot at a rate of 2.5 to 3.0 mg/ℓ to detoxify any rotenone which might have escaped through the net through wind action or boat activity. Fish were collected for 48 hr following application of rotenone.

18. The larger fishes were identified and processed in the field. Juvenile fishes, minnows, and unusual fishes were preserved in 10-percent formalin for later identification. Total length (millimetres) and weight (grams) were recorded for all specimens in good condition. When large numbers of fish of the same species occurred within any one sample, a subsample of that species was taken. (Nomenclature of fish is given in Table 1).

Sampling dates

19. There were six major sampling efforts plus one rotenone effort during the study period:

a. 2-5 July

b. 13-16 July

c. 30 July-2 August (rotenone samples)

d. 3-10 August

e. 24-27 August

f. 7-10 September

g. 22-25 September

Each was approximately 4 days in duration and was scheduled to coincide as much as possible with river stages that created flowing and non-flowing (isolated) conditions through Pools 2 and 3.

Treatment of data

20. Mean numerical catch per unit of effort (C/f), mean total weight of fish per unit of effort (C/y), and mean number of species per unit of effort were calculated for each habitat during each sampling period. The C/f for all variables for gill nets and hoop nets was based on each catch per net per 24-hr set. For electroshocking, the unit of effort was a single 600-m transect. The C/f for seining was based on catch per 32-m haul. Catch from the block nets was reported on a per hectare basis. Data were also transformed to log 10 (x + 1) as is generally appropriate for species abundance estimates (Green 1979). Analysis of variance (ANOVA) was used to test for differences between habitats based on mean C/f , C/y , and number of species. Data were also transformed to log 10 (x + 1) as is generally appropriate for species abundance estimates (Green 1979). The significance level for all catch data was established at $\alpha = 0.05$.

21. Condition factor (K) was determined from length-weight data according to Carlander (1969). Blue catfish K values were treated with ANOVA and log 10 ANOVA to compare by habitat over time. Duncan's multiple range test was applied to K data to facilitate comparisons among habitats.

22. The binary similarity coefficient, Kulczynski First, was also applied to the data to compare fish communities among habitats. The Kulczynski First is a ratio of cojoint presence to the sum of the reciprocal absences (A/B + C). This coefficient is one of the best

indicators of change in dike field fish communities when large numbers of species make up the community (Polovino, Farrell, and Pennington 1983). Furthermore, measures based on presence/absence represent a valid alternative method for characterizing compositional change in community structure when dealing with highly variable data, which is the case in most fishery assessment studies.

PART IV: RESULTS

Flow Pattern Characteristics

23. The formation of dike pools is dependent upon river stage. During the sampling period of 2-5 July, river stage was highest than at any other time during the study (Figure 2). Water was flowing over Dike 3 and much of the middle bar (Table 2). By the 13-16 July sampling period, the river had fallen to create a cascading effect over Dike 3 and flow continued over much of the middle bar. From 31 July-10 August, river stage had dropped sufficiently to fully expose the middle bar and Dike 3, forming isolated pool conditions. A rise in river stage on 21 August that continued through approximately 5 September allowed flow through Pool 2 and the cascading effect over Dike 3 was again present. As river stage fell to create isolated conditions during 7-10 September, all of the middle bar was exposed and no flow was present through Pool 2 over Dike 3. River stage dropped even more during 22-25 September to

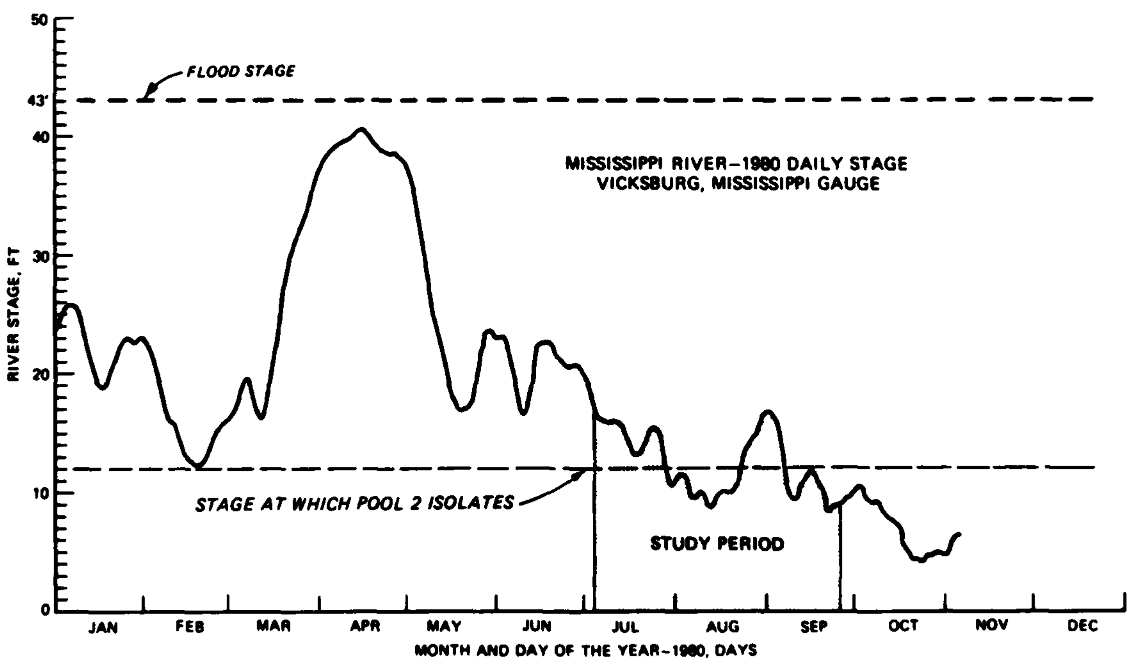

Figure 2. Daily river stage hydrograph for the Lower Mississippi River, Vicksburg, Miss., gauge, 1980

the lowest during the study. Pools decreased appreciably in size during this time and more of the middle bar became exposed. Flow along the riverside of the middle bar varied little throughout the study.

Characterization of Individual Habitats

Pool 2

24. Water quality. Mean water temperatures ranged from 25.4° to 30.1° C at the bottom and 26.8° to 32.9° C at the surface (Figure 3). Pool 2 was essentially isothermal until river stage had fallen sufficiently for the pool to become isolated from the main channel. When this occurred, the water in the pool thermally stratified and stratification continued until 28 August when river stage had risen sufficiently to reflood Pool 2.

25. Mean dissolved oxygen levels ranged from 1.7 to 7.7 mg/ℓ at

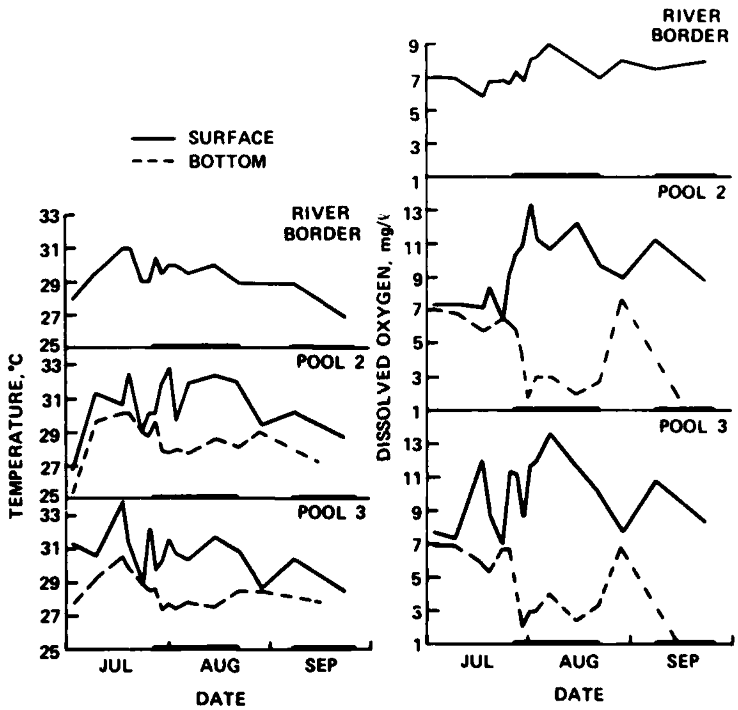

Figure 3. Mean surface and bottom temperature and dissolved oxygen values for water quality stations at the river border, Pool 2, and Pool 3 from 2 July-25 September 1980. Dark portions of the abscissa represent periods of isolation

the bottom and 6.7 to 13.4 mg/ℓ at the surface (Figure 3). Surface and bottom dissolved oxygen levels were quite uniform during the periods prior to 23 July in Pool 2 when flowing conditions were present. Stratification became apparent in Pool 2 and after 23 July and continued until river levels rose on 28 August.

26. Mean total alkalinity levels in Pool 2 ranged from 108.0 to 140.0 mg/ℓ $CaCO_3$ at the surface and 114.0 to 232.0 mg/ℓ $CaCO_3$ at the bottom (Figure 4). Surface and bottom alkalinity were similar during all sampling periods except on 17 July when the highest values were measured at the bottom.

27. Mean pH levels in Pool 2 ranged from 7.9 to 9.4 at the surface and 7.1 to 8.7 at the bottom (Figure 4). Stratification was apparent from 27 July-28 August with surface pH greater than at the bottom.

28. Mean conductivity levels in this pool ranged from 347.8 to 538.3 µmhos/cm at the bottom and 347.2 to 507.8 µmhos/cm at the surface (Figure 4). Surface and bottom values were similar until 31 July when stratification occurred. During this time, bottom conductivity values were higher than at the surface.

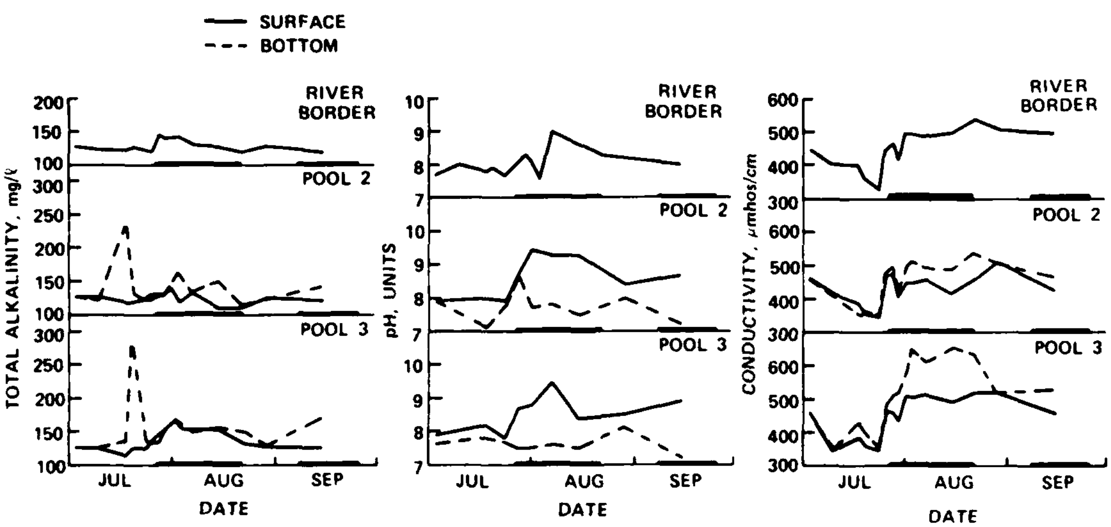

Figure 4. Mean surface and bottom total alkalinity, pH, and conductivity values for water quality stations at the river border, Pool 2, and Pool 3 from 2 July-25 September 1980. Dark portions of the abscissa represent periods of isolation

29. Fish. A total of 42 species and 5344 individual fish were collected from Pool 2. The number of species occurring during any one sampling period ranged from 19 to 25 and the number of individuals from 162 to 2013 (Table 3). Gizzard and threadfin shad dominated the catch in Pool 2 with 35.6 and 33.0 percent of the catch, respectively, using all gears. Their relative abundances fluctuated considerably; for example, threadfin shad comprised 1.0 percent of the catch during 13-16 July and 24-27 August to 54.3 percent of the catch during 31 July-10 August. Other species comprising at least 3.0 percent of the catch were river shiner (4.2 percent), emerald shiner (3.6 percent), and blue catfish (3.1 percent).

30. The abundance of the more typical riverine species, such as the minnows and shiners, was generally low in this pool. The minnows and shiners comprised 11.8 percent of the total catch. Although 11 species of minnows and shiners occurred in Pool 2, only the emerald and river shiner were collected at every sampling date. Four species, quillback carpsucker, mimic shiner, speckled chub, and carp, were unique to this pool.

31. Commercial and sport fishes comprised 11.8 percent of the species collected from Pool 2. Centrarchids collectively comprised only 0.8 percent of the catch. Catfishes and freshwater drum represented 8.2 and 2.1 percent of the catch, respectively.

Pool 3

32. Water quality. Mean temperatures were most variable during the study. Temperatures ranged from 28.7° to 33.9° C at the surface and 27.4 to 30.6° C at the bottom (Figure 3). Thermal stratification first became apparent in this pool on 25 July and continued until river levels rose, on 28 August, flooding the pool. Stratification was again evident in September.

33. Mean dissolved oxygen concentrations were quite variable in Pool 3 prior to 23 July. Surface dissolved oxygen ranged from 7.1 to 13.6 mg/ℓ and bottom concentrations ranged from 1.2 to 6.9 mg/ℓ (Figure 3). Stratification became apparent after 23 July and continued until 28 August.

34. Mean total alkalinity at both surface and bottom was usually similar in Pool 3. However, on 19 July surface levels were 123 mg/ℓ $CaCO_3$ and bottom levels were 280 mg/ℓ CaC_3 (Figure 4).

35. Mean pH levels in Pool 3 ranged from 7.8 to 9.5 at the surface and 7.5 to 8.1 at the bottom (Figure 4). Differences between surface and bottom levels were greatest on 6 August and stratification was apparent from 23 July through 28 August.

36. Mean conductivity ranged from 342.2 to 517.2 μmhos/cm at the surface and 345.0 to 650.0 μmhos/cm at the bottom (Figure 4). Stratification patterns were evident beginning on 25 July through 28 August.

37. Fish. Thirty-seven species, comprising 15,454 individuals, were collected from Pool 3. The number of species occurring during any one sampling period ranged from 20 to 27 and the number of individuals from 334 to 9,153 (Table 4).

38. Threadfin and gizzard shad dominated the fish community of this pool and comprised 62.1 and 21.6 percent of the total catch, respectively (Table 4). Their relative abundances fluctuated considerably among sampling dates; for example, threadfin shad ranged from 1.3 percent of the catch during 13-16 July to 83.0 percent of the catch during 31 July-10 August. Three additional species, emerald shiner, river carpsucker, and blue catfish, each constituted 3.1, 2.4, and 2.3 percent, respectively, of the overall total catch. Bigmouth buffalo, black buffalo, longear sunfish, and largemouth bass were captured only from Pool 3.

39. The abundance of minnows and shiners comprised 6.1 percent of the total catch from Pool 3 and was lower than in other habitats sampled. Of the seven species of minnows and shiners captured, only the emerald shiner and river shiner were present during every sampling period. The central silvery minnow and silverband shiner were represented by only a single collection during the 31 July-10 August sampling period.

40. Commercial and sport fish abundance was generally low in this pool and comprised only 4.8 percent of the total catch. Catfishes, especially the blue catfish, dominated the commerical and sport fish catch and comprised 3.6 percent of the total.

River border of middle bar

41. Water quality. Water quality measurements along the river border varied only slightly during the study. Temperatures ranged from a high of 31.0° C recorded on 17 and 19 July to a low of 26.9° C measured on 25 September (Figure 3). Dissolved oxygen concentrations ranged from 5.8 to 9.0 mg/ℓ (Figure 3). The former occurred on 17 July and the latter on 6 August.

42. Total alkalinity levels along the river border were similar throughout the study. Measurements ranged only from 119 to 144 mg/ℓ $CaCO_3$ (Figure 4), the former occurring on 25 July and 25 September and the latter occurring on 27 July. River border pH values ranged from 7.7 to 9.0 and both extremes were measured during August. Conductivity ranged from 330 to 540 μmhos/cm during the study with the higher values being recorded during August when river stages were low (Figure 4).

43. Fish. A total of 415 fish representing 20 species were captured from Bar 2 (upstream reach of middle bar). The fauna collected during a sampling period varied only slightly; the number of species ranged from 7 to 12, and the number of individuals ranged from 47 to 134.

44. Emerald shiner comprised 41.7 percent of the total fish captured and dominated the catch from Bar 2 except on two occasions: during 2-5 July, bluegill were most numerous and during 7-10 September, river shiner were greatest in abundance (Table 5). Blue catfish fluctuated in relative abundance from 5.6 to 32.1 percent of the catch during any one sampling period and comprised 18.8 percent of the total. Other species comprising at least 4.0 percent of the catch were river shiner (8.0), inland silversides (4.8), and flathead catfish (4.3).

45. Only five species of minnows and shiners occurred along Bar 2, but comprised 55.4 percent of the total catch. The emerald shiner, river shiner, and silverband shiner were captured consistently throughout the study. The silver chub and blacktail shiner were each collected only during a single sampling period.

46. Sport and commercial fishes, principally the blue catfish, flathead catfish, and the bluegill, comprised 28.9 percent of the total

number of individuals. Blue catfish dominated and accounted for 85 percent of sport and commerical fish captured.

47. The abundance of gizzard and threadfin shad was relatively low along Bar 2. Both species collectively comprised only 5.8 percent of the catch. One yellow bass caught during 13-16 July was unique to Bar 2.

48. Twenty-seven species, comprising 829 individuals, were collected from Bar 3. The number of species occurring during any one sampling period ranged from 9 to 15 and the number of individuals from 34 to 249 (Table 6). Two species, bullhead minnow and mosquitofish, were unique to Bar 3 during this study.

49. Emerald shiner and gizzard shad were the two most abundant species from Bar 3 and comprised 30.6 and 21.0 percent of the total catch, respectively. Their relative abundances fluctuated considerably among sampling dates; for example, the emerald shiner ranged from 8.4 percent of the catch during 7-10 September to 63.1 percent during 13-16 July and the relative abundance of gizzard shad ranged from a low of 1.1 percent during 7-10 September to a high of 57.0 percent during 22-25 September. Three additional species, river shiner, blue catfish, and inland silverside, each accounted for 13.6, 12.1, and 5.9 percent of the overall catch, respectively.

50. The abundance of minnows and shiners comprised 47.0 percent of the total catch from Bar 3. The emerald and river shiner were the most abundant of the seven species of minnows and shiners captured and accounted for 30.6 and 13.6 percent of the catch, respectively. Five or less individuals of silver chub, weed shiner, blacktail shiner, and bullhead minnow were captured and collectively accounted for only 1.3 percent of the catch.

51. Commercial and sport fish comprised 16.8 percent of the total catch. Catfishes, especially the blue catfish, dominated the commercial and sport fish catch and accounted for 15 percent of the total.

Comparison of Fish Populations Among Habitats

52. A total of 22,042 fish representing 53 species and 16 families

were captured from the Cracraft Dike Field during the study. By far the numerically most abundant species was threadfin shad which comprised 50.7 percent of the total catch. Gizzard shad comprised the greatest percentage (39.3 percent) by weight of the catch.

Abundance

53. Mean C/f , C/y , and number of species were indices used to compare, by gear type, the fishes captured from the four habitats over the six sampling periods. ANOVA was used to statistically compare habitats.

54. Relative abundance and species composition varied depending upon sampling gear. Hoop nets principally sampled gizzard shad, flathead catfish, and freshwater drum. Gill nets were particularly effective on gizzard shad, goldeye, blue catfish, skipjack herring, shortnose gar, river carpsucker, and threadfin shad. Electroshocking catch was principally comprised of gizzard shad, blue catfish, threadfin shad, and flathead catfish. Seining was effective on such shallow-water species as emerald shiner, river shiner, threadfin shad, juvenile river carpsucker, and inland silverside.

