Long Term Resource Monitoring Program

**Program Report**
**97-P011**

# 1996 Annual Status Report

*A Summary of Fish Data in Six Reaches of the Upper Mississippi River System*

**August 1997**

*The Environmental Management Technical Center issues LTRMP Program Reports to provide Long Term Resource Monitoring Program partners with programmatic documentation, procedures manuals, and annual status reports.*



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*A Summary of Fish Data in Six Reaches of the Upper Mississippi River System*

by

Randy W. Burkhardt and Steve Gutreuter[1]
U.S. Geological Survey
Environmental Management Technical Center
575 Lester Avenue
Onalaska, Wisconsin 54650

Mark Stopyro
Minnesota Department of Natural Resources
1801 S. Oak Street
Lake City, Minnesota 55041

Andrew Bartels and Eric Kramer
Wisconsin Department of Natural Resources
Onalaska Field Station
575 Lester Avenue
Onalaska, Wisconsin 54650

Melvin C. Bowler
Iowa Department of Natural Resources
Mississippi River Monitoring Station
206 Rose Street
Bellevue, Iowa 52031

Frederick A. Cronin and Dirk W. Soergel
Illinois Natural History Survey
Alton Field Station
4134 Alby Street
Alton, Illinois 62002

Michael D. Petersen and David P. Herzog
Missouri Department of Conservation
3815 E. Jackson Boulevard
Jackson, Missouri 63755

Kevin S. Irons, Timothy M. O'Hara, K. Douglas Blodgett, and Paul T. Raibley
Illinois Natural History Survey
Havana Field Station
704 N. Schrader Avenue
Havana, Illinois 62644

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[1]Present address: U.S. Geological Survey, Upper Mississippi Science Center, 2630 Fanta Reed Road, La Crosse, Wisconsin 54603.

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## Preface

This report is a product of the Long Term Resource Monitoring Program (LTRMP) for the Upper Mississippi River System. The LTRMP was authorized under the Water Resources Development Act of 1986 (Public Law 99-662) as an element of the U.S. Army Corps of Engineers' Environmental Management Program. The LTRMP is being implemented by the Environmental Management Technical Center, a U.S. Geological Survey science center, in cooperation with the five Upper Mississippi River System (UMRS) States of Illinois, Iowa, Minnesota, Missouri, and Wisconsin. The U.S. Army Corps of Engineers provides guidance and has overall Program responsibility. The mode of operation and respective roles of the agencies are outlined in a 1988 Memorandum of Agreement.

The UMRS encompasses the commercially navigable reaches of the Upper Mississippi River, as well as the Illinois River and navigable portions of the Kaskaskia, Black, St. Croix, and Minnesota Rivers. Congress has declared the UMRS to be both a nationally significant ecosystem and a nationally significant commercial navigation system. The mission of the LTRMP is to provide decision makers with information for maintaining the UMRS as a sustainable large river ecosystem given its multiple-use character. The long-term goals of the Program are to understand the system, determine resource trends and effects, develop management alternatives, manage information, and develop useful products.

Data (factual record) and information (usable interpretation of data) are the primary products of the LTRMP. Data on water quality, vegetation, aquatic macroinvertebrates, and fish are collected using a network of six field stations on the Upper Mississippi and Illinois Rivers. Analysis, interpretation, and the reporting of information are conducted at the six field stations and at the Environmental Management Technical Center, the operational center of the LTRMP. Informational products of the LTRMP include professional presentations, reports, and publications in the open and peer-reviewed scientific literature.

This document is an annual status report for 1996, containing a synthesis of data from fish populations and communities in the Upper Mississippi River System. This report satisfies, for 1996, Task 2.2.8.4, *Evaluate and Summarize Annual Results* under Goal 2, *Monitor and Evaluate the Condition of the Upper Mississippi River Ecosystem* as specified in the Operating Plan for the Long Term Resource Monitoring Program (USFWS 1993). This report was developed with funding provided by the Long Term Resource Monitoring Program. The purposes of this annual synthesis report are to provide (1) a systemwide summary of data in standardized tables and figures, and (2) initial identification and interpretation of observed spatial and temporal patterns. The primary data summarized in this report are available from the Environmental Management Technical Center.

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## Abstract

The Long Term Resource Monitoring Program (LTRMP) completed 2,378 collections of fishes from stratified random and permanently fixed sampling locations in six study reaches of the Upper Mississippi River System during 1996. Collection methods included day and night electrofishing, hoop netting, fyke netting (two net sizes), gill netting, seining, and trawling in select aquatic area classes. The six LTRMP study reaches are Pools 4 (excluding Lake Pepin), 8, 13, and 26 of the Upper Mississippi River, an unimpounded reach of the Mississippi River near Cape Girardeau, Missouri, and the La Grange Pool of the Illinois River. A total of 59–75 fish species were detected in each study reach. For each of the six LTRMP study reaches, this report contains summaries of: (1) sampling efforts in each combination of gear type and aquatic area class, (2) total catches of each species from each gear type, (3) mean catch-per-unit of gear effort statistics and standard errors for common species from each combination of aquatic area class and selected gear type, and (4) length distributions of common species from selected gear types.

## Introduction

The objective of this report is to summarize key features of fish populations and communities from samples collected by field stations of the Long Term Resource Monitoring Program (LTRMP) from the Upper Mississippi River System (UMRS). The fisheries component of the LTRMP is charged, in part, with monitoring and reporting trends in the status of selected fish populations and fish communities of the UMRS (USFWS 1993). Intended as a data summary, this report contains only minimal descriptive syntheses. The LTRMP is required to produce trend reports at 5-year intervals that contain quantitative analyses and systemic syntheses of temporal changes. Further, the LTRMP uses these monitoring data in analyses to address specific issues of concern to LTRMP partners; these analyses are reported in special reports and in the open scientific literature.

Fish are the primary biotic object of recreational and commercial use on the UMRS. During 1982, UMRS fisheries provided more than 8.5 million activity days of sportfishing that generated more than $150 million in direct expenditures (Fremling et al. 1989). Commercial fisheries of the UMRS were valued at more than $2.4 million in 1987 (UMRCC 1989). Adverse trends in fisheries of the UMRS would have detrimental effects on recreation and the regional economy. Therefore, it is important to detect any adverse trends as they occur so that remedial actions can be considered.

Monitoring of and research on fish are also important because fish often affect other ecosystem elements. Although documentation of the effects of fish on other biota is derived primarily from lakes and reservoirs (Northcote 1988), and traditional thought maintains that the dynamics of river biota are influenced primarily by abiotic factors, recent evidence shows that the dynamics of fish assemblages in temperate rivers are regulated in part by biotic factors (Welcomme et al. 1989). Fish may exert influences on other biota in riverine ecosystems and may, therefore, be of broad ecological importance. For example, evidence shows that common carp (*Cyprinus carpio*), an abundant species in the UMRS, may depress or even eliminate macrophytes either through uprooting or disturbance of substrate (Cahn 1929; Macrae 1979). Effects of fish on benthic

macroinvertebrates are well known (Northcote 1988). Therefore, trends in abundance of fish may be crucial in explaining trends in abundance of other riverine biota.

Resource monitoring is an important component of long-term ecological research on processes governing large-scale ecosystems. It is nearly impossible to perform experimental manipulations of the UMRS on large spatial scales and to incorporate replication. Long-term data from standardized sampling programs that span natural or anthropogenic disturbances are the only means for gaining an understanding of large-scale processes governing large river systems (Sparks et al. 1990). Further, the LTRMP fisheries component will provide support for the formulation and investigation of research hypotheses concerning smaller scales using focused experimentation. Therefore, the combination of routine monitoring coupled with more intensive investigation of consequences of disturbances and experimentation at reduced spatial and temporal scales is the only available means for better understanding the UMRS and for identifying viable management alternatives.

## Study Areas

The LTRMP study areas include six river reaches within the Upper Mississippi River System, five on the Mississippi River and one on the Illinois River (Figure). Study areas are referred to herein by the navigation pool designations according to the U.S. Army Corps of Engineers lock and dam system. Mississippi River navigation pools studied are Pool 4 (river mile 752 to 797), Pool 8 (679 to 703), Pool 13 (523 to 557), Pool 26 (202 to 242), and an unimpounded, open river reach (29 to 80). The remaining study area is the La Grange Pool of the Illinois River (80 to 158).

The LTRMP study areas were chosen, in part, to reflect important differences in geomorphology, floodplain land-use practices, and navigation management strategies that exist within the UMRS (Table 1). Pools 4, 8, and 13 are located in an upper impounded reach characterized by high percentages of open water and aquatic vegetation and low agricultural use (Figure). Relatively high percentages of the total aquatic area in these study reaches are composed of contiguous (to the main channel) backwaters, and relatively low percentages are composed of main channel. Qualitatively, Pools 4, 8, and 13 are geomorphically complex and richly braided by side channels and backwaters. Pool 26, in a lower impounded reach, is characterized by relatively low percentages of open water and aquatic vegetation and a high percentage of agriculture in the floodplain. A low percentage of the total aquatic area is composed of contiguous backwaters, and commensurately, a high percentage is composed of the main channel. The Open River study reach is characterized by low percentages of open water and aquatic vegetation and 71.5% agriculture in the floodplain. Of the total aquatic area in the Open River study reach, only 1.8% is contiguous backwater and 79% is main channel (Table 1). The La Grange Pool is similar to Pool 26 in floodplain composition, but is similar to Pools 8 and 13 in composition of the aquatic area (Table 1). In fact, the La Grange Pool has the greatest percentage (52.2%) of contiguous backwaters among the six LTRMP study areas.

Sampling sites are randomly selected within nine strata for each study area: backwater contiguous shoreline (BWCS), backwater contiguous offshore (BWCO), impounded shoreline (IMPS), impounded offshore (IMPO), main channel border unstructured (MCBU), main channel border wing dam (MCBW), side channel border (SCB), tributary mouth (TRI), and tailwater (TWZ). The definitions of sampling strata are defined based on geomorphic regions that have been mapped and entered into a Geographical Information System.

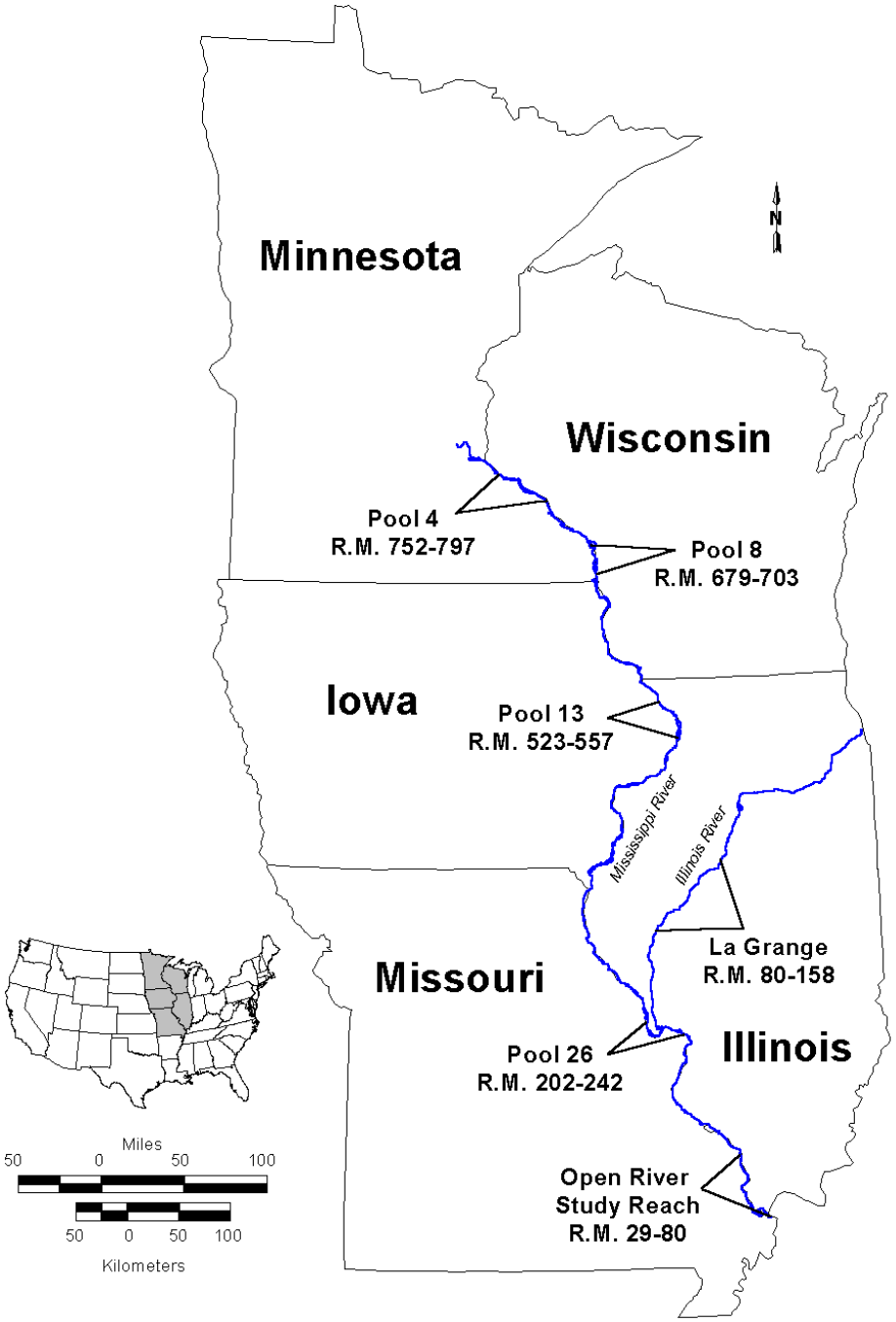


**Figure.** Long Term Resource Monitoring Program study reaches.

**Table 1.** Key features of the floodplain and aquatic area compositions of the Long Term Resource Monitoring Program's five Mississippi and Illinois River study reaches. Aquatic area is that portion of the floodplain that is inundated at normal water elevations. Main channel includes area in the navigation channel and main channel border areas. Data on floodplain composition are from Laustrup and Lowenberg (1994). Data on the composition of aquatic areas are from the Long Term Resource Monitoring Program aquatic areas spatial data base.

| | | Floodplain composition (%) | | | Aquatic area composition (%) | |
|---|---|---|---|---|---|---|
| Study reach | Floodplain area (ha) | Open water | Aquatic vegetation | Agriculture | Contiguous backwater | Main channel |
| Pool 4 | 28,358 | 50.5 | 10.0 | 12.1 | 21.3 | 10.5 |
| Pool 8 | 19,068 | 40.1 | 14.4 | 0.9 | 30.6 | 14.2 |
| Pool 13 | 34,528 | 29.7 | 8.6 | 27.9 | 28.5 | 24.7 |
| Pool 26 | 51,688 | 13.4 | 1.4 | 65.4 | 17.3 | 54.4 |
| Open River | 105,244 | 9.9 | 0.6 | 71.5 | 1.8 | 79.0 |
| La Grange Pool, Illinois River | 89,554 | 15.7 | 2.2 | 59.6 | 52.2 | 21.3 |

## Methods

### *Sampling Methods*

The LTRMP fish monitoring design and sampling protocols, including historical changes, are given in Gutreuter et al. (1995). Readers requiring detailed descriptions should refer to that report. An abbreviated description of the LTRMP design and protocols follows; a list of common and scientific names of fish used in this report is found in Table 2.

In this report, we summarize the annual increment of fish data obtained by the LTRMP from stratified random and fixed-site sampling during 1996. The LTRMP converted to a stratified, random fish sampling design in 1993, augmented with limited sampling at a few permanently fixed sites. Selected aquatic areas, chosen for their enduring geomorphic features (Wilcox 1993), were used as sampling strata. These aquatic areas were largely compatible with the habitat classes used in 1990–92, with the exception of the 1990–92 classifications, which were based on the presence of aquatic vegetation; those fixed sites were reclassified into strata according to aquatic areas. Each aquatic area is artificially partitioned into 50-$m^2$ sampling grids beginning with a random origin for each LTRMP study reach (Gutreuter et al. 1995) using the ARC Geographic Information System. Beginning in 1993, sampling sites were randomly chosen from this lattice of square grids. Whenever it is discovered that a randomly selected site cannot be sampled because of environmental constraints (e.g., limited physical access or high flow), the nearest accessible site from a list of randomly selected alternate sites is sampled within the same aquatic area class.

**Table 2.** Long Term Resource Monitoring Program list of fishes, arranged phylogenetically by family, then alphabetically by genus and species. Hybrids are listed after respective genera. Nomenclature follows Robins et al. (1991).

| Common name | Family name | Scientific name |
|---|---|---|
| | **Petromyzontidae** | |
| Chestnut lamprey | | *Ichthyomyzon castaneus* |
| Northern brook lamprey | | *I. fossor* |
| Silver lamprey | | *I. unicuspis* |
| Least brook lamprey | | *Lampetra aepyptera* |
| American brook lamprey | | *L. appendix* |
| Sea lamprey | | *Petromyzon marinus* |
| | **Carcharhinidae** | |
| Bull shark | | *Carcharhinus leucas* |
| | **Acipenseridae** | |
| Lake sturgeon | | *Acipenser fulvescens* |
| Pallid sturgeon | | *Scaphirhynchus albus* |
| Shovelnose sturgeon | | *S. platorynchus* |
| | **Polyodontidae** | |
| Paddlefish | | *Polyodon spathula* |
| | **Lepisosteidae** | |
| Spotted gar | | *Lepisosteus oculatus* |
| Longnose gar | | *L. osseus* |
| Shortnose gar | | *L. platostomus* |
| Alligator gar | | *L. spatula* |
| | **Amiidae** | |
| Bowfin | | *Amia calva* |
| | **Hiodontidae** | |
| Goldeye | | *Hiodon alosoides* |
| Mooneye | | *H. tergisus* |
| | **Anguillidae** | |
| American eel | | *Anguilla rostrata* |
| | **Clupeidae** | |
| Alabama shad | | *Alosa alabamae* |
| Skipjack herring | | *A. chrysochloris* |
| Alewife | | *A. pseudoharengus* |
| Gizzard shad | | *Dorosoma cepedianum* |
| Threadfin shad | | *D. petenense* |

**Table 2.** Continued.

| Common name | Family name | Scientific name |
|---|---|---|
| | **Cyprinidae** | |
| Central stoneroller | | *Campostoma anomalum* |
| Largescale stoneroller | | *C. oligolepis* |
| Goldfish | | *Carassius auratus* |
| Lake chub | | *Couesius plumbeus* |
| Grass carp | | *Ctenopharyngodon idella* |
| Red shiner | | *Cyprinella lutrensis* |
| Spotfin shiner | | *C. spiloptera* |
| Blacktail shiner | | *C. venusta* |
| Steelcolor shiner | | *C. whipplei* |
| Common carp | | *Cyprinus carpio* |
| Goldfish × common carp | | *Carassius auratus* × *C. carpio* |
| Gravel chub | | *Erimystax x-punctatus* |
| Western silvery minnow | | *Hybognathus argyritis* |
| Brassy minnow | | *H. hankinsoni* |
| Mississippi silvery minnow | | *H. nuchalis* |
| Plains minnow | | *H. placitus* |
| Silver carp | | *Hypopthalmichthys molitrix* |
| Bighead carp | | *H. nobilis* |
| Striped shiner | | *Luxilus chrysocephalus* |
| Common shiner | | *L. cornutus* |
| Rosefin shiner | | *Lythrurus ardens* |
| Ribbon shiner | | *L. fumeus* |
| Redfin shiner | | *L. umbratilis* |
| Speckled chub | | *Macrhybopsis aestivalis* |
| Sturgeon chub | | *M. gelida* |
| Sicklefin chub | | *M. meeki* |
| Silver chub | | *M. storeriana* |
| Pearl dace | | *Margariscus margarita* |
| Hornyhead chub | | *Nocomis biguttatus* |
| River chub | | *N. micropogon* |
| Golden shiner | | *Notemigonus crysoleucas* |
| Bigeye chub | | *Notropis amblops* |
| Pallid shiner | | *N. amnis* |
| Pugnose shiner | | *N. anogenus* |
| Emerald shiner | | *N. atherinoides* |
| River shiner | | *N. blennius* |
| Bigeye shiner | | *N. boops* |
| Silverjaw minnow | | *N. buccatus* |
| Ghost shiner | | *N. buchanani* |
| Ironcolor shiner | | *N. chalybaeus* |
| Bigmouth shiner | | *N. dorsalis* |
| Blackchin shiner | | *N. heterodon* |
| Blacknose shiner | | *N. heterolepis* |
| Bluehead shiner | | *N. hubbsi* |
| Spottail shiner | | *N. hudsonius* |
| Ozark minnow | | *N. nubilus* |
| Rosyface shiner | | *N. rubellus* |
| Silverband shiner | | *N. shumardi* |
| Sand shiner | | *N. stramineus* |
| Weed shiner | | *N. texanus* |
| Mimic shiner | | *N. volucellus* |

**Table 2.** Continued.

| Common name | Family name | Scientific name |
|---|---|---|
| Channel shiner | | *N. wickliffi* |
| Pugnose minnow | | *Opsopoeodus emiliae* |
| Suckermouth minnow | | *Phenacobius mirabilis* |
| Northern redbelly dace | | *Phoxinus eos* |
| Southern redbelly dace | | *P. erythrogaster* |
| Bluntnose minnow | | *Pimephales notatus* |
| Fathead minnow | | *P. promelas* |
| Bullhead minnow | | *P. vigilax* |
| Flathead chub | | *Platygobio gracilis* |
| Blacknose dace | | *Rhinichthys atratulus* |
| Longnose dace | | *R. cataractae* |
| Creek chub | | *Semotilus atromaculatus* |
| | **Catostomidae** | |
| River carpsucker | | *Carpiodes carpio* |
| Quillback | | *C. cyprinus* |
| Highfin carpsucker | | *C. velifer* |
| Longnose sucker | | *Catostomus catostomus* |
| White sucker | | *C. commersoni* |
| Blue sucker | | *Cycleptus elongatus* |
| Creek chubsucker | | *Erimyzon oblongus* |
| Lake chubsucker | | *E. sucetta* |
| Northern hog sucker | | *Hypentelium nigricans* |
| Smallmouth buffalo | | *Ictiobus bubalus* |
| Bigmouth buffalo | | *I. cyprinellus* |
| Black buffalo | | *I. niger* |
| Spotted sucker | | *Minytrema melanops* |
| Silver redhorse | | *Moxostoma anisurum* |
| River redhorse | | *M. carinatum* |
| Black redhorse | | *M. duquesnei* |
| Golden redhorse | | *M. erythrurum* |
| Shorthead redhorse | | *M. macrolepidotum* |
| Greater redhorse | | *M. valenciennesi* |
| | **Ictaluridae** | |
| White catfish | | *Ameiurus catus* |
| Black bullhead | | *A. melas* |
| Yellow bullhead | | *A. natalis* |
| Brown bullhead | | *A. nebulosus* |
| Blue catfish | | *Ictalurus furcatus* |
| Channel catfish | | *I. punctatus* |
| Mountain madtom | | *Noturus eleutherus* |
| Slender madtom | | *N. exilis* |
| Stonecat | | *N. flavus* |
| Tadpole madtom | | *N. gyrinus* |
| Brindled madtom | | *N. miurus* |
| Freckled madtom | | *N. nocturnus* |
| Northern madtom | | *N. stigmosus* |
| Flathead catfish | | *Pylodictis olivaris* |

**Table 2.** Continued.

| Common name | Family name | Scientific name |
|---|---|---|
| | **Esocidae** | |
| Grass pickerel | | *Esox americanus vermiculatus* |
| Northern pike | | *E. lucius* |
| Muskellunge | | *E. masquinongy* |
| Tiger muskellunge | | *E. masquinongy* × *E. lucius* |
| Chain pickerel | | *E. niger* |
| | **Umbridae** | |
| Central mudminnow | | *Umbra limi* |
| | **Osmeridae** | |
| Rainbow smelt | | *Osmerus mordax* |
| | **Salmonidae** | |
| Cisco | | *Coregonus artedi* |
| Bloater | | *C. hoyi* |
| Coho salmon | | *Oncorhynchus kisutch* |
| Rainbow trout | | *O. mykiss* |
| Brown trout | | *Salmo trutta* |
| Brook trout | | *Salvelinus fontinalis* |
| | **Percopsidae** | |
| Trout-perch | | *Percopsis omiscomaycus* |
| | **Aphredoderidae** | |
| Pirate perch | | *Aphredoderus sayanus* |
| | **Amblyopsidae** | |
| Spring cavefish | | *Chologaster agassizi* |
| | **Gadidae** | |
| Burbot | | *Lota lota* |
| | **Cyprinodontidae** | |
| Northern studfish | | *Fundulus catenatus* |
| Banded killifish | | *F. diaphanus* |
| Starhead topminnow | | *F. dispar* |
| Blackstripe topminnow | | *F. notatus* |
| Blackspotted topminnow | | *F. olivaceus* |
| | **Poeciliidae** | |
| Western mosquitofish | | *Gambusia affinis* |

**Table 2.** Continued.

| Common name | Family name | Scientific name |
|---|---|---|
| | **Atherinidae** | |
| Brook silverside | | *Labidesthes sicculus* |
| Mississippi silverside | | *Menidia audens* |
| Inland silverside | | *M. beryllina* |
| | **Gasterosteidae** | |
| Brook stickleback | | *Culaea inconstans* |
| Ninespine stickleback | | *Pungitius pungitius* |
| | **Cottidae** | |
| Mottled sculpin | | *Cottus bairdi* |
| Banded sculpin | | *C. carolinae* |
| Slimy sculpin | | *C. cognatus* |
| Deepwater sculpin | | *Myoxocephalus thompsoni* |
| | **Percichthyidae** | |
| White perch | | *Morone americana* |
| White bass | | *M. chrysops* |
| Yellow bass | | *M. mississippiensis* |
| Striped bass | | *M. saxatilis* |
| White bass × striped bass | | *M. chrysops* × *M. saxatilis* |
| | **Centrarchidae** | |
| Shadow bass | | *Ambloplites ariommus* |
| Rock bass | | *A. rupestris* |
| Flier | | *Centrarchus macropterus* |
| Banded pygmy sunfish | | *Elassoma zonatum* |
| Green sunfish | | *Lepomis cyanellus* |
| Pumpkinseed | | *L. gibbosus* |
| Warmouth | | *L. gulosus* |
| Orangespotted sunfish | | *L. humilis* |
| Bluegill | | *L. macrochirus* |
| Longear sunfish | | *L. megalotis* |
| Redear sunfish | | *L. microlophus* |
| Spotted sunfish | | *L. punctatus* |
| Bantam sunfish | | *L. symmetricus* |
| Green sunfish × pumpkinseed | | *L. cyanellus* × *L. gibbosus* |
| Green sunfish × warmouth | | *L. cyanellus* × *L. gulosus* |
| Green sunfish × orangespotted sunfish | | *L. cyanellus* × *L. humilis* |
| Green sunfish × bluegill | | *L. cyanellus* × *L. macrochirus* |
| Green sunfish × redear sunfish | | *L. cyanellus* × *L. microlophus* |
| Green sunfish × unknown | | *L. cyanellus* × sp. |
| Pumpkinseed × warmouth | | *L. gibbosus* × *L. gulosus* |
| Pumpkinseed × orangespotted sunfish | | *L. gibbosus* × *L. humilis* |
| Pumpkinseed × bluegill | | *L. gibbosus* × *L. macrochirus* |
| Orangespotted sunfish × longear sunfish | | *L. humilis* × *L. megalotis* |
| Bluegill × warmouth | | *L. macrochirus* × *L. gulosus* |
| Bluegill × orangespotted sunfish | | *L. macrochirus* × *L. humilis* |

**Table 2.** Continued.

| Common name | Family name | Scientific name |
|---|---|---|
| Bluegill × longear sunfish | | *L. macrochirus* × *L. megalotis* |
| Bluegill × redear sunfish | | *L. macrochirus* × *L. microlophus* |
| Redear sunfish × warmouth | | *L. microlophus* × *L. gulosus* |
| Smallmouth bass | | *Micropterus dolomieu* |
| Spotted bass | | *M. punctulatus* |
| Largemouth bass | | *M. salmoides* |
| White crappie | | *Pomoxis annularis* |
| Black crappie | | *P. nigromaculatus* |
| White crappie × black crappie | | *P. annularis* × *P. nigromaculatus* |
| | **Percidae** | |
| Crystal darter | | *Ammocrypta asprella* |
| Western sand darter | | *A. clara* |
| Eastern sand darter | | *A. pellucida* |
| Mud darter | | *Etheostoma asprigene* |
| Greenside darter | | *E. blennioides* |
| Rainbow darter | | *E. caeruleum* |
| Bluebreast darter | | *E. camurum* |
| Bluntnose darter | | *E. chlorosomum* |
| Iowa darter | | *E. exile* |
| Fantail darter | | *E. flabellare* |
| Slough darter | | *E. gracile* |
| Harlequin darter | | *E. histrio* |
| Stripetail darter | | *E. kennicotti* |
| Least darter | | *E. microperca* |
| Johnny darter | | *E. nigrum* |
| Cypress darter | | *E. proelaire* |
| Orangethroat darter | | *E. spectabile* |
| Spottail darter | | *E. squamiceps* |
| Banded darter | | *E. zonale* |
| Yellow perch | | *Perca flavescens* |
| Logperch | | *Percina caprodes* |
| Blackside darter | | *P. maculata* |
| Slenderhead darter | | *P. phoxocephala* |
| Dusky darter | | *P. sciera* |
| River darter | | *P. shumardi* |
| Sauger | | *Stizostedion canadense* |
| Walleye | | *S. vitreum* |
| Sauger × walleye | | *S. canadense* × *S. vitreum* |
| | **Sciaenidae** | |
| Freshwater drum | | *Aplodinotus grunniens* |
| | **Mugilidae** | |
| Striped mullet | | *Mugil cephalus* |

Since 1990, the LTRMP uses day and night electrofishing, fyke nets, seines, small mini fyke nets, hoop nets, and small trawls to sample fish in various strata. The following is a summary of sampling gears according to Gutreuter et al. (1995):

### Electrofishing

Electrofishing is conducted with pulsed direct current; boat configuration and power output are standardized (Burkhardt and Gutreuter 1995; Gutreuter et al. 1995). Electrofishing effort is of 15-min duration and is paced so that the boat covers a rectangle of about 200 × 30 m. Day and night electrofishing data from these two methods were combined for length–frequency analysis. The unit of effort is a 15-min run.

### Hoop Netting

The LTRMP uses two sizes of hoop nets. The large nets are composed of seven fiberglass hoops with diameters of 1.1 to 1.2 m. These nets are 4.8 m long, contain two finger-style throats, and are constructed of 3.7-cm (bar measure) nylon mesh. The small nets are composed of seven fiberglass hoops with diameters of 0.5 to 0.6 m. The small nets are 3 m long, contain two finger-style throats, and are constructed of 1.8-cm (bar measure) nylon mesh. Hoop nets are deployed separately but in pairs within sampling sites. Both nets are baited with 3 kg of soybean cake. For this report, the estimates from pairs of nets are pooled and therefore treated as a single gear for consistency with the 1990–92 data. The unit of effort is a net-day, which is 24 h of effort by a pair of nets.

### Seining

The LTRMP uses 10.7-m-long seines constructed of 3-mm Ace-type nylon mesh. These seines are 1.8 m high and have a 0.9-$m^2$ bag in the centers. Seines are extended perpendicularly to shorelines and then swept in a 90˚ arc downstream to the shoreline. The unit of effort is a haul.

### Fyke Netting

The LTRMP uses Wisconsin-type fyke nets (trap nets) that contain three sections: the lead, frame, and cab. All netting is 1.8-cm (bar measure) mesh. Leads are 15 m long and 1.3 m high. The spring steel frames are 0.9 m high and 1.8 m wide with two internal wing throats. The cabs are constructed of six steel hoops (0.9 m in diameter) containing two throats. These nets are fished singly from shoreline or from beds of dense vegetation or in tandem (with leads connected) offshore. The unit of effort is a net-day, where each frame is one net. Fyke net and tandem fyke net data were combined for length–frequency distribution analysis.

### Mini Fyke Netting

Mini fyke nets are small, Wisconsin-type fyke nets. Mesh size is 3-mm Ace-type nylon. The leads are 4.5 m long and 0.6 m high. The spring steel frames are 0.6 m high and 1.2 m wide with two internal wing throats. The cabs are constructed of two steel hoops (0.6 m in diameter) with one throat. These nets are fished singly from shoreline or from beds of dense vegetation or in tandem (with leads connected) offshore. The unit of effort is a net-day, where each frame is one net.

### Trawling

Trawling is conducted only at permanently fixed sampling sites in tailwater zones and unstructured channel borders. The LTRMP trawls collect mainly small, bottom-dwelling fish. The trawls are two-seam, 4.8-m slingshot balloon trawls (TRL16BC, Memphis Net and Twine Co., Inc., or the equivalent). The body of the trawl is made of No. 9 nylon with stretch mesh 18 mm in diameter. The cod end is made of No. 18 nylon with stretch mesh 18 mm in diameter. The cod end contains a 1.8-m liner consisting of 3-mm Ace-type nylon mesh. Floats are spaced every 0.91 m along the headrope, and a 4.8-mm steel chain is tied to the footrope. The trawl is equipped with 37-cm-high by 75-cm-long iron "V" doors (otter boards). These trawls are dragged downriver by small, flat-bottomed boats. Trawl speed is barely faster than ambient current speed. The standard unit of trawl effort is a haul. A minimum of six hauls is collected in main or side channel sites and four hauls at tailwater sites.

### Gill Netting

In 1993, gill nets became an optional experimental sampling gear. This option was included to improve monitoring capabilities for some large riverine species. Gill nets are 91.44 m long and consist of four, 22.86-m panels of monofilament mesh. The panels are 2.44 m deep. Each panel consists of different mesh of 10.2-, 20.3-, and 25.4-cm stretch measure. The 10.2- and 15.2-cm mesh are woven from No. 8 (9.07-kg [20-pound] test) transparent nylon monofilament. The 25.4-cm mesh is woven from No. 12 (13.61-kg [30-pound] test) transparent nylon monofilament. The top line is floating foam-core rope and the bottom line is 29.50-kg lead-core rope. Gill nets are set either perpendicularly (preferred) or parallel (in high-flow conditions) to the shoreline. The standard unit of gill netting effort is the net-day, where a day is 24 h.