55. Hoop nets. During the first two sampling periods, mean C/f was consistently higher along the river border (Figure 5), but only the value at Bar 3 during 13-16 July was significant. Catch was comprised principally of gizzard shad and freshwater drum in the pools and catfishes in the river. Just prior to the 31 July-10 August sampling period, Pool 2 became isolated from the main channel and Pool 3. The occurrence of isolation had no apparent immediate effect on the catch since mean C/f along the river border continued to be higher than mean C/f in the pools. Catch in the pools was dominated by gizzard shad, river carpsucker, and freshwater drum during this time. River border catch was comprised principally of catfishes. As the river rose to reflood the pools just prior to 24-27 August, a shift occurred in mean C/f and for the remainder of the study mean C/f was greater in the pools than along the river border. Flathead catfish dominated the catch along the river border and gizzard shad, black crappie, and river carpsucker were the principal species collected in the pools during this

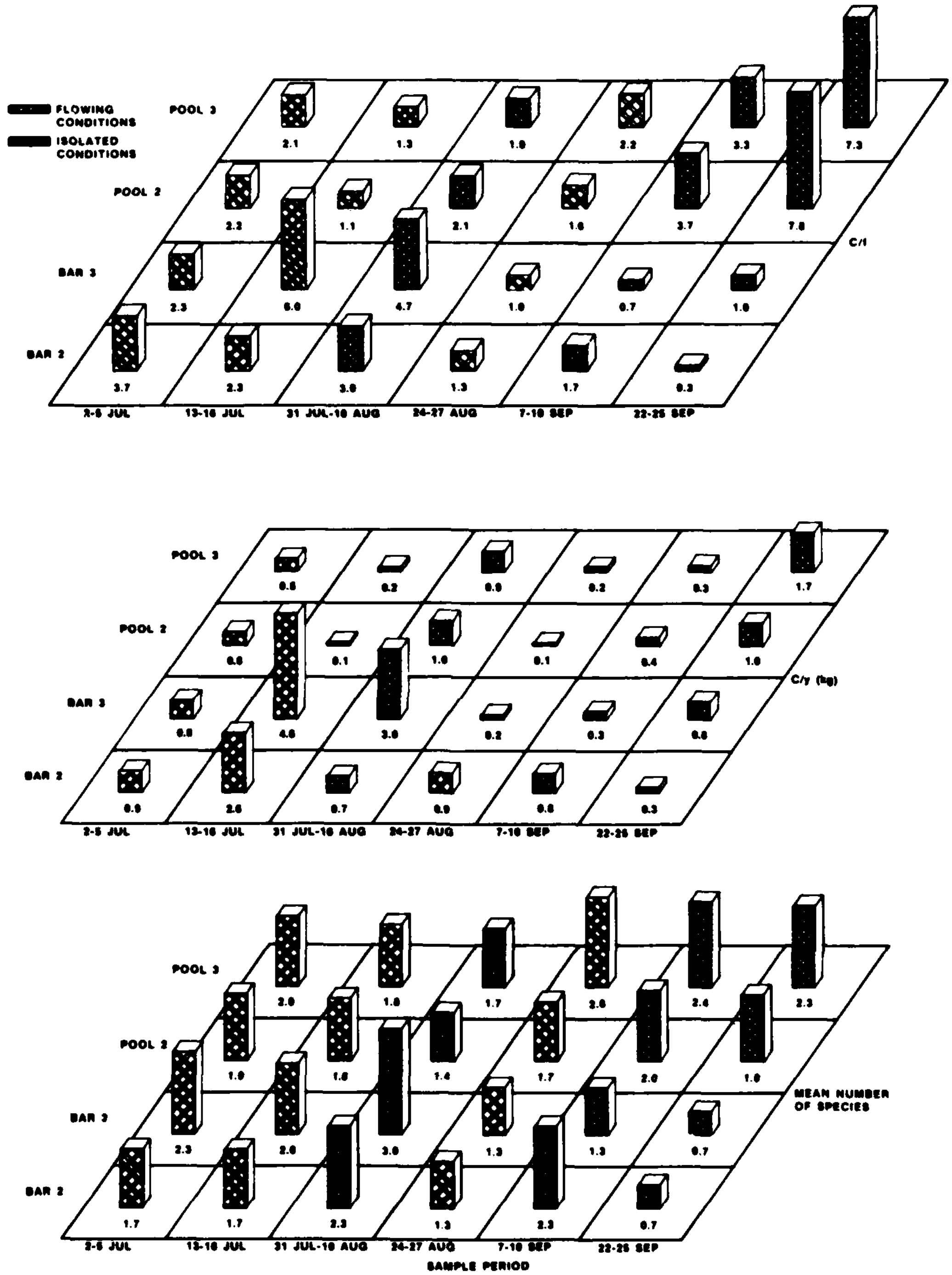

Figure 5. Catch per unit of effort (C/f), mean weight (C/y), and mean number of species for hoop net data over time

time. The greatest contrast in mean C/f occurred during 22-25 September when catch in the pools was significantly higher than those at Bar 2 and Bar 3. Gizzard shad almost exclusively comprised the catch in the pools, while very few fish were collected along the river border during this time.

56. Hoop net catches averaged less than 1.0 kg over all habitats during 2-5 July and mean C/y generally reflected the pattern of mean C/f (Figure 5). During 13-16 July mean C/y was significantly higher along the river border. The high value at Bar 3 was a result of the capture of several large blue suckers at this time. During 31 July-10 August and 24-27 August, mean C/y values were higher along the river border with catch at Bar 3 being significantly higher during the former and at Bar 2 during the latter. Catches remained low in all habitats during 7-10 September and increased slightly during 22-25 September.

57. Mean number of species varied little across all habitats during 2-5 and 13-16 July. As river levels dropped to create pool isolation just prior to 31 July-10 August, mean number of species values were higher at Bar 2 and Bar 3. By 24-27 August the opposite effect became apparent. As river levels rose to reflood the pool habitats, mean number of species values were higher in the pools than along the river border. This trend continued for the remainder of the study. However, only during 22-25 September was the difference significant.

58. Gill nets. During 2-5 July and 13-16 July overall catch was low in the pools (Figure 6). Gizzard shad was the principal species collected during these times. The 2-5 July sampling period was the only occurrence of a higher mean C/f in Pool 2. Falling river levels between 24-27 August and 7-10 September had no apparent effect on the catch since mean C/f continued to be higher in Pool 3, but no significant differences were found. Gizzard shad, blue catfish, and shortnose gar comprised the majority of the catch in the pools during August and September.

59. Mean C/y values were consistently higher in Pool 3 and generally followed the pattern of mean C/y (Figure 6). However,

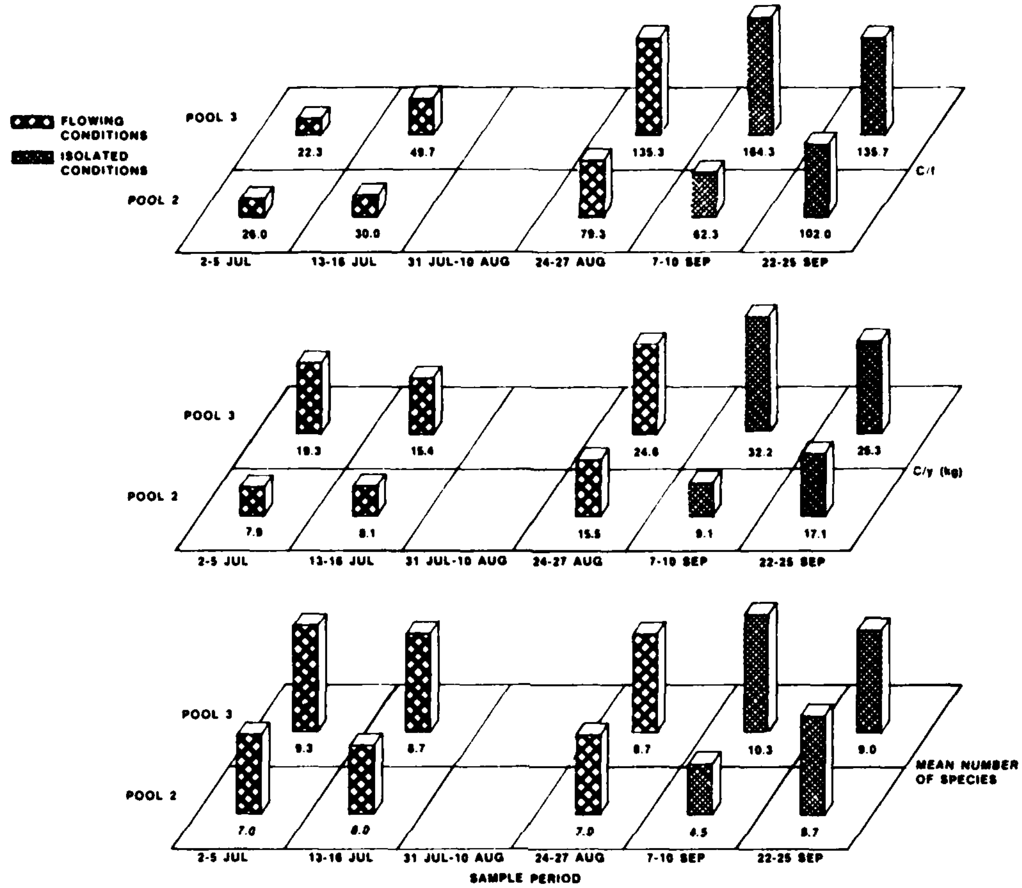

Figure 6. Mean catch per unit of effort (C/f), mean weight (C/y), and mean number of species for gill net data over time

significant differences in mean C/y between pools occurred only during 7-10 and 22-25 September.

60. Gill net catches during all sampling periods were generally comprised of six or more different species in Pool 2 and Pool 3 (Figure 6). Mean number of species was consistently higher in Pool 3 and demonstrated the overall trends of the mean C/f and mean C/y . However, only during 7-10 September was the difference large enough to be statistically significant.

61. <u>Electroshocking.</u> Overall catch was low across all habitats during 2-5 July and 13-16 July (Figure 7). During the latter, Pool 3 exhibited a significantly higher mean C/f than the other habitats.

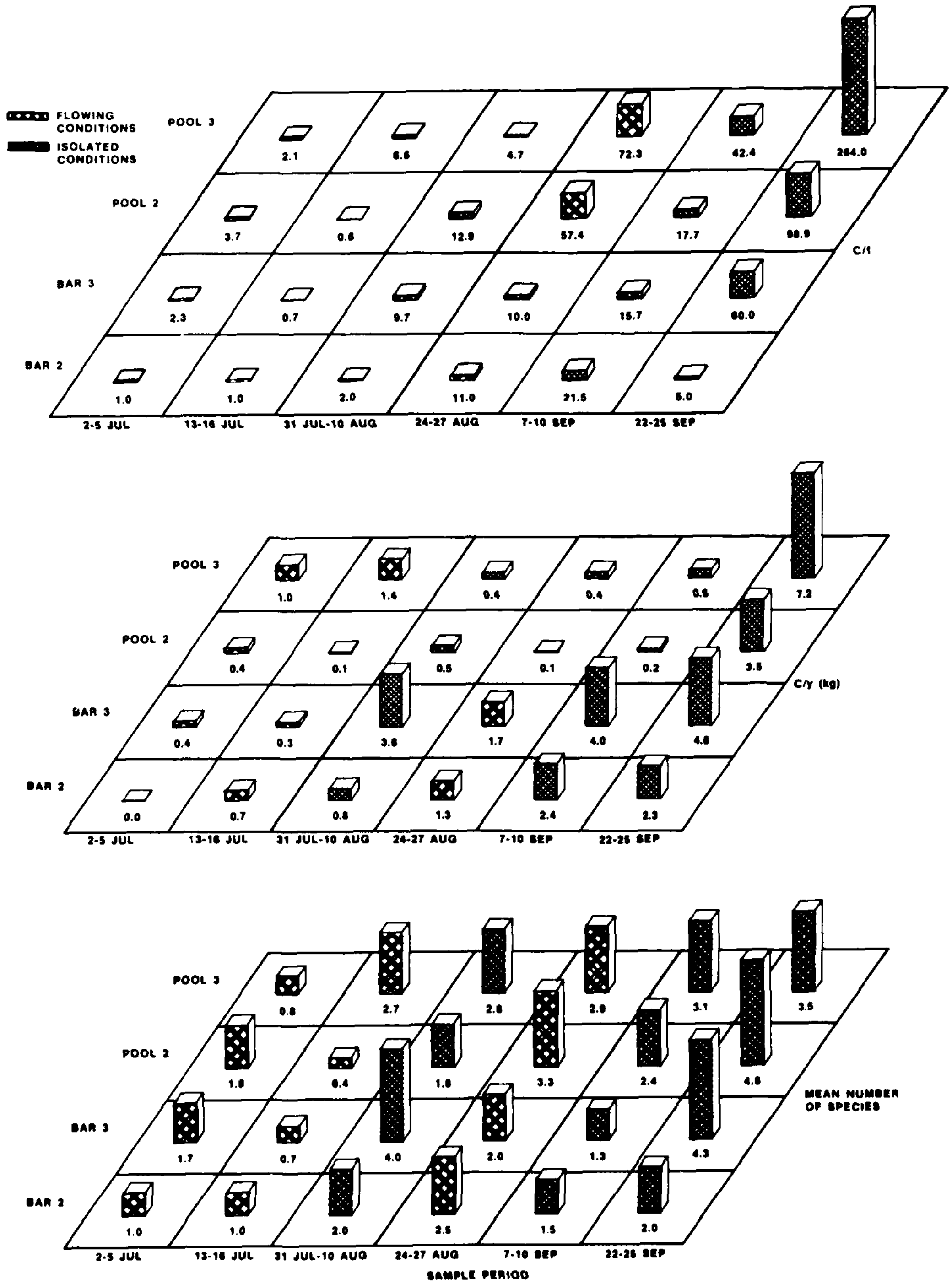

Figure 7. Mean catch per unit of effort (C/f), mean weight (C/y), and mean number of species for electroshocking data over time

Catch during July and August was dominated by gizzard shad and blue catfish in all habitats. The onset of isolation had no marked effect on mean C/f during 31 July-10 August; values were not significantly different. Mean C/f was higher in the pool habitats than along the river border during 24-27 August as river levels rose to reflood the pools, but the differences were not significant. Mean C/f remained low across all habitats during 7-10 September with Pool 3 again exhibiting the highest value. Gizzard shad, river carpsucker, and blue catfish were the dominant species collected in the pools during 7-10 September. The greatest contrast in mean C/f occurred during 22-25 September. The high C/f at Pool 3 was the result of the capture of numerous threadfin shad during this time and was significantly greater than mean C/f at any other habitat.

62. Electroshocking catches averaged less than 2.0 kg over all habitats during 2-5 and 13-16 July (Figure 7). During 31 July-10 August, 24-27 August, and 7-10 September, mean C/y was significantly higher along the river border than in the pools. Mean C/y was consistently higher in all habitats during 22-25 September, but no significant differences were found.

63. During 2-5 July, Pool 2 and Bar 3 exhibited the highest mean number of species. Bar 2 and Pool 3 had significantly higher numbers of species during 13-16 July. As river levels dropped just prior to 31 July-10 August, a higher number of species made up the catch in all habitats. During 24-27 August when river levels rose to reflood the pools, as well as 7-10 September when river levels dropped once again, mean number of species was higher in the pools than along the river border. However, only during 7-10 September were the values significant. An increase in number of species was evident across all habitats during 22-25 September. Generally, more species comprised the catch in all habitats during this time.

64. <u>Seine.</u> During 2-5 July, mean C/f was higher in the pools than along the river border (Figure 8). Catch was principally comprised of threadfin shad, emerald shiners, river shiners, and inland silversides in the pools during this time. The bulk of the catch along the

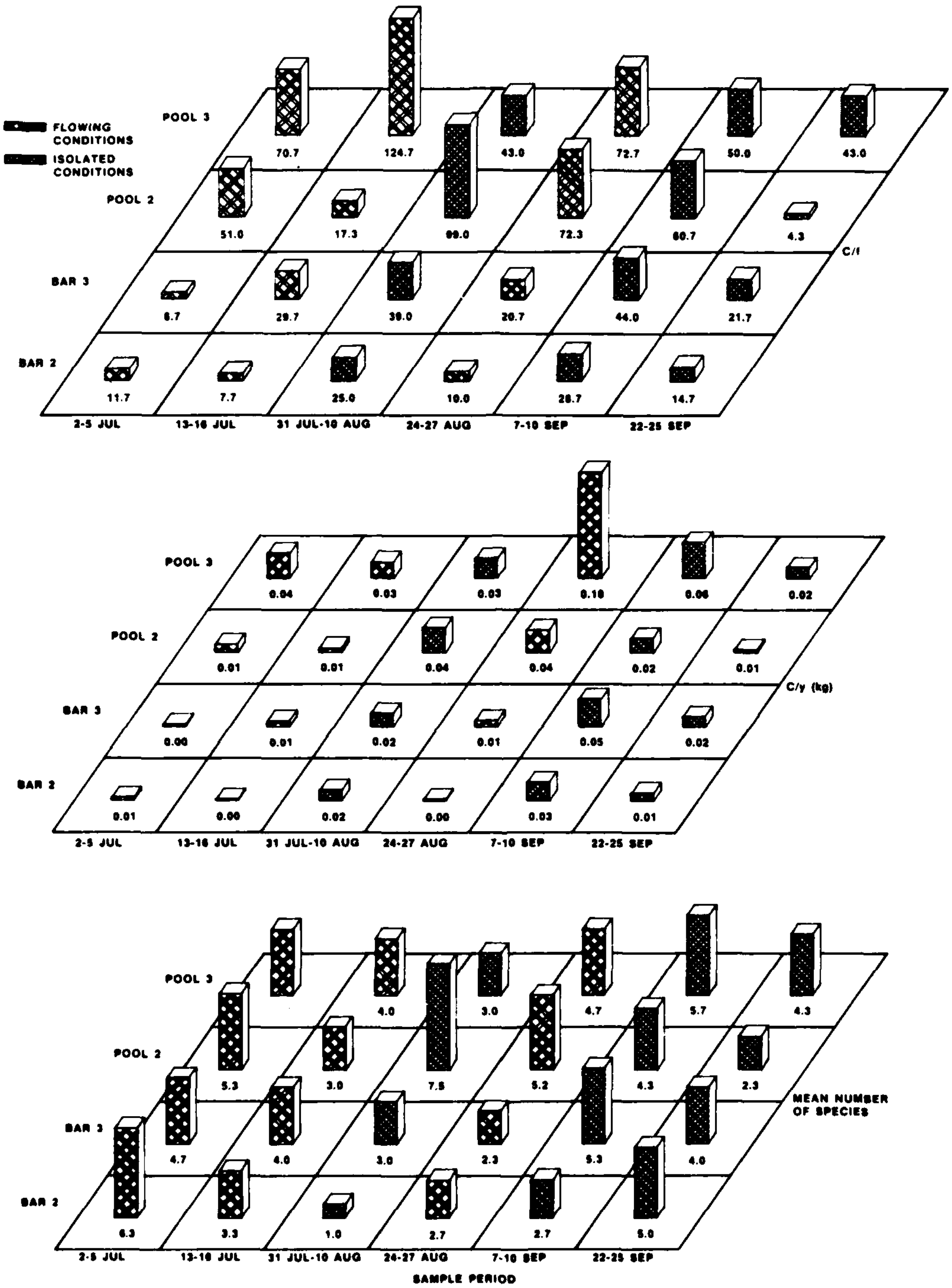

Figure 8. Mean catch per unit of effort (C/f), mean weight (C/y), and mean number of species for seine data over time

river border was comprised of emerald and river shiners. Catch was highly variable during 13-16 July, with Pool 3 exhibiting a significantly higher mean C/f than the other habitats. Emerald shiners, river shiners, and river carpsuckers dominated the catch in all habitats during this time. During 31 July-10 August, mean C/f was significantly higher in Pool 2 due to the catch of numerous river shiners. Pool habitats exhibited a significantly higher mean C/f than along the river border during 24-27 August due to the catch of large numbers of emerald and river shiners. Mean C/f was also greater in the pools during 7-10 September, but values were not significantly different. Mean C/f dropped off in each habitat during 22-25 September.

65. Mean C/y was very low at both pool and bar habitats throughout the study (Figure 8). However, Pool 3 had significantly higher values during 13-16 July and 24-27 August. The highest value occurred during 24-27 August at Pool 3.

66. Seine data exhibited a higher mean number of species throughout the study than did data from any other gear type (Figure 8). When isolation occurred just prior to 31 July-10 August, species composition varied among habitats. Pool 2 exhibited the highest value during this time but was not significantly different from other habitats. Higher species numbers were present in the pool habitats during 24-27 August. Pool 3 and Bar 3 exhibited the highest species numbers during 7-10 September, while Bar 2 and Bar 3 had the highest during 22-25 September.

67. Rotenone. During 31 July-10 August, threadfin shad was the dominant species in Pool 2 with 64.0 percent of the catch. Other species comprising at least 3.0 percent of the catch were catfishes (14.7 percent), gizzard shad (10.2 percent), silver chub (4.1 percent), and freshwater drum (4.1 percent). During this time, 19 species were collected in Pool 2 with rotenone compared to 10 or less utilizing any other gear. Species collected only with rotenone during 31 July-10 August include central silvery minnow, silverband shiner, highfin carpsucker, smallmouth buffalo, brook silverside, inland silverside, bluegill, and sauger.

68. Threadfin shad comprised 84.8 percent of the catch in Pool 3.

Another species comprising at least 3.0 percent of the catch included river carpsucker (3.8 percent). A total of 22 species was collected in Pool 3 with rotenone during this time compared to 10 or less utilizing any other gear. Species collected only with rotenone during this time include skipjack herring, central silvery minnow, silver chub, silverband shiner, weed shiner, striped bass, orangespotted sunfish, longear sunfish, and freshwater drum.

Seasonal similarity

69. Kulczynski's Binary Similarity Coefficient, based on pairwise comparison of species presence-absence, was calculated for each pair of habitat locations during each sampling period and for each pair of sampling periods at a particular habitat. This coefficient serves as a means of detecting changes in similarity of fish communities over time. Results indicated that species composition in all habitats fluctuated over the low water period. Habitat type was suggested as important in determining location similarities. Fish communities of Pool 2 and Pool 3 were quite similar over all sampling periods (Figure 9). The similarity of fish communities in Bar 2 and Bar 3 was quite variable throughout the sampling periods. In contrast, the habitat effect for pool-bar combinations likely contributed to a lower degree of similarity over time. Pool 2 and Pool 3 fish communities were expected to be more similar duing sampling periods conducted under flowing conditions. However, no general trend was apparent except during 2-5 July and 24-27 August (Figure 9). Similarity values between Pool 2 and Pool 3 during 24-27 August and 7-10 September indicated that fish community structure did not change as river levels dropped to reiosolate Pool 2 (Figure 9).