### Trammel Netting

In 1994, trammel nets became an optional experimental sampling gear. This option was included to improve monitoring capabilities for some large riverine species. Trammel nets may be anchored or drifted with the current.

Trammel nets are 91.44 m × 2.44 m, inside netting is 10.16-cm bar of No. 8 monofilament hung about 85 m per 30.48 m of finished net, wall size is 35.56-cm bar of No. 9 multifilament twine hung 61 m per 30.48 yards of finished net, float line is 1.27 cm foam-core (two strands on the floating nets, one strand on the bottom set nets), and lead line is lead-core (No. 20 on the floating net, No. 65 on the sinking net).

## *Statistical Methods*

The LTRMP uses mean catch-per-unit-effort *C*/*f* as an index of abundance, as is conventional practice (Ricker 1975). The units of effort are specific to particular gears. For electrofishing and seining, effort is a constant, but for other gears it is somewhat variable. For example, although the effort goal for fyke nets is 1 day (Gutreuter et al. 1995), actual effort may vary between 20 and 30 h. Catch and effort are recorded for each species from individual samples (deployments of particular gears at unique combinations of time and place. Whenever a species is not caught in a sample, the catch for that species in that sample is zero. Although these zero catches are not recorded, they are reconstructed for analyses.

The estimates of pooled reachwide mean *C/f* were obtained from the conventional design-based estimator for stratified random samples (Cochran 1977). For an arbitrary random variable denoted *y* (for this report *y* represents *C/f*), the pooled mean, denoted $\bar{y}_{st}$ (*st* represents stratified) is given by

$$\bar{y}_{st} = \frac{1}{N} \sum_{h=1}^{L} N_h \bar{y}_h \quad (1)$$

where $N_h$ is the number of sampling units within stratum *h*, $N = \sum_{h=1}^{L} N_h$, and $\bar{y}_h$ denotes the estimator of the simple mean of *y* for stratum *h*. The estimator of the variance of $\bar{y}_{st}$ is

$$s^2(\bar{y}_{st}) = \frac{1}{N^2} \sum_{h=1}^{L} N_h (N_h - n_h) \left( \frac{s_h^2}{n_h} \right) \quad (2)$$

where

$$s_h^2 = \frac{\sum_{i=1}^{n_h} (y_{hi} - \bar{y}_h)^2}{n_h - 1}$$

is the usual estimator of the variance of $y_h$ and $n_h$ is the number of samples taken in stratum *h* (Cochran 1977). The standard error of $\bar{y}_{st}$ is therefore $s(\bar{y}_{st})$. For LTRMP fish monitoring, the sampling units are 50-m$^2$ sampling grids.

In this report, *C/f* statistics are reported separately for the limited, fixed-site sampling and the primary stratified random sampling. Equation (1) is used to estimate means of data obtained from fixed-site sampling to maintain computational consistency. The pooled means from fixed-site sampling are not guaranteed unbiased because there is no assurance that the fixed sites were unbiased within the stratum. Equation (1) is also used to obtain estimates of overall mean catch-per-unit-effort from stratified random sampling. In random samples, equation (1) yields unbiased estimates of the pooled means regardless of the probability distribution of *y* (Cochran 1977).

Length distribution analysis was performed for 13 selected fish species (gear used): gizzard shad (electrofishing), common carp (electrofishing), smallmouth buffalo (electrofishing; large and small hoop netting), channel catfish (electrofishing; large and small hoop netting), northern pike (electrofishing; fyke and tandem fyke netting), white bass (electrofishing), bluegill (electrofishing; fyke and tandem fyke netting), largemouth bass (electrofishing), white crappie (electrofishing; fyke and tandem fyke netting), black crappie (electrofishing; fyke and tandem fyke netting), sauger (electrofishing), walleye (electrofishing), and freshwater drum (electrofishing; fyke and tandem fyke netting). The data are illustrated in the form of histograms within the following chapters. In some instances, meaningful biological interpretation of these distributions may be limited by small sample size or size selectivity of the gear (Anderson and Neumann 1996). Some fish histograms with small sample sizes (<100) are included in this report because of local interest, while others were omitted (reach dependent).

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# Chapter 1. Pool 4, Upper Mississippi River

by

Mark Stopyro

Minnesota Department of Natural Resources
1801 S. Oak Street
Lake City, Minnesota 55041

## Hydrograph

Water levels in the Lock and Dam 3 tailwaters approximated the 1940 to 1995 mean elevations throughout the year (Figure 1.1), except that the peak levels in April were about 5 feet above the mean. Water elevations were slightly below the mean most of the time from mid-June through October. Water levels did not hinder sampling efforts during 1996. The U.S. Army Corps of Engineers discharge data were obtained from the Environmental Management Technical Center (Wlosinski et al. 1995).

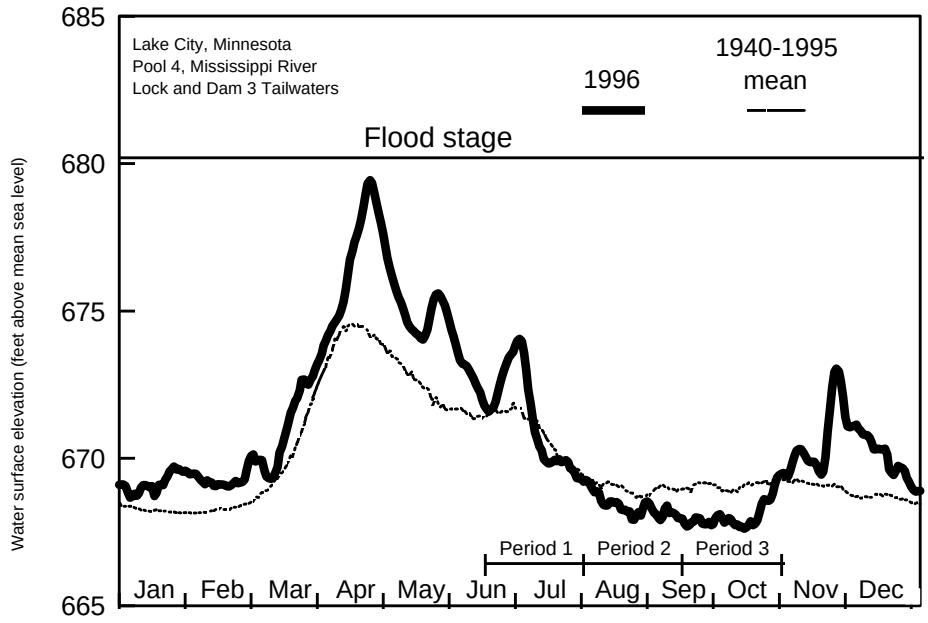


**Figure 1.1.** Daily water surface elevation from Lock and Dam 3 for Pool 4, Upper Mississippi River, during 1996 and mean elevation since 1940. The U.S. Army Corps of Engineers discharge data were obtained from the Environmental Management Technical Center (Wlosinski et al. 1995).

## Summary of Sampling Effort

In 1996, we completed 391 collections at randomly selected sites and 78 collections at fixed sites (Table 1.1). Fixed-site samples comprised 48 collections in the TWZ and 30 collections in the MCBW.

## Total Catch by Gear

We collected 52,634 fish comprising 66 species and 2 hybrids in 1996 (Table 1.2). Historically, 99 species have been documented in Pool 4 (Pitlo et al. 1995). During 1996, the most numerically abundant species (and total catches) were the emerald shiner (32,728), gizzard shad (4,522), bluegill (1,883), spotfin shiner (1,992), and common carp (1,132). Total catches by gear were day electrofishing, 5,649; night electrofishing, 6,826;

fyke net, 1,011; tandem fyke net, 1,275; mini fyke, 22,846; tandem mini fyke, 1,323; seine, 12,235; small hoop net, 328; large hoop net, 672; gill net, 266; trammel net, 52; and trawl, 151.

## Random Sampling, Mean *C/f* by Gear and Stratum

### *Day Electrofishing*

We collected 55 species using day electrofishing (Table 1.2). Species with the highest poolwide mean catch-per-unit-effort (*C/f*s) in day electrofishing collections (Table 1.3.1) were the gizzard shad (83/h = 4 × 20.8 per 15-min run), emerald shiner (44/h) , and bluegill (29/h). The gizzard shad was the most commonly collected species by electrofishing in the BWCO (61/h) and BWCS (193/h). Emerald shiners predominated in the MCBU (120/h), and spotfin shiners predominated in the SCB (54/h). In the MCBW, the highest *C/f* was for the shorthead redhorse (64/h). Six species taken by electrofishing were not collected by any other gear. These were the chestnut lamprey, silver lamprey, American brook lamprey, brook silverside, western sand darter, and slenderhead darter.

### *Fyke Net*

Thirty species from two strata were collected in fyke nets (Table 1.2). Poolwide mean *C/f*s in fike nets (Table 1.3.2) were highest for the black crappie (7/net-day), silver redhorse (5/net-day), and bluegill (3/net-day). The black crappie had the highest stratumwide *C/f* in the BWCS (7/net-day) and MCBW (9/net-day).

### *Tandem Fyke Net*

Tandem fyke nets were used solely in the BWCO and 30 species were collected (Table 1.2). The most commonly caught species in tandem fyke nets (Table 1.3.3) were the black crappie (9/net-day), freshwater drum (5/net-day), and bluegill (2/net-day).

### *Mini Fyke Net*

We collected 44 species in mini fyke nets (Table 1.2). Poolwide *C/f*s (Table 1.3.4) were highest for the emerald shiner (95/net-day), bluegill (9/net-day), and spotfin shiner (7/net-day). The emerald shiner was the most abundant species in mini fyke net collections from the MCBU (344/net-day) and SCB (9/net-day). The bluegill was the most common species in collections from the BWCS (16/net-day). In the MCBW, catches were low (<0.4/net-day) for all species in mini fyke nets. One species, the tadpole madtom, was collected solely by this gear.

### *Tandem Mini Fyke Net*

We collected 29 species in tandem mini fyke nets in the BWCO (Table 1.2). The most commonly collected species (Table 1.3.5) were the bluegill (4/net-day), emerald shiner (3/net-day), and black crappie (2/net-day).

### *Small Hoop Net*

In small hoop nets, 19 species and 1 hybrid were collected (Table 1.2). The channel catfish was the most frequently caught species (Table 1.3.6) in the BWCO, MCBU, MCBW, and SCB (1/net-day per stratum).

### *Large Hoop Net*

We collected 23 species in large hoop nets (Table 1.2). Poolwide, the most commonly caught species (Table 1.3.7) were the common carp and smallmouth buffalo (1/net-day each). The common carp was the most frequently collected species in the BWCO (1/net-day) and SCB (2/net-day). The smallmouth buffalo had the highest *C/f* in the MCBU (2/net-day) and MCBW (0.5/net-day).

### *Seine*

We collected 34 species in the seine (Table 1.2), including the sole specimens of the fathead minnow and brook stickleback taken during 1996. Poolwide *C/f*s in the seine (Table 1.3.8) were highest for the emerald shiner (159/haul), spotfin shiner (19/haul), and bluegill (6/haul). The emerald shiner was the most frequently collected species in the MCBU (138/haul) and SCB (175/haul).

### *Gill Net*

Gill nets were set solely in the BWCO and collected 21 species (Table 1.2). The highest *C/f*s (Table 1.3.9) were for the common carp (5/net-day), silver redhorse (4/net-day), and channel catfish (2/net-day).

### *Trammel Net*

Trammel nets were set solely in the BWCO and collected 8 species (Table 1.2). The most frequently caught species (Table 1.3.10) were the common carp (3/net-day) and bigmouth buffalo (0.2/net-day).

## Fixed Sampling, Mean *C/F* by Gear and Stratum

### *Day Electrofishing*

The *C/f*s for 26 species collected by day electrofishing at fixed sites in the MCBW are reported in Table 1.4.1. The highest *C/f*s were for the emerald shiner (257/h), gizzard shad (74/h), and shorthead redhorse (43/h).

### *Night Electrofishing*

We collected 37 species and 1 hybrid by night electrofishing at fixed sites in the TWZ (Table 1.2). The most frequently caught species (Table 1.4.2) were the gizzard shad (1014/h), emerald shiner (842/h), and sauger (83/h).

### *Fyke Net*

Fyke nets were set at fixed sites in the TWZ and MCBW. In the MCBW, the highest *C/f*s in fyke nets (Table 1.4.3) were for the freshwater drum (25/net-day), black crappie (9/net-day), and bluegill (2/net-day). The *C/f*s in the TWZ were highest for the white bass (12/net-day), freshwater drum (10/net-day), and black crappie (4/net-day).

### *Mini Fyke Net*

Mini fyke net *C/f*s at fixed sites in the MCBW (Table 1.4.4) were highest for the emerald shiner (73/net-day) and freshwater drum (5/net-day). The most frequently collected species in mini fyke nets in the TWZ stratum were the emerald shiner (2,453/net-day), mimic shiner (102/net-day), and spotfin shiner (44/net-day).

### *Small and Large Hoop Nets*

The common carp was the most frequently collected species in small hoop nets at fixed sites (Table 1.4.5) in the MCBW (2/net-day) and TWZ (3/net-day). The *C/f*s in large hoop nets (Table 1.4.6) in the TWZ were highest for the common carp (8/net-day) and freshwater drum (1/net-day each). The highest *C/f*s in large hoop nets in the MCBW were for the common carp (3/net-day) and smallmouth buffalo (1/net-day).

### *Trawl*

The *C/f*s in the trawl in the TWZ are reported for seven species (Table 1.4.7). The gizzard shad (5/haul), freshwater drum (4/haul), and channel catfish (1/haul) were the most frequently caught species in the trawl.

## Length Distributions of Selected Species

### *Gizzard Shad*

The modal length of 1,875 gizzard shad collected by electrofishing was 14 cm and the maximum length was 20 cm (Figure 1.2). An additional 2,316 unmeasured gizzard shad from subsampled collections were not included in this length distribution.

### *Common Carp*

The modal length of 543 common carp collected by electrofishing was 50 cm (Figure 1.3). The grouping of individuals from 22 to 34 cm is somewhat unusual as common carp under 35 cm are rarely caught in Pool 4.

### *Smallmouth Buffalo*

The length distribution of 30 smallmouth buffalo collected by electrofishing shows a bimodal grouping, with peaks at 30 and 48 cm (Figure 1.4). The 147 smallmouth buffalo collected in hoop nets ranged in length from 30 to 68 cm, and the modal length was 46 cm (Figure 1.5).

### *Channel Catfish*

The modal length of 24 channel catfish collected by electrofishing was 46 cm (Figure 1.6). The 168 channel catfish collected in hoop nets ranged in length from 16 to 68 cm, and the modal length was 36 cm (Figure 1.7).

### *Northern Pike*

The lengths of 22 northern pike collected by electrofishing ranged from 6 to 88 cm (Figure 1.8). Lengths of 19 northern pike caught in fyke nets ranged from 24 to 74 cm total length (Figure 1.9). One northern pike caught in a fyke net was not measured or included in Figure 1.9.

### *White Bass*

The length distribution of 274 white bass collected by electrofishing is presented in Figure 1.10. Lengths ranged from 2 to 40 cm, and the modal length was 12 cm.

### *Bluegill*

The modal length of 684 bluegills collected by electrofishing was 4 cm, and the maximum length was 22 cm (Figure 1.11). The 198 bluegills collected in fyke nets ranged in length from 2 to 22 cm, and the modal length was 14 cm (Figure 1.12).

### *Largemouth Bass*

The length distribution of 262 largemouth bass collected by electrofishing is presented in Figure 1.13. Lengths ranged from 2 to 48 cm. The modal length was 10 cm.

### *Black Crappie*

The lengths of 669 black crappies collected in fyke nets ranged from 6 to 32 cm (Figure 1.14). The modal length was 20 cm.

### *Sauger*

The length distribution of 311 saugers collected by electrofishing is presented in Figure 1.15. Lengths of saugers ranged from 8 to 52 cm, and the modal length was 16 cm.

### *Walleye*

The length distribution of 147 walleyes collected by electrofishing is presented in Figure 1.16. Individuals ranged from 8 to 68 cm in length, and the modal length was 18 cm.

### *Freshwater Drum*

Freshwater drum collected by electrofishing ranged from 6 to 50 cm in length, and the modal length was 20 cm (Figure 1.17). Freshwater drum collected in fyke nets were from 6 to 54 cm in length, and the distribution of lengths was nearly bimodal, with peaks at 20 and 30 cm (Figure 1.18).

Table 1.1. Allocation of fish sampling effort among strata by the Long Term Resource Monitoring Program in Pool 4 of the Mississippi River during 1996. Table entries are numbers of successfully completed standardized monitoring collections. 

Sampling period = 1: June 15 - July 31

| Sampling gear | BWCS | BWCO | SCB | MCBU | MCBW | IMPS | IMPO | TRI | TWZ | TOTAL |
|---|---|---|---|---|---|---|---|---|---|---|
| Day electrofishing | 8 | 4 | 6 | 6 | 4 | | | | | 28 |
| Fyke net | 6 | | | | 4 | | | | 2 | 12 |
| Gill net | | 4 | | | | | | | | 4 |
| Large hoop net | | 5 | 5 | 6 | 4 | | | | 2 | 22 |
| Small hoop net | | 5 | 5 | 6 | 4 | | | | 2 | 22 |
| Mini fyke net | 6 | | 6 | 4 | 4 | | | | 2 | 22 |
| Night electrofishing | | | | | | | | | 4 | 4 |
| Seine | | | 12 | 8 | | | | | | 20 |
| Trawling | | | | | | | | | 4 | 4 |
| Trammel net (set) | | 4 | | | | | | | | 4 |
| Tandem fyke net | | 8 | | | | | | | | 8 |
| Tandem mini fyke net | | 8 | | | | | | | | 8 |
| SUBTOTAL | 20 | 38 | 34 | 30 | 20 | 0 | 0 | 0 | 16 | 158 |

Sampling period = 2: August 1 - September 14

| Sampling gear | BWCS | BWCO | SCB | MCBU | MCBW | IMPS | IMPO | TRI | TWZ | TOTAL |
|---|---|---|---|---|---|---|---|---|---|---|
| Day electrofishing | 8 | 4 | 6 | 6 | 3 | | | | | 27 |
| Fyke net | 6 | | | | 4 | | | | 2 | 12 |
| Gill net | | 4 | | | | | | | | 4 |
| Large hoop net | | 3 | 6 | 6 | 4 | | | | 2 | 22 |
| Small hoop net | | 4 | 6 | 6 | 4 | | | | 2 | 22 |
| Mini fyke net | 6 | | 5 | 4 | 4 | | | | 2 | 21 |
| Night electrofishing | | | | | | | | | 4 | 4 |
| Seine | | | 10 | 8 | | | | | | 18 |
| Trawling | | | | | | | | | 4 | 4 |
| Trammel net (set) | | 4 | | | | | | | | 4 |
| Tandem fyke net | | 8 | | | | | | | | 8 |
| Tandem mini fyke net | | 8 | | | | | | | | 8 |
| SUBTOTAL | 20 | 35 | 33 | 30 | 19 | 0 | 0 | 0 | 16 | 154 |

Sampling period = 3: September 15 - October 31

| Sampling gear | BWCS | BWCO | SCB | MCBU | MCBW | IMPS | IMPO | TRI | TWZ | TOTAL |
|---|---|---|---|---|---|---|---|---|---|---|
| Day electrofishing | 8 | 4 | 6 | 6 | 4 | | | | | 28 |
| Fyke net | 6 | | | | 4 | | | | 2 | 12 |
| Gill net | | 4 | | | | | | | | 4 |
| Large hoop net | | 5 | 5 | 6 | 4 | | | | 2 | 22 |
| Small hoop net | | 5 | 5 | 6 | 4 | | | | 2 | 22 |
| Mini fyke net | 6 | | 6 | 4 | 3 | | | | 2 | 21 |
| Night electrofishing | | | | | | | | | 4 | 4 |
| Seine | | | 12 | 8 | | | | | | 20 |
| Trawling | | | | | | | | | 4 | 4 |
| Trammel net (set) | | 4 | | | | | | | | 4 |
| Tandem fyke net | | 8 | | | | | | | | 8 |
| Tandem mini fyke net | | 8 | | | | | | | | 8 |
| SUBTOTAL | 20 | 38 | 34 | 30 | 19 | 0 | 0 | 0 | 16 | 157 |
| | 60 | 111 | 101 | 90 | 58 | 0 | 0 | 0 | 48 | 469 |

Strata: BWCS - Backwater, contiguous, shoreline. MCBW - Main channel border, wing dam.
BWCO - Backwater, contiguous, offshore. SCB - Side channel border.
IMPS - Impounded, shoreline. TRI - Tributary mouth.
IMPO - Impounded, offshore. TWZ - Tailwater.
MCBU - Main channel border, unstructured.

Table 1.2. Total catches, by gear type, of fishes collected by the Long Term Resource Program during 1996 in Pool 4 of the Mississippi River. See Table 1.1 for the list of sampling gears actually deployed in this study reach.



| Species | Common name | Scientific name | D | N | F | X | M | Y | S | HS | HL | G | TA | T | TOTAL |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | Chestnut lamprey | Ichthyomyzon castaneus | 1 | - | - | - | - | - | - | - | - | - | - | - | 1 |
| 2 | Silver lamprey | Ichthyomyzon unicuspis | 2 | - | - | - | - | - | - | - | - | - | - | - | 2 |
| 3 | American brook lamprey | Lampetra appendix | 1 | - | - | - | - | - | - | - | - | - | - | - | 1 |
| 4 | Lake sturgeon | Acipenser fulvescens | - | - | - | - | - | - | - | - | - | - | 1 | 1 | 2 |
| 5 | Shovelnose sturgeon | Scaphirhynchus platorynchus | - | - | - | - | - | - | - | - | 1 | - | - | 15 | 16 |
| 6 | Longnose gar | Lepisosteus osseus | 6 | 1 | 7 | 1 | 2 | - | - | - | - | 1 | - | - | 18 |
| 7 | Shortnose gar | Lepisosteus platostomus | - | 2 | 4 | 10 | 8 | - | - | - | - | - | - | - | 24 |
| 8 | Bowfin | Amia calva | 28 | - | 21 | 88 | 9 | 4 | - | 2 | 2 | 7 | 1 | - | 162 |
| 9 | Mooneye | Hiodon tergisus | 7 | 1 | 1 | 5 | - | - | - | - | - | 2 | - | - | 16 |
| 10 | American eel | Anguilla rostrata | 1 | 1 | 1 | 1 | 1 | - | - | 1 | - | - | - | - | 6 |
| 11 | Gizzard shad | Dorosoma cepedianum | 1149 | 3042 | 18 | 49 | 23 | 64 | 108 | - | - | 15 | - | 54 | 4522 |
| 12 | Spotfin shiner | Cyprinella spiloptera | 243 | 8 | - | - | 603 | 1 | 1137 | - | - | - | - | - | 1992 |
| 13 | Common carp | Cyprinus carpio | 399 | 144 | 48 | 78 | 10 | 7 | - | 112 | 252 | 53 | 27 | 2 | 1132 |
| 14 | Speckled chub | Macrhybopsis aestivalis | - | - | - | - | 79 | - | 4 | - | - | - | - | 1 | 84 |
| 15 | Silver chub | Macrhybopsis storeriana | 1 | 3 | - | - | 6 | 7 | 4 | 2 | - | - | - | 1 | 24 |
| 16 | Emerald shiner | Notropis atherinoides | 1348 | 2527 | - | - | 19429 | 154 | 9270 | - | - | - | - | - | 32728 |
| 17 | River shiner | Notropis blennius | 51 | - | - | - | 13 | - | 71 | - | - | - | - | - | 135 |
| 18 | Spottail shiner | Notropis hudsonius | 15 | - | - | - | 8 | 73 | 13 | - | - | - | - | - | 109 |
| 19 | Sand shiner | Notropis stramineus | - | - | - | - | 3 | - | 6 | - | - | - | - | - | 9 |
| 20 | Weed shiner | Notropis texanus | 1 | - | - | - | - | 1 | - | - | - | - | - | - | 2 |
| 21 | Mimic shiner | Notropis volucellus | 31 | 2 | - | - | 701 | 60 | 140 | - | - | - | - | - | 934 |
| 22 | Pugnose minnow | Opsopoeodus emiliae | 19 | - | - | - | 73 | 65 | - | - | - | - | - | - | 157 |
| 23 | Bluntnose minnow | Pimephales notatus | - | - | - | - | 1 | - | 2 | - | - | - | - | - | 3 |
| 24 | Fathead minnow | Pimephales promelas | - | - | - | - | - | - | 1 | - | - | - | - | - | 1 |
| 25 | Bullhead minnow | Pimephales vigilax | 55 | 5 | - | - | 312 | 43 | 198 | - | - | - | - | - | 613 |
| 26 | Unidentified minnow | Cyprinid sp. | - | - | - | - | 58 | 225 | 23 | - | - | - | - | - | 306 |
| 27 | River carpsucker | Carpiodes carpio | 8 | 2 | - | - | - | - | - | - | 5 | 12 | - | - | 27 |
| 28 | Qillback | Carpiodes cyprinus | 47 | 4 | - | 1 | - | - | 187 | 1 | 3 | 17 | - | - | 260 |
| 29 | Highfin carpsucker | Carpiodes velifer | - | - | - | 2 | - | - | - | - | - | - | - | - | 2 |
| 30 | Unidentified carpsucker | Carpiodes sp. | - | - | - | - | - | - | 121 | - | - | - | - | - | 121 |
| 31 | White sucker | Catostomus commersoni | 3 | 1 | - | 7 | 1 | 1 | - | - | 3 | - | - | - | 16 |
| 32 | Blue sucker | Cycleptus elongatus | 3 | - | - | - | - | - | 1 | - | - | - | - | - | 4 |
| 33 | Northern hog sucker | Hypentelium nigricans | 3 | - | - | - | - | - | 2 | - | - | - | - | - | 5 |
| 34 | Smallmouth buffalo | Ictiobus bubalus | 20 | 10 | 1 | 9 | - | - | - | 15 | 132 | 19 | 1 | 1 | 208 |
| 35 | Bigmouth buffalo | Ictiobus cyprinellus | 9 | 1 | - | 3 | 3 | - | - | - | 1 | 2 | 19 | - | 38 |
| 36 | Spotted sucker | Minytrema melanops | 23 | - | 6 | 2 | 1 | - | - | - | - | 6 | - | - | 38 |
| 37 | Silver redhorse | Moxostoma anisurum | 133 | 2 | 87 | 49 | 7 | 4 | - | 1 | 10 | 45 | - | - | 338 |
| 38 | River redhorse | Moxostoma carinatum | 56 | - | 3 | - | - | - | - | - | - | - | - | - | 59 |
| 39 | Golden redhorse | Moxostoma erythrurum | 50 | 2 | 1 | 1 | 1 | - | - | - | 1 | 4 | - | - | 60 |

Gears:
- D - Day electrofishing
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- F - Fyke netting
- X - Tandem fyke netting
- M - Mini fyke netting
- Y - Tandem mini fyke netting
- S - Seining
- HS - Small hoop netting
- HL - Large hoop netting
- G - Gill netting
- TA - Trammel netting, anchored sets
- T - Trawling (4.8-m bottom trawl)

Table 1.2. Total catches, by gear type,of fishes collected by the Long Term Resource Program during 1996 in Pool 4 of the Mississippi River. See Table 1.1 for the list of sampling gears actually deployed in this study reach.



| Species | Common name | Scientific name | D | N | F | X | M | Y | S | HS | HL | G | TA | T | TOTAL |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 40 | Shorthead redhorse | Moxostoma macrolepidotum | 266 | 20 | 14 | 5 | - | 6 | 6 | 6 | 11 | 8 | - | 3 | 345 |
| 41 | Unidentified redhorse | Moxostoma sp. | 12 | - | - | - | 1 | - | 162 | - | - | - | - | - | 175 |
| 42 | Unidentified sucker | Catostomid sp. | - | - | - | - | - | - | 6 | - | - | - | - | - | 6 |
| 43 | Yellow bullhead | Ameiurus natalis | - | - | 1 | - | 1 | 1 | - | - | - | - | - | - | 3 |
| 44 | Channel catfish | Ictalurus punctatus | 19 | 5 | 5 | - | 1 | 1 | - | 109 | 59 | 22 | - | 19 | 240 |
| 45 | Tadpole madtom | Noturus gyrinus | - | - | - | - | 1 | - | - | - | - | - | - | - | 1 |
| 46 | Flathead catfish | Pylodictis olivaris | 6 | 10 | 7 | 1 | 4 | - | - | 3 | 21 | 2 | 2 | 3 | 59 |
| 47 | Northern pike | Esox lucius | 20 | 2 | 6 | 14 | 4 | 4 | 6 | - | 1 | 14 | 1 | - | 72 |
| 48 | Trout-perch | Percopsis omiscomaycus | 1 | - | - | - | 3 | - | 2 | - | - | - | - | - | 6 |
| 49 | Burbot | Lota lota | 3 | 4 | - | - | 2 | - | - | - | - | - | - | - | 9 |
| 50 | Brook silverside | Labidesthes sicculus | 2 | - | - | - | - | - | - | - | - | - | - | - | 2 |
| 51 | Brook stickleback | Culaea inconstans | - | - | - | - | - | - | 1 | - | - | - | - | - | 1 |
| 52 | White bass | Morone crysops | 111 | 163 | 101 | 78 | 96 | 6 | 71 | 4 | 16 | 15 | - | - | 661 |
| 53 | Rock bass | Ambloplites rupestris | 60 | 6 | 38 | 17 | 11 | 5 | 11 | 7 | - | - | - | - | 155 |
| 54 | Green sunfish | Lepomis cyanellus | 25 | 19 | 2 | - | 4 | 1 | 1 | - | - | - | - | - | 52 |
| 55 | Pumpkinseed | Lepomis gibbosus | 6 | - | 3 | 1 | - | - | - | - | - | - | - | - | 10 |
| 56 | Orangespotted sunfish | Lepomis humilis | 2 | - | - | - | - | - | 2 | - | - | - | - | - | 4 |
| 57 | Bluegill | Lepomis macrochirus | 487 | 197 | 102 | 96 | 431 | 186 | 351 | 30 | 3 | - | - | - | 1883 |
| 58 | Green sunfish x bluegill | L. cyanellus x L. macrochirus | - | - | - | - | - | - | - | 1 | - | - | - | - | 1 |
| 59 | Smallmouth bass | Micropterus dolomieu | 224 | 84 | 3 | - | 1 | - | 46 | 1 | 1 | - | - | - | 360 |
| 60 | Largemouth bass | Micropterus salmoides | 225 | 37 | 2 | 4 | 265 | 1 | 29 | - | - | 3 | - | - | 566 |
| 61 | White crappie | Pomoxis annularis | 8 | 13 | 2 | 37 | 4 | 13 | - | 3 | 3 | - | - | - | 83 |
| 62 | Black crappie | Pomoxis nigromaculatus | 47 | 24 | 247 | 422 | 28 | 100 | 13 | 13 | 96 | 2 | - | - | 992 |
| 63 | Unidentified sunfish | Centrarchid sp. | - | - | - | - | 8 | - | - | - | - | - | - | - | 8 |
| 64 | Western sand darter | Ammocrypta clara | 1 | - | - | - | - | - | - | - | - | - | - | - | 1 |
| 65 | Johnny darter | Etheostoma nigrum | 15 | - | - | - | 6 | 7 | 120 | - | - | - | - | - | 148 |
| 66 | Yellow perch | Perca flavescens | 61 | 1 | 5 | 13 | 5 | - | 6 | - | - | - | - | - | 91 |
| 67 | Logperch | Percina caprodes | 102 | 12 | - | - | 15 | 8 | 67 | - | - | - | - | - | 204 |
| 68 | Slenderhead darter | Percina phoxocephala | 3 | - | - | - | - | - | - | - | - | - | - | - | 3 |
| 69 | River darter | Percina shumardi | 5 | 1 | - | - | 6 | 1 | 9 | - | - | - | - | - | 22 |
| 70 | Sauger | Stizostedion canadense | 61 | 250 | 4 | 14 | 2 | 2 | 2 | - | 1 | - | - | 3 | 339 |
| 71 | Walleye | Stizostedion vitreum | 35 | 112 | 5 | 6 | - | - | 4 | 1 | 2 | 6 | - | 1 | 172 |
| 72 | Sauger x walleye | S. canadense x S. vitreum | - | 2 | - | - | - | - | - | - | - | - | - | - | 2 |
| 73 | Unidentified Stizostedion | Stizostedion sp. | - | - | - | - | 1 | 1 | 27 | - | - | - | - | - | 29 |
| 74 | Freshwater drum | Aplodinotus grunniens | 118 | 100 | 266 | 260 | 52 | 36 | 3 | 16 | 48 | 10 | - | 47 | 956 |
| 75 | Larval fish | Unidentified | - | - | - | - | 513 | 230 | 2 | - | - | - | - | - | 745 |
| 76 | Unidentified | Unidentified | 11 | 6 | - | 1 | 29 | 5 | - | - | - | 1 | - | - | 53 |
| | | | 5649 | 6826 | 1011 | 1275 | 22846 | 1323 | 12235 | 328 | 672 | 266 | 52 | 151 | 52634 |

Gears: D - Day electrofishing
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T - Trawling (4.8-m bottom trawl)

Table 1.3.1. Mean catch-per-unit-effort and (standard error) for fishes collected by day electrofishing in Pool 4 of the Mississippi River using stratified random sampling during 1996. The statistics under ALL pertain to unbiased means over all strata sampled using this gear (as indicated by nonmissing entries below and by Table 1.1). See text for definitions of catch-per-unit-effort and standard error.