70. Pairwise comparisons of sampling periods for each habitat revealed some interesting trends. Although similarity values in all habitats were quite variable, fish species composition over time in Pool 2 and Pool 3 was more similar than that of Bar 2 and Bar 3. Of the four habitats, Pool 3 showed the highest similarity values over time (Figure 10), which indicates that the fish community in Pool 3 was more stable than at any other habitat. Pairwise comparisons of sampling periods

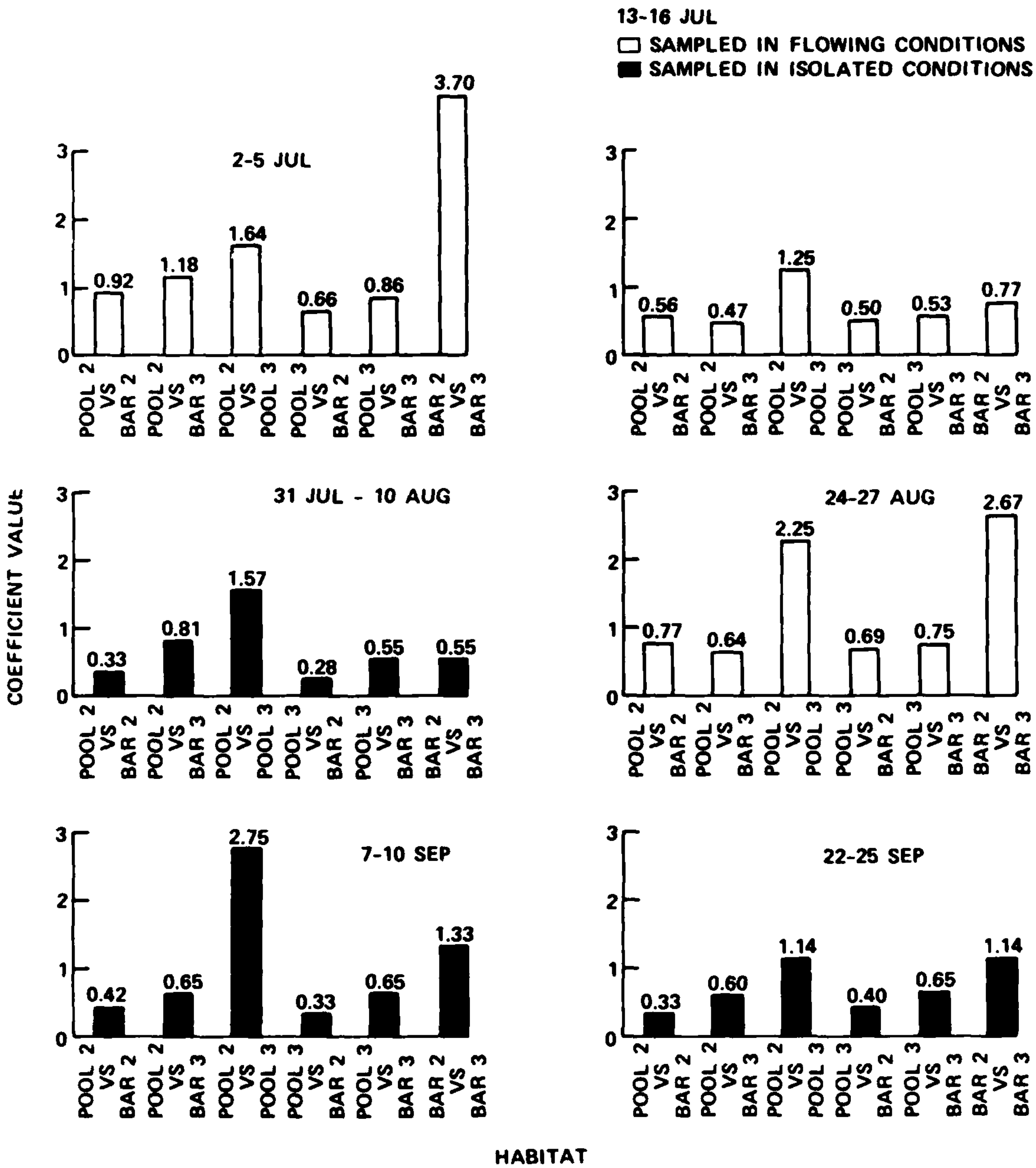

Figure 9. Kulczynski's Binary Similarity Coefficient values for each pairwise habitat comparison from 2 July-25 September 1980

for Bar 3 were generally higher than those of Bar 2 with high degrees of similarity noted in both habitats during 24-27 August versus 7-10 September samples and 24-27 August versus 22-25 September samples (Figure 10).

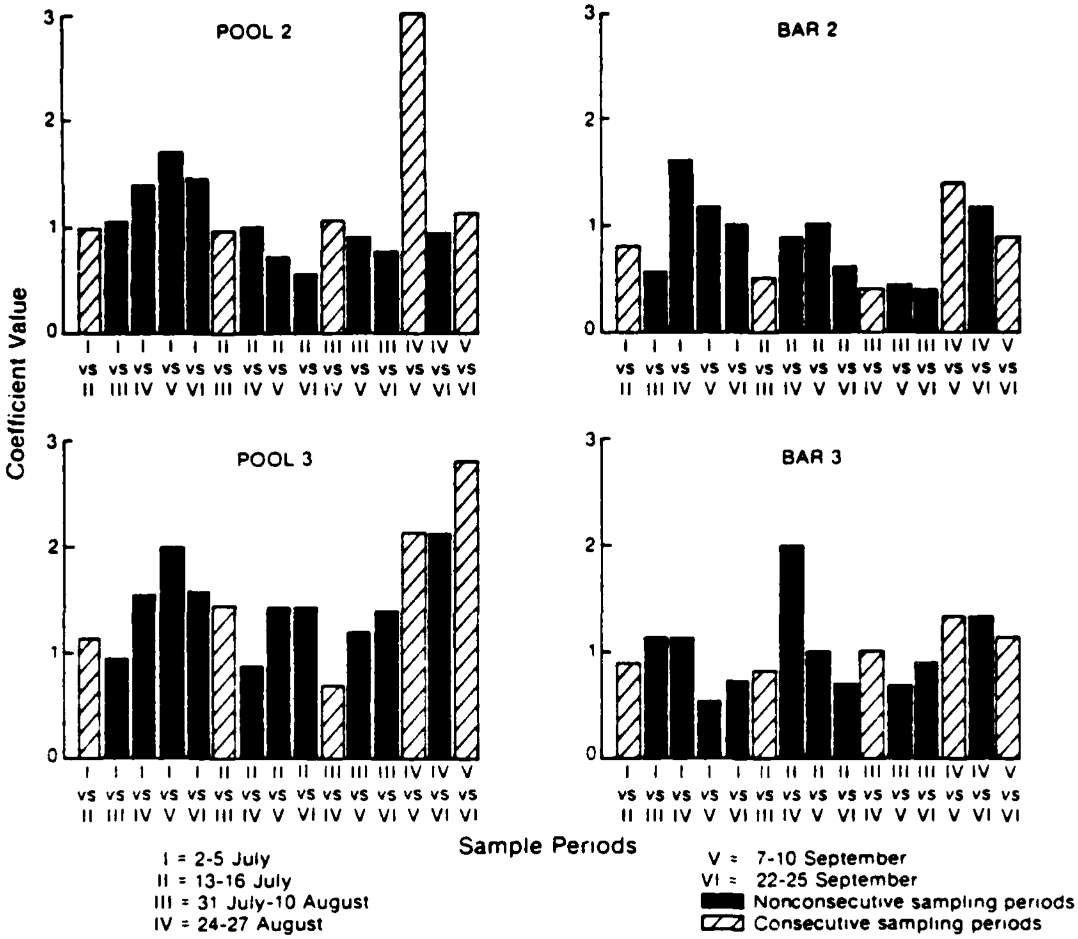

Figure 10. Kulczynski's Binary Similarity Coefficient values for each pairwise sampling period comparison from 2 July-25 September 1980

Length-weight relationship and condition

71. An overall length-weight relationship for blue catfish was derived from collections in all pool and bar habitats over the six sampling periods. Blue catfish ranged in length from 42 to 758 mm in total length. The resulting equation was:

$$\ln WT = -12.16 + 3.05 \ln TL \qquad (1)$$

where ANOVA indicated that the regression coefficient (slope) was significantly different from 3 (t = 2.98, df = 564, $\alpha = 0.05$). Furthermore, the 95-percent confidence level for the slope was 3.05 ± 0.03.

72. Condition factors were calculated for blue catfish from each habitat during each sampling period (Table 7). Mean values for K generally were between 0.66 and 0.80. The range of K factors of individual specimens was usually much larger in the pool habitats than along the river border, but only one significant difference among habitats was found: mean K for blue catfish was significantly greater in Pool 2 during 7-10 September.

PART V: DISCUSSION

Water Quality

73. Slack-water pools created as a result of the construction of stone dikes undergo rapid changes in water quality. Changes exhibited in the pools of this study as river stage dropped and flow through them ceased resembled the characteristic summer stratification seen in southern eutrophic lakes. Overall differences in water quality characteristics between pooled and riverine habitats were easily discernable once stratification in the pools began.

74. The water column in the river border was assumed to be uniform and evidence has been reported to support this assumption (Sabol, Winfield, and Toczydlowski 1984). Temperatures along the river border of the middle bar were less variable than temperatures in Pools 2 and 3. As flow into Pools 2 and 3 ceased, they lost their similarities to main channel habitats and became characteristic of permanent lakes. Temperature measurements ranged from 24.0° to 34.5° C during the study with mean values in Pool 2 being slightly higher than those of Pool 3. Thermal stratification was observed in both pools, with metalimnions in Pool 2 commonly occurring between the surface and 1 m, and between 2 and 4 m in Pool 3 (Figures 3 and 11). Temporary metalimnions developed in Pool 3 between 17 and 23 July, and reformed on 27 July for the length of the study. Temperature stratification of Pool 2 was not detected until 29 July.

75. Dissolved oxygen concentrations along the river border were less variable over time than in pooled habitats. Concentration of dissolved oxygen in pools varied considerably and ranged from a surface high of 16.2 mg/ℓ to a low of 0.1 mg/ℓ in the stratified hypolimnion. Dissolved oxygen profiles demonstrated clinograde oxygen curves typical of eutrophic lakes, once thermal stratification had occurred in the pools (Figures 3 and 12). Clinograde distributions were first observed in Pool 3 on 17 July and in Pool 2 ten days later.

76. When water was flowing over the middle bar and Dike 3, total

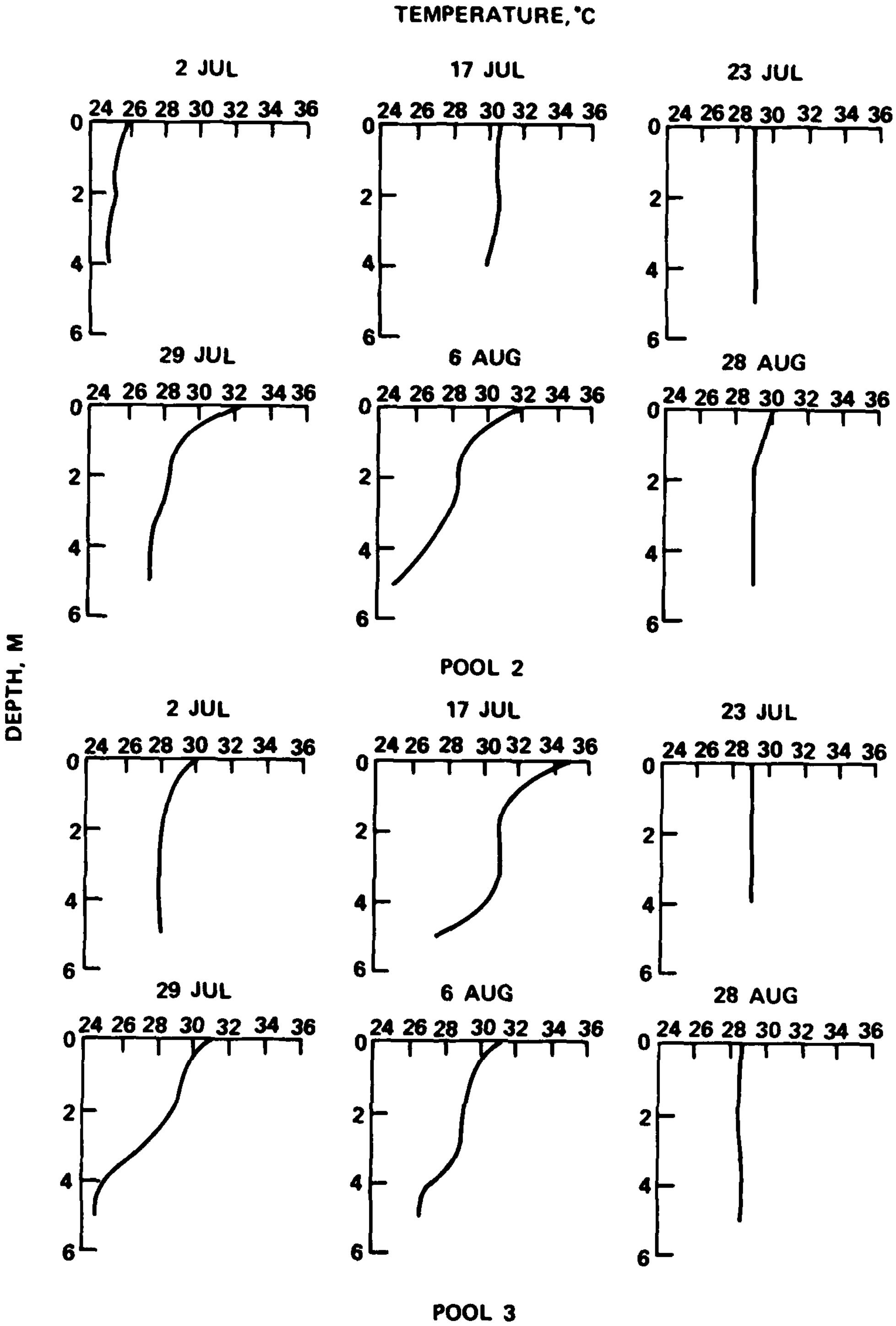

Figure 11. Mean temperature profile data at Pool 2 and Pool 3 on selected dates during the study

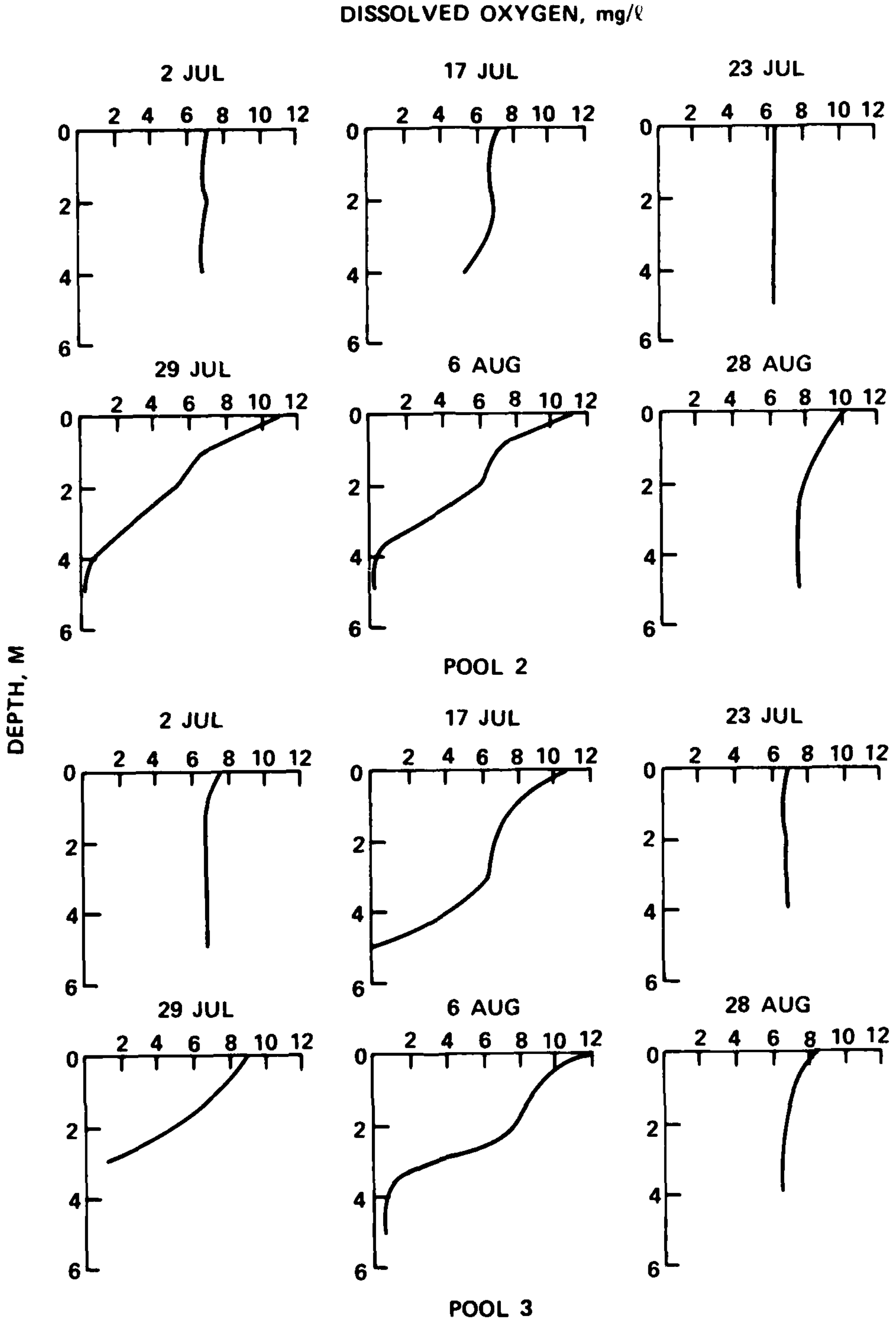

Figure 12. Mean dissolved oxygen profile data at Pool 2 and Pool 3 on selected dates during the study

alkalinities in the habitats were similar (Figure 4). For example, on 2 July as water flowed over the middle bar and Dike 3, surface total alkalinity across all habitats averaged 127 mg/ℓ. From that point on, Pool 2 surface alkalinity fluctuated between 108 mg/ℓ on 14 August to 140 mg/ℓ on 29 July. Total alkalinity at the surface in Pool 3 showed similar patterns as Pool 2 with values ranging from 114 to 165 mg/ℓ on 17 July and 2 August, respectively. Bottom alkalinity of the pooled habitats showed wide differences from riverine conditions (Figure 4). Pool 2 alkalinities at the bottom fluctuated from 115 mg/ℓ on 28 August to 332 mg/ℓ on 17 July. A similar trend was observed at the bottom in Pool 3, with a maximum alkalinity of 280 mg/ℓ being measured on 19 July. Alkalinities along the river border fluctuated only slightly.

77. Measurements of pH ranged from 7.0 to 9.5 during this study and were uniform across habitats when water from the river was flowing through the pools (Figure 4). Increased pH values were observed at the surface during low flow stages in all habitats. Higher pH measurements were taken in the pools than along the river border. Surface pH values were higher than at the bottom in the pools, especially during periods when pools were isolated from main channel flow.

78. Surface conductivity levels in the pools and river border were generally similar to each other during any sampling period that occurred when water was flowing through the dike pools (Figure 4). Only during periods when pools were isolated from main channel waters did differences in conductivity become evident. Conductivities of bottom water in the pools were much greater than those of the surface after thermal stratification occurred. There are two possible explanations for peak conductivities occurring near bottom during periods of pool isolation. First, under anaerobic reducing conditions, iron trapped in the sediments became soluable and went into solution. Direct observation of this was seen in discarded samples, where the iron precipitated out of solution after reoxygenation of the water. Second, groundwater inflow could have contributed ions in significant concentrations to cause the increase in conductivity.

Fish

79. Based on species composition and relative frequency of species collected, there are three generalized fish communities present in the Cracraft Dike Field. The lentic community is typified by fish primarily in the pooled habitats. Shortnose gar, American eel, skipjack herring, carp, gizzard shad, paddlefish, striped bass, sunfishes, sauger, and striped mullet are unique only to pool habitats. The lotic community is typified by fish collected primarily in the main channel habitat. Flathead catfish, blue catfish, and blue sucker make up a high percentage of the catch in the main channel, and thus represent a large portion of the lotic community. The shallow-water fish community is characterized by fish collected in the shallows on either side of the dike field sandbar. Common shallow-water fish species found within the dike field include *Notropis* sp., inland silverside, brook silverside, threadfin shad, and gizzard shad.

80. Catch per unit of effort data can be used to indicate relative numerical abundance of fish within a habitat. Because there were unequal amounts of effort applied between habitats (pools and bars), amounts of effort were standardized to allow more meaningful relationships of relative abundance and similarity. The high C/f in pooled habitats is largely due to the consistently high numbers of gizzard shad and threadfin shad. Each sampling gear employed during the study was particularly effective on these two species. Other species which frequently had high numbers and thus affected overall C/f were river carpsucker, river shiner, emerald shiner, and blue catfish. During the 4-month study, two species made up 75 percent of the total catch in all habitats. Threadfin shad, by far, was the most abundant species comprising 50.8 percent of the total fish catch. Gizzard shad comprised 24.3 percent of the total catch over all habitats. Emerald shiners and river shiners comprised 5.0 and 3.0 percent, respectively, of the overall catch. Overall, 46 species of fish were collected with hoop nets, gill nets, seining, rotenone application, and electroshocking. Forty-two different species were captured in Pool 2 compared to 41 different

species in Pool 3. The river border habitat exhibited a lower total species count than that of the pool habitats, having 21 species collected in the former. Four species of fish were caught only in Pool 2, four were unique to Pool 3, and three were unique to the bar habitats.

81. It is recognized that not any one gear adequately samples all sizes of all species of fish (Allen, Delacy, and Gotshall 1960; Bennett 1971). All gears are selective to some degree and the use of a variety of sampling devices gives a better indication of fish population parameters than would any one gear by itself. The diversity of sampling gears used during the course of this study probably represented the fish fauna adequately in all habitats in the dike field. Seines were found to be a very valuable gear in estimating relative abundance and presence of fish in the shallows of the dike field sandbar. However, seining was not usable in other pool sites and abundances could be underestimated. Although catch was low employing hoop nets within the dike field (320 fish over all habitats), deepwater and midwater species were probably adequately represented. Gill nets accounted for only 11.1 percent of the total number of fish caught in pooled habitats, but accounted for over 70 percent of the total biomass for each pool. Rotenone and block netting employed in both pools during the sampling period of 1 August accounted for nearly 50 percent of the total catch over all habitats and sampling periods, but accounted for only 4.6 percent of the total biomass over all habitats and sampling periods. Electroshocking not only adequately represented the fish fauna within the Cracraft Dike Field during the low water period (25 percent of the total catch over all habitats composing 22 species), but can be employed in a wide variety of conditions and with limited manpower.

82. The degree of similarity between any pair of habitats was related to their location within the dike field. Lotic habitats Bar 2 and Bar 3 showed high similarity values during the study as did the lentic habitats of Pools 2 and 3 when compared with each other. Pool versus bar comparisons were generally less similar. Isolation and subsequent reflooding of dike pools apparently had little or no effect on changing the species composition of pool and bar habitats. Although the greatest

similarity between Pool 2 and Pool 3 occurred during 7-10 September when isolated conditions were present, values were quite variable during other sampling periods and no specific trends were apparent. Polovino, Farrell, and Pennington (1983) concluded that binary similarity coefficients, such as the Kulczynski First, are successful indicators of change in fish communities. He found that fish also seem to prefer dike field habitats over riverine habitats because habitat heterogeneity is increased by the dike structures.

83. Mean K was quite variable for blue catfish in all habitats during the study. Mean K for blue catfish was consistently greater in pool habitats than in bar habitats. Mean K factors for blue catfish were consistently lower than those reported by CDM/Limnetics (1976) in the Lower Mississippi River.