| Common name | ALL | BWCO | BWCS | IMPO | IMPS | MCBU | MCBW | SCB | TRI | TWZ |
|---|---|---|---|---|---|---|---|---|---|---|
| Silver lamprey | 0.02 | | 0.06 | | | | | | | |
| | (0.02) | | (0.06) | | | | | | | |
| American brook lamprey | 0.02 | | 0.06 | | | | | | | |
| | (0.02) | | (0.06) | | | | | | | |
| Longnose gar | 0.05 | | 0.12 | | | | | 0.08 | | |
| | (0.03) | | (0.08) | | | | | (0.08) | | |
| Bowfin | 0.48 | 0.38 | 0.89 | | | 0.07 | | 0.42 | | |
| | (0.13) | (0.26) | (0.27) | | | (0.07) | | (0.19) | | |
| Mooneye | 0.11 | 0.25 | | | | | | 0.08 | | |
| | (0.06) | (0.16) | | | | | | (0.08) | | |
| Gizzard shad | 20.80 | 15.38 | 48.37 | | | 7.21 | | 4.25 | | |
| | (9.38) | (4.41) | (33.70) | | | (4.70) | | (1.94) | | |
| Spotfin shiner | 3.36 | 0.25 | 0.82 | | | 1.86 | | 13.42 | | |
| | (2.22) | (0.25) | (0.49) | | | (1.10) | | (10.78) | | |
| Common carp | 3.61 | 0.25 | 5.88 | | | 4.07 | | 6.17 | | |
| | (0.61) | (0.25) | (1.68) | | | (1.22) | | (1.64) | | |
| Emerald shiner | 11.11 | 3.38 | 8.78 | | | 29.93 | | 13.25 | | |
| | (2.82) | (2.11) | (4.17) | | | (13.63) | | (5.76) | | |
| River shiner | 0.52 | | | | | 3.29 | | | | |
| | (0.25) | | | | | (1.58) | | | | |
| Spottail shiner | 0.32 | 0.38 | 0.35 | | | 0.21 | | 0.25 | | |
| | (0.11) | (0.26) | (0.15) | | | (0.21) | | (0.13) | | |
| Weed shiner | 0.02 | | | | | | | 0.08 | | |
| | (0.02) | | | | | | | (0.08) | | |
| Mimic shiner | 0.17 | 0.13 | 0.18 | | | 0.14 | | 0.25 | | |
| | (0.08) | (0.13) | (0.13) | | | (0.10) | | (0.25) | | |
| Pugnose minnow | 0.35 | 0.13 | 0.12 | | | | | 1.33 | | |
| | (0.26) | (0.13) | (0.08) | | | | | (1.25) | | |
| Bullhead minnow | 0.69 | 0.13 | 0.71 | | | 2.07 | | 0.58 | | |
| | (0.28) | (0.13) | (0.42) | | | (1.57) | | (0.29) | | |
| River carpsucker | 0.09 | | 0.12 | | | 0.14 | | 0.17 | | |
| | (0.04) | | (0.12) | | | (0.10) | | (0.11) | | |
| Quillback | 0.29 | | 0.47 | | | 0.71 | 0.42 | 0.25 | | |
| | (0.12) | | (0.35) | | | (0.30) | (0.42) | (0.25) | | |
| White sucker | 0.02 | | 0.06 | | | | 0.37 | | | |
| | (0.02) | | (0.06) | | | | (0.37) | | | |
| Blue sucker | | | | | | | 0.75 | | | |
| | | | | | | | (0.75) | | | |
| Northern hog sucker | 0.04 | | | | | 0.14 | | 0.08 | | |
| | (0.03) | | | | | (0.14) | | (0.08) | | |
| Smllmouth buffalo | 0.15 | 0.13 | 0.29 | | | 0.14 | | | | |
| | (0.09) | (0.13) | (0.29) | | | (0.10) | | | | |
| Bigmouth buffalo | 0.08 | | 0.12 | | | | | 0.25 | | |
| | (0.06) | | (0.12) | | | | | (0.25) | | |
| Spotted sucker | 0.28 | | 0.82 | | | | | 0.25 | | |
| | (0.10) | | (0.33) | | | | | (0.25) | | |
| Silver redhorse | 1.01 | 0.75 | 1.00 | | | 1.29 | 4.22 | 1.25 | | |
| | (0.19) | (0.37) | (0.31) | | | (0.52) | (2.18) | (0.39) | | |
| River redhorse | 0.21 | | | | | 0.79 | 6.29 | 0.33 | | |
| | (0.10) | | | | | (0.50) | (2.71) | (0.26) | | |
| Golden redhorse | 0.61 | 0.13 | 0.94 | | | 0.64 | | 1.00 | | |
| | (0.18) | (0.13) | (0.57) | | | (0.23) | | (0.39) | | |
| Shorthead redhorse | 1.49 | 0.13 | 1.53 | | | 1.64 | 16.06 | 3.58 | | |
| | (0.23) | (0.13) | (0.43) | | | (0.59) | (10.27) | (0.80) | | |
| Channel catfish | 0.07 | | | | | 0.21 | | 0.17 | | |
| | (0.03) | | | | | (0.15) | | (0.11) | | |
| Flathead catfish | 0.02 | | | | | | | 0.08 | | |
| | (0.02) | | | | | | | (0.08) | | |

Strata: BWCS - Backwater, contiguous, shoreline.
BWCO - Backwater, contiguous, offshore.
IMPS - Impounded, shoreline.
IMPO - Impounded, offshore.
MCBU - Main channel border, unstructured.
MCBW - Main channel border, wing dam.
SCB - Side channel border.
TRI - Tributary mouth.
TWZ - Tailwater.

Table 1.3.1. Mean cach-per-unit-effort and (standard error) for fishes collected by day electrofishing in Pool 4 of the Mississippi River using stratified random sampling during 1996. The statistics under ALL pertain to unbiased means over all strata sampled using this gear (as indicated by nonmissing entries below and by Table 1.1). See text for definitions of catch-per-unit-effort and standard error.



| Common name | ALL | BWCO | BWCS | IMPO | IMPS | MCBU | MCBW | SCB | TRI | TWZ |
|---|---|---|---|---|---|---|---|---|---|---|
| Northern pike | 0.10 | | 0.12 | | | 0.21 | | 0.17 | | |
| | (0.04) | | (0.08) | | | (0.11) | | (0.11) | | |
| Trout-perch | 0.02 | | 0.06 | | | | | | | |
| | (0.02) | | (0.06) | | | | | | | |
| Burbot | 0.02 | | | | | | | 0.08 | | |
| | (0.02) | | | | | | | (0.08) | | |
| Brook silverside | 0.03 | | 0.06 | | | | | 0.08 | | |
| | (0.02) | | (0.06) | | | | | (0.08) | | |
| White bass | 0.84 | 0.25 | 0.54 | | | 2.07 | 1.49 | 1.33 | | |
| | (0.27) | (0.25) | (0.23) | | | (1.16) | (1.49) | (0.79) | | |
| Rock bass | 0.52 | 0.13 | 0.24 | | | 0.21 | | 1.83 | | |
| | (0.18) | (0.13) | (0.14) | | | (0.15) | | (0.81) | | |
| Green sunfish | 0.18 | | 0.41 | | | 0.29 | | 0.08 | | |
| | (0.07) | | (0.21) | | | (0.22) | | (0.08) | | |
| Pumpkinseed | 0.08 | | 0.18 | | | | | 0.17 | | |
| | (0.05) | | (0.13) | | | | | (0.17) | | |
| Orangespotted sunfish | 0.03 | | | | | 0.07 | | 0.08 | | |
| | (0.02) | | | | | (0.07) | | (0.08) | | |
| Bluegill | 7.23 | 0.38 | 18.06 | | | 2.86 | 0.89 | 8.25 | | |
| | (1.36) | (0.26) | (4.53) | | | (1.13) | (0.51) | (2.57) | | |
| Smallmouth bass | 1.70 | 0.13 | 0.71 | | | 3.21 | 2.84 | 4.58 | | |
| | (0.39) | (0.13) | (0.34) | | | (0.98) | (1.17) | (1.67) | | |
| Largemouth bass | 3.22 | | 7.18 | | | 0.71 | | 5.58 | | |
| | (0.87) | | (2.90) | | | (0.27) | | (1.76) | | |
| White crappie | 0.13 | | 0.49 | | | | | | | |
| | (0.10) | | (0.37) | | | | | | | |
| Black crappie | 0.60 | | 1.30 | | | 0.21 | | 1.00 | | |
| | (0.19) | | (0.57) | | | (0.15) | | (0.52) | | |
| Western sand darter | 0.01 | | | | | 0.07 | | | | |
| | (0.01) | | | | | (0.07) | | | | |
| Johnny darter | 0.24 | | 0.29 | | | 0.14 | | 0.67 | | |
| | (0.12) | | (0.19) | | | (0.14) | | (0.50) | | |
| Yellow perch | 0.84 | 0.38 | 1.06 | | | 0.57 | | 1.58 | | |
| | (0.28) | (0.38) | (0.40) | | | (0.29) | | (1.07) | | |
| Logperch | 1.09 | | 0.71 | | | 3.36 | 0.79 | 1.75 | | |
| | (0.40) | | (0.22) | | | (2.31) | (0.46) | (0.68) | | |
| Slenderhead darter | 0.01 | | | | | 0.07 | | | | |
| | (0.01) | | | | | (0.07) | | | | |
| River darter | 0.01 | | | | | 0.07 | 0.47 | | | |
| | (0.01) | | | | | (0.07) | (0.47) | | | |
| Sauger | 0.70 | 0.50 | 1.09 | | | 0.36 | | 0.83 | | |
| | (0.15) | (0.27) | (0.31) | | | (0.29) | | (0.27) | | |
| Walleye | 0.69 | 1.25 | 0.56 | | | 0.21 | 0.37 | 0.25 | | |
| | (0.21) | (0.53) | (0.23) | | | (0.11) | (0.37) | (0.25) | | |
| Freshwater drum | 2.14 | 3.25 | 1.77 | | | 1.21 | 0.37 | 1.42 | | |
| | (0.62) | (1.62) | (0.42) | | | (0.86) | (0.37) | (0.65) | | |

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MCBW - Main channel border, wing dam.
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Table 1.3.2. Mean catch-per-unit-effort and (standard error) for fishes collected by fyke netting in Pool 4 of the Mississippi River using stratified random sampling during 1996. The statistics under ALL pertain to unbiased means over all strata sampled using this gear (as indicated by nonmissing entries below and by Table 1.1). See text for definitions of catch-per-unit-effort and standard error.



| Common name | ALL | BWCO | BWCS | IMPO | IMPS | MCBU | MCBW | SCB | TRI | TWZ |
|---|---|---|---|---|---|---|---|---|---|---|
| Longnose gar | 0.20 | | 0.20 | | | | | | | |
| | (0.14) | | (0.15) | | | | | | | |
| Shortnose gar | 0.06 | | 0.06 | | | | | | | |
| | (0.06) | | (0.06) | | | | | | | |
| Bowfin | 1.14 | | 1.15 | | | | | | | |
| | (0.41) | | (0.41) | | | | | | | |
| Mooneye | 0.05 | | 0.05 | | | | | | | |
| | (0.05) | | (0.05) | | | | | | | |
| Gizzard shad | 0.87 | | 0.88 | | | | | | | |
| | (0.76) | | (0.77) | | | | | | | |
| Common carp | 2.49 | | 2.51 | | | | | | | |
| | (1.11) | | (1.12) | | | | | | | |
| Spotted sucker | 0.34 | | 0.34 | | | | | | | |
| | (0.18) | | (0.18) | | | | | | | |
| Silver redhorse | 5.04 | | 5.08 | | | | | | | |
| | (1.55) | | (1.57) | | | | | | | |
| River redhorse | 0.18 | | 0.18 | | | | | | | |
| | (0.18) | | (0.18) | | | | | | | |
| Golden redhorse | 0.06 | | 0.06 | | | | | | | |
| | (0.06) | | (0.06) | | | | | | | |
| Shorthead redhorse | 0.76 | | 0.76 | | | | | | | |
| | (0.34) | | (0.35) | | | | | | | |
| Yellow bullhead | 0.06 | | 0.06 | | | | | | | |
| | (0.05) | | (0.06) | | | | | | | |
| Channel catfish | 0.12 | | 0.12 | | | | 0.19 | | | |
| | (0.08) | | (0.08) | | | | (0.19) | | | |
| Flathead catfish | 0.06 | | 0.06 | | | | | | | |
| | (0.06) | | (0.06) | | | | | | | |
| Northern pike | 0.31 | | 0.31 | | | | | | | |
| | (0.12) | | (0.12) | | | | | | | |
| White bass | 1.24 | | 1.24 | | | | 0.71 | | | |
| | (0.55) | | (0.56) | | | | (0.71) | | | |
| Rock bass | 2.04 | | 2.05 | | | | 0.33 | | | |
| | (0.85) | | (0.86) | | | | (0.21) | | | |
| Pumpkinseed | 0.17 | | 0.17 | | | | | | | |
| | (0.12) | | (0.12) | | | | | | | |
| Bluegill | 3.38 | | 3.37 | | | | 4.34 | | | |
| | (1.27) | | (1.28) | | | | (1.59) | | | |
| Smallmouth bass | | | | | | | 0.30 | | | |
| | | | | | | | (0.30) | | | |
| Largemouth bass | 0.13 | | 0.13 | | | | | | | |
| | (0.13) | | (0.13) | | | | | | | |
| Black crappie | 6.90 | | 6.88 | | | | 9.32 | | | |
| | (1.77) | | (1.79) | | | | (5.37) | | | |
| Yellow perch | 0.31 | | 0.31 | | | | | | | |
| | (0.16) | | (0.16) | | | | | | | |
| Sauger | 0.19 | | 0.19 | | | | | | | |
| | (0.14) | | (0.1) | | | | | | | |
| Walleye | 0.19 | | 0.19 | | | | 0.19 | | | |
| | (0.19) | | (0.19) | | | | (0.19) | | | |
| Freshwater drum | 2.67 | | 2.66 | | | | 3.71 | | | |
| | (1.61) | | (1.63) | | | | (1.84) | | | |

Strata: BWCS - Backwater, contiguous, shoreline.
BWCO - Backwater, contiguous, offshore.
IMPS - Impounded, shoreline.
IMPO - Impounded, offshore.
MCBU - Main channel border, unstructured.
MCBW - Main channel border, wing dam.
SCB - Side channel border.
TRI - Tributary mouth.
TWZ - Tailwater.

Table 1.3.3. Mean catch-per-unit-effort and (standard error) for fishes collected by tandem fyke netting in Pool 4 of the Mississippi River using stratified random sampling during 1996. The statistics under ALL pertain to unbiased means over all strata sampled using this gear (as indicated by nonmissing entries below and by Table 1.1). See text for definitions of catch-per-unit-effort and standard error.



| Common name | ALL | BWCO | BWCS | IMPO | IMPS | MCBU | MCBW | SCB | TRI | TWZ |
|---|---|---|---|---|---|---|---|---|---|---|
| Longnose gar | 0.02 | 0.02 | | | | | | | | |
| | (0.02) | (0.02) | | | | | | | | |
| Shortnose gar | 0.23 | 0.23 | | | | | | | | |
| | (0.13) | (0.13) | | | | | | | | |
| Bowfin | 2.03 | 2.03 | | | | | | | | |
| | (0.88) | (0.88) | | | | | | | | |
| Mooneye | 0.11 | 0.11 | | | | | | | | |
| | (0.06) | (0.07) | | | | | | | | |
| American eel | 0.02 | 0.02 | | | | | | | | |
| | (0.02) | (0.02) | | | | | | | | |
| Gizzard shad | 1.14 | 1.14 | | | | | | | | |
| | (0.54) | (0.54) | | | | | | | | |
| Common carp | 1.69 | 1.69 | | | | | | | | |
| | (0.46) | (0.46) | | | | | | | | |
| Quillback | 0.02 | 0.02 | | | | | | | | |
| | (0.02) | (0.02) | | | | | | | | |
| Highfin carpsucker | 0.04 | 0.04 | | | | | | | | |
| | (0.04) | (0.04) | | | | | | | | |
| White sucker | 0.16 | 0.16 | | | | | | | | |
| | (0.07) | (0.07) | | | | | | | | |
| Smallmouth buffalo | 0.20 | 0.20 | | | | | | | | |
| | (0.08) | (0.08) | | | | | | | | |
| Bigmouth buffalo | 0.07 | 0.07 | | | | | | | | |
| | (0.04) | (0.04) | | | | | | | | |
| Spotted sucker | 0.05 | 0.05 | | | | | | | | |
| | (0.03) | (0.03) | | | | | | | | |
| Silver redhorse | 1.03 | 1.03 | | | | | | | | |
| | (0.26) | (0.26) | | | | | | | | |
| Golden redhorse | 0.02 | 0.02 | | | | | | | | |
| | (0.02) | (0.02) | | | | | | | | |
| Shorthead redhorse | 0.11 | 0.11 | | | | | | | | |
| | (0.04) | (0.04) | | | | | | | | |
| Flathead catfish | 0.02 | 0.02 | | | | | | | | |
| | (0.02) | (0.02) | | | | | | | | |
| Northern pike | 0.32 | 0.32 | | | | | | | | |
| | (0.09) | (0.10) | | | | | | | | |
| White bass | 1.80 | 1.80 | | | | | | | | |
| | (0.72) | (0.72) | | | | | | | | |
| Rock bass | 0.36 | 0.36 | | | | | | | | |
| | (0.13) | (0.13) | | | | | | | | |
| Pumpkinseed | 0.02 | 0.02 | | | | | | | | |
| | (0.02) | (0.02) | | | | | | | | |
| Bluegill | 2.00 | 2.00 | | | | | | | | |
| | (0.70) | (0.70) | | | | | | | | |
| Largemouth bass | 0.09 | 0.09 | | | | | | | | |
| | (0.06) | (0.06) | | | | | | | | |
| White crappie | 0.83 | 0.83 | | | | | | | | |
| | (0.38) | (0.38) | | | | | | | | |
| Black crappie | 9.02 | 9.02 | | | | | | | | |
| | (2.70) | (2.71) | | | | | | | | |
| Yellow perch | 0.28 | 0.28 | | | | | | | | |
| | (0.12) | (0.12) | | | | | | | | |
| Sauger | 0.34 | 0.34 | | | | | | | | |
| | (0.16) | (0.16) | | | | | | | | |
| Walleye | 0.13 | 0.13 | | | | | | | | |
| | (0.06) | (0.06) | | | | | | | | |
| Freshwater drum | 5.55 | 5.55 | | | | | | | | |
| | (1.71) | (1.71) | | | | | | | | |

Strata: BWCS - Backwater, contiguous, shoreline. MCBW - Main channel border, wing dam.
BWCO - Backwater, contiguous, offshore. SCB - Side channel border.
IMPS - Impounded, shoreline. TRI - Tributary mouth.
IMPO - Impounded, offshore. TWZ - Tailwater.
MCBU - Main channel border, unstructured.

Table 1.3.4. Mean catch-per-unit-effort and (standard error) for fishes collected by mini fyke netting in Pool 4 of the Mississippi River using stratified random sampling during 1996. The statistics under ALL perain to unbiased means over all strata sampled using this gear (as indicated by nonmissing entries below and by Table 1.1). See text for definitions of catch-per-unit-effort and standard error.



| Common name | ALL | BWCO | BWCS | IMPO | IMPS | MCBU | MCBW | SCB | TRI | TWZ |
|---|---|---|---|---|---|---|---|---|---|---|
| Longnose gar | 0.02 | | 0.05 | | | | | | | |
| | (0.02) | | (0.05) | | | | | | | |
| Shortnose gar | 0.12 | | 0.05 | | | 0.09 | | 0.23 | | |
| | (0.06) | | (0.05) | | | (0.09) | | (0.17) | | |
| Bowfin | 0.20 | | 0.29 | | | | | 0.23 | | |
| | (0.08) | | (0.14) | | | | | (0.17) | | |
| Gizzard shad | 0.44 | | 0.11 | | | 1.51 | 0.20 | 0.06 | | |
| | (0.32) | | (0.07) | | | (1.26) | (0.20) | (0.06) | | |
| Spotfin shiner | 6.77 | | 0.11 | | | 16.42 | | 8.20 | | |
| | (3.87) | | (0.08) | | | (12.69) | | (7.02) | | |
| Common carp | 0.16 | | 0.28 | | | | | 0.11 | | |
| | (0.06) | | (0.14) | | | | | (0.08) | | |
| Silver chub | 0.04 | | | | | 0.08 | | 0.06 | | |
| | (0.03) | | | | | (0.08) | | (0.06) | | |
| Emerald shiner | 95.26 | | 15.39 | | | 343.75 | | 9.10 | | |
| | (82.52) | | (14.14) | | | (330.61) | | (7.23) | | |
| River shiner | 0.13 | | 0.11 | | | 0.09 | | 0.17 | | |
| | (0.08) | | (0.11) | | | (0.09) | | (0.17) | | |
| Spottail shiner | 0.17 | | 0.22 | | | | | 0.23 | | |
| | (0.08) | | (0.13) | | | | | (0.18) | | |
| Sand shiner | 0.02 | | | | | | | 0.06 | | |
| | (0.02) | | | | | | | (0.06) | | |
| Mimic shiner | 2.08 | | 0.06 | | | 6.13 | | 1.64 | | |
| | (1.02) | | (0.06) | | | (3.87) | | (1.02) | | |
| Pugnose minnow | 1.83 | | 4.15 | | | 0.08 | | 0.12 | | |
| | (1.34) | | (3.14) | | | (0.08) | | (0.08) | | |
| Bluntnose minnow | 0.02 | | | | | 0.08 | | | | |
| | (0.02) | | | | | (0.08) | | | | |
| Bullhead minnow | 3.55 | | 5.28 | | | 2.92 | | 1.75 | | |
| | (1.87) | | (3.99) | | | (2.74) | | (1.19) | | |
| White sucker | 0.02 | | 0.06 | | | | | | | |
| | (0.02) | | (0.06) | | | | | | | |
| Bigmouth buffalo | 0.02 | | | | | | | 0.06 | | |
| | (0.02) | | | | | | | (0.06) | | |
| Spotted sucker | 0.02 | | 0.06 | | | | | | | |
| | (0.02) | | (0.06) | | | | | | | |
| Silver redhorse | 0.18 | | 0.43 | | | | | | | |
| | (0.08) | | (0.19) | | | | | | | |
| Golden redhorse | 0.02 | | 0.06 | | | | | | | |
| | (0.02) | | (0.06) | | | | | | | |
| Yellow bullhead | 0.03 | | 0.07 | | | | | | | |
| | (0.03) | | (0.07) | | | | | | | |
| Channel catfish | 0.02 | | 0.06 | | | | | | | |
| | (0.02) | | (0.06) | | | | | | | |
| Tadpole madtom | 0.02 | | | | | 0.09 | | | | |
| | (0.02) | | | | | (0.09) | | | | |
| Flathead catfish | 0.02 | | | | | 0.08 | | | | |
| | (0.02) | | | | | (0.08) | | | | |
| Northern pike | 0.06 | | 0.11 | | | | | 0.06 | | |
| | (0.04) | | (0.08) | | | | | (0.06) | | |
| Trout-perch | 0.06 | | 0.06 | | | 0.08 | | 0.06 | | |
| | (0.04) | | (0.06) | | | (0.08) | | (0.06) | | |
| Burbot | 0.02 | | 0.05 | | | | | | | |
| | (0.02) | | (0.05) | | | | | | | |
| White bass | 1.42 | | 0.27 | | | 3.34 | | 1.47 | | |
| | (0.83) | | (0.17) | | | (3.16) | | (0.78) | | |
| Rock bass | 0.19 | | | | | 0.33 | | 0.35 | | |
| | (0.06) | | | | | (0.19) | | (0.12) | | |

Strata: BWCS - Backwater, contiguous, shoreline.
BWCO - Backwater, contiguous, offshore.
IMPS - Impounded, shoreline.
IMPO - Impounded, offshore.
MCBU - Main channel border, unstructured.
MCBW - Main channel border, wing dam.
SCB - Side channel border.
TRI - Tributary mouth.
TWZ - Tailwater.

Table 1.3.4. Mean catch-per-unit-effort and (standard error) for fishes collected by mini fyke netting in Pool 4 of the Mississippi River using stratified random sampling during 1996. The statistics under ALL pertain to unbiased means over all strata sampled using this gear (as indicated by nonmissing entries below and by Table 1.1). See text for definitions of catch-per-unit-effort and standard error.



| Common name | ALL | BWCO | BWCS | IMPO | IMPS | MCBU | MCBW | SCB | TRI | TWZ |
|---|---|---|---|---|---|---|---|---|---|---|
| Green sunfish | 0.06 | | | | | 0.24 | | | | |
| | (0.06) | | | | | (0.24) | | | | |
| Bluegill | 9.42 | | 16.22 | | | 0.57 | | 7.31 | | |
| | (5.26) | | (11.62) | | | (0.25) | | (5.47) | | |
| Smallmouth bass | | | | | | | 0.19 | | | |
| | | | | | | | (0.19) | | | |
| Largemouth bass | 5.94 | | 11.99 | | | 1.69 | | 1.24 | | |
| | (5.06) | | (11.80) | | | (1.10) | | (1.12) | | |
| White crappie | 0.08 | | 0.11 | | | | | 0.12 | | |
| | (0.06) | | (0.11) | | | | | (0.12) | | |
| Black crappie | 0.54 | | 0.78 | | | 0.27 | 0.16 | 0.43 | | |
| | (0.16) | | (0.34) | | | (0.19) | (0.16) | (0.18) | | |
| Johnny darter | 0.13 | | 0.22 | | | 0.08 | | 0.06 | | |
| | (0.06) | | (0.13) | | | (0.08) | | (0.06) | | |
| Yellow perch | 0.11 | | 0.12 | | | 0.08 | | 0.11 | | |
| | (0.06) | | (0.12) | | | (0.08) | | (0.11) | | |
| Logperch | 0.29 | | 0.22 | | | 0.72 | | 0.06 | | |
| | (0.19) | | (0.17) | | | (0.72) | | (0.06) | | |
| River darter | 0.04 | | 0.06 | | | 0.08 | | | | |
| | (0.03) | | (0.06) | | | (0.08) | | | | |
| Freshwater drum | 0.23 | | 0.27 | | | | 0.33 | 0.37 | | |
| | (0.07) | | (0.13) | | | | (0.33) | (0.15) | | |

Strata: BWCS - Backwater, contiguous, shoreline.
BWCO - Backwater, contiguous, offshore.
IMPS - Impounded, shoreline.
IMPO - Impounded, offshore.
MCBU - Main channel border, unstructured.
MCBW - Main channel border, wing dam.
SCB - Side channel border.
TRI - Tributary mouth.
TWZ - Tailwater.

Table 1.3.5. Mean catch-per-unit-effort and (standard error) for fishes collected by tandem mini fyke netting in Pool 4 of the Mississippi River using stratified random sampling during 1996. The statistics under ALL pertain to unbiased means over all strata sampled using this gear (as indicated by nonmissing entries below and by Table 1.1). See text for definitions of catch-per-unit-effort and standard error.



| Common name | ALL | BWCO | BWCS | IMPO | IMPS | MCBU | MCB | SCB | TRI | TWZ |
|---|---|---|---|---|---|---|---|---|---|---|
| Bowfin | 0.09 | 0.09 | | | | | | | | |
| | (0.09) | (0.09) | | | | | | | | |
| Gizzard shad | 1.50 | 1.50 | | | | | | | | |
| | (0.65) | (0.65) | | | | | | | | |
| Spotfin shiner | 0.02 | 0.02 | | | | | | | | |
| | (0.02) | (0.02) | | | | | | | | |
| Common carp | 0.16 | 0.16 | | | | | | | | |
| | (0.09) | (0.09) | | | | | | | | |
| Silver chub | 0.18 | 0.18 | | | | | | | | |
| | (0.18) | (0.18) | | | | | | | | |
| Emerald shiner | 3.54 | 3.54 | | | | | | | | |
| | (1.99) | (2.00) | | | | | | | | |
| Spottail shiner | 1.93 | 1.93 | | | | | | | | |
| | (1.61) | (1.61) | | | | | | | | |
| Weed shiner | 0.02 | 0.02 | | | | | | | | |
| | (0.02) | (0.02) | | | | | | | | |
| Mimic shiner | 1.51 | 1.51 | | | | | | | | |
| | (1.50) | (1.51) | | | | | | | | |
| Pugnose minnow | 1.48 | 1.48 | | | | | | | | |
| | (0.96) | (0.96) | | | | | | | | |
| Bullhead minnow | 1.09 | 1.09 | | | | | | | | |
| | (0.56) | (0.56) | | | | | | | | |
| White sucker | 0.02 | 0.02 | | | | | | | | |
| | (0.02) | (0.02) | | | | | | | | |
| Silver redhorse | 0.09 | 0.09 | | | | | | | | |
| | (0.05) | (0.05) | | | | | | | | |
| Shorthead redhorse | 0.13 | 0.13 | | | | | | | | |
| | (0.06) | (0.06) | | | | | | | | |
| Yellow bullhead | 0.02 | 0.02 | | | | | | | | |
| | (0.02) | (0.02) | | | | | | | | |
| Channel catfish | 0.02 | 0.02 | | | | | | | | |
| | (0.02) | (0.02) | | | | | | | | |
| Northern pike | 0.09 | 0.09 | | | | | | | | |
| | (0.05) | (0.05) | | | | | | | | |
| White bass | 0.15 | 0.15 | | | | | | | | |
| | (0.08) | (0.08) | | | | | | | | |
| Rock bass | 0.10 | 0.10 | | | | | | | | |
| | (0.04) | (0.04) | | | | | | | | |
| Green sunfish | 0.02 | 0.02 | | | | | | | | |
| | (0.02) | (0.02) | | | | | | | | |
| Bluegill | 3.96 | 3.96 | | | | | | | | |
| | (1.59) | (1.59) | | | | | | | | |
| Largemouth bass | 0.03 | 0.03 | | | | | | | | |
| | (0.03) | (0.03) | | | | | | | | |
| White crappie | 0.28 | 0.28 | | | | | | | | |
| | (0.14) | (0.14) | | | | | | | | |
| Black crappie | 2.22 | 2.22 | | | | | | | | |
| | (0.88) | (0.88) | | | | | | | | |
| Johnny darter | 0.16 | 0.16 | | | | | | | | |
| | (0.08) | (0.08) | | | | | | | | |
| Logperch | 0.20 | 0.20 | | | | | | | | |
| | (0.11) | (0.1) | | | | | | | | |
| River darter | 0.03 | 0.03 | | | | | | | | |
| | (0.03) | (0.03) | | | | | | | | |
| Sauger | 0.04 | 0.04 | | | | | | | | |
| | (0.03) | (0.03) | | | | | | | | |
| Freshwater drum | 0.77 | 0.77 | | | | | | | | |
| | (0.20) | (0.20) | | | | | | | | |

Strata: BWCS - Backwater, contiguous, shoreline. MCBW - Main channel border, wing dam.
BWCO - Backwater, contiguous, offshore. SCB - Side channel border.
IMPS - Impounded, shoreline. TRI - Tributary mouth.
IMPO - Impounded, offshore. TWZ - Tailwater.
MCBU - Main channel border, unstructured.

Table 1.3.6. Mean catch-per-unit-effort and (standard error) for fishes collected by small hoop netting in Pool 4 of the Mississippi River using stratified random sampling during 1996. The statistics under ALL pertain to unbiased means over all strata sampled using this gear (as indicated by nonmissing entries below and by Table 1.1). See text for definitions of catch-per-unit-effort and standard error.



| Common name | ALL | BWCO | BWCS | IMPO | IMPS | MCBU | MCBW | SCB | TRI | TWZ |
|---|---|---|---|---|---|---|---|---|---|---|
| Bowfin | 0.03 | 0.04 | | | | | | 0.03 | | |
| | (0.02) | (0.04) | | | | | | (0.03) | | |
| American eel | 0.02 | 0.04 | | | | | | | | |
| | (0.02) | (0.04) | | | | | | | | |
| Common carp | 0.51 | 0.41 | | | | 0.14 | | 0.97 | | |
| | (0.17) | (0.16) | | | | (0.09) | | (0.52) | | |
| Silver chub | 0.01 | | | | | 0.06 | | | | |
| | (0.01) | | | | | (0.04) | | | | |
| Quillback | 0.02 | 0.04 | | | | | | | | |
| | (0.02) | (0.04) | | | | | | | | |
| Smallmouth buffalo | 0.12 | 0.11 | | | | 0.14 | | 0.13 | | |
| | (0.06) | (0.11) | | | | (0.11) | | (0.09) | | |
| Shorthead redhorse | 0.06 | 0.07 | | | | 0.08 | | 0.03 | | |
| | (0.03) | (0.05) | | | | (0.05) | | (0.03) | | |
| Channel catfish | 1.09 | 1.29 | | | | 0.75 | 0.76 | 0.99 | | |
| | (0.59) | (1.14) | | | | (0.61) | (0.55) | (0.34) | | |
| Flathead catfish | 0.02 | | | | | 0.06 | | 0.03 | | |
| | (0.01) | | | | | (0.04) | | (0.03) | | |
| White bass | 0.05 | 0.08 | | | | | | 0.03 | | |
| | (0.03) | (0.05) | | | | | | (0.03) | | |
| Rock bass | 0.03 | | | | | 0.06 | 0.25 | 0.06 | | |
| | (0.02) | | | | | (0.04) | (0.17) | (0.06) | | |
| Bluegill | 0.37 | 0.54 | | | | 0.28 | | 0.13 | | |
| | (0.15) | (0.28) | | | | (0.19) | | (0.07) | | |
| Smallmouth bass | | | | | | | 0.08 | | | |
| | | | | | | | (0.08) | | | |
| White crappie | 0.05 | 0.07 | | | | | | 0.03 | | |
| | (0.03) | (0.05) | | | | | | (0.03) | | |
| Black crappie | 0.14 | 0.19 | | | | 0.14 | | 0.07 | | |
| | (0.05) | (0.09) | | | | (0.08) | | (0.04) | | |
| Walleye | 0.01 | | | | | | | 0.03 | | |
| | (0.01) | | | | | | | (0.03) | | |
| Freshwater drum | 0.17 | 0.20 | | | | 0.11 | | 0.16 | | |
| | (0.09) | (0.16) | | | | (0.08) | | (0.11) | | |

Strata: BWCS - Backwater, contiguous, soreline. MCBW - Main channel border, wing dam.
BWCO - Backwater, contiguous, offshore. SCB - Side channel border.
IMPS - Impounded, shoreline. TRI - Tributary mouth.
IMPO - Impounded, offshore. TWZ - Tailwater.
MCBU - Main channel border, unstructured.