84. The distribution of fish in a riverine ecosystem is a complex phenomenon complicated by the interaction of many factors such as river stage, current, temperature, turbidity, interspecific competition, and reproduction cycles. Ragland (1974) and Emge et al. (1974) have shown that current influences the distribution and relative abundance of fish in the Middle Mississippi River. Many species of fish appear to use the still waters within unchannelized portions of major river systems as spawning and nursery grounds (Hey and Baldwin 1977; Kallemeyn and Novotny 1977; Ellis, Farabee, and Reynolds 1979; Persons 1979). Starrett (1951) considered spawning period, flooding, and siltation to be the most important factors influencing species composition in the Des Moines River. He concluded that late season spawning species were the most successful reproducers due to their avoidance of the worst flooding and siltation conditions during the critical spawning period. He suggested that excessively high or low river levels, occurring over several consecutive years, could have a major effect in changing the species composition of the river. Mississippi Power and Light (1973) strongly suggested that flooding was the major factor responsible for changing the species composition in the Lower Mississippi River during the spring flood of 1973. Schramm and Lewis (1974) suggested that shallow water and softer substrates in addition to reduced current and water level fluctuations appear to be

important in determining fish production in extra-channel habitats.

85. Because of the ubiquity of dikes on the Lower Mississippi River, there exists a significant amount of riverine habitat influenced by the physical characteristics of these structures. Dikes change the morphological characteristics of the river, creating a variety of aquatic habitats capable of supporting many different species of fish. The slack-water pools, created by the construction of dikes, are quite variable in size and depth. The existence of these slack-water pools is greatly dependent on seasons of the year and river flow stage.

86. Many species of fish appear to use these backwater areas (pools) for reproduction and nursery areas because of the lack of quiet water in the main channel. The still water, coupled with a variety of substrates, provides suitable spawning habitat for many species of fish native to the river. Limestone riprap provides suitable spawning substrates for many species of fish with a dike field. Channel catfish and flathead catfish may be classified as speleophils (Balon 1975). Members of this group construct cavities or holes for spawning. The cracks among the riprap would appear to be suitable substrate for speleophil spawning. Riprap was present in both Pools 2 and 3 in the main channel border, as the dikes extended into the main channel past the dike field bar. The river carpsucker and some shiners are species which spawn over a sandy bottom. Sand substrate was present in both pools and adjacent main channel habitats as a direct result of deposition occurrence from dike structures themselves. Gizzard shad, threadfin shad, emerald shiners, goldeye, and freshwater drum are classified as pelagophils or open-water spawners. Open water was abundant in all habitats during the study. However, the use of these pools as a spawning and/or a nursery habitat is dependent upon juveniles and adults entering the pools. Fish can move freely in and out of Pool 3 year-round because it remains open at the lower end. However, since Pool 2 becomes isolated from the main channel at low river stages, fish movement is restricted to higher flow levels. As the flow levels drop to create pools, turbidity levels decrease. As the overall productivity improves, the habitat becomes suitable for the development and growth of many young-of-the-year fishes.

PART VI: CONCLUSIONS

87. Overall differences in water quality between the pools and the river were easily distinguishable once stratification in the pools began. Surface readings of dissolved oxygen, temperature, and pH were generally higher in the pooled habitats. As depth increased, the opposite was true for dissolved oxygen, temperature, and pH. Conductivity at the bottom in the pools during isolation were much higher than in the river.

88. Between-pool differences were less apparent. For example, the lower end of Pool 3 fluctuated between uniformity and heterogeneity with the rise and fall of the river. The upper and middle sections, however, took on the characteristics of a stratified lake. Stratification occurred in Pool 3 prior to its establishment in Pool 2.

89. Results from this study indicated that stone dikes create suitable habitat for the growth and development of many species of fish. Mean C/f values were generally greater in pool habitats with all gear types. Catch in pool habitats was dominated by threadfin shad and gizzard shad in numerical abundance and total biomass, respectively. Catch along the river border habitats was dominated by typical riverine species such as minnows and shinners.

90. Based on species composition and relative frequency of species collected, there were three generalized fish communities present in the Cracraft Dike Field. The lentic community was typified by fish primarily in the pooled habitats. Shortnose gar, American eel, skipjack herring, carp, gizzard shad, paddlefish, striped bass, sunfishes, sauger, and striped mullet were unique only to pooled habitats. The lotic community was typified by fish collected primarily in the main channel habitat. Flathead catfish, blue catfish, and blue sucker made up a high percentage of the catch in the main channel, and thus represented a large portion of the lotic community. The shallow-water fish community was characterized by fish collected in the shallows on either side of the dike field sandbar. Common shallow-water fish species found within the dike field included shiners, inland silverside, brook silverside, threadfin shad, and gizzard shad.

91. Results of Kulczynski's Binary similarity coefficient indicated that the degree of similarity in fish community structure between any pair of habitats was likely related to their location within the dike field. Lotic habitats Bar 2 and Bar 3 showed high similarity values during the study when compared with each other, as did the lentic habitats of Pools 2 and 3. Pool versus bar cominations showed a lower degree of similarity likely due to the habitat effect.

92. Although mean K values were quite variable throughout the study, mean values were consistently higher in pool habitats than in river border habitats for blue catfish.

93. The diversity of sampling gears used during the course of the study probably represented the fish fauna adequately in all habitats in the dike field. Electroshocking not only was a very valuable gear in estimating relative abundance of fish in all habitats, but can be employed in a wide variety of conditions and with limited manpower.

94. Results of this study indicated that dike structures can create desirable habitat necessary to maintain fish populations at various river stages. Cooperation between agencies and professions is essential so that dike modification and placement can be completed to maximize fish habitat and minimize impacts on existing off-channel areas.

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Table 1

Species of Fish Collected from the Lower Cracraft Dike Field

from 2 July to 25 September 1980*

Common Name	Scientific Name	Bar 2	Bar 3	Pool 2	Pool 3
Shovelnose sturgeon	*Scaphirhynchus platorynchus*		x		x
Paddlefish	*Polyodon spathula*			x	x
Longnose gar	*Lepisosteus osseus*		x	x	x
Shortnose gar	*Lepisosteus platostomus*			x	x
American eel	*Anguilla rostrata*			x	x
Skipjack herring	*Alosa chrysochloris*		x	x	x
Gizzard shad	*Dorosoma cepedianum*	x	x	x	x
Threadfin shad	*Dorosoma petenense*	x	x	x	x
Goldeye	*Hiodon alasoides*		x	x	x
Carp	*Cyprinus carpio*			x	
Central silvery minnow	*Hybognathus nuchalis*			x	x
Speckled chub	*Hybopsis aestivalis*			x	
Silver chub	*Hybopsis storeriana*	x	x	x	x
Emerald shiner	*Notropis atherinoides*	x	x	x	x
River shiner	*Notropis blennius*	x	x	x	x
Red shiner	*Notropis lutrensis*			x	

(Continued)

Note: "x" denotes the capture of a species in a particular habitat.
* Nomenclature according to Robins et al. (1980).

(Sheet 1 of 3)

Table 1 (Continued)

Common Name	Scientific Name	Bar 2	Bar 3	Pool 2	Pool 3
Silverband shiner	*Notropis shumardi*	x	x	x	x
Weed shiner	*Notropis texanus*		x		x
Blacktail shiner	*Notropis venustus*	x	x	x	x
Mimic shiner	*Notropis volucellus*			x	
Bullhead minnow	*Pimephales vigilax*		x		
River carpsucker	*Carpiodes carpio*	x	x	x	x
Quillback carpsucker	*Carpiodes cyprinus*			x	
Highfin carpsucker	*Carpiodes velifer*			x	x
Blue sucker	*Cycleptus elongatus*	x	x	x	
Smallmouth buffalo	*Ictiobus bubalus*	x	x	x	x
Bigmouth buffalo	*Ictiobus cyprinellus*				x
Black buffalo	*Ictiobus niger*				x
Blue catfish	*Ictalurus furcatus*	x	x	x	x
Channel catfish	*Ictalurus punctatus*	x	x	x	x
Flathead catfish	*Pylodictis olivaris*	x	x	x	x
Mosquitofish	*Gambusia affinis*		x		
Brook silverside	*Labidesthes sicculus*		x	x	x
Inland silverside	*Menidia beryllina*	x	x	x	x
White bass	*Morone chrysops*		x	x	x
Yellow bass	*Morone mississippiensis*	x			
Striped bass	*Morone saxatilis*			x	x

(Continued)

(Sheet 2 of 3)

Table 1 (Concluded)

Common Name	Scientific Name	Bar 2	Bar 3	Pool 2	Pool 3
Orangespotted sunfish	*Lepomis humilis*			x	x
Bluegill	*Lepomis macrochirus*	x	x	x	x
Longear sunfish	*Lepomis megalotis*				x
Largemouth bass	*Micropterus salmoides*				x
White crappie	*Pomoxis annularis*		x	x	x
Black crappie	*Pomoxis nigromaculatus*			x	x
Sauger	*Stizostedion canadense*			x	x
Freshwater drum	*Aplodinotus grunniens*	x	x	x	x
Striped mullet	*Mugil cephalus*			x	x

(Sheet 3 of 3)

Table 2

Description of Pool 2, Pool 3, and River Border Habitats during Each Sampling Period

Date	River Stage ft*	Habitat	Mean Current Velocity cm/sec	Pool Condition
2-5 Jul	17.7-16.1	Pool 2	7.2	Water flowing over middle bar and Dike 3
		Pool 3	13.6	
		River border	61.0	
13-16 Jul	15.4-13.5	Pool 2	8.8	Water cascading over middle bar and Dike 3
		Pool 3	6.9	
		River border	55.3	
31 Jul-10 Aug	10.6-9.6	Pool 2	0.0	Isolated conditions present in pools
		Pool 3	5.0	
		River border	60.3	
24-27 Aug	13.7-14.9	Pool 2	9.0	Water cascading over middle bar and Dike 3
		Pool 3	7.5	
		River border	50.6	
7-10 Sep	11.0-9.5	Pool 2	0.0	Isolated conditions present in pools
		Pool 3	8.0	
		River border	50.0	
22-25 Sep	8.8-9.0	Pool 2	0.0	Isolated conditions present in pools
		Pool 3	4.5	
		River border	52.6	

* To convert feet to metres multiply by 0.3048.

Table 3

Total Numbers and Total Weights (grams) of Fish Collected at Pool 2 by Sampling Period and Gear Type

Species		ROTN	ES	EG8	HN	SN	Total (Rank)
				2-5 July			
Paddlefish	No.	--	--	--	--	--	--
	Wt.	--	--	--	--	--	--
Longnose gar	No.	--	--	1	--	--	1 (20)
	Wt	--	--	1,604.0	--	--	1,604.0 (9)
Shortnose gar	No.	--	--	--	--	--	--
	Wt.	--	--	--	--	--	--
American eel	No.	--	--	--	2	--	2 (14)
	Wt.	--	--	--	880.0	--	880.0 (12)
Skipjack herring	No.	--	--	1	--	--	1 (20)
	Wt.	--	--	103.0	--	--	103.0 (16)
Gizzard shad	No.	--	5	25	8	10	48 (1)
	Wt.	--	118.0	3,139.0	1,072.0	13.0	4,342.0 (3)
Threadfin shad	No.	--	2	--	--	43	45 (2)
	Wt.	--	14.0	--	--	8.2	22.2 (17)
Goldeye	No.	--	--	20	1	--	21 (6)
	Wt.	--	--	1,835.0	95.0	--	1,930.0 (7)
Common carp	No.	--	--	3	--	--	3 (11)
	Wt.	--	--	5,652.0	--	--	5,652.0 (1)
Central silvery minnow	No.	--	--	--	--	--	--
	Wt.	--	--	--	--	--	--
Speckled chub	No.	--	--	--	--	--	--
	Wt.	--	--	--	--	--	--
Silver chub	No.	--	--	--	--	--	--
	Wt.	--	--	--	--	--	--
Emerald shiner	No.	--	--	--	--	40	40 (3)
	Wt.	--	--	--	--	6.9	6.9 (18)
River shiner	No.	--	--	--	--	3	3 (11)
	Wt.	--	--	--	--	3.0	3.0 (19)
Red shiner	No.	--	--	--	--	--	--
	Wt.	--	--	--	--	--	--
Silverband shiner	No.	--	--	--	--	--	--
	Wt.	--	--	--	--	--	--
Weed shiner	No.	--	--	--	--	1	1 (20)
	Wt.	--	--	--	--	0.4	0.4 (21)
Notropis sp.	No.	--	--	--	--	--	--
	Wt.	--	--	--	--	--	--
Blacktail shiner	No.	--	--	--	--	--	--
	Wt.	--	--	--	--	--	--
Mimic shiner	No.	--	--	--	--	--	--
	Wt.	--	--	--	--	--	--
River carpsucker	No.	--	1	1	1	12	15 (7)
	Wt.	--	36.0	880.0	848.0	3.8	1,767.8 (8)
Quillback carpsucker	No.	--	--	--	--	--	--
	Wt.	--	--	--	--	--	--
Highfin carpsucker	No.	--	1	2	--	--	3 (11)
	Wt.	--	162.0	865.0	--	--	1,027.0 (10)
Carpiodes sp.	No.	--	--	--	--	--	--
	Wt.	--	--	--	--	--	--
Blue sucker	No.	--	--	--	--	--	--
	Wt.	--	--	--	--	--	--
Smallmouth buffalo	No.	--	--	2	--	--	2 (14)
	Wt.	--	--	2,904.0	--	--	2,904.0 (4)
Blue catfish	No.	--	19	12	1	--	32 (5)
	Wt.	--	2,291.0	2,704.0	83.0	--	5,078.0 (2)
Channel catfish	No.	--	--	1	--	--	1 (20)
	Wt.	--	--	588.0	--	--	588.0 (13)
Ictalurus sp.	No.	--	--	--	--	--	--
	Wt.	--	--	--	--	--	--

(Continued)

Note: ES = electroshocking, ROTN = rotenone, EG8 = gill net, HN = hoop net, and SN = seine.

Table 3 (Continued)

Species		ROTN	ES	EG8	HN	SN	Total	(Rank)
				2-5 July (Continued)				
Flathead catfish	No.	--	3	--	3	--	6	(9)
	Wt.	--	810.0	--	1,991.0	--	2,801.0	(5)
Brook silverside	No.	--	--	--	--	--	--	
	Wt.	--	--	--	--	--	--	
Inland silverside	No.	--	--	--	--	40	40	(3)
	Wt.	--	--	--	--	2.8	2.8	(20)
White bass	No.	--	--	1	--	--	1	(20)
	Wt.	--	--	296.0	--	--	296.0	(15)
Striped bass	No.	--	--	1	--	--	1	(20)
	Wt.	--	--	2,083.0	--	--	2,083.0	(6)
Morone sp.	No.	--	--	--	--	1	1	(20)
	Wt.	--	--	--	--	2.0	2.0	(21)
Orangespot sunfish	No.	--	--	--	--	--	--	
	Wt.	--	--	--	--	--	--	
Bluegill	No.	--	--	--	--	6	6	(9)
	Wt.	--	--	--	--	0.1	0.1	(23)
White crappie	No.	--	--	--	--	--	--	
	Wt.	--	--	--	--	--	--	
Black crappie	No.	--	--	--	--	--	--	
	Wt.	--	--	--	--	--	--	
Sauger	No.	--	--	2	--	--	2	(14)
	Wt.	--	--	441.0	--	--	441.0	(14)
Freshwater drum	No.	--	--	6	4	--	10	(8)
	Wt.	--	--	539.0	364.0	--	903.0	(11)
Striped mullet	No.	--	--	--	--	--	--	
	Wt.	--	--	--	--	--	--	
Damaged fish	No.	--	--	--	--	2	2	(14)
	Wt.	--	--	--	--	0.0	0.0	(24)
Total number caught		--	31	78	20	158	287	
Total number of species		--	6	14	7	8	22	
				13-16 July				
Paddlefish	No.	--	--	--	--	--	--	
	Wt.	--	--	--	--	--	--	
Longnose gar	No.	--	--	1	--	--	1	(15)
	Wt	--	--	1,411.0	--	--	1,411.0	(7)
Shortnose gar	No.	--	--	3	--	--	3	(8)
	Wt.	--	--	3,156.0	--	--	3,156.0	(2)
American eel	No.	--	--	--	--	--	--	
	Wt.	--	--	--	--	--	--	
Skipjack herring	No.	--	--	8	--	--	8	(4)
	Wt.	--	--	762	--	--	762.0	(9)
Gizzard shad	No.	--	3	62	5	3	73	(1)
	Wt.	--	381.0	9,174.9	278.0	6.5	9,840.0	(1)
Threadfin shad	No.	--	--	--	--	1	1	(15)
	Wt.	--	--	--	--	0.5	0.5	(17)
Goldeye	No.	--	--	--	--	--	--	
	Wt.	--	--	--	--	--	--	
Common carp	No.	--	--	--	--	--	--	
	Wt.	--	--	--	--	--	--	
Central silvery minnow	No.	--	--	--	--	--	--	
	Wt.	--	--	--	--	--	--	
Speckled chub	No.	--	--	--	--	--	--	
	Wt.	--	--	--	--	--	--	
Silver chub	No.	--	--	--	--	1	1	(15)
	Wt.	--	--	--	--	0.5	0.5	(17)
Emerald shiner	No.	--	--	--	--	41	41	(2)
	Wt.	--	--	--	--	11.5	11.5	(14)
River shiner	No.	--	--	--	--	2	2	(9)
	Wt.	--	--	--	--	0.4	0.4	(18)
Red shiner	No.	--	--	--	--	--	--	
	Wt.	--	--	--	--	--	--	

(Continued)

Table 3 (Continued)

Species		ROTN	ES	EG8	HN	SN	Total	(Rank)
				13-16 July (Continued)				
Silverband shiner	No.	--	--	--	--	--	--	
	Wt.	--	--	--	--	--	--	
Weed shiner	No.	--	--	--	--	--	--	
	Wt.	--	--	--	--	--	--	
Notropis sp.	No.	--	--	--	--	--	--	
	Wt.	--	--	--	--	--	--	
Blacktail shiner	No.	--	--	--	--	--	--	
	Wt.	--	--	--	--	--	--	
Mimic shiner	No.	--	--	--	--	--	--	
	Wt.	--	--	--	--	--	--	
River carpsucker	No.	--	1	2	--	6	9	(3)
	Wt.	--	50.0	1,168.0	--	0.8	1,216.8	(8)
Quillback carpsucker	No.	--	--	--	--	--	--	
	Wt.	--	--	--	--	--	--	
Highfin carpsucker	No.	--	--	--	--	--	--	
	Wt.	--	--	--	--	--	--	
Carpiodes sp.	No.	--	--	--	--	1	1	(15)
	Wt.	--	--	--	--	0.1	0.5	(19)
Blue sucker	No.	--	--	3	--	--	3	(8)
	Wt.	--	--	513.0	--	--	513.0	(11)
Smallmouth buffalo	No.	--	--	2	--	--	2	(9)
	Wt.	--	--	2,249.0	--	--	2,249.0	(3)
Blue catfish	No.	--	--	5	--	--	5	(6)
	Wt.	--	--	2,035.0	--	--	2,035.0	(4)
Channel catfish	No.	--	--	1	--	--	1	(15)
	Wt.	--	--	1,567.0	--	--	1,567.0	(6)
Ictalurus sp.	No.	--	--	--	--	--	--	
	Wt.	--	--	--	--	--	--	
Flathead catfish	No.	--	--	--	--	--	--	
	Wt.	--	--	--	--	--	--	
Brook silverside	No.	--	--	--	--	1	1	(15)
	Wt.	--	--	--	--	0.8	0.8	(16)
Inland silverside	No.	--	--	--	--	--	--	
	Wt.	--	--	--	--	--	--	
White bass	No.	--	--	--	--	--	--	
	Wt.	--	--	--	--	--	--	
Striped bass	No.	--	--	1	--	--	1	(15)
	Wt.	--	--	1,865.0	--	--	1,865.0	(5)
Morone sp.	No.	--	--	--	--	1	1	(15)
	Wt.	--	--	--	--	1.3	1.3	(15)
Orangespot sunfish	No.	--	--	--	--	--	--	
	Wt.	--	--	--	--	--	--	
Bluegill	No.	--	--	--	--	1	1	(15)
	Wt.	--	--	--	--	0.1	0.1	(19)
White crappie	No.	--	--	--	1	--	1	(15)
	Wt.	--	--	--	310.0	--	310.0	(12)
Black crappie	No.	--	--	--	--	--	--	
	Wt.	--	--	--	--	--	--	
Sauger	No.	--	--	--	--	--	--	
	Wt.	--	--	--	--	--	--	
Freshwater drum	No.	--	--	1	4	--	5	(6)
	Wt.	--	--	58.0	647.0	--	705.0	(10)
Striped mullet	No.	--	--	1	--	--	1	(15)
	Wt.	--	--	239.0	--	--	239.0	(13)
Damaged fish	No.	--	--	--	--	--	--	
	Wt.	--	--	--	--	--	--	
Total number caught		--	4	90	10	58	162	
Total number of species		--	2	12	3	8	19	
				31 July-10 August				
Paddlefish	No.	--	--	--	--	--	--	
	Wt.	--	--	--	--	--	--	

(Continued)

Table 3 (Continued)

Species		ROTN	ES	EG8	HN	SN	Total	(Rank)
				31 July-10 August (Continued)				
Longnose gar	No.	--	--	--	--	--	--	
	Wt	--	--	--	--	--	--	
Shortnose gar	No.	--	--	--	--	--	--	
	Wt.	--	--	--	--	--	--	
American eel	No.	--	--	--	--	--	--	
	Wt.	--	--	--	--	--	--	
Skipjack herring	No.	--	3	--	1	--	4	(19)
	Wt.	--	*	--	76.0	--		(13)
Gizzard shad	No.	170	88	--	4	--	262	(2)
	Wt.	16,468.0	*	--	904.0	--	17,372.0	(1)
Threadfin shad	No.	1,070	11	--	--	13	1,094	(1)
	Wt.	1,491.8	*	--	--	10.1	1,501.9	(4)
Goldeye	No.	--	--	--	--	--	--	
	Wt.	--	--	--	--	--	--	
Common carp	No.	--	--	--	--	--	--	
	Wt.	--	--	--	--	--	--	
Central silvery minnow	No.	1	--	--	--	--	1	(26)
	Wt.	2.0	--	--	--	--	2.0	(23)
Speckled chub	No.	--	--	--	--	1	1	(26)
	Wt.	--	--	--	--	0.2	0.2	(28)
Silver chub	No.	69	--	--	--	18	87	(5)
	Wt.	129.1	--	--	--	4.9	134.0	(11)
Emerald shiner	No.	--	--	--	--	23	23	(10)
	Wt.	--	--	--	--	4.2	4.2	(19)
River shiner	No.	6	--	--	--	99	105	(4)
	Wt.	8.8	--	--	--	19.1	27.9	(17)
Red shiner	No.	--	--	--	--	--	--	
	Wt.	--	--	--	--	--	--	
Silverband shiner	No.	5	--	--	--	--	5	(15)
	Wt.	2.4	--	--	--	--	2.4	(22)
Weed shiner	No.	--	--	--	--	--	--	
	Wt.	--	--	--	--	--	--	
Notropis spp.	No.	--	--	--	--	--	--	
	Wt.	--	--	--	--	--	--	
Blacktail shiner	No.	--	--	--	--	2	2	(22)
	Wt.	--	--	--	--	0.2	0.2	(28)
Mimic shiner	No.	--	--	--	--	--	--	
	Wt.	--	--	--	--	--	--	
River carpsucker	No.	6	1	--	11	4	22	(11)
	Wt.	317.0	*	--	7,418.0	39.0	7,774.0	(2)
Quillback carpsucker	No.	--	--	--	--	--	--	
	Wt.	--	--	--	--	--	--	
Highfin carpsucker	No.	1	--	--	--	--	1	(26)
	Wt.	1.3	--	--	--	--	1.3	(25)
Carpiodes sp.	No.	1	--	--	--	--	1	(26)
	Wt.	2.7	--	--	--	--	2.7	(21)
Blue sucker	No.	--	--	--	--	--	--	
	Wt.	--	--	--	--	--	--	
Smallmouth buffalo	No.	4	--	--	--	--	4	(17)
	Wt.	804.0	--	--	--	--	804.0	(7)
Blue catfish	No.	23	14	--	1	1	39	(8)
	Wt.	15.1	1,091.0	--	144.0	0.9	1,251.0	(5)
Channel catfish	No.	81	--	--	--	2	83	(6)
	Wt.	209.2	--	--	--	1.2	210.4	(9)
Ictalurus sp.	No.	141	--	--	--	--	141	(3)
	Wt.	92.0	--	--	--	--	92.0	(12)
Flathead catfish	No.	1	4	--	1	--	6	(17)
	Wt.	0.5	1,071.0	--	605.0	--	1,676.0	(3)
Brook silverside	No.	3	--	--	--	--	3	(20)
	Wt.	3.7	--	--	--	--	3.7	(20)
Inland silverside	No.	1	--	--	--	--	1	(26)
	Wt.	1.4	--	--	--	--	1.4	(24)

(Continued)

* Weights not taken.