Table 1.3.7. Mean catch-per-unit-effort and (standard error) for fishes collected by large hoop netting in Pool 4 of the Mississippi River using stratified random sampling during 1996. The statistics under ALL pertain to unbiased means over all strata sampled using this gear (as indicated by nonmissing entries below and by Table 1.1). See text for definitions of catch-per-unit-effort and standard error.



| Common name | ALL | BWCO | BWCS | IMPO | IMPS | MCBU | MCBW | SCB | TRI | TWZ |
|---|---|---|---|---|---|---|---|---|---|---|
| Common carp | 1.42 | 1.47 | | | | 0.73 | | 1.86 | | |
| | (0.46) | (0.73) | | | | (0.35) | | (0.96) | | |
| River carpsucker | 0.05 | | | | | | | 0.17 | | |
| | (0.05) | | | | | | | (0.17) | | |
| Quillback | 0.06 | 0.12 | | | | | | | | |
| | (0.06) | (0.12) | | | | | | | | |
| White sucker | 0.06 | 0.12 | | | | | | | | |
| | (0.06) | (0.12) | | | | | | | | |
| Smallmouth buffalo | 0.89 | 0.36 | | | | 2.33 | 0.49 | 0.68 | | |
| | (0.20) | (0.16) | | | | (0.61) | (0.18) | (0.47) | | |
| Silver redhorse | 0.12 | 0.12 | | | | 0.06 | | 0.17 | | |
| | (0.07) | (0.09) | | | | (0.06) | | (0.17) | | |
| Golden redhorse | 0.02 | 0.04 | | | | | | | | |
| | (0.02) | (0.04) | | | | | | | | |
| Shorthead redhorse | 0.10 | 0.12 | | | | 0.15 | 0.08 | 0.03 | | |
| | (0.05) | (0.09) | | | | (0.10) | (0.08) | (0.03) | | |
| Channel catfish | 0.43 | 0.24 | | | | 1.02 | 0.18 | 0.30 | | |
| | (0.12) | (0.14) | | | | (0.43) | (0.11) | (0.12) | | |
| Flathead catfish | 0.08 | | | | | | | 0.27 | | |
| | (0.05) | | | | | | | (0.16) | | |
| Northern pike | 0.01 | | | | | 0.03 | | | | |
| | (0.01) | | | | | (0.03) | | | | |
| White bass | 0.03 | 0.04 | | | | 0.06 | | | | |
| | (0.02) | (0.04) | | | | (0.04) | | | | |
| Bluegill | 0.01 | | | | | 0.03 | | | | |
| | (0.01) | | | | | (0.03) | | | | |
| Smallmouth bass | | | | | | | 0.08 | | | |
| | | | | | | | (0.08) | | | |
| White crappie | 0.06 | 0.12 | | | | | | | | |
| | (0.03) | (0.06) | | | | | | | | |
| Black crappie | 0.58 | 0.24 | | | | 1.87 | 0.10 | 0.17 | | |
| | (0.34) | (0.09) | | | | (1.55) | (0.10) | (0.09) | | |
| Sauger | 0.01 | | | | | 0.03 | | | | |
| | (0.01) | | | | | (0.03) | | | | |
| Walleye | 0.02 | 0.04 | | | | | | | | |
| | (0.02) | (0.04) | | | | | | | | |
| Freshwater drum | 0.44 | 0.59 | | | | 0.46 | 0.09 | 0.17 | | |
| | (0.21) | (0.42) | | | | (0.19) | (0.09) | (0.09) | | |

Strata: BWCS - Backwater, contiguous, shoreline.
BWCO - Backwater, contiguous, offshore.
IMPS - Impounded, shoreline.
IMPO - Impounded, offshore.
MCBU - Main channel border, unstructured.
MCBW - Main channel border, wing dam.
SCB - Side channel border.
TRI - Tributary mouth.
TWZ - Tailwater.

Table 1.3.8. Mean catch-per-unit-efort and (standard error) for fishes collected by seining in Pool 4 of the Mississippi River using stratified random sampling during 1996. The statistics under ALL pertain to unbiased means over all strata sampled using this gear (as indicated by nonmissing entries below and by Table 1.1). See text for definitions of catch-per-unit-effort and standard error.



| Common name | ALL | BWCO | BWCS | IMPO | IMPS | MCBU | MCBW | SCB | TRI | TWZ |
|---|---|---|---|---|---|---|---|---|---|---|
| Gizzard shad | 1.78 | | | | | | | 3.18 | | |
| | (0.97) | | | | | | | (1.74) | | |
| Spotfin shiner | 18.91 | | | | | 2.96 | | 31.35 | | |
| | (7.52) | | | | | (2.24) | | (13.35) | | |
| Speckled chub | 0.07 | | | | | 0.04 | | 0.09 | | |
| | (0.05) | | | | | (0.04) | | (0.09) | | |
| Silver chub | 0.07 | | | | | 0.04 | | 0.09 | | |
| | (0.04) | | | | | (0.04) | | (0.06) | | |
| Emerald shiner | 158.93 | | | | | 138.33 | | 175.00 | | |
| | (45.78) | | | | | (61.29) | | (66.56) | | |
| River shiner | 1.24 | | | | | 1.67 | | 0.91 | | |
| | (0.54) | | | | | (1.04) | | (0.53) | | |
| Spottail shiner | 0.22 | | | | | 0.08 | | 0.32 | | |
| | (0.09) | | | | | (0.06) | | (0.16) | | |
| Sand shiner | 0.11 | | | | | 0.17 | | 0.06 | | |
| | (0.05) | | | | | (0.10) | | (0.04) | | |
| Mimic shiner | 2.41 | | | | | 2.38 | | 2.44 | | |
| | (0.75) | | | | | (1.42) | | (0.76) | | |
| Bluntnose minnow | 0.03 | | | | | 0.04 | | 0.03 | | |
| | (0.02) | | | | | (0.04) | | (0.03) | | |
| Fathead minnow | 0.02 | | | | | 0.04 | | | | |
| | (0.02) | | | | | (0.04) | | | | |
| Bullhead minnow | 3.30 | | | | | 0.63 | | 5.38 | | |
| | (0.83) | | | | | (0.27) | | (1.48) | | |
| Quillback | 3.09 | | | | | | | 5.50 | | |
| | (3.02) | | | | | | | (5.41) | | |
| Blue sucker | 0.02 | | | | | | | 0.03 | | |
| | (0.02) | | | | | | | (0.03) | | |
| Northern hog sucker | 0.03 | | | | | 0.04 | | 0.03 | | |
| | (0.02) | | | | | (0.04) | | (0.03) | | |
| Shorthead redhorse | 0.10 | | | | | 0.13 | | 0.09 | | |
| | (0.06) | | | | | (0.09) | | (0.09) | | |
| Northern pike | 0.10 | | | | | 0.04 | | 0.15 | | |
| | (0.05) | | | | | (0.04) | | (0.07) | | |
| Trout-perch | 0.03 | | | | | | | 0.06 | | |
| | (0.02) | | | | | | | (0.04) | | |
| Brook stickleback | 0.02 | | | | | | | 0.03 | | |
| | (0.02) | | | | | | | (0.03) | | |
| White bass | 1.25 | | | | | 1.79 | | 0.82 | | |
| | (0.62) | | | | | (1.35) | | (0.37) | | |
| Rock bass | 0.20 | | | | | 0.42 | | 0.03 | | |
| | (0.14) | | | | | (0.31 | | (0.03) | | |
| Green sunfish | 0.02 | | | | | | | 0.03 | | |
| | (0.02) | | | | | | | (0.03) | | |
| Orangespotted sunfish | 0.03 | | | | | 0.04 | | 0.03 | | |
| | (0.02) | | | | | (0.04) | | (0.03) | | |
| Bluegill | 6.27 | | | | | 11.21 | | 2.41 | | |
| | (3.93) | | | | | (8.79) | | (1.58) | | |
| Smallmouth bass | 0.78 | | | | | 0.50 | | 1.00 | | |
| | (0.29) | | | | | (0.21) | | (0.49) | | |
| Largemouth bass | 0.49 | | | | | 0.25 | | 0.68 | | |
| | (0.19) | | | | | (0.15) | | (0.32) | | |
| Black crappie | 0.22 | | | | | 0.04 | | 0.35 | | |
| | (0.14) | | | | | (0.04) | | (0.24) | | |
| Johnny darter | 2.03 | | | | | 1.17 | | 2.71 | | |
| | (0.80) | | | | | (0.57) | | (1.37) | | |
| Yellow perch | 0.10 | | | | | 0.04 | | 0.15 | | |
| | (0.06) | | | | | (0.04) | | (0.10) | | |

Strata: BWCS - Backwater, contiguous, shoreline.
BWCO - Backwater, contiguous, offshore.
IMPS - Impounded, shoreline.
IMPO - Impounded, offshore.
MCBU - Main channel border, unstructured.
MCBW - Main channel border, wing dam.
SCB - Side channel border.
TRI - Tributary mouth.
TWZ - Tailwater.

Table 1.3.8. Mean catch-per-unit-effort and (standard error) for fishes collected by seining in Pool 4 of the Mississippi River using stratified random sampling during 1996. The statistics under ALL pertain to unbiased means over all strata sampledusing this gear (as indicated by nonmissing entries below and by Table 1.1). See text for definitions of catch-per-unit-effort and standard error.



| Common name | ALL | BWCO | BWCS | IMPO | IMPS | MCBU | MCBW | SCB | TRI | TWZ |
|---|---|---|---|---|---|---|---|---|---|---|
| Logperch | 1.19 | | | | | 2.08 | | 0.50 | | |
| | (0.81) | | | | | (1.83) | | (0.20) | | |
| River darter | 0.15 | | | | | 0.04 | | 0.24 | | |
| | (0.07) | | | | | (0.04) | | (0.11) | | |
| Sauger | 0.03 | | | | | | | 0.06 | | |
| | (0.02) | | | | | | | (0.04) | | |
| Walleye | 0.07 | | | | | | | 0.12 | | |
| | (0.04) | | | | | | | (0.07) | | |
| Freshwater drum | 0.05 | | | | | | | 0.09 | | |
| | (0.03) | | | | | | | (0.05) | | |

Strata: BWCS - Backwater, contiguous, shoreline.
BWCO - Backwater, contiguous, offshore.
IMPS - Impounded, shoreline.
IMPO - Impounded, offshore.
MCBU - Main channel border, unstructured.
MCBW - Main channel border, wing dam.
SCB - Side channel border.
TRI - Tributary mouth.
TWZ - Tailwater.

Table 1.3.9. Mean catch-per-unit-effort and (standard error) for fishes collected by gill netting in Pool 4 of the Mississippi River using stratified random sampling during 1996. The statistics under ALL pertain to unbiased means over all strata sampled using this gear (as indicated by nonmissing entries below and by Table 1.1). See text for definitions of catch-per-unit-effort and standard error.



| Common name | ALL | BWCO | BWCS | IMPO | IMPS | MCBU | MCBW | SC | TRI | TWZ |
|---|---|---|---|---|---|---|---|---|---|---|
| Longnose gar | 0.07 | 0.07 | | | | | | | | |
| | (0.07) | (0.07) | | | | | | | | |
| Bowfin | 0.61 | 0.61 | | | | | | | | |
| | (0.27) | (0.27) | | | | | | | | |
| Mooneye | 0.18 | 0.18 | | | | | | | | |
| | (0.12) | (0.12) | | | | | | | | |
| Gizzard shad | 1.38 | 1.38 | | | | | | | | |
| | (0.38) | (0.38) | | | | | | | | |
| Common carp | 4.54 | 4.54 | | | | | | | | |
| | (1.38) | (1.38) | | | | | | | | |
| River carpsucker | 1.06 | 1.06 | | | | | | | | |
| | (0.30) | (0.30) | | | | | | | | |
| Quillback | 1.50 | 1.50 | | | | | | | | |
| | (0.61) | (0.61) | | | | | | | | |
| Smallmouth buffalo | 1.71 | 1.71 | | | | | | | | |
| | (0.46) | (0.46) | | | | | | | | |
| Bigmouth buffalo | 0.19 | 0.19 | | | | | | | | |
| | (0.18) | (0.19) | | | | | | | | |
| Spotted sucker | 0.54 | 0.54 | | | | | | | | |
| | (0.28) | (0.28) | | | | | | | | |
| Silver redhorse | 3.86 | 3.86 | | | | | | | | |
| | (0.87) | (0.87) | | | | | | | | |
| Golden redhorse | 0.33 | 0.33 | | | | | | | | |
| | (0.26) | (0.26) | | | | | | | | |
| Shorthead redhorse | 0.72 | 0.72 | | | | | | | | |
| | (0.37) | (0.37) | | | | | | | | |
| Channel catfish | 2.01 | 2.01 | | | | | | | | |
| | (0.57) | (0.57) | | | | | | | | |
| Flathead catfish | 0.21 | 0.21 | | | | | | | | |
| | (0.14) | (0.14) | | | | | | | | |
| Northern pike | 1.25 | 1.25 | | | | | | | | |
| | (0.28) | (0.28) | | | | | | | | |
| White bass | 1.22 | 1.22 | | | | | | | | |
| | (0.45) | (0.45) | | | | | | | | |
| Largemouth bass | 0.25 | 0.25 | | | | | | | | |
| | (0.13) | (0.13) | | | | | | | | |
| Black crappie | 0.17 | 0.17 | | | | | | | | |
| | (0.11) | (0.11) | | | | | | | | |
| Walleye | 0.46 | 0.46 | | | | | | | | |
| | (0.30) | (0.30) | | | | | | | | |
| Freshwater drum | 0.86 | 0.86 | | | | | | | | |
| | (0.36) | (0.36) | | | | | | | | |

Strata: BWCS - Backwater, contiguous, shoreline.
BWCO - Backwater, contiguous, offshore.
IMPS - Impounded, shoreline.
IMPO - Impounded, offshore.
MCBU - Main channel border, unstructured.
MCBW - Main channel border, wing dam.
SCB - Side channel border.
TRI - Tributary mouth.
TWZ - Tailwater.

Table 1.3.10. Mea catch-per-unit-effort and (standard error) for fishes collected by anchored trammel netting in Pool 4 of the Mississippi River using stratified random sampling during 1996. The statistics under ALL pertain to unbiased means over all strata sampled using this gear (as indicated by nonmissing entries below and by Table 1.1). See text for definitions of catch-per-unit-effort and standard error. 

| Common name | ALL | BWCO | BWCS | IMPO | IMPS | MCBU | MCBW | SCB | TRI | TWZ |
|---|---|---|---|---|---|---|---|---|---|---|
| Lake sturgeon | 0.11 | 0.11 | | | | | | | | |
| | (0.11) | (0.11) | | | | | | | | |
| Bowfin | 0.11 | 0.11 | | | | | | | | |
| | (0.11) | (0.11) | | | | | | | | |
| Common carp | 2.71 | 2.71 | | | | | | | | |
| | (0.90) | (0.90) | | | | | | | | |
| Smallmouth buffalo | 0.09 | 0.09 | | | | | | | | |
| | (0.09) | (0.09) | | | | | | | | |
| Bigmouth buffalo | 1.68 | 1.68 | | | | | | | | |
| | (1.68) | (1.68) | | | | | | | | |
| Flathead catfish | 0.20 | 0.20 | | | | | | | | |
| | (0.14) | (0.14) | | | | | | | | |
| Northern pike | 0.11 | 0.11 | | | | | | | | |
| | (0.11) | (0.11) | | | | | | | | |

Strata: BWCS - Backwater, contiguous, shoreline. MCBW - Main channel border, wing dam.
BWCO - Backwater, contiguous, offshore. SCB - Side channel border.
IMPS - Impounded, shoreline. TRI - Tributary mouth.
IMPO - Impounded, offshore. TWZ - Tailwater.
MCBU - Main channel border, unstructured.

Table 1.4.1. Mean catch-per-unit-effort and (standard error) for fishes collected by day electrofishing in Pool 4 of the Mississippi River using fixed-site sampling during 1996. See text for definitions of catch-per-unit-effort and standard error.



| Common name | BWCO | BWCS | IMPO | IMPS | MCBU | MCBW | SCB | TRI | TWZ |
|---|---|---|---|---|---|---|---|---|---|
| Silver lamprey | | | | | | 0.34 (0.34) | | | |
| Gizzard shad | | | | | | 18.53 (9.57) | | | |
| Spotfin shiner | | | | | | 6.74 (4.57) | | | |
| Common carp | | | | | | 8.09 (3.73) | | | |
| Silver chub | | | | | | 0.25 (0.25) | | | |
| Emerald shiner | | | | | | 64.14 (33.18) | | | |
| Bullhead minnow | | | | | | 2.24 (2.24) | | | |
| Smallmouth buffalo | | | | | | 0.47 (0.47) | | | |
| Bigmouth buffalo | | | | | | 0.25 (0.25) | | | |
| River redhorse | | | | | | 1.42 (1.42) | | | |
| Shorthead redhorse | | | | | | 10.65 (4.55) | | | |
| Flathead catfish | | | | | | 1.50 (0.98) | | | |
| Northern pike | | | | | | 0.25 (0.25) | | | |
| Burbot | | | | | | 0.72 (0.45) | | | |
| White bass | | | | | | 4.97 (3.03) | | | |
| Green sunfish | | | | | | 3.90 (1.39) | | | |
| Bluegill | | | | | | 8.73 (3.73) | | | |
| Smallmouth bass | | | | | | 7.55 (2.75) | | | |
| Largemouth bass | | | | | | 2.74 (2.13) | | | |
| Black crappie | | | | | | 0.37 (0.37) | | | |
| Logperch | | | | | | 5.93 (2.49) | | | |
| Slenderhead darter | | | | | | 0.62 (0.37) | | | |
| River darter | | | | | | 0.84 (0.50) | | | |
| Sauger | | | | | | 1.37 (1.06) | | | |
| Walleye | | | | | | 0.25 (0.25) | | | |
| Freshwater drum | | | | | | 2.17 (1.36) | | | |

Strata: BWCS - Backwater, contiguous, shoreline.
BWCO - Backwater, contiguous, offshore.
IMPS - Impounded, shoreline.
IMPO - Impounded, offshore.
MCBU - Main channel border, unstructured.
MCBW - Main channel border, wing dam.
SCB - Side channel border.
TRI - Tributary mouth.
TWZ - Tailwater.

Table 1.4.2. Mean catch-per-unit-effort and (standard error) for fishes collected by night electrofishing in Pool 4 of the Mississippi River using fixed-site sampling during 1996. See text for definitions of catch-per-unit-effort and standard error.



| Common name | BWCO | BWCS | IMPO | IMPS | MCBU | MCBW | SCB | TRI | TWZ |
|---|---|---|---|---|---|---|---|---|---|
| Longnose gar | | | | | | | | | 0.08 (0.08) |
| Shortnose gar | | | | | | | | | 0.17 (0.17) |
| Mooneye | | | | | | | | | 0.08 (0.08) |
| American eel | | | | | | | | | 0.08 (0.08) |
| Gizzard shad | | | | | | | | | 253.50 (175.06) |
| Spotfin shiner | | | | | | | | | 0.67 (0.36) |
| Common carp | | | | | | | | | 12.00 (2.19) |
| Silver chub | | | | | | | | | 0.25 (0.18) |
| Emerald shiner | | | | | | | | | 210.58 (122.16) |
| Mimic shiner | | | | | | | | | 0.17 (0.11) |
| Bullhead minnow | | | | | | | | | 0.42 (0.34) |
| River carpsucker | | | | | | | | | 0.17 (0.11) |
| Quillback | | | | | | | | | 0.33 (0.22) |
| White sucker | | | | | | | | | 0.08 (0.08) |
| Smallmouth buffalo | | | | | | | | | 0.83 (0.59) |
| Bigmouth buffalo | | | | | | | | | 0.08 (0.08) |
| Silver redhorse | | | | | | | | | 0.17 (0.11) |
| Golden redhorse | | | | | | | | | 0.17 (0.17) |
| Shorthead redhorse | | | | | | | | | 1.67 (0.92) |
| Channel catfish | | | | | | | | | 0.42 (0.19) |
| Flathead catfish | | | | | | | | | 0.83 (0.32) |
| Northern pike | | | | | | | | | 0.17 (0.11) |
| Burbot | | | | | | | | | 0.33 (0.26) |
| White bass | | | | | | | | | 13.58 (2.90) |
| Rock bass | | | | | | | | | 0.50 (0.42) |
| Green sunfish | | | | | | | | | 1.58 (0.70) |
| Bluegill | | | | | | | | | 16.42 (8.91) |
| Smallmouth bass | | | | | | | | | 7.00 (1.79) |
| Largemouth bass | | | | | | | | | 3.08 (1.28) |
| White crappie | | | | | | | | | 1.08 (0.38) |

Strata: BWCS - Backwater, contiguous, shoreline.
BWCO - Backwater, contiguous, offshore.
IMPS - Impounded, shoreline.
IMPO - Impounded, offshore.
MCBU - Main channel border, unstructured.
MCBW - Main channel border, wing dam.
SCB - Side channel border.
TRI - Tributary mouth.
TWZ - Tailwater.

Table 1.4.2. Mean catch-per-unit-effort and (standard error) for fishes collected by night electrofishing in Pool 4 of the Mississippi River using fixed-site sampling during 1996. See text for definitions of catch-per-uni-effort and standard error.



| Common name | BWCO | BWCS | IMPO | IMPS | MCBU | MCBW | SCB | TRI | TWZ |
|---|---|---|---|---|---|---|---|---|---|
| Black crappie | | | | | | | | | 2.00 (0.62) |
| Yellow perch | | | | | | | | | 0.08 (0.08) |
| Logperch | | | | | | | | | 1.00 (0.52) |
| River darter | | | | | | | | | 0.08 (0.08) |
| Sauger | | | | | | | | | 20.83 (7.06) |
| Walleye | | | | | | | | | 9.33 (3.45) |
| Sauger x walleye | | | | | | | | | 0.17 (0.17) |
| Freshwater drum | | | | | | | | | 8.33 (4.77) |

Strata: BWCS - Backwater, contiguous, shoreline.
BWCO - Backwater, contiguous, offshore.
IMPS - Impounded, shoreline.
IMPO - Impounded, offshore.
MCBU - Main channel border, unstructured.
MCBW - Main channel border, wing dam.
SCB - Side channel border.
TRI - Tributary mouth.
TWZ - Tailwater.

Table 1.4.3. Mean catch-per-unit-effort and (standard error) for fishes collected by fyke netting in Pool 4 of the Mississippi River using fixed-site sampling during 1996. See text for definitions of catch-per-unit-effort and standard error.



| Common name | BWCO | BWCS | IMPO | IMPS | MCBU | MCBW | SCB | TRI | TWZ |
|---|---|---|---|---|---|---|---|---|---|
| Longnose gar | | | | | | | | | 0.67 |
| | | | | | | | | | (0.33) |
| Shortnose gar | | | | | | | | | 0.50 |
| | | | | | | | | | (0.50) |
| Bowfin | | | | | | | | | 0.33 |
| | | | | | | | | | (0.33) |
| American eel | | | | | | | | | 0.17 |
| | | | | | | | | | (0.17) |
| Gizzard shad | | | | | | 0.17 | | | 0.50 |
| | | | | | | (0.17) | | | (0.50) |
| Common carp | | | | | | 0.50 | | | 0.84 |
| | | | | | | (0.34) | | | (0.54) |
| Smallmouth buffalo | | | | | | 0.18 | | | |
| | | | | | | (0.18) | | | |
| Shorthead redhorse | | | | | | 0.34 | | | |
| | | | | | | (0.34) | | | |
| Channel catfish | | | | | | 0.34 | | | |
| | | | | | | (0.34) | | | |
| Flathead catfish | | | | | | 0.68 | | | 0.33 |
| | | | | | | (0.43) | | | (0.33) |
| Northern pike | | | | | | | | | 0.17 |
| | | | | | | | | | (0.17) |
| White bass | | | | | | 1.18 | | | 11.85 |
| | | | | | | (1.18) | | | (9.22) |
| Rock bass | | | | | | | | | 0.17 |
| | | | | | | | | | (0.17) |
| Green sunfish | | | | | | | | | 0.33 |
| | | | | | | | | | (0.33) |
| Bluegill | | | | | | 1.68 | | | 1.50 |
| | | | | | | (1.68) | | | (1.50) |
| Smallmouth bass | | | | | | | | | 0.17 |
| | | | | | | | | | (0.17) |
| White crappie | | | | | | 0.17 | | | 0.17 |
| | | | | | | (0.17) | | | (0.17) |
| Black crappie | | | | | | 8.59 | | | 3.89 |
| | | | | | | (8.19) | | | (1.87) |
| Sauger | | | | | | | | | 0.17 |
| | | | | | | | | | (0.17) |
| Walleye | | | | | | 0.17 | | | |
| | | | | | | (0.17) | | | |
| Freshwater drum | | | | | | 24.60 | | | 9.63 |
| | | | | | | (9.16) | | | (4.27) |

Strata: BWCS - Backwater, contiguous, shoreline.
BWCO - Backwater, contiguous, offshore.
IMPS - Impounded, shoreline.
IMPO - Impounded, offshore.
MCBU - Main channel border, unstructured.
MCBW - Main channel border, wing dam.
SCB - Side channel border.
TRI - Tributary mouth.
TWZ - Tailwater.

Table 1.4.4. Mean catch-per-unit-effort and (standard error) for fishes collected by mini fyke netting in Pool 4 of the Mississippi River using fixed-site sampling during 1996. See text for definitions of catch-per-unit-effort and standard error.



| Common name | BWCO | BWCS | IMPO | IMPS | MCBU | MCBW | SCB | TRI | TWZ |
|---|---|---|---|---|---|---|---|---|---|
| Longnose gar | | | | | | | | | 0.17 (0.17) |
| Shortnose gar | | | | | | | | | 0.33 (0.33) |
| American eel | | | | | | 0.20 (0.20) | | | |
| Gizzard shad | | | | | | 0.20 (0.20) | | | 0.17 (0.17) |
| Spotfin shiner | | | | | | | | | 43.65 (10.54) |
| Common carp | | | | | | 0.41 (0.25) | | | 0.17 (0.17) |
| Speckled chub | | | | | | | | | 13.04 (12.84) |
| Silver chb | | | | | | | | | 0.69 (0.35) |
| Emerald shiner | | | | | | 72.73 (72.47) | | | 2453.29 (982.15) |
| River shiner | | | | | | | | | 1.20 (0.62) |
| Sand shiner | | | | | | | | | 0.35 (0.35) |
| Mimic shiner | | | | | | 0.21 (0.21) | | | 102.49 (41.04) |
| Bullhead minnow | | | | | | 0.20 (0.20) | | | 26.19 (12.95) |
| Bigmouth buffalo | | | | | | | | | 0.34 (0.34) |
| Flathead catfish | | | | | | | | | 0.51 (0.34) |
| Northern pike | | | | | | | | | 0.17 (0.17) |
| Burbot | | | | | | | | | 0.17 (0.17) |
| White bass | | | | | | | | | 4.69 (1.92) |
| Rock bass | | | | | | | | | 0.17 (0.17) |
| Green sunfish | | | | | | 0.20 (0.20) | | | |
| Bluegill | | | | | | 0.61 (0.40) | | | 4.26 (4.26) |
| Largemouth bass | | | | | | | | | 0.18 (0.18) |
| Black crappie | | | | | | | | | 0.70 (0.53) |
| Logperch | | | | | | 0.20 (0.20) | | | 0.18 (0.18) |
| River darter | | | | | | 0.20 (0.20) | | | 0.51 (0.35) |
| Sauger | | | | | | | | | 0.35 (0.22) |
| Freshwater drum | | | | | | 4.73 (3.28) | | | 2.70 (1.21) |

Strata: BWCS - Backwater, contiguous, shoreline.
BWCO - Backwater, contiguous, offshore.
IMPS - Impounded, shoreline.
IMPO - Impounded, offshore.
MCBU - Main channel border, unstructured.
MCBW - Main channel border, wing dam.
SCB - Side channel border.
TRI - Tributary mouth.
TWZ - Tailwater.

Table 1.4.5. Mean catch-per-uni-effort and (standard error) for fishes collected by small hoop netting in Pool 4 of the Mississippi River using fixed-site sampling during 1996. See text for definitions of catch-per-unit-effort and standard error.



| Common name | BWCO | BWCS | IMPO | IMPS | MCBU | MCBW | SCB | TRI | TWZ |
|---|---|---|---|---|---|---|---|---|---|
| Common carp | | | | | | 2.28 (0.84) | | | 3.18 (1.44) |
| Smallmouth buffalo | | | | | | 0.08 (0.08) | | | 0.16 (0.16) |
| Silver redhorse | | | | | | 0.08 (0.08) | | | |
| Channel catfish | | | | | | 0.84 (0.31) | | | |
| White bass | | | | | | 0.08 (0.08) | | | |
| Bluegill | | | | | | | | | 0.16 (0.16) |
| Green sunfish x bluegill | | | | | | | | | 0.08 (0.08) |
| Black crappie | | | | | | 0.08 (0.08) | | | |
| Freshwater drum | | | | | | 0.17 (0.17) | | | |

Strata: BWCS - Backwater, contiguous, shoreline. MCBW - Main channel border, wing dam.
BWCO - Backwater, contigous, offshore. SCB - Side channel border.
IMPS - Impounded, shoreline. TRI - Tributary mouth.
IMPO - Impounded, offshore. TWZ - Tailwater.
MCBU - Main channel border, unstructured.

Table 1.4.6. Mean catch-per-unit-effort and (standard error) for fishes collected by large hoop netting in Pool 4 of the Mississippi River using fixed-site sampling during 1996. See text for definitions of catch-per-unit-effort and standard error.



| Common name | BWCO | BWCS | IMPO | IMPS | MCBU | MCBW | SCB | TRI | TWZ |
|---|---|---|---|---|---|---|---|---|---|
| Shovelnose sturgeon | | | | | | | | | 0.09 (0.09) |
| Common carp | | | | | | 2.95 (1.96) | | | 8.27 (3.11) |
| Smallmouth buffalo | | | | | | 1.01 (0.75) | | | 0.25 (0.17) |
| Shorthead redhorse | | | | | | | | | 0.08 (0.08) |
| Channel catfish | | | | | | | | | 0.42 (0.15) |
| Flathead catfish | | | | | | 0.08 (0.08) | | | 1.04 (1.04) |
| White bass | | | | | | 0.51 (0.34) | | | 0.59 (0.40) |
| Bluegill | | | | | | | | | 0.17 (0.17) |
| Black crappie | | | | | | 0.75 (0.48) | | | 0.50 (0.50) |
| Walleye | | | | | | | | | 0.08 (0.08) |
| Freshwater drum | | | | | | | | | 0.75 (0.28) |

Strata: BWCS - Backwater, contiguous, shoreline.
BWCO - Backwater, contiguous, offshore.
IMPS - Impounded, shoreline.
IMPO - Impounded, offshore.
MCBU - Main channel border, unstructured.
MCBW - Main channel border, wing dam.
SCB - Side channel border.
TRI - Tributary mouth.
TWZ - Tailwater.

Table 1.4.7. Mean catch-per-unit-effort and (standard error) for fishes collected by bottom trawling in Pool 4 of the Mississippi River using fixed-site sampling during 1996. See text for definitions of catch-per-unit-effort and standard error.



| Common name | BWCO | BWCS | IMPO | IMPS | MCBU | MCBW | SCB | TRI | TWZ |
|---|---|---|---|---|---|---|---|---|---|
| Lake sturgeon | | | | | | | | | 0.08 (0.08) |
| Shovelnose sturgeon | | | | | | | | | 1.25 (0.55) |
| Gizzard shad | | | | | | | | | 4.50 (2.48) |
| Common carp | | | | | | | | | 0.17 (0.11) |
| Speckled chub | | | | | | | | | 0.08 (0.08) |
| Silver chub | | | | | | | | | 0.08 (0.08) |
| Smallmouth buffalo | | | | | | | | | 0.08 (0.08) |
| Shorthead redhorse | | | | | | | | | 0.25 (0.18) |
| Channel catfish | | | | | | | | | 1.58 (0.53) |
| Flathead catfish | | | | | | | | | 0.25 (0.13) |
| Sauger | | | | | | | | | 0.25 (0.18) |
| Walleye | | | | | | | | | 0.08 (0.08) |
| Freshwater drum | | | | | | | | | 3.92 (1.57) |

Strata: BWCS - Backwater, contiguous, shoreline. MCBW - Main channel border, wing dam.
BWCO - Backwater, contiguous, offshore. SCB - Side channel border.
IMPS - Impounded, shoreline. TRI - Tributary mouth.
IMPO - Impounded, offshore. TWZ - Tailwater.
MCBU - Main channel border, unstructured.

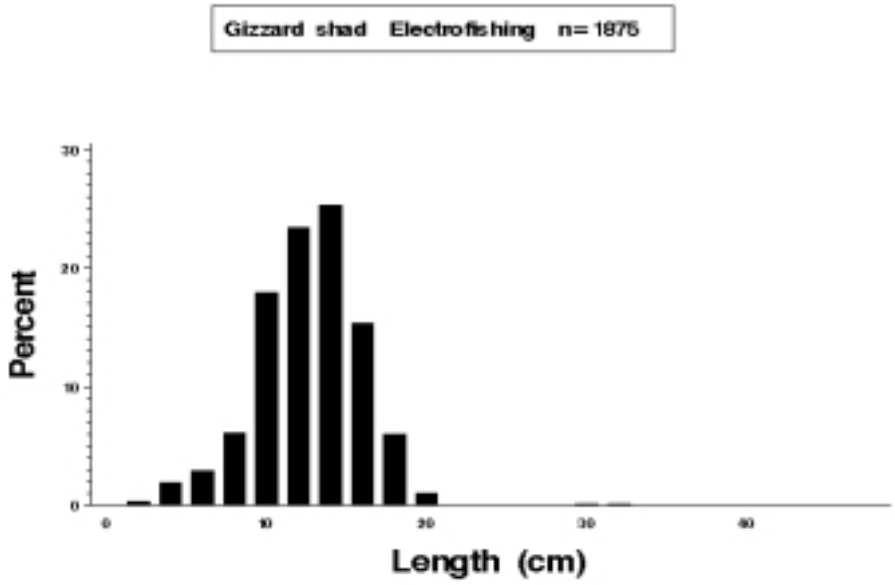


**Figure 1.2.** Length distributions (*length*) as a percentage of catch (*percent*) for gizzard shad (*Dorosoma cepedianum*) collected by electrofishing in Upper Mississippi River Pool 4 during 1996.