Table 3 (Continued)

Species		ROTN	ES	EG8	HN	SN	Total	(Rank)
				31 July-10 August (Continued)				
White bass	No.	1	--	--	1	--	3	(20)
	Wt.	122.7	--	--	224.0	--	347.0	(8)
Striped bass	No.	--	--	--	--	--	--	
	Wt.	--	--	--	--	--	--	
Morone sp.	No.	6	--	--	--	--	6	(13)
	Wt.	34.2	--	--	--	--	34.2	(15)
Orangespot sunfish	No.	6	--	--	--	1	7	(12)
	Wt.	37.5	--	--	--	1.2	38.7	(14)
Bluegill	No.	5	--	--	--	--	5	(15)
	Wt.	5.5	--	--	--	--	5.5	(18)
White crappie	No.	--	--	--	3	--	3	(20)
	Wt.	--	--	--	160.0	--	160.0	(10)
Black crappie	No.	--	--	--	--	--	--	
	Wt.	--	--	--	--	--	--	
Sauger	No.	1	--	--	--	--	1	(26)
	Wt.	8.8	--	--	--	--	8.8	(1[illegible])
Freshwater drum	No.	68	--	--	1	1	70	(7)
	Wt.	585.7	--	--	222.0	0.8	808.5	(6)
Striped mullet	No.	--	--	--	--	--	--	
	Wt.	--	--	--	--	--	--	
Damaged fish	No.	--	--	--	--	33	33	(9)
	Wt.	--	--	--	--	0.8	0.8	(26)
Total number caught		1,671	121	0	23	198	2,013	
Total number of species		19	6	0	8	10	24	
			24-27 August					
Paddlefish	No.	--	--	--	--	--	--	
	Wt.	--	--	--	--	--	--	
Longnose gar	No.	--	--	2	--	--	2	(17)
	Wt	--	--	1,746.0	--	--	1,746.0	(5)
Shortnose gar	No.	--	--	6	--	--	6	(12)
	Wt.	--	--	6,581.0	--	--	6,581.0	(3)
American eel	No.	--	--	--	--	--	--	
	Wt.	--	--	--	--	--	--	
Skipjack herring	No.	--	3	4	--	--	7	(10)
	Wt.	--	*	1,154.0	--	--		(8)
Gizzard shad	No.	--	207	189	7	--	403	(1)
	Wt.	--	*	21,959.0	615.0	--		(1)
Threadfin shad	No.	--	261	--	--	32	293	(2)
	Wt.	--	*	--	--	10.1		(16)
Goldeye	No.	--	--	3	--	--	3	(15)
	Wt.	--	--	336.0	--	--	336.0	(11)
Common carp	No.	--	--	1	--	--	1	(20)
	Wt.	--	--	1,562.0	--	--	1,562.0	(7)
Central silvery minnow	No.	--	--	--	--	--	--	
	Wt.	--	--	--	--	--	--	
Speckled chub	No.	--	--	--	--	--	--	
	Wt.	--	--	--	--	--	--	
Silver chub	No.	--	--	--	--	--	--	
	Wt.	--	--	--	--	--	--	
Emerald shiner	No.	--	--	--	--	76	76	(3)
	Wt.	--	--	--	--	48.5	48.5	(13)
River shiner	No.	--	--	--	--	61	61	(4)
	Wt.	--	--	--	--	22.6	22.6	(15)
Red shiner	No.	--	--	--	--	--	--	
	Wt.	--	--	--	--	--	--	
Silverband shiner	No.	--	--	--	--	--	--	
	Wt.	--	--	--	--	--	--	
Weed shiner	No.	--	--	--	--	--	--	
	Wt.	--	--	--	--	--	--	
Notropis sp.	No.	--	--	--	--	7	7	(10)
	Wt.	--	--	--	--	0.8	0.8	(19)

(Continued)

* Weights not taken.

Table 3 (Continued)

Species		ROTN	ES	EG8	HN	SN	Total	(Rank)
				24-27 August (Continued)				
Blacktail shiner	No.	--	--	--	--	14	14	(8)
	Wt.	--	--	--	--	1.6	1.6	(18)
Mimic shiner	No.	--	--	--	--	--	--	
	Wt.	--	--	--	--	--	--	
River carpsucker	No.	--	--	7	3	16	26	(7)
	Wt.	--	--	5,225.0	*	13.7	5,239.0	(4)
Quillback carpsucker	No.	--	--	--	--	--	--	
	Wt.	--	--	--	--	--	--	
Highfin carpsucker	No.	--	--	--	--	--	--	
	Wt.	--	--	--	--	--	--	
Carpiodes sp.	No.	--	--	--	--	--	--	
	Wt.	--	--	--	--	--	--	
Blue sucker	No.	--	--	--	--	--	--	
	Wt.	--	--	--	--	--	--	
Smallmouth buffalo	No.	--	1	--	--	--	1	(20)
	Wt.	--	*	--	--	--	*	*
Blue catfish	No.	--	15	19	--	--	34	(6)
	Wt.	--	1,656.0	5,512.0	--	--	7,168.0	(2)
Channel catfish	No.	--	--	3	1	--	4	(13)
	Wt.	--	--	1,624.0	*	--	1,624.0	(6)
Ictalurus sp.	No.	--	--	--	--	--	--	
	Wt.	--	--	--	--	--	--	
Flathead catfish	No.	--	3	--	--	--	3	(15)
	Wt.	--	426.0	--	--	--	426.0	(10)
Brook silverside	No.	--	--	--	--	6	6	(12)
	Wt.	--	--	--	--	8.4	8.4	(17)
Inland silverside	No.	--	--	--	--	39	39	(5)
	Wt.	--	--	--	--	45.1	45.1	(14)
White bass	No.	--	1	--	--	--	1	(20)
	Wt.	--	*	--	--	--	*	*
Striped bass	No.	--	--	--	--	--	--	
	Wt.	--	--	--	--	--	--	
Morone sp.	No.	--	--	--	--	--	--	
	Wt.	--	--	--	--	--	--	
Orangespot sunfish	No.	--	--	--	--	--	--	
	Wt.	--	--	--	--	--	--	
Bluegill	No.	--	1	1	--	--	2	(17)
	Wt.	--	*	132.0	--	--		(12)
White crappie	No.	--	--	--	2	--	2	(17)
	Wt.	--	--	--	*	--	*	*
Black crappie	No.	--	--	--	1	--	1	(20)
	Wt.	--	--	--	*	--	*	*
Sauger	No.	--	--	--	--	--	--	
	Wt.	--	--	--	--	--	--	
Freshwater drum	No.	--	--	3	--	--	3	(15)
	Wt.	--	--	521.0	--	--	521.0	(9)
Striped mullet	No.	--	--	--	--	--	--	
	Wt.	--	--	--	--	--	--	
Damaged fish	No.	--	--	--	--	--	--	
	Wt.	--	--	--	--	--	--	
Total number caught		--	492	238	14	251	995	
Total number of species		--	8	11	5	7	22	
				7-10 September				
Paddlefish	No.	--	--	--	--	--	--	
	Wt.	--	--	--	--	--	--	
Longnose gar	No.	--	--	--	--	--	--	
	Wt	--	--	--	--	--	--	
Shortnose gar	No.	--	--	1	--	--	1	(23)
	Wt.	--	--	733.0	--	--	733.0	(9)

(Continued)

* Weights not taken.

Table 3 (Continued)

Species		ROTN	ES	EG8	HN	SN	Total (Rank)	
				7-10 September (Continued)				
American eel	No.	--	--	--	1	--	1	(23)
	Wt.	--	--	--	703.0	--	703.0	(10)
Skipjack herring	No.	--	1	1	--	--	2	(18)
	Wt.	--	*	143.0	--	--		(14)
Gizzard shad	No.	--	120	297	17	--	434	(1)
	Wt.	--	*	30,258.0	1,886.0	--		(1)
Threadfin shad	No.	--	2	--	--	--	2	(18)
	Wt.	--	*	--	--	--	*	*
Goldeye	No.	--	--	28	--	--	28	(6)
	Wt.	--	--	3,026.0	--	--	3,026.0	(5)
Common carp	No.	--	--	2	--	--	2	(18)
	Wt.	--	--	4,337.0	--	--	4,337.0	(4)
Central silvery minnow	No.	--	--	--	--	--	--	
	Wt.	--	--	--	--	--	--	
Speckled chub	No.	--	--	--	--	--	--	
	Wt.	--	--	--	--	--	--	
Silver chub	No.	--	--	--	--	--	--	
	Wt.	--	--	--	--	--	--	
Emerald shiner	No.	--	--	--	--	14	14	(10)
	Wt.	--	--	--	--	13.3	13.3	(16)
River shiner	No.	--	--	--	--	59	59	(2)
	Wt.	--	--	--	--	29.5	29.5	(15)
Red shiner	No.	--	--	--	--	8	8	(11)
	Wt.	--	--	--	--	1.8	1.8	(20)
Silverband shiner	No.	--	--	--	--	1	1	(23)
	Wt.	--	--	--	--	0.6	0.6	(21)
Weed shiner	No.	--	--	--	--	--	--	
	Wt.	--	--	--	--	--	--	
Notropis spp.	No.	--	--	--	--	37	37	(4)
	Wt.	--	--	--	--	2.7	2.7	(19)
Blacktail shiner	No.	--	--	--	--	37	37	(4)
	Wt.	--	--	--	--	6.2	6.2	(18)
Mimic shiner	No.	--	--	--	--	--	--	
	Wt.	--	--	--	--	--	--	
River carpsucker	No.	--	--	10	2	3	15	(9)
	Wt.	--	--	6,264.0	*	9.4	6,273.8	(2)
Quillback carpsucker	No.	--	--	--	--	--	--	
	Wt.	--	--	--	--	--	--	
Highfin carpsucker	No.	--	--	--	--	--	--	
	Wt.	--	--	--	--	--	--	
Carpiodes sp.	No.	--	--	--	--	--	--	
	Wt.	--	--	--	--	--	--	
Blue sucker	No.	--	--	--	--	--	--	
	Wt.	--	--	--	--	--	--	
Smallmouth buffalo	No.	--	2	1	--	--	3	(15)
	Wt.	--	*	497.0	--	--	497.0	(12)
Blue catfish	No.	--	17	13	--	--	30	(5)
	Wt.	--	1,687.0	4,182.0	--	--	5,869.0	(3)
Channel catfish	No.	--	--	4	--	--	4	(13)
	Wt.	--	--	1,632.0	--	--	1,632.0	(7)
Ictalurus sp.	No.	--	--	--	--	--	--	
	Wt.	--	--	--	--	--	--	
Flathead catfish	No.	--	2	--	--	--	2	(23)
	Wt.	--	447.0	--	--	--	447.0	(13)
Brook silverside	No.	--	--	--	--	--	--	
	Wt.	--	--	--	--	--	--	
Inland silverside	No.	--	--	--	--	23	23	(7)
	Wt.	--	--	--	--	7.1	7.1	(17)
White bass	No.	--	--	--	1	--	1	(23)
	Wt.	--	--	--	*	--	*	*
Striped bass	No.	--	--	1	--	--	1	(23)
	Wt.	--	--	770.0	--	--	770.0	(8)

(Continued)

* Weights not taken.

Table 3 (Continued)

Species		RDTN	ES	EG8	HN	SN	Total	(Rank)	Overall Total and Rank	Relative Abundance percent
				7-10 September (Continued)						
Morone sp.	No.	--	--	--	--	--	--			
	Wt.	--	--	--	--	--	--			
Orangespot sunfish	No.	--	--	--	--	--	--			
	Wt.	--	--	--	--	--	--			
Bluegill	No.	--	--	--	3	--	3	(15)		
	Wt.	--	--	--	*	--	*	*		
White crappie*	No.	--	--	--	3	--	3	(15)		
	Wt.	--	--	--	*	--	*	*		
Black crappie	No.	--	--	--	6	--	6	(12)		
	Wt.	--	--	--	*	--	*	*		
Sauger	No.	--	--	1	--	--	1	(23)		
	Wt.	--	--	571.0	--	--	571.0	(11)		
Freshwater drum	No.	--	--	15	--	--	15	(9)		
	Wt.	--	--	2,364.0	--	--	2,364.0	(6)		
Striped mullet	No.	--	--	--	--	--	--			
	Wt.	--	--	--	--	--	--			
Damaged fish	No.	--	--	--	--	--	--			
	Wt.	--	--	--	--	--	--			
Total number caught		--	144	374	33	182	733			
Total number of species		--	6	12	7	7	25			
				22-25 September						
Paddlefish	No.	--	--	1	--	--	1	(18)	1 (28)	**
	Wt.	--	--	98.0	--	--	98.0	(14)	--	--
Longnose gar	No.	--	--	--	--	--	--		4 (25)	0.1
	Wt	--	--	--	--	--	--		--	--
Shortnose gar	No.	--	--	--	--	--	--		10 (19)	0.2
	Wt.	--	--	--	--	--	--		--	--
American eel	No.	--	--	--	--	--	--		3 (26)	0.1
	Wt.	--	--	--	--	--	--		--	--
Skipjack herring	No.	--	8	3	--	--	11	(7)	33 (15)	0.6
	Wt.	--	56.0	603.0	--	--	659.0	(10)	--	--
Gizzard shad	No.	--	386	230	64	1	681	(1)	1,901 (1)	35.6
	Wt.	--	18,470.0	27,174.0	6,318.0	10.3	51,972.0	(1)	--	--
Threadfin shad	No.	--	326	1	1	--	328	(2)	1,763 (2)	33.0
	Wt.	--	2,093.0	5.0	36.0	--	2,134.0	(6)	--	--
Goldeye	No.	--	2	25	--	--	27	(4)	79 (12)	1.5
	Wt.	--	127.8	2,899.0	--	--	3,027	(4)	--	--
Common carp	No.	--	--	--	--	--	--		6 (23)	0.1
	Wt.	--	--	--	--	--	--		--	--
Central silvery minnow	No.	--	--	--	--	--	--		1 (28)	**
	Wt.	--	--	--	--	--	--		--	--
Speckled chub	No.	--	--	--	--	--	--		1 (28)	**
	Wt.	--	--	--	--	--	--		--	--
Silver chub	No.	--	--	--	--	--	--		88 (11)	1.7
	Wt.	--	--	--	--	--	--		--	--
Emerald shiner	No.	--	--	--	--	1	1	(18)	195 (4)	3.7
	Wt.	--	--	--	--	0.1	0.1	(20)	--	--
River shiner	No.	--	--	--	--	2	2	(14)	232 (3)	4.2
	Wt.	--	--	--	--	1.0	1.0	(17)	--	--
Red shiner	No.	--	--	--	--	--	--		8 (21)	0.2
	Wt.	--	--	--	--	--	--		--	--
Silverband shiner	No.	--	--	--	--	--	--		6 (23)	0.1
	Wt.	--	--	--	--	--	--		--	--
Weed shiner	No.	--	--	--	--	--	--		1 (23)	**
	Wt.	--	--	--	--	--	--		--	--
Notropis sp.	No.	--	--	--	--	2	2	(14)	46 (14)	0.9
	Wt.	--	--	--	--	0.2	0.2	(19)	--	--

(Continued)

* Weights not taken.
** Values of less than 0.5 g.

Table 3 (Concluded)

Species		ROTN	ES	EG8	HN	SN	Total (Rank)	Overall Total and Rank	Relative Abundance percent
				22-25 September (Continued)					
Blacktail shiner	No.	--	--	--	--	--	--	53 (13)	1.0
	Wt.	--	--	--	--	--	--	--	--
Mimic shiner	No.	--	--	--	--	3	3 (11)	3 (26)	0.1
	Wt.	--	--	--	--	0.6	0.6 (18)	--	--
River carpsucker	No.	--	3	22	4	--	29 (3)	116 (7)	2.2
	Wt.	--	1,559.0	12,246.0	2,463.0	--	16,268.0 (2)	--	--
Quillback carpsucker	No.	--	--	1	--	--	1 (18)	1 (28)	**
	Wt.	--	--	253.0	--	--	253.0 (12)	--	--
Highfin carpsucker	No.	--	--	2	--	--	2 (11)	6 (23)	0.1
	Wt.	--	--	636.0	--	--	636.0 (11)	--	--
Carpiodes sp.	No.	--	--	--	--	--	--	2 (27)	**
	Wt.	--	--	--	--	--	--	--	--
Blue sucker	No.	--	--	--	--	--	--	3 (26)	0.1
	Wt.	--	--	--	--	--	--	--	--
Smallmouth buffalo	No.	--	--	--	--	--	--	12 (18)	0.2
	Wt.	--	--	--	--	--	--	--	--
Blue catfish	No.	--	25	2	--	--	27 (4)	167 (5)	3.1
	Wt.	--	1,233.0	127.0	--	--	1,360.0 (8)	--	--
Channel catfish	No.	--	6	4	1	4	15 (6)	108 (9)	2.0
	Wt.	--	26.8	3,394.0	63.0	4.2	3,488.0 (3)	--	--
Ictalurus sp.	No.	--	--	--	--	--	--	141 (6)	2.6
	Wt.	--	--	--	--	--	--	--	--
Flathead catfish	No.	--	6	--	--	--	6 (11)	23 (16)	0.4
	Wt.	--	1,945.0	--	--	--	1,945.0 (7)	--	--
Brook silverside	No.	--	--	--	--	--	--	10 (19)	0.2
	Wt.	--	--	--	--	--	--	--	--
Inland silverside	No.	--	--	--	--	--	--	103 (10)	1.9
	Wt.	--	--	--	--	--	--	--	--
White bass	No.	--	1	--	--	--	1 (18)	7 (22)	0.1
	Wt.	--	12.5	--	--	--	12.5 (16)	--	--
Striped bass	No.	--	--	2	--	--	2 (14)	5 (24)	0.1
	Wt.	--	--	213.0	--	--	213.0 (13)	--	--
Morone sp.	No.	--	--	--	--	--	--	8 (21)	0.2
	Wt.	--	--	--	--	--	--	--	--
Orangespot sunfish	No.	--	--	--	--	--	--	7 (22)	0.1
	Wt.	--	--	--	--	--	--	--	--
Bluegill	No.	--	1	--	--	--	1 (18)	18 (17)	0.3
	Wt.	--	37.0	--	--	--	37.0 (15)	--	--
White crappie	No.	--	--	--	--	--	--	9 (20)	0.2
	Wt.	--	--	--	--	--	--	--	--
Black crappie	No.	--	--	--	--	--	--	7 (22)	0.1
	Wt.	--	--	--	--	--	--	--	--
Sauger	No.	--	1	4	--	--	5 (9)	9 (20)	0.2
	Wt.	--	128.0	1,109.0	--	--	1,237.0 (8)	--	--
Freshwater drum	No.	--	--	9	--	--	9 (8)	112 (8)	2.1
	Wt.	--	--	2,421.0	--	--	2,421.0 (5)	--	--
Striped mullet	No.	--	--	--	--	--	--	1 (28)	**
	Wt.	--	--	--	--	--	--	--	--
Damaged fish	No.	--	--	--	--	--	--	35 (15)	0.7
	Wt.	--	--	--	--	--	--	--	--
Total number caught		--	765	306	70	13	1,154	5,344	
Total number of species		--	11	13	4	5	19	42	

** Values of less than 0.5 g.

(Sheet 9 of 9)

Table 4

Total Numbers and Total Weights (grams) of Fish Collected at Pool 3 by Sampling Period and Gear Type

Species		ROTN	ES	EG8	HN	SN	Total	(Rank)
			2-5 July					
Shovelnose sturgeon	No.	--	--	1	--	--	1	(20)
	Wt.	--	--	807.0	--	--	807.0	(14)
Paddlefish	No.	--	--	7	--	--	7	(11)
	Wt	--	--	6,077.0	--	--	6,077.0	(5)
Longnose gar	No.	--	--	8	--	--	8	(9)
	Wt.	--	--	19,496.0	--	--	19,496.0	(1)
Shortnose gar	No.	--	--	3	--	--	3	(15)
	Wt.	--	--	5,203.0	--	--	5,203.0	(6)
American eel	No.	--	--	--	--	--	--	
	Wt.	--	--	--	--	--	--	
Skipjack herring	No.	--	--	1	--	--	1	(20)
	Wt.	--	--	184.0	--	--	184.0	(16)
Gizzard shad	No.	--	4	11	5	13	33	(3)
	Wt.	--	193.0	1,474.0	555.0	60.6	228.0	(10)
Threadfin shad	No.	--	--	--	--	159	159	(1)
	Wt.	--	--	--	--	45.1	45.1	(19)
Goldeye	No.	--	--	6	--	--	6	(12)
	Wt.	--	--	460.0	--	--	460.0	(15)
Central silvery minnow	No.	--	--	--	--	--	--	
	Wt.	--	--	--	--	--	--	
Silver chub	No.	--	--	--	--	--	--	
	Wt.	--	--	--	--	--	--	
Emerald shiner	No.	--	--	--	--	12	12	(5)
	Wt.	--	--	--	--	1.3	1.3	(21)
River shiner	No.		--	--	--	18	18	(4)
	Wt.	--	--	--	--	12.3	12.3	(20)
Silverband shiner	No.	--	--	--	--	--	--	
	Wt.	--	--	--	--	--	--	
Weed shiner	No.	--	--	--	--	1	1	(20)
	Wt.	--	--	--	--	0.5	0.5	(23)
Notropis sp.	No.	--	--	--	--	--	--	
	Wt.	--	--	--	--	--	--	
Blacktail shiner	No.	--	--	--	--	--	--	
	Wt.	--	--	--	--	--	--	
River carpsucker	No.	--	--	4	2	3	9	(6)
	Wt.	--	--	2,245.0	1,648.0	2.9	3,896.0	(7)
Highfin carpsucker	No.	--	--	--	--	--	--	
	Wt.	--	--	--	--	--	--	
Smallmouth buffalo	No.	--	--	8	--	--	8	(9)
	Wt.	--	--	8,801.0	--	--	8,801.0	(2)
Bigmouth buffalo	No.	--	--	--	--	--	--	
	Wt.	--	--	--	--	--	--	
Black buffalo	No.	--	--	1	--	--	1	(20)
	Wt.	--	--	3,257.0	--	--	3,257.0	(8)
Blue catfish	No.	--	26	9	1	--	36	(2)
	Wt.	--	2,702.0	6,019.0	188.0	--	8,909.0	(3)
Channel catfish	No.	--	--	--	1	--	1	(20)
	Wt.	--	--	--	73.0	--	73.0	(18)
Ictalurus sp.	No.	--	--	--	--	--	--	
	Wt.	--	--	--	--	--	--	
Flathead catfish	No.	--	5	--	4	--	9	(9)
	Wt.	--	7,207.0	--	1,654.0	--	8,861.0	(4)
Brook silverside	No.	--	--	--	--	--	--	
	Wt.	--	--	--	--	--	--	
Inland silverside	No.	--	--	--	--	5	5	(13)
	Wt.	--	--	--	--	0.9	0.9	(22)
White bass	No.	--	--	4	--	--	4	(14)
	Wt.	--	--	2,296.0	--	--	2,296.0	(9)

(Continued)

Note: ES = electroshocking, ROTN = rotenone, EG8 = gill net, HN = hoop net, and SN = seine.

Table 4 (Continued)

Species		ROTN	ES	EG8	HN	SN	Total (Rank)
			2-5 July (Continued)				
Striped bass	No.	--	--	--	--	--	--
	Wt.	--	--	--	--	--	--
Morone sp.	No.	--	--	--	--	--	--
	Wt.	--	--	--	--	--	--
Orangespot sunfish	No.	--	--	--	--	--	--
	Wt.	--	--	--	--	--	--
Bluegill	No.	--	--	--	--	1	1 (20)
	Wt.	--	--	--	--	0.3	0.3 (24)
Longear sunfish	No.	--	--	--	--	--	--
	Wt.	--	--	--	--	--	--
Lepomis sp.	No.	--	--	--	--	--	--
	Wt.	--	--	--	--	--	--
Largemouth bass	No.	--	--	--	--	--	--
	Wt.	--	--	--	--	--	--
White crappie	No.	--	--	--	1	--	1 (20)
	Wt.	--	--	--	134.0	--	134.0 (17)
Black crappie	No.	--	--	--	--	--	--
	Wt.	--	--	--	--	--	--
Sauger	No.	--	--	1	--	--	1 (20)
	Wt.	--	--	1,013.0	--	--	1,013.0 (13)
Freshwater drum	No.	--	--	3	5	--	8 (9)
	Wt.	--	--	605.0	576.0	--	1,181.0 (11)
Striped mullet	No.	--	1	--	--	--	1 (20)
	Wt.	--	1,074.0	--	--	--	1,074.0 (12)
Total number caught		--	36	67	19	212	334
Total number of species		--	7	14	7	8	24
			13-16 July				
Shovelnose sturgeon	No.	--	--	--	--	--	--
	Wt.	--	--	--	--	--	--
Paddlefish	No.	--	--	1	--	--	1 (20)
	Wt	--	--	897.0	--	--	897.0 (12)
Longnose gar	No.	--	--	5	--	--	5 (11)
	Wt.	--	--	3,819.0	--	--	3,819.0 (6)
Shortnose gar	No.	--	--	3	--	--	3 (14)
	Wt.	--	--	2,316.0	--	--	2,316.0 (7)
American eel	No.	--	--	--	--	--	--
	Wt.	--	--	--	--	--	--
Skipjack herring	No.	--	--	12	--	--	12 (6)
	Wt.	--	--	1,025.0	--	--	1,025.0 (11)
Gizzard shad	No.	--	33	76	6	--	115 (2)
	Wt.	--	1,314.0	9,221.0	554.0	--	11,119.0 (1)
Threadfin shad	No.	--	8	--	--	--	8 (10)
	Wt.	--	57.0	--	--	--	57.0 (15)
Goldeye	No.	--	--	--	--	--	--
	Wt.	--	--	--	--	--	--
Central silvery minnow	No.	--	--	--	--	--	--
	Wt.	--	--	--	--	--	--
Silver chub	No.	--	--	--	--	--	--
	Wt.	--	--	--	--	--	--
Emerald shiner	No.	--	--	--	--	82	82 (3)
	Wt.	--	--	--	--	20.7	20.7 (17)
River shiner	No.	--	--	--	--	3	3 (14)
	Wt.	--	--	--	--	1.0	1.0 (21)
Silverband shiner	No.	--	--	--	--	--	--
	Wt.	--	--	--	--	--	--
Weed shiner	No.	--	--	--	--	--	--
	Wt.	--	--	--	--	--	--
Notropis sp.	No.	--	--	--	--	--	--
	Wt.	--	--	--	--	--	--
Blacktail shiner	No.	--	--	--	--	--	--
	Wt.	--	--	--	--	--	--

(Continued)

Table 4 (Continued)

Species		ROTN	ES	EG8	HN	SN	Total	(Rank)
				13-16 July (Continued)				
River carpsucker	No.	--	1	18	--	156	275	(1)
	Wt.	--	61.0	10,754.0	--	30.7	10,846.0	(2)
Highfin carpsucker	No.	--	--	--	--	--	--	
	Wt.	--	--	--	--	--	--	
Smallmouth buffalo	No.	--	--	9	--	--	9	(8)
	Wt.	--	--	8,949.0	--	--	8,949.0	(4)
Bigmouth buffalo	No.	--	1	--	--	--	1	(20)
	Wt.	--	1,860.0	--	--	--	1,860.0	(9)
Black buffalo	No.	--	--	--	--	--	--	
	Wt.	--	--	--	--	--	--	
Blue catfish	No.	--	10	16	1	--	27	(4)
	Wt.	--	6,048.0	3,573.0	409.0	--	10,030.0	(3)
Channel catfish	No.	--	--	--	--	--	--	
	Wt.	--	--	--	--	--	--	
Ictalurus sp.	No.	--	--	--	--	--	--	
	Wt.	--	--	--	--	--	--	
Flathead catfish	No.	--	7	1	2	--	10	(10)
	Wt.	--	3,833.0	2,295.0	524.0	--	6,652.0	(5)
Brook silverside	No.	--	--	--	--	--	--	
	Wt.	--	--	--	--	--	--	
Inland silverside	No.	--	--	--	--	23	23	(5)
	Wt.	--	--	--	--	8.6	8.6	(20)
White bass	No.	--	--	--	--	--	--	
	Wt.	--	--	--	--	--	--	
Striped bass	No.	--	--	3	--	--	3	(14)
	Wt.	--	--	2,104.0	--	--	2,104.0	(8)
Morone sp.	No.	--	--	--	--	9	9	(8)
	Wt.	--	--	--	--	17.4	17.4	(19)
Orangespot sunfish	No.	--	--	--	--	--	--	
	Wt.	--	--	--	--	--	--	
Bluegill	No.	--	--	--	1	1	2	(17)
	Wt.	--	--	--	26.0	0.7	26.7	(16)
Longear sunfish	No.	--	--	--	1	--	1	(20)
	Wt.	--	--	--	19.0	--	19.0	(18)
Lepomis sp.	No.	--	--	--	--	--	--	
	Wt.	--	--	--	--	--	--	
Largemouth bass	No.	--	--	--	--	--	--	
	Wt.	--	--	--	--	--	--	
White crappie	No.	--	--	--	--	--	--	
	Wt.	--	--	--	--	--	--	
Black crappie	No.	--	--	--	--	--	--	
	Wt.	--	--	--	--	--	--	
Sauger	No.	--	--	1	--	--	1	(20)
	Wt.	--	--	357.0	--	--	357.0	(13)
Freshwater drum	No.		1	2	1	--	4	(12)
	Wt.	--	320.0	564.0	183.0	--	1,067.0	(10)
Striped mullet	No.	--	--	2	--	--	2	(17)
	Wt.	--	--	307.0	--	--	307.0	(14)
Total number caught			61	149	12	374	596	
Total number of species			7	13	6	6	20	
				31 July-10 August				
Shovelnose sturgeon	No.	--	--	--	--	--	--	
	Wt.	--	--	--	--	--	--	
Paddlefish	No.	--	--	--	--	--	--	
	Wt.	--	--	--	--	--	--	
Longnose gar	No.	1	--	--	1	--	2	(25)
	Wt.	0.9	--	--	495.0	--	495.9	(9)
Shortnose gar	No.	--	2	--	2	--	4	(20)
	Wt.	--	*	--	2,534.0	--	2,534	(4)
American eel	No.	--	--	--	--	--	--	
	Wt.	--	--	--	--	--	--	

(Continued)

* Weights not taken.

Table 4 (Continued)

Species		ROTN	ES	EG8	HN	SN	Total	(Rank)
		31 July-10 August (Continued)						
Skipjack herring	No.	1	--	--	--	--	1	(29)
	Wt.	56.0	--	--	--	--	56.0	(14)
Gizzard shad	No.	231	11	--	5	--	247	(3)
	Wt.	4,878.7	*	--	993.0	--	5,872.0	(2)
Threadfin shad	No.	7,595	1	--	--	2	7,598	(1)
	Wt	12,539.7	*	--	--	0.8	12,540.0	(1)
Goldeye	No.	--	--	--	--	--	--	
	Wt.	--	--	--	--	--	--	
Central silvery minnow	No.	3	--	--	--	--	3	(22)
	Wt.	20.9	--	--	--	--	20.9	(19)
Silver chub	No.	82	--	--	--	--	82	(8)
	Wt.	109.1	--	--	--	--	109.1	(13)
Emerald shiner	No.	153	--	--	--	76	229	(4)
	Wt.	61.1	--	--	--	49.7	111.0	(12)
River shiner	No.	105	--	--	--	8	113	(6)
	Wt.	127.4	--	--	--	1.3	128.7	(11)
Silverband shiner	No.	29	--	--	--	--	29	(13)
	Wt.	34.0	--	--	--	--	34.0	(17)
Weed shiner	No.	1	--	--	--	--	1	(29)
	Wt.	0.9	--	--	--	--	0.9	(27)
Notropis sp.	No.	59	--	--	--	3	62	(10)
	Wt.	8.7	--	--	--	0.2	8.9	(21)
Blacktail shiner	No.	--	--	--	--	--	--	
	Wt.	--	--	--	--	--	--	
River carpsucker	No.	344	2	--	2	16	6	(2)
	Wt.	1,219.4	*	--	1,967.0	24.6	1,992.0	(5)
Highfin carpsucker	No.	--	--	--	--	--	--	
	Wt.	--	--	--	--	--	--	
Smallmouth buffalo	No.	2	3	--	--	--	5	(18)
	Wt.	9.3	*	--	--	--	9.3	(20)
Bigmouth buffalo	No.	--	1	--	--	--	1	(29)
	Wt.	--	*	--	--	--	*	*
Black buffalo	No.	--	--	--	--	--	--	
	Wt.	--	--	--	--	--	--	
Blue catfish	No.	107	24	--	1	--	132	(5)
	Wt.	465.5	2,655.0	--	1,026.0	--	4,147.0	(3)
Channel catfish	No.	109	--	--	1	--	110	(7)
	Wt.	486.1	--	--	365.0	--	851.0	(8)
Ictalurus sp.	No.	33	--	--	--	--	33	(11)
	Wt.	21.1	--	--	--	--	21.1	(18)
Flathead catfish	No.	--	5	--	--	--	5	(18)
	Wt.	--	1,143.0	--	--	--	1,143.0	(6)
Brook silverside	No.	1	--	--	--	1	2	(20)
	Wt.	0.6	--	--	--	0.7	1.3	(26)
Inland silverside	No.	42	--	--	--	22	64	(9)
	Wt.	24.6	--	--	--	18.9	43.5	(15)
White bass	No.	4	--	--	5	--	9	(14)
	Wt.	223.7	--	--	711.0	--	935.0	(7)
Striped bass	No.	3	--	--	--	--	3	(22)
	Wt.	188.7	--	--	--	--	188.7	(10)
Morone sp.	No.	3	--	--	--	--	3	(22)
	Wt.	6.6	--	--	--	--	6.6	(23)
Orangespot sunfish	No.	7	--	--	--	--	7	(16)
	Wt.	6.8	--	--	--	--	6.8	(22)
Bluegill	No.	6	--	--	--	1	7	(10)
	Wt.	2.7	--	--	--	0.9	3.6	(24)
Longear sunfish	No.	1	--	--	--	--	1	(29)
	Wt.	0.7	--	--	--	--	0.7	(28)
Lepomis sp.	No.	5	--	--	--	--	5	(18)
	Wt.	2.0	--	--	--	--	2.0	(25)
Largemouth bass	No.	--	--	--	--	--	--	
	Wt.	--	--	--	--	--	--	

(Continued)

* Weights not taken.

Table 4 (Continued)

Species		ROTN	ES	EG8	HN	SN	Total	(Rank)
				31 July-10 August (Continued)				
White crappie	No.	--	--	--	--	--	--	
	Wt.	--	--	--	--	--	--	
Black crappie	No.	--	--	--	--	--	--	
	Wt.	--	--	--	--	--	--	
Sauger	No.	--	1	--	--	--	1	(29)
	Wt.	--	*	--	--	--	*	*
Freshwater drum	No.	29	--	--	--	--	29	(13)
	Wt.	42.1	--	--	--	--	42.1	(16)
Striped mullet	No.	--	1	--	--	--	1	(29)
	Wt.	--	*	--	--	--	*	*
Total number caught		8,956	51	0	17	129	9,153	--
Total number of species		22	10	0	7	7	27	--
				24-27 August				
Shovelnose sturgeon	No.	--	--	--	--	--	--	--
	Wt.	--	--	--	--	--	--	--
Paddlefish	No.	--	--	2	--	--	2	(15)
	Wt.	--	--	875.0	--	--	875.0	(10)
Longnose gar	No.	--	--	1	--	--	1	(19)
	Wt.	--	--	2,635.0	--	--	2,635.0	(7)
Shortnose gar	No.	--	--	8	1	--	9	(9)
	Wt.	--	--	10,054.0	*	--	10,054.0	(2)
American eel	No.	--	--	--	--	--	--	
	Wt.	--	--	--	--	--	--	
Skipjack herring	No.	--	21	14	--	--	35	(6)
	Wt.	--	*	3,821.0	--	--	3,821.0	(4)
Gizzard shad	No.	--	172	352	9	6	539	(1)
	Wt.	--	*	39,903.0	1,294.0	436.0	41,633.0	(1)
Threadfin shad	No.	--	458	1	--	--	459	(2)
	Wt.	--	*	4.0	--	--	4.0	(18)
Goldeye	No.	--	--	2	--	--	2	(15)
	Wt.	--	--	538.0	--	--	538.0	(12)
Central silvery minnow	No.	--	--	--	--	--	--	
	Wt	--	--	--	--	--	--	
Silver chub	No.	--	--	--	--	--	--	
	Wt.	--	--	--	--	--	--	
Emerald shiner	No.	--	--	--	--	71	71	(4)
	Wt.	--	--	--	--	37.0	37.0	(15)
River shiner	No.	--	--	--	--	81	81	(3)
	Wt.	--	--	--	--	17.7	17.7	(16)
Silverband shiner	No.	--	--	--	--	--	--	
	Wt.	--	--	--	--	--	--	
Weed shiner	No.	--	--	--	--	--	--	
	Wt.	--	--	--	--	--	--	
Notropis sp.	No.	--	--	--	--	--	--	
	Wt.	--	--	--	--	--	--	
Blacktail shiner	No.	--	--	--	--	8	8	(10)
	Wt.	--	--	--	--	1.1	1.1	(19)
River carpsucker	No.	--	--	7	2	40	49	(5)
	Wt.	--	--	3,017.0	*	29.0	3,040.0	(6)
Highfin carpsucker	No.	--	--	1	--	--	1	(19)
	Wt.	--	--	211.0	--	--	211.0	(13)
Smallmouth buffalo	No.	--	--	2	--	--	2	(15)
	Wt.	--	--	3,720.0	--	--	3,720.0	(5)
Bigmouth buffalo	No.	--	--	--	--	--	--	
	Wt.	--	--	--	--	--	--	
Black buffalo	No.	--	--	--	--	--	--	
	Wt.	--	--	--	--	--	--	
Blue catfish	No.	--	17	12	1	--	30	(7)
	Wt.	--	1,562.0	7,153.0	156.0	--	8,871.0	(3)
Channel catfish	No.	--	--	2	2	--	4	(12)
	Wt.	--	--	1,081.0	172.0	--	1,253.0	(8)

(Continued)

* Weights not taken.

Table 4 (Continued)

Species		ROTN	ES	EG8	HN	SN	Total	(Rank)
			24-27 August (Continued)					
Ictalurus sp.	No.	--	--	--	--	--	--	
	Wt.	--	--	--	--	--	--	
Flathead catfish	No.	--	4	--	--	--	4	(12)
	Wt.	--	1,011.0	--	--	--	1,011.0	(9)
Brook silverside	No.	--	--	--	--	--	--	
	Wt.	--	--	--	--	--	--	
Inland silverside	No.	--	--	--	--	12	12	(8)
	Wt.	--	--	--	--	8.2	8.2	(17)
White bass	No.	--	--	--	1	--	1	(19)
	Wt.	--	--	--	*	--	*	*
Striped bass	No.	--	--	--	--	--	--	
	Wt.	--	--	--	--	--	--	
Morone sp.	No.	--	--	--	--	--	--	
	Wt.	--	--	--	--	--	--	
Orangespot sunfish	No.	--	--	--	--	--	--	
	Wt.	--	--	--	--	--	--	
Bluegill	No.	--	--	--	--	--	--	
	Wt.	--	--	--	--	--	--	
Longear sunfish	No.	--	--	--	--	--	--	
	Wt.	--	--	--	--	--	--	
Lepomis sp.	No.	--	--	--	--	--	--	
	Wt.	--	--	--	--	--	--	
Largemouth bass	No.	--	--	--	--	--	--	
	Wt.	--	--	--	--	--	--	
White crappie	No.	--	--	--	1	--	1	(19)
	Wt.	--	--	--	*	--	*	*
Black crappie	No.	--	--	1	5	--	6	(12)
	Wt.	--	--	143.0	*	--	143.0	(14)
Sauger	No.	--	--	--	--	--	--	
	Wt.	--	--	--	--	--	--	
Freshwater drum	No.	--	--	1	--	--	1	(19)
	Wt.	--	--	667.0	--	--	667.0	(11)
Striped mullet	No.	--	--	--	--	--	--	
	Wt.	--	--	--	--	--	--	
Total number caught		--	672	406	22	218	1,318	
Total number of species		--	5	14	8	6	21	
			7-10 September					
Shovelnose sturgeon	No.	--	--	--	--	--	--	
	Wt.	--	--	--	--	--	--	
Paddlefish	No.	--	--	3	--	--	3	(16)
	Wt.	--	--	3,113.0	--	--	3,113.0	(7)
Longnose gar	No.	--	--	--	--	--	--	
	Wt.	--	--	--	--	--	--	
Shortnose gar	No.	--	--	13	1	--	14	(11)
	Wt.	--	--	11,111.0	942.0	--	12,053.0	(3)
American eel	No.	--	--	--	--	--	--	
	Wt.	--	--	--	--	--	--	
Skipjack herring	No.	--	1	14	--	--	15	(9)
	Wt.	--	*	3.191.0	--	--	3,191.0	(5)
Gizzard shad	No.	--	283	373	22	4	682	(1)
	Wt.	--	*	44,636.0	1,128.0	34.7	45,794.0	(1)
Threadfin shad	No.	--	67	--	--	--	67	(3)
	Wt.	--	*	--	--	--	*	*
Goldeye	No.	--	--	9	--	--	9	(14)
	Wt.	--	--	1,008.0	--	--	1,008.0	(12)
Central silvery minnow	No.	--	--	--	--	--	--	
	Wt.	--	--	--	--	--	--	
Silver chub	No.	--	--	--	--	--	--	
	Wt.	--	--	--	--	--	--	
Emerald shiner	No.	--	--	--	--	35	35	(5)
	Wt.	--	--	--	--	26.2	26.2	(18)

(Continued)

* Weights not taken.