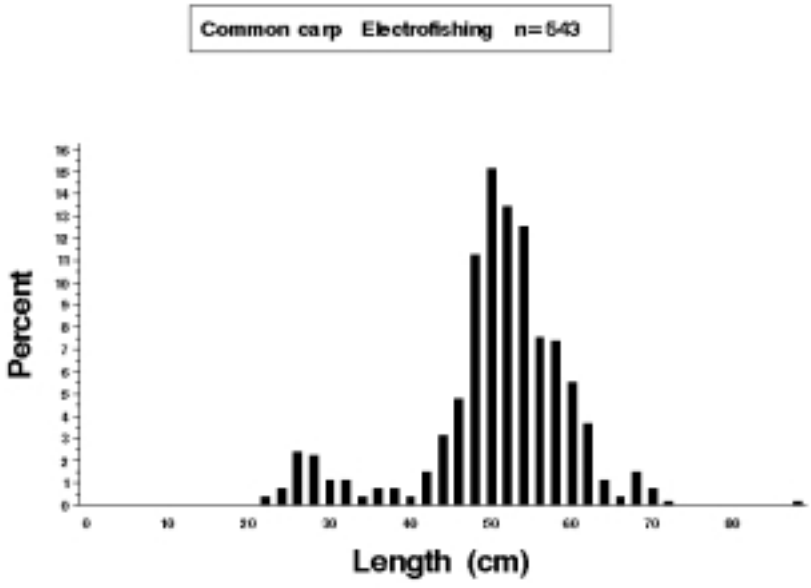


**Figure 1.3.** Length distributions (*length*) as a percentage of catch (*percent*) for common carp (*Cyprinus carpio*) collected by electrofishing in Upper Mississippi River Pool 4 during 1996.

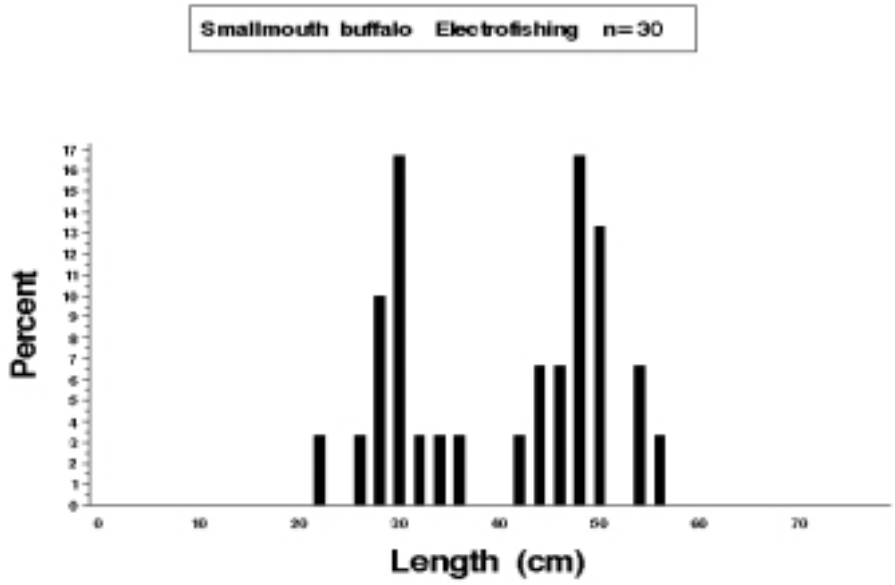


**Figure 1.4.** Length distributions (*length*) as a percentage of catch (*percent*) for smallmouth buffalo (*Ictiobus bubalus*) collected by electrofishing in Upper Mississippi River Pool 4 during 1996.

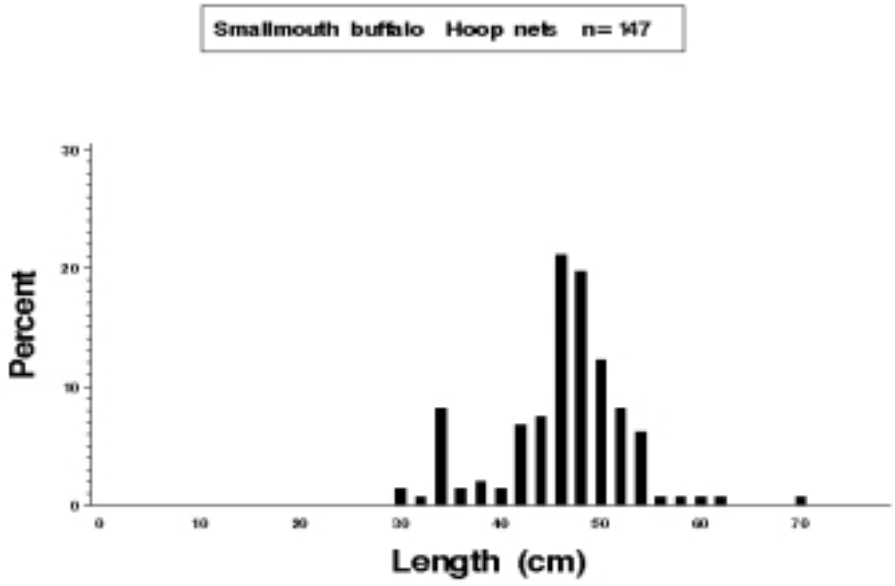


**Figure 1.5.** Length distributions (*length*) as a percentage of catch (*percent*) for smallmouth buffalo (*Ictiobus bubalus*) collected by large and small hoop netting in Upper Mississippi River Pool 4 during 1996.

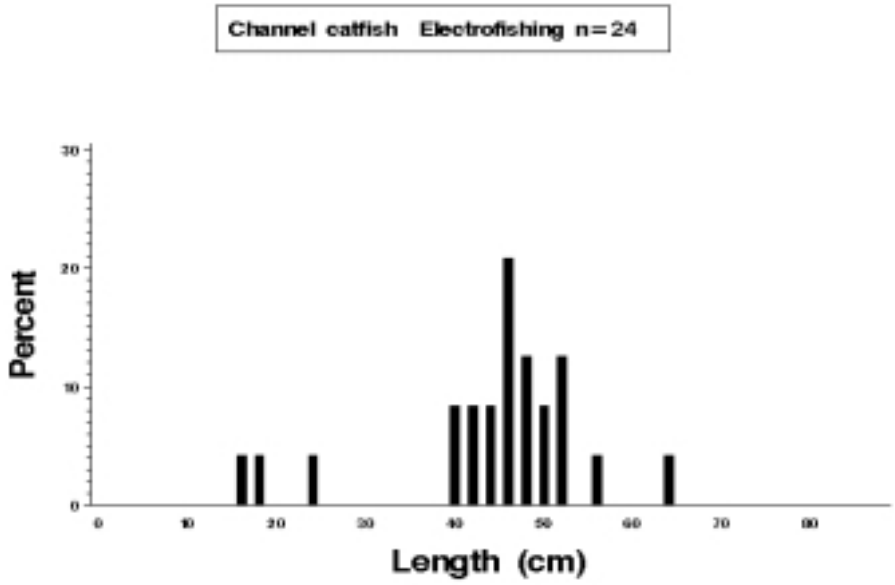


**Figure 1.6.** Length distributions (*length*) as a percentage of catch (*percent*) for channel catfish (*Ictalurus punctatus*) collected by electrofishing in Upper Mississippi River Pool 4 during 1996.

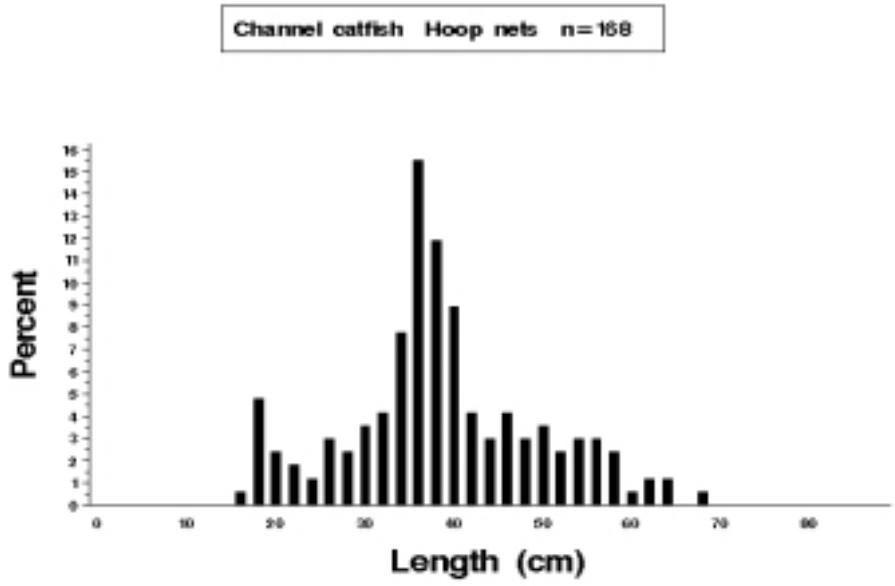


**Figure 1.7.** Length distributions (*length*) as a percentage of catch (*percent*) for channel catfish (*Ictalurus punctatus*) collected by large and small hoop netting in Upper Mississippi River Pool 4 during 1996.

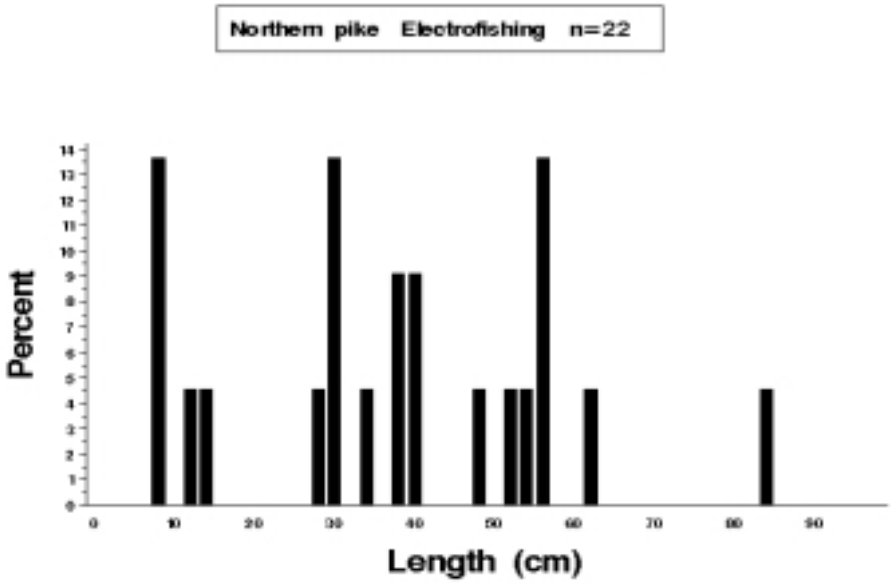


**Figure 1.8.** Length distributions (*length*) as a percentage of catch (*percent*) for northern pike (*Esox lucius*) collected by electrofishing in Upper Mississippi River Pool 4 during 1996.

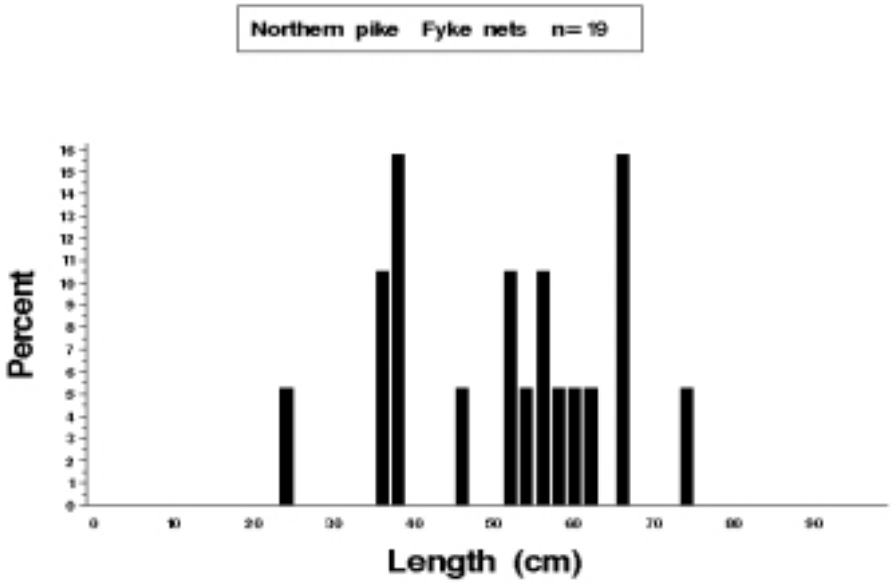


**Figure 1.9.** Length distributions (*length*) as a percentage of catch (*percent*) for northern pike (*Esox lucius*) collected by fyke netting in Upper Mississippi River Pool 4 during 1996.

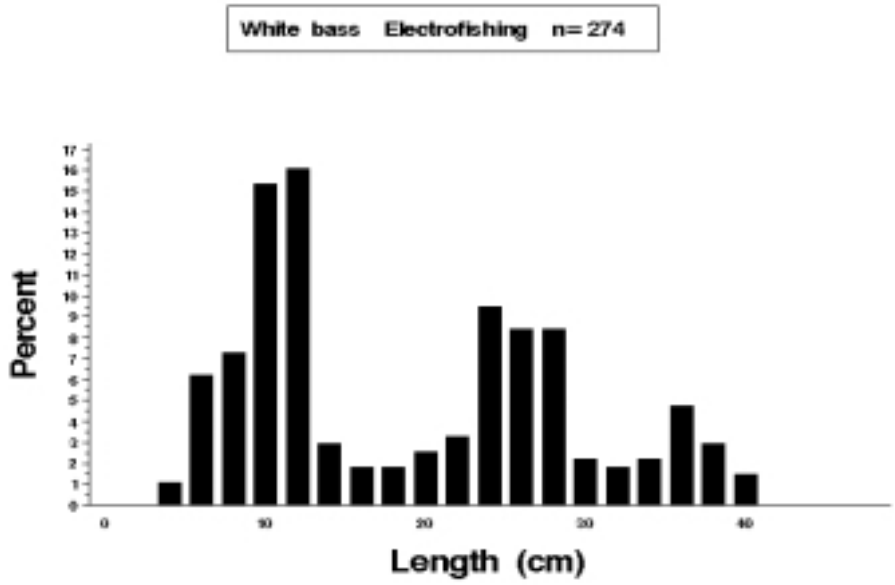


**Figure 1.10.** Length distributions (*length*) as a percentage of catch (*percent*) for white bass (*Morone chrysops*) collected by electrofishing in Upper Mississippi River Pool 4 during 1996.

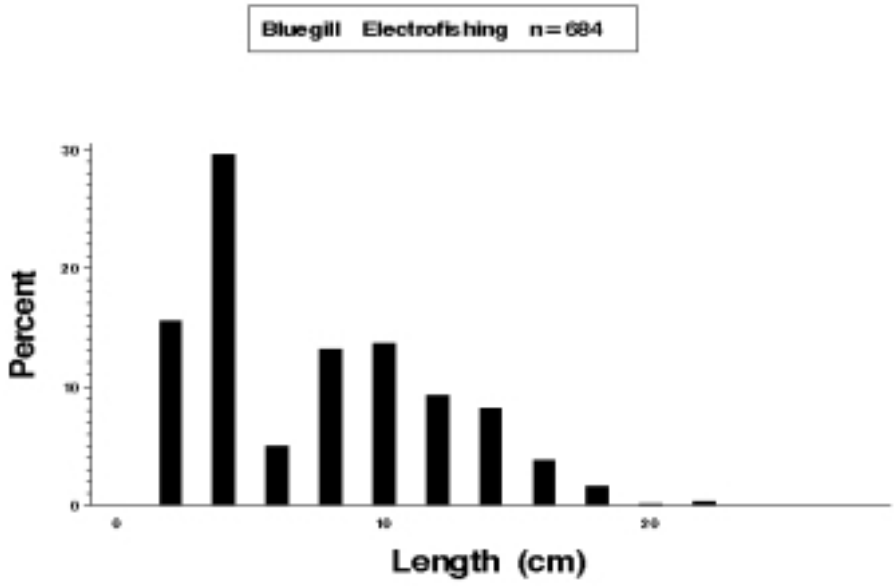


**Figure 1.11.** Length distributions (*length*) as a percentage of catch (*percent*) for bluegill (*Lepomis macrochirus*) collected by electrofishing in Upper Mississippi River Pool 4 during 1996.

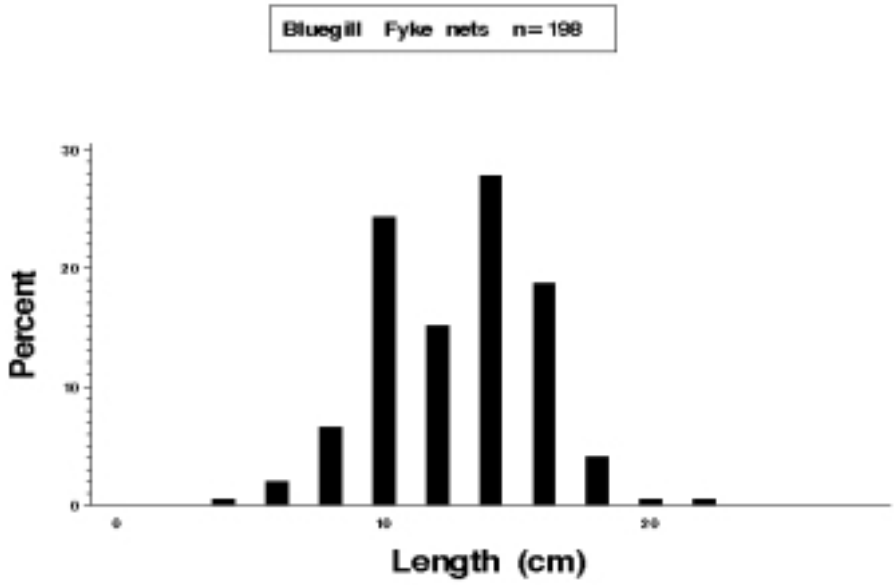


**Figure 1.12.** Length distributions (*length*) as a percentage of catch (*percent*) for bluegill (*Lepomis macrochirus*) collected by fyke netting in Upper Mississippi River Pool 4 during 1996.

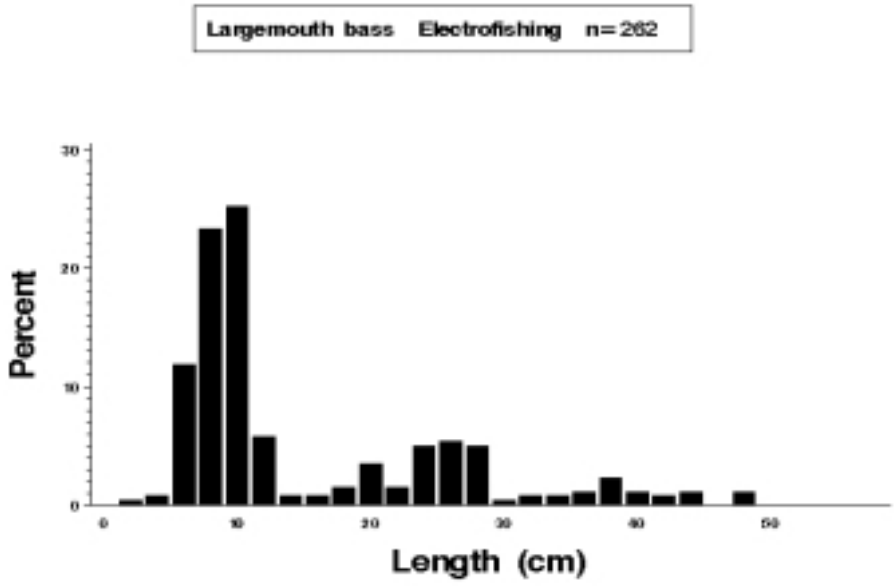


**Figure 1.13.** Length distributions (*length*) as a percentage of catch (*percent*) for largemouth bass (*Micropterus salmoides*) collected by electrofishing in Upper Mississippi River Pool 4 during 1996.

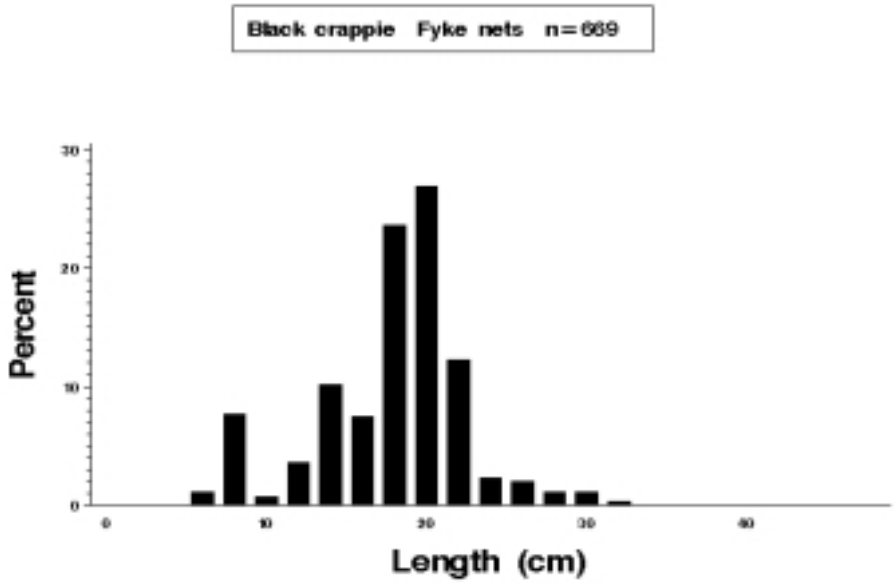


**Figure 1.14.** Length distributions (*length*) as a percentage of catch (*percent*) for black crappie (*Pomoxis nigromaculatus*) collected by electrofishing in Upper Mississippi River Pool 4 during 1996.

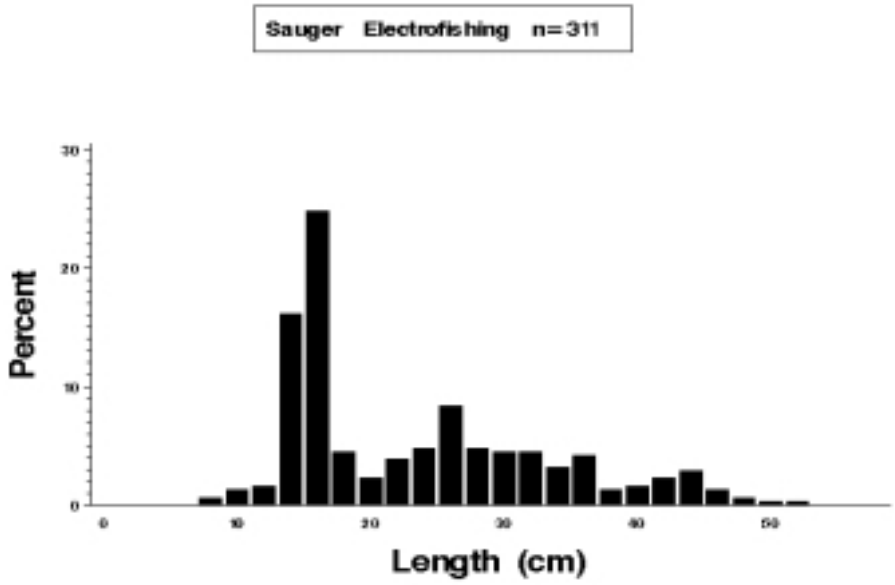


**Figure 1.15.** Length distributions (*length*) as a percentage of catch (*percent*) for sauger (*Stizostedion canadense*) collected by electrofishing in Upper Mississippi River Pool 4 during 1996.

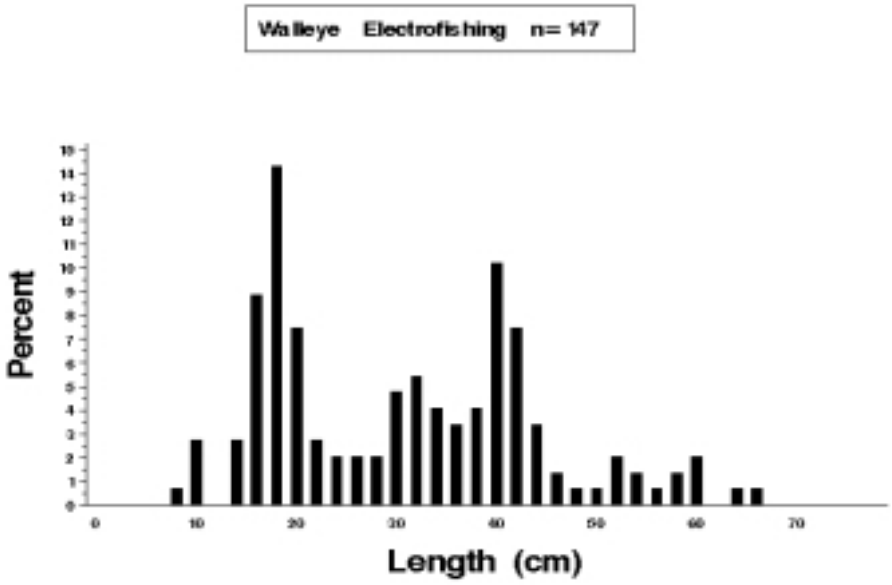


**Figure 1.16.** Length distributions (*length*) as a percentage of catch (*percent*) for walleye (*Stizostedion vitreum*) collected by electrofishing in Upper Mississippi River Pool 4 during 1996.

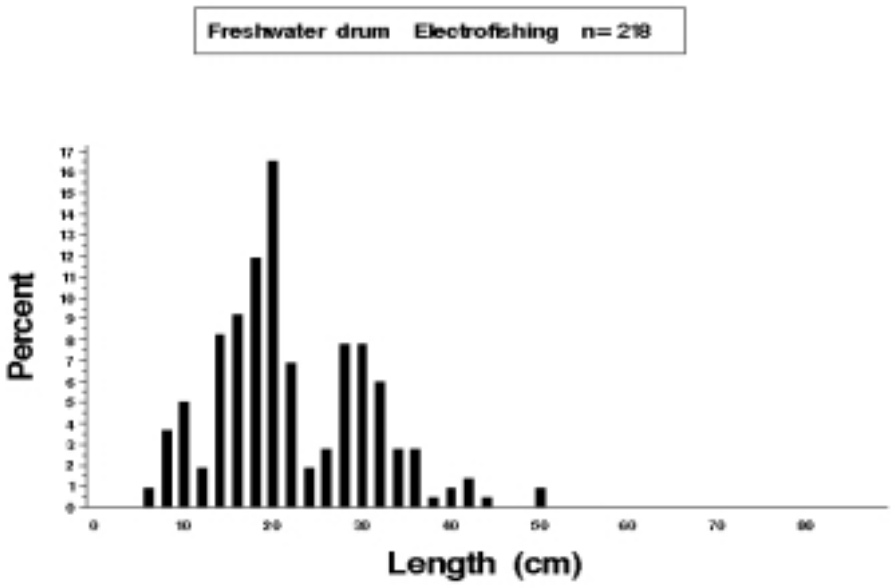


**Figure 1.17.** Length distributions (*length*) as a percentage of catch (*percent*) for freshwater drum (*Aplodinotus grunniens*) collected by electrofishing in Upper Mississippi River Pool 4 during 1996.

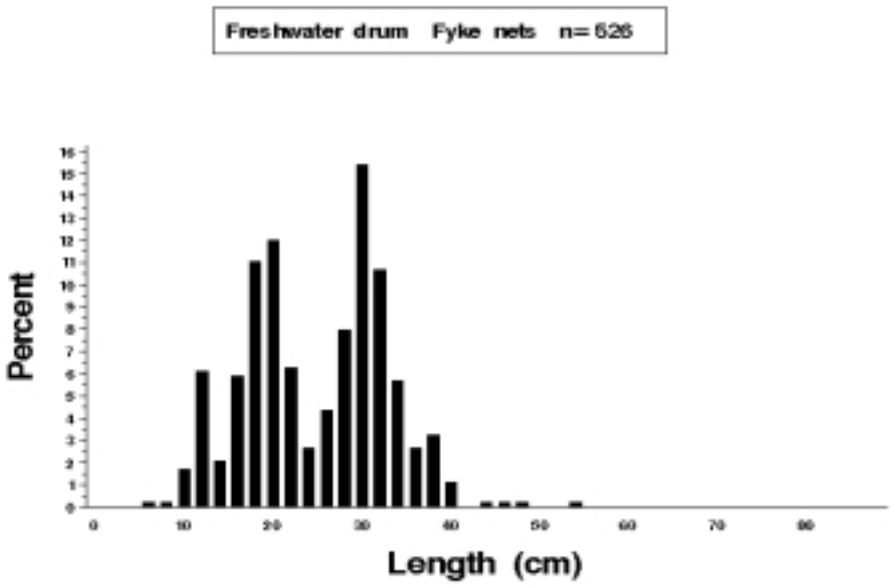


**Figure 1.18.** Length distributions (*length*) as a percentage of catch (*percent*) for freshwater drum (*Aplodinotus grunniens*) collected by fyke netting in Upper Mississippi River Pool 4 during 1996.

# Chapter 2. Pool 8, Upper Mississippi River

by

Andrew Bartels and Eric Kramer

Wisconsin Department of Natural Resources
Onalaska Field Station
575 Lester Avenue
Onalaska, Wisconsin 54650

## Hydrograph

The 1996 hydrograph for Pool 8 (Figure 2.1) followed the postimpoundment mean hydrograph closely. The only major departures from normal occurred during spring flooding in April and during a late fall surge in November and December. The river exceeded flood stage for about 2 weeks in Pool 8 during April. Although water levels were slightly above normal during sampling period 1 and slightly below normal for periods 2 and 3, water levels did not negatively affect sampling activities in 1996. The U.S. Army Corps of Engineers discharge data were obtained from the Environmental Management Technical Center (Wlosinski et al. 1995).

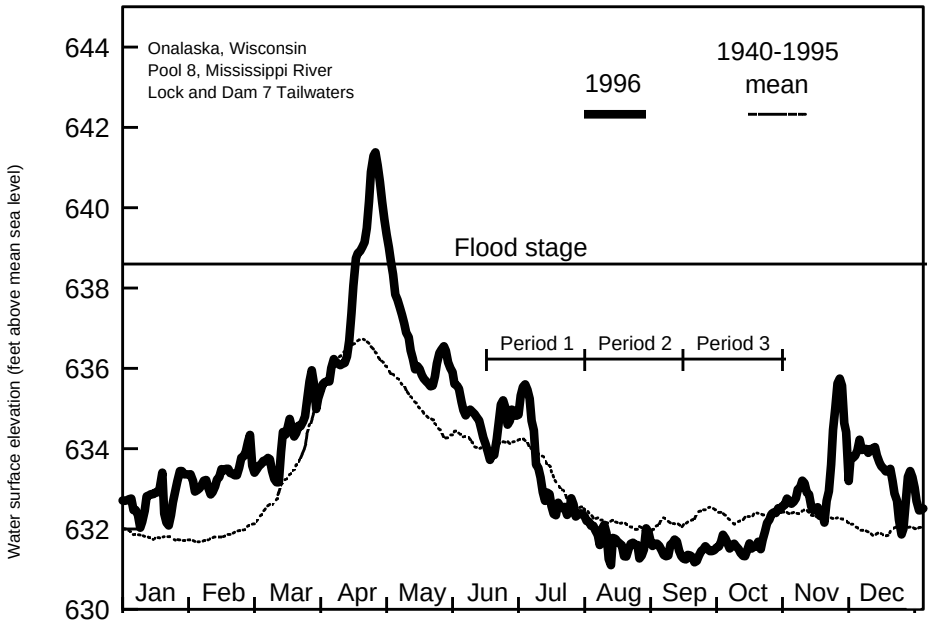


**Figure 2.1.** Daily water surface elevation from Lock and Dam 3 for Pool 8, Upper Mississippi River, during 1996 and mean elevation since 1940. The U.S. Army Corps of Engineers discharge data were obtained from the Environmental Management Technical Center (Wlosinski et al. 1995).

## Summary of Sampling Effort

We made 546 fish collections in Pool 8 during 1996. Gear allocations across strata remained consistent for all three sampling periods at 182 collections per period (Table 2.1). Of the total number of collections, 456 were from randomly selected sites in the BWCO, BWCS, IMPO, IMPS, MCBU, MCBW, and SCB strata. Fifty-four collections were made at fixed TWZ sites, and 36 were from two fixed backwater sites. Backwaters, followed by SCB and MCBU, received the most sampling effort.