Table 4 (Continued)

Species		ROTN	ES	EG8	HN	SN	Total	(Rank)
				7-10 September (Continued)				
River shiner	No.	--	--	--	--	17	17	(8)
	Wt.	--	--	--	--	12.5	12.5	(19)
Silverband shiner	No.	--	--	--	--	--	--	
	Wt	--	--	--	--	--	--	
Weed shiner	No.	--	--	--	--	--	--	
	Wt.	--	--	--	--	--	--	
Notropis sp.	No.	--	--	--	--	19	19	(7)
	Wt.	--	--	--	--	2.8	2.8	(20)
Blacktail shiner	No.	--	--	--	--	12	12	(12)
	Wt.	--	--	--	--	1.8	1.8	(21)
River carpsucker	No.	--	1	19	1	13	34	(6)
	Wt.	--	*	10,988.0	*	46.4	1,103.0	(11)
Highfin carpsucker	No.	--	--	--	--	--	--	
	Wt.	--	--	--	--	--	--	
Smallmouth buffalo	No.	--	1	1	--	--	2	(19)
	Wt.	--	*	1,281.0	--	--	1,281.0	(10)
Bigmouth buffalo	No.	--	--	--	--	--	--	
	Wt.	--	--	--	--	--	--	
Black buffalo	No.	--	--	--	--	--	--	
	Wt.	--	--	--	--	--	--	
Blue catfish	No.	--	53	27	2	--	82	(2)
	Wt.	--	3,369.0	9,744.0	125.0	--	13,238.0	(2)
Channel catfish	No.	--	--	13	1	--	14	(11)
	Wt.	--	--	3,903.0	*	--	3,903.0	(4)
Ictalurus sp.	No.	--	--	--	--	--	--	
	Wt.	--	--	--	--	--	--	
Flathead catfish	No.	--	4	--	--	--	4	(19)
	Wt.	--	2,311.0	--	--	--	2,311.0	(9)
Brook silverside	No.	--	--	--	--	1	1	(24)
	Wt.	--	--	--	--	1.5	1.5	(22)
Inland silverside	No.	--	--	--	--	49	49	(4)
	Wt.	--	--	--	--	54.2	54.2	(17)
White bass	No.	--	--	6	--	--	6	(15)
	Wt.	--	--	3,159.0	--	--	3,159.0	(6)
Striped bass	No.	--	--	2	--	--	2	(19)
	Wt.	--	--	2,573.0	--	--	2,573.0	(8)
Morone sp.	No.	--	--	--	--	--	--	
	Wt.	--	--	--	--	--	--	
Orangespot sunfish	No.	--	--	--	--	--	--	
	Wt.	--	--	--	--	--	--	
Bluegill	No.	--	--	--	1	--	1	(24)
	Wt.	--	--	--	*	--	*	*
Longear sunfish	No.	--	--	--	--	--	--	
	Wt.	--	--	--	--	--	--	
Lepomis sp.	No.	--	--	--	--	--	--	
	Wt.	--	--	--	--	--	--	
Largemouth bass	No.	--	--	--	--	--	1	(24)
	Wt.	--	--	--	--	--	*	*
White crappie	No.	--	--	1	1	--	2	(19)
	Wt.	--	--	161.0	*	--	161.0	(16)
Black crappie	No.	--	--	--	1	--	1	(24)
	Wt.	--	--	--	*	--	*	*
Sauger	No.	--	--	1	--	--	1	(24)
	Wt.	--	--	460.0	--	--	460.0	(15)
Freshwater drum	No.	--	--	10	--	--	10	(13)
	Wt.	--	--	627.0	--	--	627.0	(14)
Striped mullet	No.	--	--	1	--	--	1	(24)
	Wt.	--	--	694.0	--	--	694.0	(13)
Total number caught		--	411	493	30	150	1,084	
Total number of species		--	8	15	8	7	25	

(Continued)

* Weights not taken.

Table 4 (Continued)

Species		ROTN	ES	EG8	HN	SN	Total	(Rank)	Overall Total and Rank	Relative Abundance percent
				22-25 September						
Shovelnose sturgeon	No.	--	--	--	--	--	--		1 (9)	**
	Wt.	--	--	--	--	--	--		--	--
Paddlefish	No.	--	--	--	--	--	--		13 (21)	0.1
	Wt	--	--	--	--	--	--		--	--
Longnose gar	No.	--	--	2	--	--	2	(18)	18 (19)	0.1
	Wt.	--	--	1,498.0	--	--	1,498.0	(11)	--	--
Shortnose gar	No.	--	1	5	2	--	8	(10)	41 (13)	0.3
	Wt.	--	1,222.0	5,615.0	2,624.0	--	9,461.0	(3)	--	--
American eel	No.	--	--	--	2	--	2	(18)	2 (28)	**
	Wt.	--	--	--	1,732.0	--	1,732.0	(10)	--	--
Skipjack herring	No.	--	2	15	--	--	17	(7)	81 (11)	0.5
	Wt.	--	11.4	3,812.0	--	--	3,823.4	(7)	--	--
Gizzard shad	No.	--	1,254	336	50	4	1,644	(1)	3,260 (2)	21.6
	Wt.	--	48,016.0	39,403.0	6,272.0	16.8	93,708.0	(1)	--	--
Threadfin shad	No.	--	1,075	1	--	10	1,086	(2)	9,377 (1)	62.1
	Wt.	--	5,839.1	15.0	--	12.5	5,867.0	(4)	--	--
Goldeye	No.	--	2	2	--	--	4	(16)	21 (18)	0.1
	Wt.	--	34.2	565.0	--	--	599.2	(14)	--	--
Central silvery minnow	No.	--	--	--	--	--	--		3 (27)	**
	Wt.	--	--	--	--	--	--		--	--
Silver chub	No.	--	--	--	--	1	1	(22)	83 (10)	0.6
	Wt.	--	--	--	--	0.2	0.2	(25)	--	--
Emerald shiner	No.	--	--	--	--	34	34	(5)	463 (3)	3.1
	Wt.	--	--	--	--	11.7	11.7		--	--
River shiner	No.	--	--	--	--	4	4	(16)	236 (6)	1.6
	Wt.	--	--	--	--	2.2	2.2	(23)	--	--
Silverband shiner	No.	--	--	--	--	--	--		29 (15)	0.2
	Wt.	--	--	--	--	--	--		--	--
Weed shiner	No.	--	--	--	--	--	--		2 (28)	**
	Wt.	--	--	--	--	--	--		--	--
Notropis spp.	No.	--	--	--	--	27	27	(6)	108 (9)	0.7
	Wt.	--	--	--	--	3.1	3.1	(22)	--	--
Blacktail shiner	No.	--	--	--	--	6	6	(12)	26 (17)	0.2
	Wt.	--	--	--	--	1.0	1.0	(24)	--	--
River carpsucker	No.	--	--	4	1	--	5	(14)	736 (23)	2.4
	Wt.	--	--	2,889.0	557.0	--	3,446.0	(8)	--	--
Highfin carpsucker	No.	--	--	--	--	--	--		1 (29)	**
	Wt.	--	--	--	--	--	--		--	--
Smallmouth buffalo	No.	--	--	--	1	--	1	(22)	27 (16)	0.2
	Wt.	--	--	--	591.0	--	591.0	(15)	--	--
Bigmouth buffalo	No.	--	--	--	--	--	--		2 (28)	**
	Wt.	--	--	--	--	--	--		--	--
Black buffalo	No.	--	--	--	--	--	--		1 (29)	**
	Wt.	--	--	--	--	--	--		--	--
Blue catfish	No.	--	28	15	3	--	46	(3)	353 (5)	2.3
	Wt.	--	1,867.0	9,160.0	300.0	--	11,327.0	(2)	--	--
Channel catfish	No.	--	2	2	1	--	5	(14)	134 (8)	0.9
	Wt.	--	7.8	706.0	2,281.0	--	2,995.0	(9)	--	--
Ictalurus sp.	No.	--	--	--	--	--	--		33 (14)	0.2
	Wt.	--	--	--	--	--	--		--	--
Flathead catfish	No.	--	1	--	--	--	1	(22)	33 (14)	0.2
	Wt.	--	720.0	--	--	--	720.0	(13)	--	--
Brook silverside	No.	--	--	--	--	--	--		3 (27)	**
	Wt.	--	--	--	--	--	--		--	--
Inland silverside	No.	--	--	--	--	43	43	(4)	196 (7)	1.3
	Wt.	--	--	--	--	6.3	6.3	(21)	--	--
White bass	No.	--	--	10	3	--	13	(8)	33 (14)	0.2
	Wt.	--	--	4,913.0	369.0	--	5,282.0	(6)	--	--
Striped bass	No.	--	--	6	--	--	6	(12)	14 (20)	0.1
	Wt.	--	--	5,283.0	--	--	5,282.0	(5)	--	--
Morone sp.	No.	--	--	--	--	--	--		12 (22)	0.1
	Wt.	--	--	--	--	--	--		--	--

(Continued)

** Values of less than 0.5 g.

Table 4 (Concluded)

Species		ROTN	ES	EG8	HN	SN	Total (Rank)		Overall Total and Rank	Relative Abundance percent
			22-25 September (Continued)							
Orangespot sunfish	No.	--	--	--	--	--	--		7 (24)	0.1
	Wt.	--	--	--	--	--	--		--	--
Bluegill	No.	--	1	--	--	--	1	(22)	12 (22)	0.1
	Wt.	--	0.7	--	--	--	0.7	(25)	--	--
Longear sunfish	No.	--	1	--	--	--	1	(22)	3 (27)	**
	Wt.	--	28.7	--	--	--	28.7	(19)	--	--
Lepomis sp.	No.	--	--	--	--	--	--		5 (26)	**
	Wt.	--	--	--	--	--	--		--	--
Largemouth bass	No.	--	--	--	--	--	--		1 (29)	**
	Wt.	--	--	--	--	--	--		--	--
White crappie	No.	--	--	1	--	--	1	(22)	5 (26)	**
	Wt.	--	--	383.0	--	--	383.0	(16)	--	--
Black crappie	No.	--	--	--	1	--	1	(22)	8 (23)	0.1
	Wt.	--	--	--	267.0	--	267.0	(18)	--	--
Sauger	No.	--	--	1	--	--	1	(22)	5 (26)	**
	Wt.	--	--	363.0	--	--	363.0	(17)	--	--
Freshwater drum	No.	--	--	7	2	--	9	(9)	61 (12)	0.4
	Wt.	--	--	1,167.0	315.0	--	1,482.0	(12)	--	--
Striped mullet	No.	--	--	--	--	--	--		5 (26)	**
	Wt.	--	--	--	--	--	--		--	--
Total number caught		--	2,367	407	66	129	2,969		15,454	
Total number of species		--	10	14	10	7	25		37	

** Values of less than 0.5 g.

Table 5

Total Numbers and Total Weights (grams) of Fish Collected at Bar 2 of the River Border by Sampling Period and Gear Type

Species		ES	HN	SN	Total	(Rank)
			2-5 July			
Gizzard shad	No.	--	--	1	1	(12)
	Wt.	--	--	0.6	0.6	(10)
Threadfin shad	No.	--	--	4	4	(6)
	Wt.	--	--	0.9	0.9	(8)
Silver chub	No.	--	--	--	--	
	Wt.	--	--	--	--	
Emerald shiner	No.	--	--	4	4	(6)
	Wt.	--	--	0.7	0.7	(9)
River shiner	No.	--	--	2	2	(10)
	Wt.	--	--	3.2	3.2	(6)
Silverband shiner	No.	--	--	--	--	
	Wt.	--	--	--	--	
Notropis sp.	No.	--	--	--	--	
	Wt.	--	--	--	--	
Blacktail shiner	No.	--	--	--	--	
	Wt.	--	--	--	--	
River carpsucker	No.	--	--	3	3	(8)
	Wt.	--	--	0.4	0.4	(11)
Blue su	No.	--	--	--	--	
	Wt.	--	--	--	--	
Smallmouth buffalo	No.	--	--	--	--	
	Wt.	--	--	--	--	
Blue catfish	No.	1	5	--	6	(3)
	Wt.	24.0	573.0	--	597.0	(2)
Channel catfish	No.	--	--	--	--	
	Wt.	--	--	--	--	
Ictalurus sp.	No.	--	--	--	--	
	Wt.	--	--	--	--	
Flathead catfish	No.	--	5	--	5	(4)
	Wt.	--	2,195.0	--	2,195.0	(1)
Inland silverside	No.	--	--	6	6	(3)
	Wt.	--	--	1.4	1.4	(7)
Yellow bass	No.	--	--	--	--	
	Wt.	--	--	--	--	
Morone sp.	No.	--	--	3	3	(8)
	Wt.	--	--	5.1	5.1	(4)
Bluegill	No.	--	--	10	10	(1)
	Wt.	--	--	3.3	3.3	(5)
Freshwater drum	No.	--	1	--	1	(12)
	Wt.	--	32.0	--	32.0	(3)
Unidentified larval fish	No.	--	--	--	--	
	Wt.	--	--	--	--	
Damaged fish	No.	--	--	2	2	(10)
	Wt.	--	--	0.2	0.2	(12)
Total number caught		1	11	35	47	
Total number of species		1	3	7	10	

(Continued)

Note: ES = electroshocking, HN = hoop net, and SN = seine.

Table 5 (Continued)

Species		ES	HN	SN	Total (Rank)	
			13-16 July			
Gizzard shad	No.	--	--	--	--	
	Wt.	--	--	--	--	
Threadfin shad	No.	--	--	1	1	(10)
	Wt.	--	--	0.1	0.1	(13)
Silver chub	No.	--	--	1	1	(10)
	Wt.	--	--	0.4	0.4	(10)
Emerald shiner	No.	--	--	11	11	(1)
	Wt.	--	--	2.6	2.6	(6)
River shiner	No.	--	--	1	1	(10)
	Wt.	--	--	2.0	2.0	(7)
Silverband shiner	No.	--	--	--	--	
	Wt.	--	--	--	--	
Notropis sp.	No.	--	--	--	--	
	Wt.	--	--	--	--	
Blacktail shiner	No.	--	--	--	--	
	Wt.	--	--	--	--	
River carpsucker	No.	--	--	6	6	(2)
	Wt.	--	--	0.9	0.9	(9)
Blue sucker	No.	--	2	--	2	(4)
	Wt.	--	5,776.0	--	5,776.0	(1)
Smallmouth buffalo	No.	--	1	--	1	(10)
	Wt.	--	790.0	--	790.0	(3)
Blue catfish	No.	--	2	--	2	(4)
	Wt.	--	154.0	--	154.0	(5)
Channel catfish	No.	--	--	1	1	(10)
	Wt.	--	--	1.3	1.3	(8)
Ictalurus sp.	No.	--	--	--	--	
	Wt.	--	--	--	--	
Flathead catfish	No.	--	2	--	2	(4)
	Wt.	--	1,065.0	--	1,065.0	(2)
Inland silverside	No.	--	--	1	1	(10)
	Wt.	--	--	0.2	0.2	(12)
Yellow bass	No.	1	--	--	1	(10)
	Wt.	685	--	--	685.0	(4)
Morone sp.	No.	--	--	--	--	
	Wt.	--	--	--	--	
Bluegill	No.	--	--	--	--	
	Wt.	--	--	--	--	
Freshwater drum	No.	--	--	--	--	
	Wt.	--	--	--	--	
Unidentified larval fish	No.	--	--	--	--	
	Wt.	--	--	--	--	
Damaged fish	No.	--	--	--	--	
	Wt.	--	--	--	--	
Total number caught		1	7	22	30	
Total number of species		1	4	7	12	

(Continued)

Table 5 (Continued)

Species		ES	HN	SN	Total	(Rank)
			31 July-10 August			
Gizzard shad	No.	1	--	--	1	(6)
	Wt.	231.0	--	--	231.0	(5)
Threadfin shad	No.	--	--	--	--	
	Wt.	--	--	--	--	
Silver chub	No.	--	--	--	--	
	Wt.	--	--	--	--	
Emerald shiner	No.	--	--	75	75	(1)
	Wt.	--	--	52.6	52.6	(7)
River shiner	No.	--	--	--	--	
	Wt.	--	--	--	--	
Silverband shiner	No.	--	--	--	--	
	Wt.	--	--	--	--	
Notropis sp.	No.	--	--	--	--	
	Wt.	--	--	--	--	
Blacktail shiner	No.	--	--	--	--	
	Wt.	--	--	--	--	
River carpsucker	No.	--	--	--	--	
	Wt.	--	--	--	--	
Blue sucker	No.	--	--	--	--	
	Wt.	--	--	--	--	
Smallmouth buffalo	No.	1	--	--	1	(6)
	Wt.	450.0	--	--	450.0	(3)
Blue catfish	No.	2	3	--	5	(2)
	Wt.	920.0	407.0	--	1,327.0	(2)
Channel catfish	No.	--	2	--	2	(4)
	Wt.	--	299.0	--	299.0	(4)
Ictalurus sp.	No.	--	--	--	--	
	Wt.	--	--	--	--	
Flathead catfish	No.	--	3	--	3	(3)
	Wt.	--	1,419.0	--	1,419.0	(1)
Inland silverside	No.	--	--	--	--	
	Wt.	--	--	--	--	
Yellow bass	No.	--	--	--	--	
	Wt.	--	--	--	--	
Morone sp.	No.	--	--	--	--	
	Wt.	--	--	--	--	
Bluegill	No.	--	--	--	--	
	Wt.	--	--	--	--	
Freshwater drum	No.	--	1	--	1	(6)
	Wt.	--	84.0	--	84.0	(6)
Unidentified larval fish	No.	--	--	2	2	(4)
	Wt.	--	--	0.0	0.0	(8)
Damaged fish	No.	--	--	--	--	(4)
	Wt.	--	--	--	--	
Total number caught		4	9	77	90	
Total number of species		3	4	1	7	

(Continued)

(Sheet 3 of 6)

Table 5 (Continued)

Species		ES	HN	SN	Total	(Rank)
			24-27 August			
Gizzard shad	No.	7	--	--	7	(4)
	Wt.	1,381.0	--	--	1,381.0	(2)
Threadfin shad	No.	--	--	2	2	(7)
	Wt.	--	--	0.2	0.2	(8)
Silver chub	No.	--	--	--	--	
	Wt.	--	--	--	--	
Emerald shiner	No.	--	--	8	8	(3)
	Wt.	--	--	2.5	2.5	(5)
River shiner	No.	--	--	14	14	(2)
	Wt.	--	--	4.6	4.6	(4)
Silverband shiner	No.	--	--	--	--	
	Wt.	--	--	--	--	
Notropis sp.	No.	--	--	6	6	(5)
	Wt.	--	--	0.1	0.1	(10)
Blacktail shiner	No.	--	--	1	1	(9)
	Wt.	--	--	0.2	0.2	(8)
River carpsucker	No.	--	--	1	1	(9)
	Wt.	--	--	0.3	0.3	(7)
Blue sucker	No.	--	--	--	--	
	Wt.	--	--	--	--	
Smallmouth buffalo	No.	--	--	--	--	
	Wt.	--	--	--	--	
Blue catfish	No.	14	1	--	15	(1)
	Wt.	1,055.0	58.0	--	1,113.0	(3)
Channel catfish	No.	--	--	--	--	
	Wt.	--	--	--	--	
Ictalurus sp.	No.	--	--	--	--	
	Wt.	--	--	--	--	
Flathead catfish	No.	1	3	--	4	(6)
	Wt.	107.0	2,543.0	--	2,650.0	(1)
Inland silverside	No.	--	--	1	1	(9)
	Wt.	--	--	1.2	1.2	(6)
Yellow bass	No.	--	--	--	--	
	Wt.	--	--	--	--	
Morone sp.	No.	--	--	--	--	
	Wt.	--	--	--	--	
Bluegill	No.	--	--	--	--	
	Wt.	--	--	--	--	
Freshwater drum	No.	--	--	--	--	
	Wt.	--	--	--	--	
Unidentified larval fish	No.	--	--	--	--	
	Wt.	--	--	--	--	
Damaged fish	No.	--	--	--	--	
	Wt.	--	--	--	--	
Total number caught		22	4	33	59	
Total number of species		3	2	5	9	

(Continued)

Table 5 (Continued)

Species		ES	HN	SN	Total	(Rank)
			7-10 September			
Gizzard shad	No.	--	1	--	1	(9)
	Wt.	--	64.0	--	64.0	(5)
Threadfin shad	No.	1	--	1	2	(7)
	Wt.	6.0	--	0.7	6.7	(7)
Silver chub	No.	--	--	--	--	
	Wt.	--	--	--	--	
Emerald shiner	No.	--	--	66	66	(1)
	Wt.	--	--	71.2	71.2	(4)
River shiner	No.	--	--	6	6	(4)
	Wt.	--	--	5.9	5.9	(8)
Silverband shiner	No.	--	--	3	3	(4)
	Wt.	--	--	1.9	1.9	(9)
Notropis sp.	No.	--	--	--	--	
	Wt.	--	--	--	--	
Blacktail shiner	No.	--	--	--	--	
	Wt.	--	--	--	--	
River carpsucker	No.	--	--	--	--	
	Wt.	--	--	--	--	
Blue sucker	No.	--	1	--	1	(9)
	Wt.	--	1,114.0	--	1,114.0	(3)
Smallmouth buffalo	No.	--	--	--	--	
	Wt.	--	--	--	--	
Blue catfish	No.	42	1	--	43	(2)
	Wt.	4,920.0	12.0	--	4,932.0	(1)
Channel catfish	No.	--	--	--	--	
	Wt.	--	--	--	--	
Ictalurus sp.	No.	--	--	--	--	
	Wt.	--	--	--	--	
Flathead catfish	No.	--	2	--	2	(7)
	Wt.	--	1,279.0	--	1,279.0	(2)
Inland silverside	No.	--	--	10	10	(3)
	Wt.	--	--	13.2	13.2	(6)
Yellow bass	No.	--	--	--	--	
	Wt.	--	--	--	--	
Morone sp.	No.	--	--	--	--	
	Wt.	--	--	--	--	
Bluegill	No.	--	--	--	--	
	Wt.	--	--	--	--	
Freshwater drum	No.	--	--	--	--	
	Wt.	--	--	--	--	
Unidentified larval fish	No.	--	--	--	--	
	Wt.	--	--	--	--	
Damaged fish	No.	--	--	--	--	
	Wt.	--	--	--	--	
Total number caught		43	5	86	134	
Total number of species		2	4	5	9	

(Continued)

Table 5 (Concluded)

Species		ES	HN	SN	Total	(Rank)	Overall Total and Rank		Relative Abundance percent
				22-25 September					
Gizzard shad	No.	1	--	4	5	(6)	15	(6)	3.6
	Wt.	313.0	--	13.3	326.3	(4)	--		--
Threadfin shad	No.	--	--	--	--		9	(9)	2.2
	Wt.	--	--	--	--		--		--
Silver chub	No.	--	--	--	--		1	(14)	2
	Wt.	--	--	--	--		--		--
Emerald shiner	No.	--	--	9	9	(2)	173	(1)	41.7
	Wt.	--	--	3.6	3.6	(6)	--		--
River shiner	No.	--	--	10	10	(1)	33	(3)	8.0
	Wt.	--	--	7.2	7.2	(5)	--		--
Silverband shiner	No.	--	--	5	5	(6)	8	(10)	1.9
	Wt.	--	--	1.0	1.0	(8)	--		--
Notropis sp.	No.	--	--	--	--		6	(11)	1.5
	Wt.	--	--	--	--		--		--
Blacktail shiner	No.	--	--	8	8	(3)	9	(9)	2.2
	Wt.	--	--	1.7	1.7		--		--
River carpsucker	No.	--	1	3	4	(7)	14	(7)	3.4
	Wt.	--	747.0	8.8	756.0	(3)	--		--
Blue sucker	No.	--	--	--	--		3	(12)	0.7
	Wt.	--	--	--	--		--		--
Smallmouth buffalo	No.	--	--	--	--		2	(13)	0.5
	Wt.	--	--	--	--		--		--
Blue catfish	No.	7	--	--	7	(4)	78	(2)	18.8
	Wt.	1,597.2	--	--	1,597.2	(2)	--		--
Channel catfish	No.	--	--	--	--		3	(12)	0.7
	Wt.	--	--	--	--		--		--
Ictalurus sp.	No.	--	--	3	3	(8)	3	(12)	0.7
	Wt.	--	--	0.5	0.5	(9)	--		--
Flathead catfish	No.	2	--	--	2	(10)	18	(5)	4.3
	Wt.	2,620.0	--	--	2,620.0	(1)	--		--
Inland silverside	No.	--	--	2	2	(10)	20	(4)	4.8
	Wt.	--	--	0.2	0.2	(10)	--		--
Yellow bass	No.	--	--	--	--		1	(14)	0.2
	Wt.	--	--	--	--		--		--
Morone sp.	No.	--	--	--	--		3	(12)	0.7
	Wt.	--	--	--	--		--		--
Bluegill	No.	--	--	--	--		10	(8)	2.4
	Wt.	--	--	--	--		--		--
Freshwater drum	No.	--	--	--	--		2	(13)	0.5
	Wt.	--	--	--	--		--		--
Unidentified larval fish	No.	--	--	--	--		2	(13)	0.5
	Wt.	--	--	--	--		--		--
Damaged fish	No.	--	--	--	--		2	(13)	0.5
	Wt.	--	--	--	--		--		--
Total number caught		10	1	44	55		415		--
Total number of species		3	1	7	9		20		--

(Sheet 6 of 6)

Table 6

Total Numbers and Total Weights (grams) of Fish Collected at Bar 3 of the River Border by Sampling Period and Gear Type

Species		ES	HN	SN	Total	(Rank)
			2-5 July			
Shovelnose sturgeon	No.	--	--	--	--	
	Wt.	--	--	--	--	
Longnose gar	No.	--	--	--	--	
	Wt.	--	--	--	--	
Skipjack herring	No.	--	--	--	--	
	Wt.	--	--	--	--	
Gizzard shad	No.	--	1	--	1	(11)
	Wt.	--	56.0	--	56.0	(5)
Threadfin shad	No.	--	--	1	1	(11)
	Wt.	--	--	0.2	0.2	(13)
Goldeye	No.	--	--	--	--	
	Wt.	--	--	--	--	
Silver chub	No.	--	--	--	--	
	Wt.	--	--	--	--	
Emerald shiner	No.	--	--	6	6	(2)
	Wt.	--	--	1.6	1.6	(9)
River shiner	No.	--	--	3	3	(5)
	Wt.	--	--	4.7	4.7	(7)
Silverband shiner	No.	--	--	--	--	
	Wt.	--	--	--	--	
Weed shiner	No.	--	--	2	2	(7)
	Wt.	--	--	0.4	0.4	(12)
Blacktail shiner	No.	--	--	--	--	
	Wt.	--	--	--	--	
Bullhead minnow	No.	--	--	--	--	
	Wt.	--	--	--	--	
River carpsucker	No.	--	2	--	2	(7)
	Wt.	--	1,692.0	--	1,692.0	(1)
Blue sucker	No.	--	--	--	--	
	Wt.	--	--	--	--	
Smallmouth buffalo	No.	--	--	--	--	
	Wt.	--	--	--	--	
Blue catfish	No.	4	2	--	6	(2)
	Wt.	724.0	138.0	--	862.0	(2)
Channel catfish	No.	--	--	--	--	
	Wt.	--	--	--	--	
Flathead catfish	No.	2	1	--	3	(5)
	Wt.	458.0	243.0	--	701.0	(3)
Mosquitofish	No.	--	--	1	1	(11)
	Wt.	--	--	0.1	0.1	(14)
Brook silverside	No.	--	--	--	--	
	Wt.	--	--	--	--	
Inland silverside	No.	--	--	4	4	(3)
	Wt.	--	--	2.2	2.2	(8)
White bass	No.	1	--	--	1	(11)
	Wt.	31.0	--	--	31.0	(16)
Morone sp.	No.	--	--	1	1	(11)
	Wt.	--	--	1.5	1.5	(10)
Bluegill	No.	--	--	3	3	(5)
	Wt.	--	--	0.5	0.5	(11)
White crappie	No.	--	--	--	--	
	Wt.	--	--	--	--	
Freshwater drum	No.	--	1	--	1	(11)
	Wt.		264.0	--	264.0	(4)
Total number caught		7	7	21	34	
Total number of species		3	5	8	14	

(Continued)

Note: ES = electroshocking, HN = hoop net, and SN = seine.

Table 6 (Continued)

Species		ES	HN	SN	Total	(Rank)
			13-16 July			
Shovelnose sturgeon	No.	--	--	--	--	
	Wt.	--	--	--	--	
Longnose gar	No.	--	--	--	--	
		--	--	--	--	
Skipjack herring	No.	--	--	--	--	
	Wt.	--	--	--	--	
Gizzard shad	No.	1	--	4	5	(6)
	Wt.	153.0	--	5.4	158.4	(4)
Threadfin shad	No.	--	--	--	--	
	Wt.	--	--	--	--	
Goldeye	No.	--	--	1	1	(10)
	Wt.	--	--	1.4	1.4	(9)
Silver chub	No.	--	--	--	--	
	Wt.	--	--	--	--	
Emerald shiner	No.	--	--	53	53	(1)
	Wt.	--	--	9.2	9.2	(5)
River shiner	No.	--	--	2	2	(8)
	Wt.	--	--	2.2	2.2	(8)
Silverband shiner	No.	--	--	--	--	
	Wt.	--	--	--	--	
Weed shiner	No.	--	--	2	2	(7)
	Wt.	--	--	0.4	0.4	(12)
Blacktail shiner	No.	--	--	--	--	
	Wt.	--	--	--	--	
Bullhead minnow	No.	--	--	--	--	
	Wt.	--	--	--	--	
River carpsucker	No.	--	--	1	1	(10)
	Wt.	--	--	0.1	0.1	(11)
Blue sucker	No.	--	5	--	5	(6)
	Wt.	--	10,469.0	--	10,469.0	(1)
Smallmouth buffalo	No.	--	--	--	--	
	Wt.	--	--	--	--	
Blue catfish	No.	--	6	--	6	(4)
	Wt.	--	612.0	--	612.0	(3)
Channel catfish	No.	--	--	--	--	
	Wt.	--	--	--	--	
Flathead catfish	No.	1	7	--	3	(3)
	Wt.	795.0	2,589.0	--	3,384.0	(2)
Mosquitofish	No.	--	--	--	--	
	Wt.	--	--	--	--	
Brook silverside	No.	--	--	1	1	(10)
	Wt.	--	--	0.6	0.6	(10)
Inland silverside	No.	--	--	25	25	(2)
	Wt.	--	--	6.4	6.4	(6)
White bass	No.	--	--	--	--	
	Wt.	--	--	--	--	
Morone sp.	No.	--	--	2	2	(8)
	Wt.	--	--	3.7	3.7	(7)
Bluegill	No.	--	--	--	--	
	Wt.	--	--	--	--	
White crappie	No.	--	--	--	--	
	Wt.	--	--	--	--	
Freshwater drum	No.	--	--	--	--	
	Wt.	--	--	--	--	
Total number caught		2	18	89	109	
Total number of species		2	3	8	11	

(Continued)

Table 6 (Continued)

Species		ES	HN	SN	Total	(Rank)
			31 July-10 August			
Shovelnose sturgeon	No.	--	--	--	--	
	Wt.	--	--	--	--	
Longnose gar	No.	--	1	--	1	(14)
	Wt.	--	2,176.0	--	2,176.0	(4)
Skipjack herring	No.	--	--	--	--	
	Wt.	--	--	--	--	
Gizzard shad	No.	13	4	--	17	(2)
	Wt.	1,399.0	181.0	--	1,580.0	(6)
Threadfin shad	No.	2	--	--	2	(10)
	Wt.	28.0	--	--	28.0	(12)
Goldeye	No.	--	--	--	--	
	Wt.	--	--	--	--	
Silver chub	No.	--	--	--	--	
	Wt.	--	--	--	--	
Emerald shiner	No.	--	--	101	101	(1)
	Wt.	--	--	56.6	56.6	(11)
River shiner	No.	--	--	5	5	(6)
	Wt.	--	--	1.3	1.3	(14)
Silverband shiner	No.	--	--	--	--	
	Wt.	--	--	--	--	
Weed shiner	No.	--	--	--	--	
	Wt.	--	--	--	--	
Blacktail shiner	No.	--	--	1	1	(14)
	Wt.	--	--	0.2	0.2	(15)
Bullhead minnow	No.	--	--	--	--	
	Wt.	--	--	--	--	
River carpsucker	No.	5	--	2	7	(4)
	Wt.	2,845.0	--	1.6	2,846.6	(13)
Blue sucker	No.	1	1	--	2	(10)
	Wt.	133.0	1,335.0	--	1,468.0	(7)
Smallmouth buffalo	No.	3	--	--	3	(8)
	Wt.	4,122.0	--	--	4,122.0	(2)
Blue catfish	No.	4	1	--	5	(6)
	Wt.	1,900.0	43.0	--	1,943.0	(5)
Channel catfish	No.	--	--	--	--	
	Wt.	--	--	--	--	
Flathead catfish	No.	--	4	--	4	(7)
	Wt.	--	4,777.0	--	4,777.0	(1)
Mosquitofish	No.	--	--	--	--	
	Wt.	--	--	--	--	
Brook silverside	No.	--	--	--	--	
	Wt.	--	--	--	--	
Inland silverside	No.	--	--	8	8	(3)
	Wt.	--	--	6.6	6.6	(13)
White bass	No.	1	--	--	1	(14)
	Wt.	378.0	--	--	378.0	(8)
Morone sp.	No.	--	--	--	--	
	Wt.	--	--	--	--	
Bluegill	No.	--	--	--	--	
	Wt.	--	--	--	--	
White crappie	No.	--	2	--	2	(10)
	Wt.	--	263.0	--	263.0	(10)
Freshwater drum	No.	--	1	--	1	(14)
	Wt.	--	269	--	269.0	(9)
Total number caught		29	14	117	160	
Total number of species		7	7	5	15	

(Continued)

Table 6 (Continued)

Species		ES	HN	SN	Total	(Rank)
			24-27 August			
Shovelnose sturgeon	No.	--	--	--	--	
	Wt.	--	--	--	--	
Longnose gar	No.	--	--	--	--	
	Wt.	--	--	--	--	
Skipjack herring	No.	--	--	--	--	
	Wt.	--	--	--	--	
Gizzard shad	No.	7	--	--	7	(6)
	Wt.	634.0	--	--	634.0	(2)
Threadfin shad	No.	3	--	6	9	(4)
	Wt.	33.0	--	8.4	41.4	(4)
Goldeye	No.	1	--	--	1	(9)
	Wt.	6.0	--	--	6.0	(8)
Silver chub	No.	--	--	--	--	
	Wt.	--	--	--	--	
Emerald shiner	No.	--	--	8	8	(5)
	Wt.	--	--	7.3	7.3	(5)
River shiner	No.	--	--	30	30	(1)
	Wt.	--	--	6.8	6.8	(7)
Silverband shiner	No.	--	--	--	--	
	Wt.	--	--	--	--	
Weed shiner	No.	--	--	--	--	
	Wt.	--	--	--	--	
Blacktail shiner	No.	--	--	--	--	
	Wt.	--	--	--	--	
Bullhead minnow	No.	--	--	--	--	
	Wt.	--	--	--	--	
River carpsucker	No.	--	--	17	17	(2)
	Wt.	--	--	7.0	7.0	(6)
Blue sucker	No.	--	--	--	--	
	Wt.	--	--	--	--	
Smallmouth buffalo	No.	--	--	--	--	
	Wt.	--	--	--	--	
Blue catfish	No.	19	1	--	20	(2)
	Wt.	4,292.0	98.0	--	4,300.0	(1)
Channel catfish	No.	--	--	--	--	
	Wt.	--	--	--	--	
Flathead catfish	No.	--	2	--	2	(7)
	Wt.	--	498.0	--	498.0	(3)
Mosquitofish	No.	--	--	--	--	
	Wt.	--	--	--	--	
Brook silverside	No.	--	--	--	--	
	Wt.	--	--	--	--	
Inland silverside	No.	--	--	1	1	(9)
	Wt.	--	--	0.7	0.7	(9)
White bass	No.	--	--	--	--	
	Wt.	--	--	--	--	
Morone sp.	No.	--	--	--	--	
	Wt.	--	--	--	--	
Bluegill	No.	--	--	--	--	
	Wt.	--	--	--	--	
White crappie	No.	--	--	--	--	
	Wt.	--	--	--	--	
Freshwater drum	No.	--	--	--	--	
	Wt.	--	--	--	--	
Total number caught		30	3	62	95	
Total number of species		4	2	5	9	

(Continued)

Table 6 (Continued)

Species		ES	HN	SN	Total (Rank)
			7-10 September		
Shovelnose sturgeon	No.	--	--	--	--
	Wt.	--	--	--	--
Longnose gar	No.	--	--	--	--
	Wt.	--	--	--	--
Skipjack herring	No.	--	--	1	1 (12)
	Wt.	--	--	4.0	4.0 (10)
Gizzard shad	No.	--	--	2	2 (8)
	Wt.	--	--	39.0	39.0 (4)
Threadfin shad	No.	--	--	1	1 (12)
	Wt.	--	--	5.2	5.2 (9)
Goldeye	No.	2	--	--	2 (8)
	Wt.	16.2	--	--	16.0 (6)
Silver chub	No.	--	--	1	1 (12)
	Wt.	--	--	1.0	1.0 (12)
Emerald shiner	No.	--	--	55	55 (1)
	Wt.	--	--	44.8	45.0 (3)
River shiner	No.	--	--	49	49 (2)
	Wt.	--	--	26.3	26.3 (5)
Silverband shiner	No.	--	--	12	12 (4)
	Wt.	--	--	7.2	7.2 (7)
Weed shiner	No.	--	--	--	--
	Wt.	--	--	--	--
Blacktail shiner	No.	--	--	2	2 (8)
	Wt.	--	--	0.6	0.6 (13)
Bullhead minnow	No.	--	--	--	--
	Wt.	--	--	--	--
River carpsucker	No.	--	--	--	--
	Wt.	--	--	--	--
Blue sucker	No.	--	--	--	--
	Wt.	--	--	--	--
Smallmouth buffalo	No.	--	--	--	--
	Wt.	--	--	--	--
Blue catfish	No.	45	1	--	46 (3)
	Wt.	11,916.0	227.0	--	12,143.0 (1)
Channel catfish	No.	--	--	--	--
	Wt.	--	--	--	--
Flathead catfish	No.	--	1	--	1 (12)
	Wt.	--	795.0	--	795.0 (2)
Mosquitofish	No.	--	--	--	--
	Wt.	--	--	--	--
Brook silverside	No.	--	--	2	2 (8)
	Wt.	--	--	2.3	2.3 (11)
Inland silverside	No.	--	--	7	7 (5)
	Wt.	--	--	6.7	6.7 (8)
White bass	No.	--	--	--	--
	Wt.	--	--	--	--
Morone sp.	No.	--	--	--	--
	Wt.	--	--	--	--
Bluegill	No.	--	--	--	--
	Wt.	--	--	--	--
White crappie	No.	--	--	--	--
	Wt.	--	--	--	--
Freshwater drum	No.	--	--	--	--
	Wt.	--	--	--	--
Total number caught		47	2	132	181
Total number of species		2	2	10	13

(Continued)

Table 6 (Concluded)

Species		ES	HN	SN	Total	(Rank)	Overall Total and Rank	Relative Abundance percent
			22-25 September					
Shovelnose sturgeon	No.	--	2	--	2	(11)	2 (14)	0.2
	Wt.	--	2,278	--	2,278.0	(3)	--	--
Longnose gar	No.	--	--	--	--		1 (15)	0.1
	Wt.	--	--	--	--		--	--
Skipjack herring	No.	4	--	--	4	(8)	5 (11)	0.6
	Wt.	132.2	--	--	132.0	(6)	--	--
Gizzard shad	No.	142	4	--	142	(1)	174 (2)	21.0
	Wt.	7,356.0	--	--	7,356.0	(1)	--	--
Threadfin shad	No.	12	--	--	12	(5)	25 (7)	3.0
	Wt.	77.5	--	--	77.5	(8)	--	--
Goldeye	No.	--	--	--	--		4 (12)	0.5
	Wt.	--	--	--	--		--	--
Silver chub	No.	--	--	--	--		1 (15)	0.1
	Wt.	--	--	--	--		--	--
Emerald shiner	No.	--	--	31	31	(2)	254 (1)	30.6
	Wt.	--	--	13.0	13.0	(10)	--	--
River shiner	No.	--	--	24	24	(3)	113 (3)	13.6
	Wt.	--	--	26.8	26.8	(9)	--	--
Silverband shiner	No.	--	--	--	--		12 (9)	1.5
	Wt.	--	--	--	--		--	--
Weed shiner	No.	--	--	--	--		2 (14)	0.2
	Wt.	--	--	--	--		--	--
Blacktail shiner	No.	--	--	2	2	(11)	5 (11)	0.6
	Wt.	--	--	0.3	0.3	(13)	--	--
Bullhead minnow	No.	--	--	3	3	(9)	3 (13)	0.4
	Wt.	--	--	0.4	0.4	(12)	--	--
River carpsucker	No.	1	--	1	2	(11)	29 (6)	3.5
	Wt.	125.0	--	5.4	130.4	(7)	--	--
Blue sucker	No.	--	--	--	--		7 (10)	0.8
	Wt.	--	--	--	--		--	--
Smallmouth buffalo	No.	--	--	--	--		3 (13)	0.4
	Wt.	--	--	--	--		--	--
Blue catfish	No.	15	1	1	17	(4)	100 (4)	12.1
	Wt.	4,126.0	76.0	0.3	4,202.3	(2)	--	--
Channel catfish	No.	1	--	--	1	(13)	1 (15)	0.1
	Wt.	161.0	--	--	161.0	(5)	--	--
Flathead catfish	No.	5	--	--	5	(6)	23 (8)	2.8
	Wt.	1,796.5	--	--	1,796.5	(4)	--	--
Mosquitofish	No.	--	--	--	--		1 (15)	0.1
	Wt.	--	--	--	--		--	--
Brook silverside	No.	--	--	--	--		3 (13)	0.4
	Wt.	--	--	--	--		--	--
Inland silverside	No.	--	--	4	4	(8)	49 (5)	5.9
	Wt.	--	--	3.7	3.7	(11)	--	--
White bass	No.	--	--	--	--		2 (14)	0.2
	Wt.	--	--	--	--		--	--
Morone sp.	No.	--	--	--	--		3 (13)	0.4
	Wt.	--	--	--	--		--	--
Bluegill	No.	--	--	--	--		3 (13)	0.4
	Wt.	--	--	--	--		--	--
White crappie	No.	--	--	--	--		2 (14)	0.2
	Wt.	--	--	--	--		--	--
Freshwater drum	No.	--	--	--	--		2 (14)	0.2
	Wt.	--	--	--	--		--	--
Total number caught		180	3	66	249		829	--
Total number of species		7	2	7	13		27	--

Table 7

Mean Total Length (TL) and Mean Condition Factor (K) for Blue Catfish by Habitat and Sampling Date

Date	Habitat	Mean TL, mm	Mean K	Range (K)	N
2-5 Jul	Pool 2	257.8	0.70	0.52 - 1.00	32
	Pool 3	258.6	0.69	0.44 - 1.04	36
	Bar 2	245.2	0.66	0.52 - 0.81	6
	Bar 3	249.7	0.72	0.61 - 0.83	6
13-16 Jul	Pool 2	325.6	0.75	0.62 - 1.05	5
	Pool 3	295.7	0.69	0.38 - 1.04	27
	Bar 2	223.0	0.69	0.68 - 0.70	2
	Bar 3	243.2	0.67	0.55 - 0.80	6
31 Jul-10 Aug	Pool 2	218.7	0.66	0.47 - 0.90	16
	Pool 3	245.2	0.79	0.39 - 1.12	25
	Bar 2	312.8	0.67	0.47 - 1.00	5
	Bar 3	339.4	0.77	0.53 - 0.91	5
24-27 Aug	Pool 2	251.4	0.73	0.36 - 1.13	34
	Pool 3	274.4	0.74	0.57 - 1.22	30
	Bar 2	143.8	0.76	0.57 - 1.00	15
	Bar 3	272.1	0.80	0.57 - 0.93	20
7-10 Sep	Pool 2	247.5	0.87*	0.57 - 1.88	30
	Pool 3	245.8	0.71	0.38 - 1.04	82
	Bar 2	168.0	0.73	0.47 - 0.95	43
	Bar 3	220.6	0.76	0.46 - 1.14	46
22-25 Sep	Pool 2	166.3	0.73	0.61 - 0.89	27
	Pool 3	237.1	0.74	0.60 - 1.23	46
	Bar 2	256.7	0.75	0.67 - 0.99	7
	Bar 3	296.0	0.74	0.63 - 1.09	16

* Significantly different ($\alpha = 0.05$ level) values among habitats on a given sampling date.

END

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