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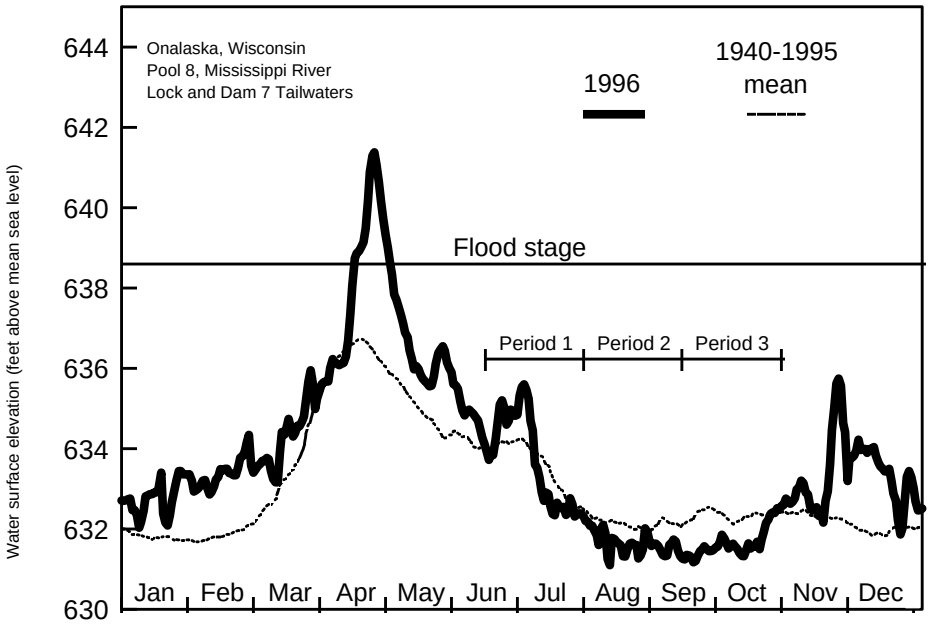


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## Summary of Sampling Effort

We made 546 fish collections in Pool 8 during 1996. Gear allocations across strata remained consistent for all three sampling periods at 182 collections per period (Table 2.1). Of the total number of collections, 456 were from randomly selected sites in the BWCO, BWCS, IMPO, IMPS, MCBU, MCBW, and SCB strata. Fifty-four collections were made at fixed TWZ sites, and 36 were from two fixed backwater sites. Backwaters, followed by SCB and MCBU, received the most sampling effort.

## Total Catch by Gear

We collected 63,575 fish representing 75 species and 3 hybrid crosses in 1996 (Table 2.2). This total does not include 3,122 fish <30 mm long identified only to family or genus. The five most abundant species in our samples were spotfin shiner (10,140), bluegill (9,645), emerald shiner (6,571), bullhead minnow (6,291), and white bass (3,463). Total species (excluding hybrids) collected by gear type were day electrofishing (59), night electrofishing (61), fyke netting (41), tandem fyke netting (39), mini fyke netting (58), tandem mini fyke netting (33), seining (46), small hoop netting (20), large hoop netting (24), and trawling (8). Fish distribution records for the Upper Mississippi River (Pitlo et al. 1995) document 99 fish species from Pool 8. Our species total before the 1996 season was 88; one new species, fantail darter, was added in 1996, bringing the cumulative total to 89. We collected one crystal darter in 1996, which is on Wisconsin's endangered species list. We also collected 1 speckled chub, 6 blue suckers, and 87 river redhorse in 1996, all listed as threatened in Wisconsin.

## Random Sampling, Mean *C/f* by Gear and Stratum

### *Day Electrofishing*

For day electrofishing (Table 2.3.1), bluegill had the highest reachwide mean catch-per-unit effort (*C/f*; 30.02), followed by spotfin shiner (25.77) and emerald shiner (21.02). Following are the fish species with the highest *C/f* within each stratum: BWCS (bluegill, 60.88), IMPS (emerald shiner, 25.75), MCBU (gizzard shad, 78.33), MCBW (shorthead redhorse, 10.11), and SCB (spotfin shiner, 41.25).

### *Night Electrofishing*

For night electrofishing (Table 2.3.2), emerald shiner (41.83), bullhead minnow (32.51), and spotfin shiner (31.99) had the highest reachwide mean *C/f*s. Following are the fish species with the highest *C/f* within each stratum: BWCS (orangespotted sunfish, 46.17), MCBU (emerald shiner, 39.58), MCBW (shorthead redhorse, 19.71), and SCB (emerald shiner, 69.67).

### *Fyke Net*

Reachwide mean *C/f*s for fyke netting (Table 2.3.3) were highest for bluegill (29.47), black crappie (22.17), and white bass (4.42). The fish species with the highest *C/f* within each stratum were BWCS (bluegill, 33.45) and IMPS (white bass, 6.97).

### *Tandem Fyke Net*

Reachwide mean *C/f*s for tandem fyke netting (Table 2.3.4) were highest for white bass (11.05), followed by black crappie (5.40) and freshwater drum (2.82). These species had the highest *C/f* within each stratum: BWCO (black crappie, 37.92) and IMPO (white bass, 12.26).

### *Mini Fyke Net*

Spotfin shiner (57.17) had the highest reachwide mean *C/f* for mini fyke nets (Table 2.3.5), followed by bluegill (38.40) and pugnose minnow (16.57). Bluegill (79.37) dominated BWCS *C/f* for mini fyke nets. River shiner (12.23) was most abundant for mini fyke nets in IMPS stratum. Bluegill had the highest *C/f* in both MCBU (19.96) and MCBW (4.66) strata, and spotfin shiner (125.43) had the highest *C/f* for SCB stratum.

### *Tandem Mini Fyke Net*

Bullhead minnow (1.90) had the highest reachwide mean *C/f* for tandem mini fyke netting (Table 2.3.6), followed by pugnose minnow (0.75) and emerald shiner (0.65). Bullhead minnow had the highest mean *C/f* in BWCS (15.37), and freshwater drum *C/f* (0.54) was the highest in IMPO stratum.

### *Small Hoop Net*

For small hoop nets (Table 2.3.7), channel catfish had the highest reachwide mean *C/f* (2.20) and the highest *C/f* for each stratum: BWCO (0.59), IMPO (1.34), MCBU (4.48), MCBW (0.76), and SCB (4.42). The next highest reachwide mean *C/f*s were held by shorthead redhorse (0.28) and common carp (0.19).

### *Large Hoop Net*

For large hoop nets (Table 2.3.8), common carp and channel catfish had the highest reachwide mean *C/f* (1.46), followed by smallmouth buffalo (1.11). Common carp had the highest stratumwide *C/f* for large hoop nets in the following strata: BWCO (1.09) and IMPO (1.97). Smallmouth buffalo was most abundant in MCBU areas (2.41). Channel catfish had the highest mean *C/f* in the MCBW (2.06) and SCB (3.91) strata.

### *Seine*

Spotfin shiner (110.43) had the highest reachwide mean *C/f* for seining (Table 2.3.9), followed by bullhead minnow (61.41) and emerald shiner (36.10). Following are the fish species with the highest *C/f* within each stratum: BWCS (spotfin shiner 172.83), MCBU (emerald shiner, 86.08), and SCB (spotfin shiner, 107.17).

## Fixed Sampling, Mean *C/f* by Gear and Stratum

### *Day Electrofishing*

For day electrofishing in 1996 at the two BWCS fixed sites in Pool 8, bluegill (42.93) had the highest mean *C/f* (Table 2.4.1), followed by gizzard shad (38.49) and largemouth bass (23.31).

### *Night Electrofishing*

Night electrofishing, conducted at four TWZ fixed sites in 1996 (Table 2.4.2), yielded white bass (*C/f* = 92.75) in greatest abundance. The next highest mean *C/f*s for TWZ night electrofishing were for sauger (38.98) and emerald shiner (17.42).

### *Fyke Net*

The BWCS fyke nets at fixed sites (Table 2.4.3) produced the following catch rates: white bass (32.93), bluegill (32.57), and black crappie (24.73).

### *Mini Fyke Net*

For mini fyke netting at TWZ fixed sites (Table 2.4.4), spotfin shiner (35.26), channel shiner (27.24), and river shiner (16.99) had the highest mean *C/f*s.

### *Small Hoop Net*

Channel catfish had the highest mean *C/f* (11.48) for small hoop nets in TWZ (Table 2.4.5). Channel catfish was followed by freshwater drum (2.62) and common carp (0.50) in the small hoop nets.

### *Large Hoop Net*

In large hoop nets fished in TWZ (Table 2.4.6), smallmouth buffalo (7.49), channel catfish (1.74), and common carp (1.36) had the highest mean *C/f*s.

### *Seine*

For fixed-site BWCS seining (Table 2.4.7), bullhead minnow (mean *C/f* = 48.50) was most abundant, followed by bluegill (26.50) and spotfin shiner (21.25). For TWZ fixed sites, channel shiner (64.42) had the highest mean *C/f*. Emerald shiner (20.58) and river shiner (10.08) had the next highest mean *C/f*s.

### *Trawl*

Freshwater drum (6.67) had the highest mean *C/f* in TWZ trawls (Table 2.4.8), followed by gizzard shad (0.25), and channel catfish and silver chub (both 0.17).

## Length Distributions of Selected Species

Length distributions are presented for selected species in Figures 2.2 to 2.19. The length distributions presented may be limited by the size selectiveness of the particular gear. Care should be used when trying to

interpret length distributions from samples <100 (Anderson and Neumann 1996); they are presented in this report because of local interest in the species by river managers.

### *Gizzard Shad*

Virtually all gizzard shad collected by electrofishing in Pool 8 during 1996 were less than 200 mm long (Figure 2.2). Sample size was 1,092 fish. This sample does not include 940 gizzard shad that were counted but only grouped into a size range from 100 to 179 mm long. The largest gizzard shad we collected in 1996 was about 320 mm long.

### *Common Carp*

The electrofishing length distribution from 880 common carp (Figure 2.3) showed a large group of fish from 400 to 700 mm long, with few fish outside this range. There were few common carp less than 400 mm long. Only a small percentage of the catch were juveniles.

### *Smallmouth Buffalo*

Smallmouth buffalo collected by electrofishing showed a similar picture to those collected by hoop nets. The 37 smallmouth buffalo collected by electrofishing (Figure 2.4) ranged mostly from 260 to 360 mm long, with a few large adults as long as 620 mm. We collected 281 smallmouth buffalo in tandem hoop net sets (Figure 2.5) in 1996. Most smallmouth buffalo collected in hoop nets were about 320 mm long or longer, with a substantial number around 500 mm long.

### *Channel Catfish*

The sample size of 108 channel catfish caught by electrofishing (Figure 2.6) gives a picture of the size structure for channel catfish in Pool 8 that is some what different from the 655 channel catfish caught in tandem hoop nets (Figure 2.7). Catfish length distribution from electrofishing centered around a mode at 400 mm long. The hoop net length distribution was bimodal, with groups at 250 and 350 mm long.

### *Northern Pike*

The 1996 northern pike length distribution, represented as 68 fish collected by electrofishing (Figure 2.8), indicated the largest percentage of the sample was greater than 500 mm long, although >15% of the catch were juveniles. The length distribution for 77 northern pike caught by fyke netting (Figure 2.9) shows a narrower range of lengths, and somewhat larger average size. The greatest percentage of the catch was from 600 to 800 mm long.

### *White Bass*

The most abundant size of 1,154 white bass we collected with electrofishing in 1996 (Figure 2.10) was 100–140 mm long. A smaller group was also present around 220 mm long. The complete size range for white

bass extended from 20 to 360 mm long. The figure does not include 1,258 white bass that were counted, but only grouped into a size range of 100 to 169 mm long.

### *Bluegill*

We caught 3,606 bluegills during electrofishing in 1996 (Figure 2.11). The electrofishing distribution was skewed toward small fish, represented primarily by bluegills less than 140 mm long. The 2,218 bluegills collected in fyke nets (Figure 2.12) averaged much larger than those from electrofishing. The largest group of fish was between 120 and 140 mm long. The percentage of quality-sized fish (>150 mm long; Anderson 1978) was about 16%.

### *Largemouth Bass*

The electrofishing length distribution from 1,100 largemouth bass (Figure 2.13) was widely distributed from 20 to 480 mm long. A large group was present from 60 to 100 mm, and a broader group occurred at 200–300 mm long. We collected few largemouth bass longer than 300 mm long. An additional 77 largemouth bass from 20 to 59 mm long were counted, but not precisely measured, and were not included in the figure.

### *White Crappie*

The sample size for white crappie, collected in fyke nets, was 32 fish. The length distribution for white crappie (Figure 2.15) showed an even distribution of medium and large fish, but no juveniles. This fish is not abundant in Pool 8, so the lack of juveniles in the sample is not surprising, and should not be interpreted as an indication that the population is endangered.

### *Black Crappie*

We caught 2,238 black crappie in fyke nets in 1996 (Figure 2.14). Most of the fish collected were from 100 to 200 mm long. Beyond 200 mm long, the percentage of catch quickly diminished.

### *Sauger*

The sample size for sauger caught by electrofishing in 1996 was 971 (Figure 2.16). The length distribution was dominated by a large group of fish about 160 mm long. A small group also occurred at about 240 mm long.

### *Walleye*

We caught 434 walleye in 1996 by electrofishing. Similar to the sauger distribution, the length distribution for walleye was dominated by two size groups, at about 170 and 400 mm long (Figure 2.17). The complete size range of walleye extended from 40 to 680 mm long.

### *Freshwater Drum*

The length distribution for freshwater drum collected by electrofishing represents 399 fish (Figure 2.18). The majority of freshwater drum in the electrofishing catch during 1996 were from 120 to 220 mm long. A different picture was indicated by 103 freshwater drum collected in fyke nets (Figure 2.19), where freshwater drum were more evenly distributed across the range. For both gears, the complete size range extended from about 100 to 500 mm long.

Table 2.1. Allocation of fish sampling effort among strata by the Long Term Resource Monitoring Program in Pool 8 of the Mississippi River during 1996. Table entries are numbers of successfully completed standardized monitoring collections. 

Sampling period = 1: June 15 - July 31

| Sampling gear | BWCS | BWCO | SCB | MCBU | MCBW | IMPS | IMPO | TRI | TWZ | TOTAL |
|---|---|---|---|---|---|---|---|---|---|---|
| Day electrofishing | 12 | | 8 | 4 | 4 | 4 | | | | 32 |
| Fyke net | 16 | | | | | 4 | | | | 20 |
| Large hoop net | | 4 | 4 | 4 | 4 | | 4 | | 2 | 22 |
| Small hoop net | | 4 | 4 | 4 | 4 | | 4 | | 2 | 22 |
| Mini fyke net | 8 | | 6 | 4 | 4 | 4 | | | 2 | 28 |
| Night electrofishing | 2 | | 4 | 4 | 4 | | | | 4 | 18 |
| Seine | 8 | | 4 | 8 | | | | | 4 | 24 |
| Trawling | | | | | | | | | 4 | 4 |
| Tandem fyke net | | 4 | | | | | 2 | | | 6 |
| Tandem mini fyke net | | 4 | | | | | 2 | | | 6 |
| SUBTOTAL | 46 | 16 | 30 | 28 | 20 | 12 | 12 | 0 | 18 | 182 |

Sampling period = 2: August 1 - September 14

| Sampling gear | BWCS | BWCO | SCB | MCBU | MCBW | IMPS | IMPO | TRI | TWZ | TOTAL |
|---|---|---|---|---|---|---|---|---|---|---|
| Day electrofishing | 12 | | 8 | 4 | 4 | 4 | | | | 32 |
| Fyke net | 16 | | | | | 4 | | | | 20 |
| Large hoop net | | 4 | 4 | 4 | 4 | | 4 | | 2 | 22 |
| Small hoop net | | 4 | 4 | 4 | 4 | | 4 | | 2 | 22 |
| Mini fyke net | 8 | | 6 | 4 | 4 | 4 | | | 2 | 28 |
| Night electrofishing | 2 | | 4 | 4 | 4 | | | | 4 | 18 |
| Seine | 8 | | 4 | 8 | | | | | 4 | 24 |
| Trawling | | | | | | | | | 4 | 4 |
| Tandem fyke net | | 4 | | | | | 2 | | | 6 |
| Tandem mini fyke net | | 4 | | | | | 2 | | | 6 |
| SUBTOTAL | 46 | 16 | 30 | 28 | 20 | 12 | 12 | 0 | 18 | 182 |

Sampling period = 3: September 15 - October 31

| Sampling gear | BWCS | BWCO | SCB | MCBU | MCBW | IMPS | IMPO | TRI | TWZ | TOTAL |
|---|---|---|---|---|---|---|---|---|---|---|
| Day electrofishing | 12 | | 8 | 4 | 4 | 4 | | | | 32 |
| Fyke net | 16 | | | | | 4 | | | | 20 |
| Large hoop net | | 4 | 4 | 4 | 4 | | 4 | | 2 | 22 |
| Small hoop net | | 4 | 4 | 4 | 4 | | 4 | | 2 | 22 |
| Mini fyke net | 8 | | 6 | 4 | 4 | 4 | | | 2 | 28 |
| Night electrofishing | 2 | | 4 | 4 | 4 | | | | 4 | 18 |
| Seine | 8 | | 4 | 8 | | | | | 4 | 24 |
| Trawling | | | | | | | | | 4 | 4 |
| Tandem fyke net | | 4 | | | | | 2 | | | 6 |
| Tandem mini fyke net | | 4 | | | | | 2 | | | 6 |
| SUBTOTAL | 46 | 16 | 30 | 28 | 20 | 12 | 12 | 0 | 18 | 182 |
| | 138 | 48 | 90 | 84 | 60 | 36 | 36 | 0 | 54 | 546 |

Strata: BWCS - Backwater, contiguous, shoreline. MCBW - Main channel border, wing dam.
BWCO - Backwater, contiguous, offshore. SCB - Side channel border.
IMPS - Impounded, shoreline. TRI - Tributary mouth.
IMPO - Impounded, offshore. TWZ - Tailwater.
MCBU - Main channel border, unstructured.

Table 2.2. Total catches, by gear type, of fishes collected by the Long Term Resurce Program during 1996 in Pool 8 of the Mississippi River. See Table 2.1 for the list of sampling gears actually deployed in this study reach.



| Species | Common name | Scientific name | D | N | F | X | M | Y | S | HS | HL | G | TA | T | TOTAL |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | Chestnut lamprey | Ichthyomyzon castaneus | - | 4 | - | - | - | - | - | - | - | - | - | - | 4 |
| 2 | Silver lamprey | Ichthyomyzon unicuspis | 5 | 10 | 1 | 1 | - | - | - | - | - | - | - | - | 17 |
| 3 | American brook lamprey | Lampetra appendix | - | 2 | - | - | - | - | - | - | - | - | - | - | 2 |
| 4 | Unidentified lamprey | Petromyzontidae | - | 3 | - | - | - | - | - | - | - | - | - | - | 3 |
| 5 | Shovelnose sturgeon | Scaphirhynchus platorynchus | 1 | - | - | - | - | - | - | - | - | - | - | - | 1 |
| 6 | Longnose gar | Lepisosteus osseus | 10 | 6 | 26 | 31 | 20 | - | 2 | - | 1 | - | - | - | 96 |
| 7 | Shortnose gar | Lepisosteus platostomus | 8 | 6 | 235 | 97 | 36 | 5 | 1 | - | 12 | - | - | - | 400 |
| 8 | Bowfin | Amia calva | 33 | 15 | 59 | 51 | 1 | - | - | - | 1 | - | - | - | 160 |
| 9 | Mooneye | Hiodon tergisus | 3 | 50 | 1 | 2 | - | - | - | - | - | - | - | - | 56 |
| 10 | American eel | Anguilla rostrata | - | - | - | 1 | - | - | - | - | - | - | - | - | 1 |
| 11 | Gizzard shad | Dorosoma cepedianum | 1737 | 295 | 29 | 203 | 14 | - | 24 | 1 | - | - | - | 3 | 2306 |
| 12 | Spotfin shiner | Cyprinella spiloptera | 1731 | 980 | - | - | 3227 | 10 | 4189 | 3 | - | - | - | - | 10140 |
| 13 | Common carp | Cyprinus carpio | 576 | 304 | 60 | 35 | 45 | 8 | 2 | 21 | 111 | - | - | - | 1162 |
| 14 | Speckled chub | Macrhybopsis aestivalis | - | - | - | - | - | - | 1 | - | - | - | - | - | 1 |
| 15 | Silver chub | Macrhybopsis storeriana | - | 2 | - | - | - | - | - | 6 | - | - | - | 2 | 10 |
| 16 | Golden shiner | Notemigonus crysoleucas | 10 | 2 | 11 | 26 | 529 | 2 | 4 | - | - | - | - | - | 584 |
| 17 | Emerald shiner | Notropis atherinoides | 1593 | 1758 | - | - | 278 | 78 | 2864 | - | - | - | - | - | 6571 |
| 18 | River shiner | Notropis blennius | 386 | 421 | - | - | 511 | - | 1195 | - | - | - | - | - | 2513 |
| 19 | Spottail shiner | Notropis hudsonius | 36 | 29 | - | - | 37 | 23 | 43 | - | - | - | - | - | 168 |
| 20 | Sand shiner | Notropis stramineus | 2 | - | - | - | 4 | - | 41 | - | - | - | - | - | 47 |
| 21 | Weed shiner | Notropis texanus | - | - | - | - | 7 | - | - | - | - | - | - | - | 7 |
| 22 | Channel shiner | Notropis wickliffi | 328 | 681 | - | - | 203 | 3 | 1231 | - | - | - | - | - | 2446 |
| 23 | Pugnose minnow | Opsopoeodus emiliae | 64 | 23 | - | - | 1174 | 158 | 319 | - | - | - | - | - | 1738 |
| 24 | Bluntnose minnow | Pimephales notatus | 1 | - | - | - | 3 | - | - | - | - | - | - | - | 4 |
| 25 | Fathead minnow | Pimephales promelas | - | 1 | - | - | 11 | - | 7 | - | - | - | - | - | 19 |
| 26 | Bullhead minnow | Pimephales vigilax | 1269 | 855 | - | - | 924 | 404 | 2839 | - | - | - | - | - | 6291 |
| 27 | Unidentified minnow | Cyprinid sp. | 1 | - | - | - | - | - | 22 | - | - | - | - | - | 23 |
| 28 | River carpsucker | Carpiodes carpio | 1 | 22 | 2 | 1 | - | - | 1 | - | - | - | - | - | 27 |
| 29 | Quillback | Carpiodes cyprinus | 39 | 140 | 2 | - | 25 | - | 200 | - | - | - | - | - | 406 |
| 30 | Highfin carpsucker | Carpiodes velifer | - | 6 | - | - | - | - | - | - | 1 | - | - | - | 7 |
| 31 | Unidentified carpsucker | Carpiodes sp. | - | - | - | - | 26 | - | 23 | - | - | - | - | - | 49 |
| 32 | White sucker | Catostomus commersoni | 1 | 1 | 1 | - | 1 | - | 19 | - | - | - | - | - | 23 |
| 33 | Blue sucker | Cycleptus elongatus | 2 | 2 | - | - | - | - | 2 | - | - | - | - | - | 6 |
| 34 | Northern hog sucker | Hypentelium nigricans | 1 | - | - | - | - | - | - | - | - | - | - | - | 1 |
| 35 | Smallmouth buffalo | Ictiobus bubalus | 18 | 19 | 5 | 5 | - | 1 | - | 15 | 266 | - | - | - | 329 |
| 36 | Bigmouth buffalo | Ictiobus cyprinellus | 25 | 12 | - | - | - | - | 1 | - | - | - | - | - | 38 |
| 37 | Spotted sucker | Minytrema melanops | 177 | 26 | 35 | 26 | 18 | 1 | 4 | - | - | - | - | - | 287 |
| 38 | Silver redhorse | Moxostoma anisurum | 268 | 253 | 114 | 76 | 12 | 1 | 14 | 8 | 22 | - | - | - | 768 |
| 39 | River redhorse | Moxostoma carinatum | 45 | 42 | - | - | - | - | - | - | - | - | - | - | 87 |

Gears:
D - Day electrofishing
N - Night electrofishing
F - Fyke netting
X - Tandem fyke netting
M - Mini fyke netting
Y - Tandem mini fyke netting
S - Seining
HS - Small hoop netting
HL - Large hoop netting
G - Gill netting
TA - Trammel netting, anchored sets
T - Trawling (4.8-m bottom trawl)

Table 2.2. Total catches, by gear type, of fishes collected by the Long Term Resource Program during 1996 in Pool 8 of the Mississippi River. See Table 2.1 for the list of sampling gears actually deployed in this study reach.



| Species | Common name | Scientific name | D | N | F | X | M | Y | S | HS | HL | G | TA | T | TOTAL |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 40 | Golden redhorse | Moxostoma erythrurum | 168 | 208 | 8 | 3 | - | - | - | 1 | 4 | - | - | - | 392 |
| 41 | Shorthead redhorse | Moxostoma macrolepidotum | 636 | 1054 | 67 | 42 | 22 | 3 | 8 | 42 | 28 | - | - | 1 | 1903 |
| 42 | Unidentified redhorse | Moxostoma sp. | 9 | 2 | - | - | 220 | - | 95 | - | - | - | - | - | 326 |
| 43 | Unidentified sucker | Catostomid sp. | 2 | - | - | - | - | - | 174 | - | - | - | - | - | 176 |
| 44 | Black bullhead | Ameiurus melas | - | - | - | 2 | - | - | - | - | - | - | - | - | 2 |
| 45 | Yellow bullhead | Ameiurus natalis | - | - | 3 | 30 | - | - | - | - | - | - | - | - | 33 |
| 46 | Brown bullhead | Ameiurus nebulosus | - | - | - | 4 | 1 | - | - | - | - | - | - | - | 5 |
| 47 | Channel catfish | Ictalurus punctatus | 23 | 85 | 14 | 7 | 2 | 3 | - | 414 | 241 | - | - | 2 | 791 |
| 48 | Stonecat | Noturus flavus | 1 | 1 | - | - | - | - | - | - | - | - | - | - | 2 |
| 49 | Tadpole madtom | Noturus gyrinus | 1 | 1 | - | - | 14 | 1 | 2 | - | - | - | - | - | 19 |
| 50 | Flathead catfish | Pylodictis olivaris | 16 | 36 | 15 | 4 | 3 | - | - | 2 | 11 | - | - | - | 87 |
| 51 | Northern pike | Esox lucius | 30 | 38 | 31 | 46 | 6 | - | 2 | - | 2 | - | - | - | 155 |
| 52 | Central mudminnow | Umbra limi | - | - | - | - | 1 | 4 | - | - | - | - | - | - | 5 |
| 53 | Brown trout | Salmo trutta | - | 1 | - | - | - | - | - | - | - | - | - | - | 1 |
| 54 | Pirate perch | Aphredoderus sayanus | 2 | - | - | - | - | - | - | - | - | - | - | - | 2 |
| 55 | Burbot | Lota lota | 2 | 6 | - | - | 3 | 2 | - | - | - | - | - | - | 13 |
| 56 | Brook silverside | Labidesthes sicculus | 30 | 72 | - | - | 9 | - | 292 | - | - | - | - | - | 403 |
| 57 | Brook stickleback | Culaea inconstans | 1 | - | - | - | 3 | - | - | - | - | - | - | - | 4 |
| 58 | White bass | Morone chrysops | 144 | 2268 | 647 | 223 | 77 | 36 | 42 | 3 | 23 | - | - | - | 3463 |
| 59 | Rock bass | Ambloplites rupestris | 187 | 150 | 25 | 6 | 21 | - | 22 | 8 | - | - | - | - | 419 |
| 60 | Green sunfish | Lepomis cyanellus | 75 | 35 | 2 | - | 79 | - | 3 | - | - | - | - | - | 194 |
| 61 | Pumpkinseed | Lepomis gibbosus | 37 | - | 9 | 2 | 16 | - | 3 | - | - | - | - | - | 67 |
| 62 | Warmouth | Lepomis gulosus | - | - | - | 2 | 12 | - | - | - | - | - | - | - | 14 |
| 63 | Orangespotted sunfish | Lepomis humilis | 192 | 337 | 3 | - | 102 | 43 | 70 | - | - | - | - | - | 747 |
| 64 | Bluegill | Lepomis macrochirus | 2695 | 911 | 1696 | 522 | 2691 | 102 | 979 | 17 | 32 | - | - | - | 9645 |
| 65 | Green sunfish x pumpkinseed | L. cyanellus x L. gibbosus | - | - | 1 | 1 | - | - | - | - | - | - | - | - | 2 |
| 66 | Green sunfish x bluegill | L. cyanellus x L. macrochirus | 3 | 1 | - | - | - | - | - | - | - | - | - | - | 4 |
| 67 | Unidentified Lepomis | Lepomis sp. | 33 | 8 | - | - | 966 | 17 | 1520 | - | - | - | - | - | 2544 |
| 68 | Smallmouth bass | Micropterus dolomieu | 373 | 653 | 3 | 1 | 15 | 2 | 11 | 1 | 2 | - | - | - | 1061 |
| 69 | Largemouth bass | Micropterus salmoides | 995 | 182 | 16 | 2 | 78 | 6 | 72 | - | - | - | - | - | 1351 |
| 70 | White crappie | Pomoxis annularis | 11 | 2 | 13 | 19 | 5 | 3 | - | 1 | 1 | - | - | - | 55 |
| 71 | Black crappie | Pomoxis nigromaculatus | 167 | 122 | 1258 | 980 | 131 | 36 | 16 | 6 | 51 | - | - | - | 2767 |
| 72 | Crystal darter | Ammocrypta asprella | - | - | - | - | - | - | 1 | - | - | - | - | - | 1 |
| 73 | Western sand darter | Ammocrypta clara | 1 | 30 | - | - | - | - | 28 | - | - | - | - | 1 | 60 |
| 74 | Mud darter | Etheostoma asprigene | 7 | 2 | - | - | 6 | 1 | 18 | - | - | - | - | - | 34 |
| 75 | Fantail darter | Etheostoma flabellare | - | 1 | - | - | - | - | - | - | - | - | - | - | 1 |
| 76 | Johnny darter | Etheostoma nigrum | 102 | 27 | - | - | 58 | 8 | 92 | - | - | - | - | - | 287 |
| 77 | Yellow perch | Perca flavescens | 68 | 22 | 80 | 88 | 5 | 6 | 62 | - | - | - | - | - | 331 |
| 78 | Logperch | Percina caprodes | 184 | 46 | - | - | 23 | 3 | 34 | - | - | - | - | - | 290 |

Gears:
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| Species | Common name | Scientific name | D | N | F | X | M | Y | S | HS | HL | G | TA | T | TOTAL |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 79 | Slenderhead darter | Percina phoxocephala | 14 | 11 | - | - | 1 | - | 2 | - | - | - | - | - | 28 |
| 80 | River darter | Percina shumardi | 2 | 5 | - | - | 3 | - | - | - | - | - | - | - | 10 |
| 81 | Sauger | Stizostedion canadense | 100 | 871 | 34 | 12 | 8 | 2 | 2 | 1 | - | - | - | 1 | 1031 |
| 82 | Walleye | Stizostedion vitreum | 53 | 381 | 14 | 6 | 6 | 1 | 7 | - | 1 | - | - | 1 | 470 |
| 83 | Sauger x walleye hybrid | S. canadense x S. vitreum | 1 | - | - | - | - | - | - | - | - | - | - | - | 1 |
| 84 | Unidentified Stizostedion | Stizostedion sp. | - | - | - | - | - | 1 | - | - | - | - | - | - | 1 |
| 85 | Freshwater drum | Aplodinotus grunniens | 75 | 324 | 48 | 55 | 7 | 10 | 4 | 53 | 46 | - | - | 80 | 702 |
| | | | 14811 | 13863 | 4568 | 2612 | 11700 | 984 | 16609 | 603 | 856 | 0 | 0 | 91 | 66697 |

Gears: D - Day electrofishing
N - Night electrofishing
F - Fyke netting
X - Tandem fyke netting
M - Mini fyke netting
Y - Tandem mini fyke netting
S - Seining
HS - Small hoop netting
HL - Large hoop netting
G - Gill netting
TA - Trammel netting, anchored sets
T - Trawling (4.8-m bottom trawl)

Table 2.3.1. Mean catch-per-unit-effort and (standard error) for fishes collected by day electrofishing in Pool 8 of the Mississippi River using stratified random sampling during 1996. The statistics under ALL pertain to unbiased means over all strata sampled using this gear (as indicated by nonmissing entries below and by Table 2.1). See text for definitions of catch-per-unit-effort and standard error.



| Common name | ALL | BWCO | BWCS | IMPO | IMPS | MCBU | MCBW | SCB | TRI | TWZ |
|---|---|---|---|---|---|---|---|---|---|---|
| Silver lamprey | 0.04 | | | | 0.08 | | 0.03 | 0.08 | | |
| | (0.03) | | | | (0.08) | | (0.03) | (0.08) | | |
| Shovelnose sturgeon | | | | | | | 0.06 | | | |
| | | | | | | | (0.06) | | | |
| Longnose gar | 0.13 | | | | 0.17 | | | 0.33 | | |
| | (0.08) | | | | (0.17) | | | (0.21) | | |
| Shortnose gar | 0.11 | | 0.21 | | 0.08 | | | 0.08 | | |
| | (0.04) | | (0.10) | | (0.08) | | | (0.06) | | |
| Bowfin | 0.38 | | 0.92 | | | | 0.10 | 0.17 | | |
| | (0.12) | | (0.35) | | | | (0.10) | (0.08) | | |
| Mooneye | 0.04 | | | | | 0.17 | 0.06 | | | |
| | (0.03) | | | | | (0.11) | (0.06) | | | |
| Gizzard shad | 20.57 | | 2.04 | | 1.75 | 78.33 | 0.26 | 4.88 | | |
| | (17.92) | | (0.84) | | (0.83) | (78.33) | (0.12) | (1.92) | | |
| Spotfin shiner | 25.77 | | 17.67 | | 2.33 | 17.58 | 0.32 | 41.25 | | |
| | (5.06) | | (6.22) | | (0.88) | (7.97) | (0.20) | (11.19) | | |
| Common carp | 7.18 | | 7.17 | | 6.33 | 1.50 | 0.98 | 10.79 | | |
| | (1.42) | | (1.28) | | (3.46) | (0.44) | (0.44) | (3.54) | | |
| Golden shiner | 0.11 | | 0.33 | | | | | | | |
| | (0.08) | | (0.22) | | | | | | | |
| Emerald shiner | 21.02 | | 6.71 | | 25.75 | 48.25 | 3.62 | 16.92 | | |
| | (8.05) | | (2.88) | | (24.21) | (33.04) | (1.84) | (6.15) | | |
| River shiner | 5.73 | | 4.21 | | 3.92 | 11.42 | 0.67 | 3.92 | | |
| | (1.49) | | (2.93) | | (2.32) | (4.21) | (0.67) | (1.46) | | |
| Spottail shiner | 0.12 | | 0.25 | | | 0.08 | | 0.04 | | |
| | (0.06) | | (0.17) | | | (0.08) | | (0.04) | | |
| Sand shiner | 0.04 | | | | | 0.17 | | | | |
| | (0.04) | | | | | (0.17) | | | | |
| Channel shiner | 2.77 | | 5.04 | | 2.92 | 1.42 | 0.58 | 1.54 | | |
| | (1.46) | | (4.21) | | (2.83) | (0.36) | (0.47) | (0.66) | | |
| Pugnose minnow | 0.73 | | 1.50 | | | | | 0.58 | | |
| | (0.24) | | (0.64) | | | | | (0.24) | | |
| Bullhead minnow | 15.61 | | 21.25 | | 3.67 | 3.33 | 0.09 | 19.63 | | |
| | (2.82) | | (5.89) | | (1.47) | (1.11) | (0.09) | (5.24) | | |
| River carpsucker | 0.01 | | 0.04 | | | | | | | |
| | (0.01) | | (0.04) | | | | | | | |
| Quillback | 0.33 | | 0.08 | | 0.92 | 0.08 | 0.21 | 0.63 | | |
| | (0.14) | | (0.08) | | (0.45) | (0.08) | (0.11) | (0.36) | | |
| White sucker | 0.02 | | | | | | | 0.04 | | |
| | (0.02) | | | | | | | (0.04) | | |
| Blue sucker | | | | | | | 0.09 | | | |
| | | | | | | | (0.06) | | | |
| Northern hog sucker | | | | | | | 0.05 | | | |
| | | | | | | | (0.05) | | | |
| Smallmouth buffalo | 0.20 | | 0.08 | | | 0.25 | 0.20 | 0.29 | | |
| | (0.07) | | (0.08) | | | (0.18) | (0.11) | (0.14) | | |
| Bigmouth buffalo | 0.13 | | 0.13 | | | 0.08 | 0.89 | 0.17 | | |
| | (0.05) | | (0.09) | | | (0.08) | (0.89) | (0.10) | | |
| Spotted sucker | 1.19 | | 3.25 | | 0.17 | | | 0.21 | | |
| | (0.48) | | (1.41) | | (0.11) | | | (0.10) | | |
| Silver redhorse | 2.17 | | 2.08 | | 1.67 | 2.00 | 3.56 | 2.42 | | |
| | (0.29) | | (0.53) | | (0.43) | (0.66) | (0.86) | (0.45) | | |
| River redhorse | 0.10 | | 0.04 | | | 0.08 | 1.95 | 0.17 | | |
| | (0.04) | | (0.04) | | | (0.08) | (0.69) | (0.10) | | |
| Golden redhorse | 1.44 | | 0.88 | | 0.75 | 1.50 | 1.39 | 2.00 | | |
| | (0.22) | | (0.34) | | (0.39) | (0.51) | (0.56) | (0.36) | | |
| Shorthead redhorse | 4.22 | | 4.00 | | 6.92 | 2.75 | 10.11 | 4.92 | | |
| | (0.42) | | (0.75) | | (2.02) | (0.74) | (2.16) | (0.72) | | |

Strata: BWCS - Backwater, contiguous, shoreline.
BWCO - Backwater, contiguous, offshore.
IMPS - Impounded, shoreline.
IMPO - Impounded, offshore.
MCBU - Main channel border, unstructured.
MCBW - Main channel border, wing dam.
SCB - Side channel border.
TRI - Tributary mouth.
TWZ - Tailwater.

Table 2.3.1. Mean catch-per-unit-effort and (standard error) for fishes collected by day electrofishing in Pool 8 of the Mississippi River using stratified random sampling during 1996. The statistics under ALL pertain to unbiased means over all strata sampled using this gear (as indicated by nonmissing entries below and by Table 2.1). See text for definitions of catch-per-unit-effort and standard error.



| Common name | ALL | BWCO | BWCS | IMPO | IMPS | MCBU | MCBW | SCB | TRI | TWZ |
|---|---|---|---|---|---|---|---|---|---|---|
| Channel catfish | 0.25 | | 0.29 | | 0.33 | 0.17 | 0.10 | 0.25 | | |
| | (0.09) | | (0.14) | | (0.19) | (0.17) | (0.07) | (0.18) | | |
| Stonecat | | | | | | | 0.07 | | | |
| | | | | | | | (0.07) | | | |
| Tadpole madtom | 0.02 | | | | | | | 0.04 | | |
| | (0.02) | | | | | | | (0.04) | | |
| Flathead catfish | 0.17 | | 0.17 | | 0.08 | | 0.07 | 0.29 | | |
| | (0.06) | | (0.10) | | (0.08) | | (0.07) | (0.13) | | |
| Northern pike | 0.19 | | 0.38 | | | 0.08 | 0.05 | 0.13 | | |
| | (0.05) | | (0.10) | | | (0.08) | (0.05) | (0.07) | | |
| Pirate perch | 0.03 | | 0.08 | | | | | | | |
| | (0.03) | | (0.08) | | | | | | | |
| Burbot | 0.02 | | | | | | 0.06 | 0.04 | | |
| | (0.02) | | | | | | (0.06) | (0.04) | | |
| Brook silverside | 0.33 | | 0.29 | | | 0.25 | | 0.46 | | |
| | (0.11) | | (0.14) | | | (0.18) | | (0.23) | | |
| Brook stickleback | | | | | 0.08 | | | | | |
| | | | | | (0.08) | | | | | |
| White bass | 1.13 | | 1.13 | | 1.50 | 1.75 | 3.41 | 0.71 | | |
| | (0.32) | | (0.49) | | (0.48) | (1.14) | (2.69) | (0.19) | | |
| Rock bass | 2.18 | | 2.33 | | 0.92 | 0.08 | 0.11 | 3.50 | | |
| | (0.49) | | (0.66) | | (0.45) | (0.08) | (0.08) | (1.16) | | |
| Green sunfish | 0.90 | | 1.63 | | 0.17 | 0.17 | | 0.79 | | |
| | (0.34) | | (0.97) | | (0.17) | (0.11) | | (0.21) | | |
| Pumpkinseed | 0.37 | | 0.75 | | | | | 0.29 | | |
| | (0.17) | | (0.47) | | | | | (0.15) | | |
| Orangespotted sunfish | 2.71 | | 5.92 | | | 0.08 | | 1.79 | | |
| | (0.81) | | (2.13) | | | (0.08) | | (0.97) | | |
| luegill | 30.02 | | 60.88 | | 2.75 | 7.58 | 0.05 | 19.63 | | |
| | (6.21) | | (17.48) | | (1.14) | (4.06) | (0.05) | (4.25) | | |
| Green sunfish x bluegill | 0.03 | | 0.04 | | | | | 0.04 | | |
| | (0.02) | | (0.04) | | | | | (0.04) | | |
| Smallmouth bass | 3.59 | | 0.92 | | 6.58 | 5.00 | 3.65 | 4.75 | | |
| | (0.84) | | (0.35) | | (2.88) | (1.58) | (1.04) | (1.96) | | |
| Largemouth bass | 9.18 | | 20.04 | | 0.58 | 0.33 | 0.15 | 5.96 | | |
| | (2.67) | | (7.63) | | (0.43) | (0.19) | (0.10) | (1.76) | | |
| White crappie | 0.16 | | 0.46 | | | | | | | |
| | (0.10) | | (0.28) | | | | | | | |
| Black crappie | 2.26 | | 5.96 | | 0.25 | 0.08 | | 0.54 | | |
| | (0.89) | | (2.62) | | (0.25) | (0.08) | | (0.26) | | |
| Western sand darter | 0.02 | | | | | 0.08 | | | | |
| | (0.02) | | | | | (0.08) | | | | |
| Mud darter | 0.11 | | 0.13 | | | | | 0.17 | | |
| | (0.04) | | (0.07) | | | | | (0.08) | | |
| Johnny darter | 1.05 | | 0.96 | | 0.75 | 0.92 | | 1.25 | | |
| | (0.23) | | (0.46) | | (0.66) | (0.50) | | (0.33) | | |
| Yellow perch | 0.54 | | 1.25 | | 0.33 | | | 0.25 | | |
| | (0.21) | | (0.59) | | (0.19) | | | (0.14) | | |
| Logperch | 1.29 | | 0.88 | | 6.50 | 0.92 | | 1.21 | | |
| | (0.38) | | (0.46) | | (4.13) | (0.83) | | (0.53) | | |
| Slenderhead darter | 0.13 | | 0.04 | | 0.33 | 0.17 | 0.10 | 0.17 | | |
| | (0.06) | | (0.04) | | (0.33) | (0.17) | (0.07) | (0.10) | | |
| Rive darter | 0.01 | | | | 0.17 | | | | | |
| | (0.01) | | | | (0.17) | | | | | |
| Sauger | 0.93 | | 1.13 | | 2.58 | 0.50 | 0.08 | 0.79 | | |
| | (0.16) | | (0.24) | | (1.01) | (0.29) | (0.05) | (0.28) | | |
| Walleye | 0.28 | | 0.38 | | 0.75 | 0.17 | 1.02 | 0.21 | | |
| | (0.07) | | (0.16) | | (0.28) | (0.17) | (0.79) | (0.08) | | |

Strata: BWCS - Backwater, contiguous, shoreline.
BWCO - Backwater, contiguous, offshore.
IMPS - Impounded, shoreline.
IMPO - Impounded, offshore.
MCBU - Main channel border, unstructured.
MCBW - Main channel border, wing dam.
SCB - Side channel border.
TRI - Tributary mouth.
TWZ - Tailwater.

Table 2.3.1. Mean catch-per-unit-effort and (standard error) for fishes collected by day electrofishing in Pool 8 of the Mississippi River using stratified random sampling during 1996. The statistics under ALL pertain to unbiased means over all strata sampled using this gear (as indicated by nonmissing entries below and by Table 2.1). See text for definitions of catch-per-unit-effort and standard error. 

| Common name | ALL | BWCO | BWCS | IMPO | IMPS | MCBU | MCBW | SCB | TRI | TWZ |
|---|---|---|---|---|---|---|---|---|---|---|
| Sauger x walleye | 0.02 | | | | | | | 0.04 | | |
| | (0.02) | | | | | | | (0.04) | | |
| Freshwater drum | 0.53 | | 0.79 | | 1.08 | 0.08 | 0.82 | 0.50 | | |
| | (0.12) | | (0.27) | | (0.38) | (0.08) | (0.51) | (0.19) | | |

Strata: BWCS - Backwater, contiguous, shoreline. MCBW - Main channel border, wing dam.
BWCO - Backwater, contiguous, offshore. SCB - Side channel border.
IMPS - Impounded, shoreline. TRI - Tributary mouth.
MPO - Impounded, offshore. TWZ - Tailwater.
MCBU - Main channel border, unstructured.

Table 2.3.2. Mean catch-per-unit-effort and (standard error) for fishes collected by night electrofishing in Pool 8 of the Mississippi River using stratified random sampling during 1996. The statistics under ALL pertain to unbiased means over all strata sampled using this gear (as indicated by nonmissing entries below and by Table 2.1). See text for definitions of catch-per-unit-effort and standard error.



| Common name | ALL | BWCO | BWCS | IMPO | IMPS | MCBU | MCBW | SCB | TRI | TWZ |
|---|---|---|---|---|---|---|---|---|---|---|
| Chestnut lamprey | 0.10 | | 0.17 | | | 0.17 | | | | |
| | (0.07) | | (0.17) | | | (0.11) | | | | |
| Silver lamprey | 0.07 | | | | | 0.17 | 0.08 | 0.08 | | |
| | (0.04) | | | | | (0.11) | (0.05) | (0.08) | | |
| American brook lamprey | 0.03 | | | | | | | 0.08 | | |
| | (0.03) | | | | | | | (0.08) | | |
| Longnose gar | 0.17 | | | | | 0.17 | | 0.33 | | |
| | (0.06) | | | | | (0.11) | | (0.14) | | |
| Shortnose gar | 0.15 | | 0.33 | | | | | 0.08 | | |
| | (0.08) | | (0.21) | | | | | (0.08) | | |
| Bowfin | 0.10 | | | | | | | 0.25 | | |
| | (0.07) | | | | | | | (0.18) | | |
| Mooneye | 0.57 | | 0.17 | | | 1.83 | 0.46 | 0.17 | | |
| | (0.30) | | (0.17) | | | (1.23) | (0.23) | (0.11) | | |
| Gizzard shad | 7.03 | | 9.50 | | | 3.17 | 2.41 | 7.17 | | |
| | (3.78) | | (7.20) | | | (1.49) | (1.07) | (6.90) | | |
| Spotfin shiner | 31.99 | | 19.00 | | | 14.17 | 0.34 | 54.67 | | |
| | (11.03) | | (12.94) | | | (5.63) | (0.21) | (24.93) | | |
| Common carp | 5.18 | | 1.17 | | | 5.67 | 2.37 | 8.50 | | |
| | (1.36) | | (0.65) | | | (4.23) | (0.91) | (2.19) | | |
| Silver chub | 0.03 | | | | | | | 0.08 | | |
| | (0.03) | | | | | | | (0.08) | | |
| Golden shiner | 0.03 | | | | | | 0.10 | 0.08 | | |
| | (0.03) | | | | | | (0.10) | (0.08) | | |
| Emerald shiner | 41.83 | | 12.67 | | | 39.58 | 2.32 | 69.67 | | |
| | (15.27) | | (4.59) | | | (14.30) | (0.64) | (37.18) | | |
| River shiner | 6.59 | | 2.67 | | | 18.83 | 0.38 | 2.75 | | |
| | (2.08) | | (1.71) | | | (8.06) | (0.38) | (1.12) | | |
| Spottail shiner | 0.45 | | 0.17 | | | 0.25 | | 0.83 | | |
| | (0.17) | | (0.17) | | | (0.13) | | (0.41) | | |
| Channel shiner | 13.19 | | 1.17 | | | 34.08 | 3.38 | 11.42 | | |
| | (3.87) | | (0.83) | | | (12.69) | (2.17) | (5.93) | | |
| Pugnose minnow | 0.99 | | 1.50 | | | 0.08 | | 1.08 | | |
| | (0.49) | | (1.15) | | | (0.08) | | (0.68) | | |
| Fathead minnow | 0.06 | | 0.17 | | | | | | | |
| | (0.06) | | (0.17) | | | | | | | |
| Bullhead minnow | 32.51 | | 37.67 | | | 6.75 | | 43.67 | | |
| | (11.27) | | (22.28) | | | (2.95) | | (19.93) | | |
| River carpsucker | 0.26 | | 0.33 | | | 0.17 | 0.05 | 0.25 | | |
| | (0.11) | | (0.21) | | | (0.11) | (0.05) | (0.18) | | |
| Quillback | 0.85 | | 1.33 | | | 1.00 | 0.59 | 0.33 | | |
| | (0.33) | | (0.88) | | | (0.35) | (0.24) | (0.14) | | |
| Blue sucker | | | | | | | 0.10 | | | |
| | | | | | | | (0.10) | | | |
| Smallmouth buffalo | 0.12 | | | | | 0.08 | 0.19 | 0.25 | | |
| | (0.07) | | | | | (0.08) | (0.13) | (0.18) | | |
| Bigmouth buffalo | 0.42 | | 1.17 | | | | 0.23 | | | |
| | (0.42) | | (1.17) | | | | (0.15) | | | |
| Spotted sucker | 0.37 | | 0.67 | | | | | 0.33 | | |
| | (0.15) | | (0.21) | | | | | (0.33) | | |
| Silver redhorse | 5.22 | | 6.67 | | | 2.50 | 1.73 | 5.58 | | |
| | (0.93) | | (1.94) | | | (0.42) | (0.56) | (1.51) | | |
| River redhorse | 0.12 | | | | | 0.50 | 1.51 | | | |
| | (0.09) | | | | | (0.36) | (0.57) | | | |
| Golden redhorse | 2.64 | | 1.50 | | | 2.67 | 1.74 | 3.67 | | |
| | (0.60) | | (1.02) | | | (0.99) | (0.55) | (1.02) | | |
| Shorthead redhorse | 12.80 | | 5.33 | | | 21.42 | 19.71 | 14.25 | | |
| | (2.53) | | (2.81) | | | (7.86) | (4.66) | (3.38) | | |

Strata: BWCS - Backwater, contiguous, shoreline. MCBW - Main channel border, wing dam.
BWCO - Backwater, contiguous, offshore. SCB - Side channel border.
IMPS - Impounded, shoreline. TRI - Tributary mouth.
IMPO - Impounded, offshore TWZ - Tailwater.
MCBU - Main channel border, unstructured.

Table 2.3.2. Mean catch-per-unit-effort and (standard error) for fishes collected by night electrofishing in Pool 8 of the Mississippi River using stratified random sampling during 1996. The statistics under ALL pertain to unbiased means over all strata sampled using this gear (as indicated by nonmissing entries below and by Table 2.1). See text for definitions of catch-per-unit-effort and standard error.



| Common name | ALL | BWCO | BWCS | IMPO | IMPS | MCBU | MCBW | SCB | TRI | TWZ |
|---|---|---|---|---|---|---|---|---|---|---|
| Channel catfish | 0.32 | | 0.33 | | | 0.25 | 2.51 | 0.33 | | |
| | (0.11) | | (0.21) | | | (0.13) | (1.41) | (0.19) | | |
| Stonecat | | | | | | | 0.05 | | | |
| | | | | | | | (0.05) | | | |
| Tadpole madtom | 0.03 | | | | | | | 0.08 | | |
| | (0.03) | | | | | | | (0.08) | | |
| Flathead catfish | 0.47 | | 0.17 | | | 1.17 | 0.20 | 0.33 | | |
| | (0.14) | | (0.17) | | | (0.47) | (0.12) | (0.14) | | |
| Northern pike | 0.28 | | 0.67 | | | 0.17 | 0.21 | | | |
| | (0.24) | | (0.67) | | | (0.17) | (0.21) | | | |
| Burbot | 0.07 | | | | | 0.17 | | 0.08 | | |
| | (0.05) | | | | | (0.17) | | (0.08) | | |
| Brook silverside | 2.00 | | 0.33 | | | 0.50 | | 4.42 | | |
| | (0.99) | | (0.33) | | | (0.34) | | (2.47) | | |
| White bass | 8.15 | | 9.67 | | | 6.33 | 1.94 | 7.92 | | |
| | (3.20) | | (7.89) | | | (2.46) | (1.07) | (3.49) | | |
| Rock bass | 3.45 | | 2.17 | | | 2.00 | 0.10 | 5.50 | | |
| | (0.80) | | (1.60) | | | (0.64) | (0.07) | (1.37) | | |
| Green sunfish | 1.00 | | | | | 0.58 | | 2.17 | | |
| | (0.60) | | | | | (0.43) | | (1.48) | | |
| Orangespotted sunfish | 18.50 | | 46.17 | | | 0.17 | | 4.83 | | |
| | (16.29) | | (45.37) | | | (0.11) | | (3.37) | | |
| Bluegill | 25.89 | | 24.33 | | | 8.00 | 2.83 | 38.25 | | |
| | (10.58) | | (21.76) | | | (4.08) | (2.27) | (17.84) | | |
| Smallmouth bass | 6.67 | | 0.50 | | | 12.25 | 6.88 | 8.83 | | |
| | (1.68) | | (0.50) | | | (4.66) | (2.28) | (3.13) | | |
| Largemouth bass | 1.81 | | 2.17 | | | 0.42 | 1.13 | 2.33 | | |
| | (0.81) | | (1.97) | | | (0.26) | (1.04) | (1.01) | | |
| Black crappie | 1.96 | | 1.50 | | | 2.75 | 0.41 | 1.92 | | |
| | (0.52) | | (0.96) | | | (1.23) | (0.28) | (0.66) | | |
| Western sand darter | 0.06 | | | | | 0.25 | | | | |
| | (0.06) | | | | | (0.25) | | | | |
| Mud darter | 0.12 | | 0.33 | | | | | | | |
| | (0.12) | | (0.33) | | | | | | | |
| Fantail darter | 0.03 | | | | | | | 0.08 | | |
| | (0.03) | | | | | | | (0.08) | | |
| Johnny darter | 0.94 | | 0.67 | | | 0.17 | | 1.67 | | |
| | (0.41) | | (0.49) | | | (0.11) | | (0.92) | | |
| Yellow perch | 0.17 | | | | | | | 0.42 | | |
| | (0.08) | | | | | | | (0.19) | | |
| Logperch | 0.50 | | 0.17 | | | 0.42 | 1.56 | 0.83 | | |
| | (0.17) | | (0.17) | | | (0.23) | (1.23) | (0.37) | | |
| Slenderhead darter | 0.11 | | | | | 0.33 | 0.15 | 0.08 | | |
| | (0.06) | | | | | (0.22) | (0.11) | (0.08) | | |
| River darter | 0.10 | | 0.17 | | | 0.17 | 0.16 | | | |
| | (0.07) | | (0.17) | | | (0.17) | (0.11) | | | |
| Sauger | 2.90 | | 2.67 | | | 3.08 | 1.38 | 3.00 | | |
| | (0.45) | | (0.80) | | | (1.03) | (0.69) | (0.63) | | |
| Walleye | 2.44 | | 1.67 | | | 2.67 | 3.07 | 3.00 | | |
| | (0.33) | | (0.61) | | | (0.59) | (0.89) | (0.51) | | |
| Freshwater drum | 3.99 | | 7.17 | | | 2.42 | 2.68 | 2.08 | | |
| | (1.21) | | (3.12) | | | (0.87) | (0.82) | (1.05) | | |

Strata: BWCS - Backwater, contiguous, shoreline.
BWCO - Backwater, contiguous, offshore.
IMPS - Impounded, shoreline.
IMPO - Impounded, offshore.
MCBU - Main channel border, unstructured.
MCBW - Main channel border, wing dam.
SCB - Side channel border.
TRI - Tributary mouth.
TWZ - Tailwater.

Table 2.3.3. Mean catch-per-unit-effort and (standard error) for fishes collected by fyke netting in Pool 8 of the Mississippi River using stratified random sampling during 1996. The statistics under ALL pertain to unbiased means over all strata sampled using this gear (as indicated by nonmissing entries below and by Table 2.1). See text for definitions of catch-per-unit-effort and standard error.



| Common name | ALL | BWCO | BWCS | IMPO | IMPS | MCBU | MCBW | SCB | TRI | TWZ |
|---|---|---|---|---|---|---|---|---|---|---|
| Silver lamprey | 0.02 | | 0.03 | | | | | | | |
| | (0.02) | | (0.03) | | | | | | | |
| Longnose gar | 0.36 | | 0.38 | | 0.23 | | | | | |
| | (0.11) | | (0.12) | | (0.17) | | | | | |
| Shortnose gar | 3.71 | | 3.70 | | 3.76 | | | | | |
| | (0.68) | | (0.77) | | (1.24) | | | | | |
| Bowfin | 1.18 | | 1.31 | | 0.25 | | | | | |
| | (0.20) | | (0.23) | | (0.13) | | | | | |
| Mooneye | 0.01 | | | | 0.08 | | | | | |
| | (0.01) | | | | (0.08) | | | | | |
| Gizzard shad | 0.53 | | 0.56 | | 0.32 | | | | | |
| | (0.30) | | (0.34) | | (0.22) | | | | | |
| Common carp | 0.93 | | 0.76 | | 2.08 | | | | | |
| | (0.25) | | (0.24) | | (1.10) | | | | | |
| Golden shiner | 0.19 | | 0.22 | | | | | | | |
| | (0.13) | | (0.15) | | | | | | | |
| River carpsucker | 0.02 | | 0.03 | | | | | | | |
| | (0.02) | | (0.03) | | | | | | | |
| Quillback | 0.03 | | 0.02 | | 0.08 | | | | | |
| | (0.02) | | (0.02) | | (0.08) | | | | | |
| White sucker | 0.02 | | 0.03 | | | | | | | |
| | (0.02) | | (0.03) | | | | | | | |
| Smallmouth buffalo | 0.05 | | 0.05 | | | | | | | |
| | (0.03) | | (0.04) | | | | | | | |
| Spotted sucker | 0.74 | | 0.85 | | | | | | | |
| | (0.39) | | (0.44) | | | | | | | |
| Silver redhorse | 2.04 | | 1.99 | | 2.44 | | | | | |
| | (0.51) | | (0.56) | | (1.21) | | | | | |
| Golden redhorse | 0.11 | | 0.05 | | 0.46 | | | | | |
| | (0.05) | | (0.04) | | (0.27) | | | | | |
| Shorthead redhorse | 1.04 | | 0.83 | | 2.42 | | | | | |
| | (0.20) | | (0.16) | | (1.09) | | | | | |
| Yellow bullhead | 0.07 | | 0.08 | | | | | | | |
| | (0.04) | | (0.05) | | | | | | | |
| Channel catfish | 0.19 | | 0.16 | | 0.39 | | | | | |
| | (0.06) | | (0.06) | | (0.21) | | | | | |
| Flathead catfish | 0.16 | | 0.11 | | 0.48 | | | | | |
| | (0.05) | | (0.05) | | (0.22) | | | | | |
| Northern pike | 0.44 | | 0.48 | | 0.16 | | | | | |
| | (0.09) | | (0.10) | | (0.11) | | | | | |
| White bass | 4.42 | | 4.09 | | 6.67 | | | | | |
| | (2.76) | | (3.15) | | (2.82) | | | | | |
| Rock bass | 0.40 | | 0.41 | | 0.33 | | | | | |
| | (0.12) | | (0.14) | | (0.18) | | | | | |
| Green sunfish | 0.04 | | 0.05 | | | | | | | |
| | (0.03) | | (0.04) | | | | | | | |
| Pumpkinseed | 0.05 | | 0.06 | | | | | | | |
| | (0.03) | | (0.04) | | | | | | | |
| Orangespotted sunfish | 0.07 | | 0.08 | | | | | | | |
| | (0.05) | | (0.06) | | | | | | | |
| Bluegill | 29.47 | | 33.45 | | 2.16 | | | | | |
| | (8.38) | | (9.64) | | (1.36) | | | | | |
| Smallmouth bass | 0.04 | | 0.03 | | 0.16 | | | | | |
| | (0.03) | | (0.03) | | (0.11) | | | | | |
| Largemouth bass | 0.20 | | 0.19 | | 0.31 | | | | | |
| | (0.08) | | (0.09) | | (0.24) | | | | | |
| White crappie | 0.27 | | 0.30 | | 0.08 | | | | | |
| | (0.10) | | (0.11) | | (0.08) | | | | | |

Strata: BWCS - Backwater, contiguous, shoreline.
BWCO - Backwater, contiguous, offshore.
IMPS - Impounded, shoreline.
IMPO - Impounded, offshore.
MCBU - Main channel border, unstructured.
MCBW - Main channel border, wing dam.
SCB - Side channel border.
TRI - Tributary mouth.
TWZ - Tailwater.

Table 2.3.3. Mean catch-per-unit-effort and (standard error) for fishes collected by fyke netting in Pool 8 of the Mississippi River using stratified random sampling during 1996. The statistics under ALL pertain to unbiased means over all strata sampled using this gear (as indicated by nonmissing entries below and by Table 2.1). See text for definitions of catch-per-unit-effort and standard error. Table page:

| Common name | ALL | BWCO | BWCS | IMPO | IMPS | MCBU | MCBW | SCB | TRI | TWZ |
|---|---|---|---|---|---|---|---|---|---|---|
| Black crappie | 22.17 | | 25.25 | | 1.02 | | | | | |
| | (5.26) | | (6.05) | | (0.50) | | | | | |
| Yellow perch | 0.83 | | 0.94 | | 0.08 | | | | | |
| | (0.27) | | (0.31) | | (0.08) | | | | | |
| Sauger | 0.50 | | 0.49 | | 0.54 | | | | | |
| | (0.12) | | (0.13) | | (0.26) | | | | | |
| Walleye | 0.20 | | 0.16 | | 0.46 | | | | | |
| | (0.07) | | (0.06) | | (0.38) | | | | | |
| Freshwater drum | 0.68 | | 0.65 | | 0.89 | | | | | |
| | (0.26) | | (0.29) | | (0.48) | | | | | |

Strata: BWCS - Backwater, contiguous, shoreline.
BWCO - Backwater, contiguous, offshore.
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IMPO - Impounded, offshore.
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MCBW - Main channel border, wing dam.
SCB - Side channel border.
TRI - Tributary mouth.
TWZ - Tailwater.

Table 2.3.4. Mean catch-per-unit-effort and (standard error) for fishes collected by tandem fyke netting in Pool 8 of the Mississippi River using stratified random sampling during 1996. The statistics under ALL pertain to unbiased means over all strata sampled using this gear (as indicated by nonmissing entries below and by Table 2.1). See text for definitions of catch-per-unit-effort and standard error.



| Common name | ALL | BWCO | BWCS | IMPO | IMPS | MCBU | MCBW | SCB | TRI | TWZ |
|---|---|---|---|---|---|---|---|---|---|---|
| Silver lamprey | | 0.04 | | | | | | | | |
| | | (0.04) | | | | | | | | |
| Longnose gar | 0.45 | 1.02 | | 0.37 | | | | | | |
| | (0.33) | (0.42) | | (0.37) | | | | | | |
| Shortnose gar | 0.60 | 3.68 | | 0.16 | | | | | | |
| | (0.20) | (1.40) | | (0.11) | | | | | | |
| Bowfin | 0.24 | 1.94 | | | | | | | | |
| | (0.09) | (0.74) | | | | | | | | |
| Mooneye | 0.13 | | | 0.15 | | | | | | |
| | (0.13) | | | (0.15) | | | | | | |
| American eel | 0.07 | | | 0.08 | | | | | | |
| | (0.07) | | | (0.08) | | | | | | |
| Gizzard shad | 2.30 | 7.25 | | 1.61 | | | | | | |
| | (1.35) | (6.48) | | (1.25) | | | | | | |
| Common carp | 0.69 | 1.08 | | 0.63 | | | | | | |
| | (0.25) | (0.30) | | (0.28) | | | | | | |
| Golden shiner | 0.13 | 1.03 | | | | | | | | |
| | (0.07) | (0.58) | | | | | | | | |
| River carpsucker | | 0.04 | | | | | | | | |
| | | (0.04) | | | | | | | | |
| Smallmouth buffalo | 0.02 | 0.19 | | | | | | | | |
| | (0.01) | (0.12) | | | | | | | | |
| Spotted sucker | 0.12 | 1.00 | | | | | | | | |
| | (0.05) | (0.44) | | | | | | | | |
| Silver redhorse | 1.65 | 2.24 | | 1.56 | | | | | | |
| | (0.54) | (0.51) | | (0.61) | | | | | | |
| Golden redhorse | 0.09 | 0.08 | | 0.09 | | | | | | |
| | (0.08) | (0.06) | | (0.09) | | | | | | |
| Shorthead redhorse | 0.89 | 1.25 | | 0.84 | | | | | | |
| | (0.35) | (0.51) | | (0.40) | | | | | | |
| Black bullhead | 0.01 | 0.08 | | | | | | | | |
| | (0.01) | (0.05) | | | | | | | | |
| Yellow bullhead | 0.14 | 1.13 | | | | | | | | |
| | (0.11) | (0.89) | | | | | | | | |
| Brown bullhead | 0.02 | 0.15 | | | | | | | | |
| | (0.01) | (0.12) | | | | | | | | |
| Channel catfish | 0.16 | 0.21 | | 0.16 | | | | | | |
| | (0.09) | (0.07) | | (0.10) | | | | | | |
| Flathead catfish | 0.14 | 0.08 | | 0.15 | | | | | | |
| | (0.09) | (0.08) | | (0.10) | | | | | | |
| Northern pike | 0.36 | 1.72 | | 0.16 | | | | | | |
| | (0.11) | (0.51) | | (0.11) | | | | | | |
| White bass | 11.05 | 2.44 | | 12.26 | | | | | | |
| | (4.78) | (1.10) | | (5.46) | | | | | | |
| Rock bass | 0.22 | 0.12 | | 0.23 | | | | | | |
| | (0.20) | (0.06) | | (0.23) | | | | | | |
| Pumpkinseed | 0.01 | 0.07 | | | | | | | | |
| | (0.01) | (0.07) | | | | | | | | |
| Warmouth | 0.01 | 0.08 | | | | | | | | |
| | (0.01) | (0.08) | | | | | | | | |
| Bluegill | 2.64 | 20.33 | | 0.15 | | | | | | |
| | (0.74) | (5.93) | | (0.15) | | | | | | |
| Green sunfish x pumpkinseed | | 0.04 | | | | | | | | |
| | | (0.04) | | | | | | | | |
| Smallmouth bass | 0.08 | | | 0.09 | | | | | | |
| | (0.08) | | | (0.09) | | | | | | |
| Largemouth bass | 0.01 | 0.09 | | | | | | | | |
| | (0.01) | (0.06) | | | | | | | | |

Strata: BWCS - Backwater, contiguous, shoreline.
BWCO - Backwater, contiguous, offshore.
IMPS - Impounded, shoreline.
IMPO - Impounded, offshore.
MCBU - Main channel border, unstructured.
MCBW - Main channel border, wing dam.
SCB - Side channel border.
TRI - Tributary mouth.
TWZ - Tailwater.

Table 2.3.4. Mean catch-per-unit-effort and (standard error) for fishes collected by tandem fyke netting in Pool 8 of the Mississippi River using stratified random sampling during 1996. The statistics under ALL pertain to unbiased means over all strata sampled using this gear (as indicated by nonmissing entries below and by Table 2.1). See text for definitions of catch-per-unit-effort and standard error. Table page: 2

| Common name | ALL | BWCO | BWCS | IMPO | IMPS | MCBU | MCBW | SCB | TRI | TWZ |
|---|---|---|---|---|---|---|---|---|---|---|
| White crappie | 0.09 | 0.74 | | | | | | | | |
| | (0.05) | (0.37) | | | | | | | | |
| Black crappie | 5.40 | 37.92 | | 0.83 | | | | | | |
| | (2.21) | (17.59) | | (0.49) | | | | | | |
| Yellow perch | 0.43 | 3.45 | | | | | | | | |
| | (0.18) | (1.46) | | | | | | | | |
| Sauger | 0.37 | 0.27 | | 0.38 | | | | | | |
| | (0.12) | (0.23) | | (0.14) | | | | | | |
| Walleye | 0.03 | 0.23 | | | | | | | | |
| | (0.01) | (0.11) | | | | | | | | |
| Freshwater drum | 2.82 | 0.56 | | 3.13 | | | | | | |
| | (1.39) | (0.20) | | (1.58) | | | | | | |

Strata: BWCS - Backwater, contiguous, shoreline.
BWCO - Backwater, contiguous, offshore.
IMPS - Impounded, shoreline.
IMPO - Impounded, offshore.
MCBU - Main channel border, unstructured.
MCBW - Main channel border, wing dam.
SCB - Side channel border.
TRI - Tributary mouth.
TWZ - Tailwater.

Table 2.3.5. Mean catch-per-unit-effort and (standard error) for fishes collected by mini fyke netting in Pool 8 of the Mississippi River using stratified random sampling during 1996. The statistics under ALL pertain to unbiased means over all strata sampled using this gear (as indicated by nonmissing entries below and by Table 2.1). See text for definitions of catch-per-unit-effort and standard error. 

| Common name | ALL | BWCO | BWCS | IMPO | IMPS | MCBU | MCBW | SCB | TRI | TWZ |
|---|---|---|---|---|---|---|---|---|---|---|
| Longnose gar | 0.25 | | 0.12 | | 0.68 | 0.09 | | 0.40 | | |
| | (0.13) | | (0.07) | | (0.39) | (0.09) | | (0.34) | | |
| Shortnose gar | 0.48 | | 0.96 | | 0.45 | | | 0.35 | | |
| | (0.20) | | (0.54) | | (0.26) | | | (0.24) | | |
| Bowfin | 0.01 | | 0.04 | | | | | | | |
| | (0.01) | | (0.04) | | | | | | | |
| Gizzard shad | 0.22 | | 0.35 | | | 0.09 | | 0.22 | | |
| | (0.10) | | (0.20) | | | (0.09) | | (0.17) | | |
| Spotfin shiner | 57.17 | | 17.78 | | 11.27 | 13.38 | 4.01 | 125.43 | | |
| | (37.61) | | (6.26) | | (5.44) | (5.84) | (2.51) | (99.33) | | |
| Common carp | 0.60 | | 0.92 | | 0.69 | | | 0.65 | | |
| | (0.33) | | (0.88) | | (0.43) | | | (0.37) | | |
| Golden shiner | 7.18 | | 20.53 | | | 0.62 | | 0.12 | | |
| | (6.15) | | (18.13) | | | (0.45) | | (0.12) | | |
| Emerald shiner | 4.46 | | 3.07 | | 1.37 | 2.32 | | 7.44 | | |
| | (1.94) | | (1.34) | | (0.67) | (1.60) | | (4.91) | | |
| River shiner | 5.63 | | 0.50 | | 12.23 | 3.70 | | 10.58 | | |
| | (3.91) | | (0.34) | | (6.60) | (2.95) | | (10.14) | | |
| Spottail shiner | 0.15 | | | | 0.45 | 0.36 | | 0.11 | | |
| | (0.08) | | | | (0.45) | (0.28) | | (0.11) | | |
| Sand shiner | 0.07 | | | | 0.08 | | | 0.17 | | |
| | (0.06) | | | | (0.08) | | | (0.17) | | |
| Weed shiner | 0.11 | | 0.31 | | | | | | | |
| | (0.08) | | (0.24) | | | | | | | |
| Channel shiner | 0.66 | | 0.04 | | 0.08 | 1.30 | | 0.91 | | |
| | (0.30) | | (0.04) | | (0.08) | (0.79) | | (0.62) | | |
| Pugnose minnow | 16.57 | | 46.13 | | 0.15 | | 0.23 | 2.26 | | |
| | (6.79) | | (19.96) | | (0.10) | | (0.23) | (1.41) | | |
| Bluntnose minnow | 0.01 | | | | 0.23 | | | | | |
| | (0.01) | | | | (0.23) | | | | | |
| Fathead minnow | 0.19 | | 0.12 | | 0.08 | 0.16 | | 0.29 | | |
| | (0.10) | | (0.09) | | (0.08) | (0.11) | | (0.24) | | |
| Bullhead minnow | 14.91 | | 16.32 | | 2.00 | 2.47 | 2.81 | 22.94 | | |
| | (7.49) | | (6.83) | | (1.30) | (1.06) | (1.69) | (18.83) | | |
| Quillback | 0.11 | | 0.04 | | 1.85 | | | | | |
| | (0.04) | | (0.04) | | (0.71) | | | | | |
| White sucker | 0.02 | | | | | 0.08 | | | | |
| | (0.02) | | | | | (0.08) | | | | |
| Spotted sucker | 0.24 | | 0.70 | | | | | | | |
| | (0.22) | | (0.66) | | | | | | | |
| Silver redhorse | 0.23 | | 0.09 | | 0.08 | | | 0.53 | | |
| | (0.16) | | (0.06) | | (0.08) | | | (0.41) | | |
| Shorthead redhorse | 0.28 | | 0.12 | | 0.62 | 0.73 | | 0.11 | | |
| | (0.10) | | (0.12) | | (0.53) | (0.35) | | (0.11) | | |
| Brown bullhead | 0.01 | | 0.04 | | | | | | | |
| | (0.01) | | (0.04) | | | | | | | |
| Channel catfish | 0.04 | | | | | 0.16 | | | | |
| | (0.03) | | | | | (0.11) | | | | |
| Tadpole madtom | 0.13 | | 0.24 | | 0.53 | | | 0.06 | | |
| | (0.04) | | (0.09) | | (0.45) | | | (0.06) | | |
| Flathead catfish | 0.02 | | 0.04 | | 0.08 | | 0.08 | | | |
| | (0.01) | | (0.04) | | (0.08) | | (0.08) | | | |
| Northern pike | 0.10 | | 0.22 | | | 0.09 | | | | |
| | (0.05) | | (0.14) | | | (0.09) | | | | |
| Central mudminnow | 0.01 | | .04 | | | | | | | |
| | (0.01) | | (0.04) | | | | | | | |
| Burbot | 0.02 | | | | | 0.08 | | | | |
| | (0.02) | | | | | (0.08) | | | | |

Strata: BWCS - Backwater, contiguous, shoreline. MCBW - Main channel border, wing dam.
BWCO - Backwater, contiguous, offshore. SCB - Side channel border.
IMPS - Impounded, shoreline. TRI - Tributary mouth.
IMPO - Impounded, offshore. TWZ - Tailwater.
MCBU - Main channel border, unstructured.

Table 2.3.5. Mean catch-per-unit-effort and (standard error) for fishes collected by mini fyke netting in Pool 8 of the Mississippi River using stratified random sampling during 1996. The statistics under ALL pertain to unbiased means over all strata sampled using this gear (as indicated by nonmissing entries below and by Table 2.1). See text for definitions of catch-per-unit-effort and standard error.



| Common name | ALL | BWCO | BWCS | IMPO | IMPS | MCBU | MCBW | SCB | TRI | TWZ |
|---|---|---|---|---|---|---|---|---|---|---|
| Brook silverside | 0.14 | | 0.08 | | | | | 0.29 | | |
| | (0.11) | | (0.06) | | | | | (0.29) | | |
| Brook stickleback | 0.02 | | | | 0.08 | 0.08 | 0.08 | | | |
| | (0.02) | | | | (0.08) | (0.08) | (0.08) | | | |
| White bass | 0.64 | | 0.45 | | 0.89 | 1.86 | 0.08 | 0.06 | | |
| | (0.30) | | (0.33) | | (0.45) | (1.23) | (0.08) | (0.06) | | |
| Rock bass | 0.23 | | 0.49 | | 0.45 | 0.08 | | 0.06 | | |
| | (0.09) | | (0.24) | | (0.31) | (0.08) | | (0.06) | | |
| Green sunfish | 1.01 | | 2.73 | | 0.30 | 0.18 | 0.08 | 0.06 | | |
| | (0.55) | | (1.63) | | (0.17) | (0.12) | (0.08) | (0.06) | | |
| Pumpkinseed | 0.21 | | 0.56 | | | | | 0.05 | | |
| | (0.15) | | (0.44) | | | | | (0.05) | | |
| Warmouth | 0.18 | | 0.40 | | | | | 0.11 | | |
| | (0.14) | | (0.40) | | | | | (0.11) | | |
| Orangespotted sunfish | 1.37 | | 3.67 | | 0.68 | 0.18 | | 0.12 | | |
| | (0.64) | | (1.87) | | (0.46) | (0.12) | | (0.08) | | |
| Bluegill | 38.40 | | 79.37 | | 11.51 | 19.96 | 4.66 | 16.44 | | |
| | (12.08) | | (33.58) | | (5.13) | (8.63) | (1.99) | (9.24) | | |
| Smallmouth bass | 0.18 | | 0.08 | | | 0.39 | 0.16 | 0.17 | | |
| | (0.11) | | (0.08) | | | (0.39) | (0.16) | (0.13) | | |
| Largemouth bass | 1.14 | | 1.18 | | 0.65 | 0.31 | | 1.67 | | |
| | (0.41) | | (0.59) | | (0.34) | (0.31) | | (0.92) | | |
| White crappie | 0.08 | | 0.17 | | | | | 0.05 | | |
| | (0.04) | | (0.10) | | | | | (0.05) | | |
| Black crappie | 1.87 | | 4.54 | | 0.08 | 0.17 | 0.09 | 0.75 | | |
| | (0.60) | | (1.74) | | (0.08) | (0.11) | (0.09) | (0.33) | | |
| Mud darter | 0.09 | | 0.21 | | | | | 0.06 | | |
| | (0.05) | | (0.13) | | | | | (0.06) | | |
| Johnny darter | 0.91 | | 1.01 | | 0.15 | 1.18 | 0.08 | 0.77 | | |
| | (0.37) | | (0.80) | | (0.15) | (0.61) | (0.08) | (0.55) | | |
| Yellow perch | 0.09 | | 0.12 | | | | | 0.12 | | |
| | (0.04) | | (0.09) | | | | | (0.08) | | |
| Logperch | 0.12 | | 0.04 | | 0.40 | 0.27 | | 0.06 | | |
| | (0.05) | | (0.04) | | (0.24) | (0.19) | | (0.06) | | |
| River darter | | | | | | | 0.08 | | | |
| | | | | | | | (0.08) | | | |
| Sauger | 0.09 | | | | 0.23 | 0.34 | | | | |
| | (0.04) | | | | (0.16) | (0.19) | | | | |
| Walleye | 0.06 | | 0.04 | | 0.15 | 0.09 | | 0.06 | | |
| | (0.03) | | (0.04) | | (0.10) | (0.09) | | (0.06) | | |
| Freshwater drum | 0.06 | | | | 0.24 | 0.22 | 0.08 | | | |
| | (0.04) | | | | (0.13) | (0.16) | (0.08) | | | |

Strata: BWCS - Backwater, contiguous, shoreline.
BWCO - Backwater, contiguous, offshore.
IMPS - Impounded, shoreline.
IMPO - Impounded, offshore.
MCBU - Main channel border, unstructured.
MCBW - Main channel border, wing dam.
SCB - Side channel border.
TRI - Tributary mouth.
TWZ - Tailwater.

Table 2.3.6. Mean catch-per-unit-effort and (standard error) for fishes collected by tandem mini fyke netting in Pool 8 of the Mississippi River using stratified random sampling during 1996. The statistics under ALL pertain to unbiased means over all strata sampled using this gear (as indicated by nonmissing entries below and by Table 2.1). See text for definitions of catch-per-unit-effort and standard error.



| Common name | ALL | BWCO | BWCS | IMPO | IMPS | MCBU | MCBW | SCB | TRI | TWZ |
|---|---|---|---|---|---|---|---|---|---|---|
| Shortnose gar | 0.02 | 0.20 | | | | | | | | |
| | (0.02) | (0.14) | | | | | | | | |
| Spotfin shiner | 0.11 | 0.35 | | 0.08 | | | | | | |
| | (0.07) | (0.18) | | (0.08) | | | | | | |
| Common carp | 0.36 | 0.12 | | 0.39 | | | | | | |
| | (0.27) | (012) | | (0.31) | | | | | | |
| Golden shiner | 0.01 | 0.08 | | | | | | | | |
| | (0.01) | (0.05) | | | | | | | | |
| Emerald shiner | 0.65 | 3.03 | | 0.31 | | | | | | |
| | (0.34) | (2.20) | | (0.23) | | | | | | |
| Spottail shiner | 0.11 | 0.92 | | | | | | | | |
| | (0.10) | (0.80) | | | | | | | | |
| Channel shiner | 0.02 | 0.12 | | | | | | | | |
| | (0.01) | (0.09) | | | | | | | | |
| Pugnose minnow | 0.75 | 6.10 | | | | | | | | |
| | (0.41) | (3.37) | | | | | | | | |
| Bullhead minnow | 1.90 | 15.37 | | | | | | | | |
| | (1.17) | (9.48) | | | | | | | | |
| Smallmouth buffalo | 0.01 | 0.04 | | | | | | | | |
| | (0.01) | (0.04) | | | | | | | | |
| Spotted sucker | | 0.04 | | | | | | | | |
| | | (0.04) | | | | | | | | |
| Silver redhorse | 0.01 | 0.04 | | | | | | | | |
| | (0.01) | (0.04) | | | | | | | | |
| Shorthead redhorse | 0.09 | 0.08 | | 0.09 | | | | | | |
| | (0.08) | (0.08) | | (0.09) | | | | | | |
| Channel catfish | 0.21 | | | 0.23 | | | | | | |
| | (0.21) | | | (0.23) | | | | | | |
| Tadpole madtom | | 0.04 | | | | | | | | |
| | | (0.04) | | | | | | | | |
| Central mudminnow | 0.02 | 0.17 | | | | | | | | |
| | (0.02) | (0.17) | | | | | | | | |
| Burbot | 0.01 | 0.08 | | | | | | | | |
| | (0.01) | (0.08) | | | | | | | | |
| White bass | 0.24 | 1.40 | | 0.08 | | | | | | |
| | (0.14) | (0.97) | | (0.08) | | | | | | |
| Orangespotted sunfish | 0.27 | 1.61 | | 0.08 | | | | | | |
| | (0.14) | (1.00) | | (0.08) | | | | | | |
| Bluegill | 0.63 | 4.00 | | 0.16 | | | | | | |
| | (0.32) | (2.34) | | (0.16) | | | | | | |
| Smallmouth bass | 0.01 | 0.08 | | | | | | | | |
| | (0.01) | (0.08) | | | | | | | | |
| Largemouth bass | 0.03 | 0.23 | | | | | | | | |
| | (0.03) | (0.23) | | | | | | | | |
| White crappie | 0.01 | 0.11 | | | | | | | | |
| | (0.01) | (0.08) | | | | | | | | |
| Black crappie | 0.24 | 1.38 | | 0.08 | | | | | | |
| | (0.12) | (0.84) | | (0.08) | | | | | | |
| Mud darte | | 0.04 | | | | | | | | |
| | | (0.04) | | | | | | | | |
| Johnny darter | 0.10 | 0.28 | | 0.08 | | | | | | |
| | (0.07) | (0.17) | | (0.08) | | | | | | |
| Yellow perch | 0.03 | 0.23 | | | | | | | | |
| | (0.02) | (0.13) | | | | | | | | |
| Logperch | 0.14 | 0.04 | | 0.15 | | | | | | |
| | (0.14) | (0.04) | | (0.15) | | | | | | |
| Sauger | 0.14 | | | 0.16 | | | | | | |
| | (0.09) | | | (0.10) | | | | | | |

Strata: BWCS - Backwater, contiguous, shoreline. MCBW - Main channel border, wing dam.
BWCO - Backwater, contiguous, offshore. SCB - Side channel border.
IMPS - Impounded, shoreline. TRI - Tributary mouth.
IMPO - Impounded, offshore. TWZ - Tailwater.
MCBU - Main channel border, unstructured.

Table 2.3.6. Mean catch-per-unit-effort and (standard error) for fishes collected by tandem mini fyke netting in Pool 8 of the Mississippi River using stratified random sampling during 1996. The statistics under ALL pertain to unbiased means over all strata sampled using this gear (as indicated by nonmissing entries below and by Table 2.1). See text for definitions of catch-per-unit-effort and standard error.



| Common name | ALL | BWCO | BWCS | IMPO | IMPS | MCBU | MCBW | SCB | TRI | TWZ |
|---|---|---|---|---|---|---|---|---|---|---|
| Walleye | 0.07 | | | 0.08 | | | | | | |
| | (0.07) | | | (0.08) | | | | | | |
| Freshwater drum | 0.49 | 0.13 | | 0.54 | | | | | | |
| | (0.22) | (0.13) | | (0.25) | | | | | | |

Strata: BWCS - Backwater, contiguous, shoreline.
BWCO - Backwater, contiguous, offshore.
IMPS - Impounded, shoreline.
IMPO - Impounded, offshore.
MCBU -Main channel border, unstructured.
MCBW - Main channel border, wing dam.
SCB - Side channel border.
TRI - Tributary mouth.
TWZ - Tailwater.

Table 2.3.7. Mean catch-per-unit-effort and (standard error) for fishes collected by small hoop netting in Pool 8 of the Mississippi River using stratified random sampling during 1996. The statistics under ALL pertain to unbiased means over all strata sampled using this gear (as indicated by nonmissing entries below and by Table 2.1). See text for definitions of catch-per-unit-effort and standard error.



| Common name | ALL | BWCO | BWCS | IMPO | IMPS | MCBU | MCBW | SCB | TRI | TWZ |
|---|---|---|---|---|---|---|---|---|---|---|
| Gizzard shad | | 0.04 | | | | | | | | |
| | | (0.04) | | | | | | | | |
| Spotfin shiner | 0.02 | | | | | | | 0.12 | | |
| | (0.02) | | | | | | | (0.12) | | |
| Common carp | 0.19 | 0.18 | | 0.22 | | 0.13 | | 0.12 | | |
| | (0.09) | (0.13) | | (0.13) | | (0.07) | | (0.09) | | |
| Silver chub | 0.01 | | | | | 0.09 | 0.16 | | | |
| | (0.01) | | | | | (0.09) | (0.16) | | | |
| Smallmouth buffalo | 0.05 | | | | | 0.33 | | 0.08 | | |
| | (0.03) | | | | | (0.24) | | (0.06) | | |
| Silver redhorse | 0.03 | 0.09 | | | | 0.17 | 0.05 | | | |
| | (0.01) | (0.06) | | | | (0.09) | (0.05) | | | |
| Golden redhorse | | | | | | 0.04 | | | | |
| | | | | | | (0.04) | | | | |
| Shorthead redhorse | 0.28 | 0.18 | | 0.30 | | 0.56 | 0.45 | 0.08 | | |
| | (0.14) | (0.11) | | (0.22) | | (0.21) | (0.28) | (0.06) | | |
| Channel catfish | 2.20 | 0.59 | | 1.34 | | 4.48 | 0.76 | 4.42 | | |
| | (0.56) | (0.35) | | (0.73) | | (2.19) | (0.45) | (1.15) | | |
| Flathead catfish | 0.01 | | | | | 0.05 | | | | |
| | (0.01) | | | | | (0.05) | | | | |
| White bass | | 0.05 | | | | | | | | |
| | | (0.05) | | | | | | | | |
| Rock bass | 0.03 | | | | | 0.04 | 0.05 | 0.13 | | |
| | (0.02) | | | | | (0.04) | (0.05) | (0.09) | | |
| Bluegill | 0.04 | 0.41 | | | | | 0.18 | | | |
| | (0.02) | (0.20) | | | | | (0.18) | | | |
| Smallmouth bass | | | | | | 0.04 | | | | |
| | | | | | | (0.04) | | | | |
| White crappie | 0.01 | | | | | | | 0.04 | | |
| | (0.01) | | | | | | | (0.04) | | |
| Black crappie | 0.01 | 0.04 | | | | | 0.18 | 0.04 | | |
| | (0.01) | (0.04) | | | | | (0.14) | (0.04) | | |
| Freshwater drum | 0.18 | 0.09 | | 0.12 | | 0.22 | 0.13 | 0.40 | | |
| | (0.07) | (0.06) | | (0.06) | | (0.10) | (0.09) | (0.32) | | |

Strata: BWCS - Backwater, contiguous, shoreline.
BWCO - Backwater, contiguous, offshore.
IMPS - Impounded, shoreline.
IMPO - Impounded, offshore.
MCBU - Main channel border, unstructured.
MCBW - Main channel border, wing dam.
SCB - Side channel border.
TRI - Tributary mouth.
TWZ - Tailwater.

Table 2.3.8. Mean catch-per-unit-effort and (standard error) for fishes collected by large hoop netting in Pool 8 of the Mississippi River using stratified random sampling during 1996. The statistics under ALL pertain to unbiased means over all strata sampled using this gear (as indicated by nonmissing entries below and by Table 2.1). See text for definitions of catch-per-unit-effort and standard error.



| Common name | ALL | BWCO | BWCS | IMPO | IMPS | MCBU | MCBW | SCB | TRI | TWZ |
|---|---|---|---|---|---|---|---|---|---|---|
| Longnose gar | | | | | | 0.04 | | | | |
| | | | | | | (0.04) | | | | |
| Shortnose gar | 0.04 | 0.49 | | | | | | | | |
| | (0.02) | (0.25) | | | | | | | | |
| Bowfin | | 0.04 | | | | | | | | |
| | | (0.04) | | | | | | | | |
| Common carp | 1.46 | 1.09 | | 1.97 | | | 0.04 | 0.86 | | |
| | (0.76) | (0.67) | | (1.21) | | | (0.04) | (0.65) | | |
| Highfin carpsucker | 0.02 | | | 0.03 | | | | | | |
| | (0.02) | | | (0.03) | | | | | | |
| Smallmouth buffalo | 1.11 | 0.25 | | 0.34 | | 2.41 | 1.05 | 3.28 | | |
| | (0.31) | (0.10) | | (0.30) | | (1.15) | (0.42) | (1.12) | | |
| Silver redhorse | 0.15 | 0.16 | | 0.11 | | 0.35 | | 0.17 | | |
| | (0.08) | (0.12) | | (0.11) | | (0.26) | | (0.13) | | |
| Golden redhorse | 0.04 | | | 0.03 | | 0.04 | | 0.08 | | |
| | (0.02) | | | (0.03) | | (0.04) | | (0.05) | | |
| Shorthead redhorse | 0.14 | 0.45 | | 0.08 | | 0.21 | 0.24 | 0.13 | | |
| | (0.04) | (0.23) | | (0.06) | | (0.08) | (0.20) | (0.07) | | |
| Channel catfish | 1.46 | 0.70 | | 0.73 | | 1.98 | 2.06 | 3.91 | | |
| | (0.37) | (0.27) | | (0.37) | | (0.98) | (1.37) | (1.47) | | |
| Flathead catfish | 0.03 | 0.04 | | | | 0.13 | 0.04 | 0.08 | | |
| | (0.02) | (0.04) | | | | (0.09) | (0.04) | (0.06) | | |
| Northern pike | | 0.04 | | | | | | | | |
| | | (0.04) | | | | | | | | |
| White bass | 0.08 | | | 0.11 | | 0.04 | 0.33 | 0.04 | | |
| | (0.05) | | | (0.09) | | (0.04) | (0.24) | (0.04) | | |
| Bluegill | 0.08 | 0.45 | | | | | 0.35 | 0.20 | | |
| | (0.05) | (0.33) | | | | | (0.23) | (0.20) | | |
| Smallmouth bass | 0.02 | | | 0.03 | | | | 0.04 | | |
| | (0.02) | | | (0.03) | | | | (0.04) | | |
| White crappie | | 0.04 | | | | | | | | |
| | | (0.04) | | | | | | | | |
| Black crappie | 0.12 | 0.85 | | | | 0.04 | 0.53 | 0.25 | | |
| | (0.04) | (0.34) | | | | (0.04) | (0.24) | (0.15) | | |
| Walleye | | 0.04 | | | | | | | | |
| | | (0.04) | | | | | | | | |
| Freshwater drum | 0.15 | 0.12 | | 0.08 | | 0.35 | 0.43 | 0.31 | | |
| | (0.06) | (0.09) | | (0.08) | | (0.12) | (0.34) | (0.15) | | |

Strata: BWCS - Backwater, contiguous, shoreline.
BWCO - Backwater, contiguous, offshore.
IMPS - Impounded, shoreline.
IMPO - Impounded, offshore.
MCBU - Main channel border, unstructured.
MCBW - Main channel border, wing dam.
SCB - Side channel border.
TRI - Tributary mouth.
TWZ - Tailwater.

Table 2.3.9. Mean catch-per-unit-effort and (standard error) for fishes collected by seining in Pool 8 of the Mississippi River using stratified random sampling during 1996. The statistics under ALL pertain to unbiased means over all strata sampled using this gear (as indicated by nonmissing entries below and by Table 2.1). See text for definitions of catch-per-unit-effort and standard error.



| Common name | ALL | BWCO | BWCS | IMPO | IMPS | MCBU | MCBW | SCB | TRI | TWZ |
|---|---|---|---|---|---|---|---|---|---|---|
| Shortnose gar | 0.01 | | | | | 0.04 | | | | |
| | (0.01) | | | | | (0.04) | | | | |
| Gizzard shad | 0.05 | | | | | 0.21 | | | | |
| | (0.04) | | | | | (0.15) | | | | |
| Spotfin shiner | 110.43 | | 172.83 | | | 23.08 | | 107.17 | | |
| | (42.30) | | (109.40) | | | (8.48) | | (39.43) | | |
| Comon carp | 0.03 | | | | | | | 0.08 | | |
| | (0.03) | | | | | | | (0.08) | | |
| Speckled chub | 0.01 | | | | | 0.04 | | | | |
| | (0.01) | | | | | (0.04) | | | | |
| Golden shiner | 0.13 | | 0.08 | | | | | 0.25 | | |
| | (0.08) | | (0.08) | | | | | (0.18) | | |
| Emerald shiner | 36.10 | | 5.00 | | | 86.08 | | 33.83 | | |
| | (16.95) | | (3.42) | | | (57.82) | | (24.13) | | |
| River shiner | 18.07 | | 24.83 | | | 29.21 | | 5.25 | | |
| | (6.54) | | (16.90) | | | (8.56) | | (3.43) | | |
| Spottail shiner | 0.03 | | | | | 0.13 | | | | |
| | (0.02) | | | | | (0.09) | | | | |
| Sand shiner | 0.39 | | | | | 1.63 | | | | |
| | (0.22) | | | | | (0.90) | | | | |
| Channel shiner | 8.26 | | | | | 9.79 | | 14.75 | | |
| | (4.49) | | | | | (4.72) | | (10.89) | | |
| Pugnose minnow | 6.13 | | 10.67 | | | 1.00 | | 5.17 | | |
| | (2.97) | | (7.62) | | | (0.78) | | (2.89) | | |
| Fathead minnow | 0.07 | | | | | 0.29 | | | | |
| | (0.07) | | | | | (0.29) | | | | |
| Bullhead minnow | 61.41 | | 125.33 | | | 11.83 | | 33.92 | | |
| | (26.94) | | (73.88) | | | (4.29) | | (12.12) | | |
| Quillback | 5.15 | | 13.83 | | | 0.63 | | 0.08 | | |
| | (3.87) | | (10.80) | | | (0.31) | | (0.08) | | |
| Whte sucker | 0.18 | | | | | 0.75 | | | | |
| | (0.15) | | | | | (0.63) | | | | |
| Spotted sucker | 0.03 | | 0.08 | | | | | | | |
| | (0.03) | | (0.08) | | | | | | | |
| Silver redhorse | 0.15 | | 0.17 | | | 0.25 | | 0.08 | | |
| | (0.07) | | (0.11) | | | (0.21) | | (0.08) | | |
| Shorthead redhorse | 0.12 | | | | | 0.21 | | 0.17 | | |
| | (0.07) | | | | | (0.12) | | (0.17) | | |
| Tadpole madtom | 0.06 | | 0.17 | | | | | | | |
| | (0.04) | | (0.11) | | | | | | | |
| Northern pike | 0.03 | | 0.08 | | | | | | | |
| | (0.03) | | (0.08) | | | | | | | |
| Brook silverside | 6.93 | | 9.92 | | | 0.04 | | 8.42 | | |
| | (3.42) | | (8.25) | | | (0.04) | | (4.29) | | |
| White bass | 0.21 | | 0.08 | | | 0.04 | | 0.42 | | |
| | (0.17) | | (0.08) | | | (0.04) | | (0.42) | | |
| Rock bass | 0.41 | | 0.92 | | | 0.04 | | 0.17 | | |
| | (0.16) | | (0.42) | | | (0.04) | | (0.11) | | |
| Green sunfish | 0.06 | | 0.08 | | | | | 0.08 | | |
| | (0.04) | | (0.08) | | | | | (0.08) | | |
| Pumpkinseed | 0.06 | | 0.08 | | | | | 0.08 | | |
| | (0.04) | | (0.08) | | | | | (0.08) | | |
| Orangespotted sunfish | 1.93 | | 3.42 | | | 0.29 | | 1.58 | | |
| | (0.92) | | (2.50) | | | (0.21) | | (0.53) | | |
| Bluegill | 20.66 | | 13.83 | | | 1.33 | | 38.50 | | |
| | (10.94) | | (6.48) | | | (0.83) | | (26.80) | | |
| Smallmouth bass | 0.15 | | 0.17 | | | 0.08 | | 0.17 | | |
| | (0.08) | | (0.17) | | | (0.06) | | (0.11) | | |

Strata: BWCS - Backwater, contiguous, shoreline.
BWCO - Backwater, contiguous, offshore.
IMPS - Impounded, shoreline.
IMPO - Impounded, offshore.
MCBU - Main channel border, unstructured.
MCBW - Main channel border, wing dam.
SCB - Side channel border.
TRI - Tributary mouth.
TWZ - Tailwater.

Table 2.3.9. Mean catch-per-unit-effort and (standard error) for fishes collected by seining in Pool 8 of the Mississippi River using stratified random sampling during 1996. The statistics under ALL pertain to unbiased means over all strata sampled using this gear (as indicated by nonmissing entries below and by Table 2.1). See text for definitions of catch-per-unit-effort and standard error.



| Common name | ALL | BWCO | BWCS | IMPO | IMPS | MCBU | MCBW | SCB | TRI | TWZ |
|---|---|---|---|---|---|---|---|---|---|---|
| Largemouth bass | 0.86 | | 2.00 | | | 0.04 | | 0.33 | | |
| | (0.31) | | (0.83) | | | (0.04) | | (0.19) | | |
| Black crappie | 0.48 | | 1.25 | | | | | 0.08 | | |
| | (0.33) | | (0.91) | | | | | (0.08) | | |
| Western sand darter | 0.13 | | 0.25 | | | 0.04 | | 0.08 | | |
| | (0.07) | | (0.18) | | | (0.04) | | (0.08) | | |
| Mud darter | 0.22 | | 0.42 | | | | | 0.17 | | |
| | (0.08) | | (0.19) | | | | | (0.11) | | |
| Johnny darter | 1.18 | | 1.83 | | | 0.79 | | 0.83 | | |
| | (0.59) | | (1.41) | | | (0.30) | | (0.75) | | |
| Logperch | .19 | | | | | 0.50 | | 0.17 | | |
| | (0.07) | | | | | (0.20) | | (0.11) | | |
| Slenderhead darter | 0.02 | | | | | 0.08 | | | | |
| | (0.02) | | | | | (0.08) | | | | |
| Sauger | 0.04 | | | | | 0.04 | | 0.08 | | |
| | (0.03) | | | | | (0.04) | | (0.08) | | |
| Walleye | 0.04 | | | | | 0.17 | | | | |
| | (0.03) | | | | | (0.13) | | | | |
| Freshwater drum | 0.06 | | | | | 0.13 | | 0.08 | | |
| | (0.04) | | | | | (0.09) | | (0.08) | | |

Strata: BWCS - Backwater, contiguous, shoreline.
BWCO - Backwater, contiguous, offshore.
IMPS - Impounded, shoreline.
IMPO - Impounded, offshore.
MCBU - Main channel border, unstructured.
MCBW - Main channel border, wing dam.
SCB - Side channel border.
TRI - Tributary mouth.
TWZ - Tailwater.

Table 2.4.1. Mean catch-per-unit-effort and (standard error) for fishes collected by day electrofishing in Pool 8 of the Mississippi River using fixed-site sampling during 1996. See text for definitions of catch-per-unit-effort and standard error.



| Common name | BWCO | BWCS | IMPO | IMPS | MCBU | MCBW | SCB | TRI | TWZ |
|---|---|---|---|---|---|---|---|---|---|
| Silver lamprey | | 0.08 (0.08) | | | | | | | |
| Bowfin | | 0.37 (0.17) | | | | | | | |
| Gizzard shad | | 38.49 (17.60) | | | | | | | |
| Spotfin shiner | | 5.60 (3.63) | | | | | | | |
| Common carp | | 2.29 (0.97) | | | | | | | |
| Golden shiner | | 0.14 (0.09) | | | | | | | |
| Emerald shiner | | 4.07 (1.97) | | | | | | | |
| Spottail shiner | | 1.92 (1.04) | | | | | | | |
| Channel shiner | | 8.74 (6.49) | | | | | | | |
| Pugnose minnow | | 0.94 (0.59) | | | | | | | |
| Bluntnose minnow | | 0.07 (0.07) | | | | | | | |
| Bullhead minnow | | 13.95 (4.45) | | | | | | | |
| Quillback | | 0.45 (0.33) | | | | | | | |
| Smallmouth buffalo | | 0.11 (0.11) | | | | | | | |
| Spotted sucker | | 6.03 (1.96) | | | | | | | |
| Silver redhorse | | 2.09 (0.34) | | | | | | | |
| Golden redhorse | | 3.15 (0.75) | | | | | | | |
| Shorthead redhorse | | 6.17 (1.55) | | | | | | | |
| Channel cafish | | 0.14 (0.10) | | | | | | | |
| Flathead catfish | | 0.18 (0.10) | | | | | | | |
| Northern pike | | 1.10 (0.49) | | | | | | | |
| Brook silverside | | 0.69 (0.48) | | | | | | | |
| White bass | | 1.44 (0.65) | | | | | | | |
| Rock bass | | 2.31 (0.95) | | | | | | | |
| Green sunfish | | 0.86 (0.34) | | | | | | | |
| Pumpkinseed | | 0.82 (0.62) | | | | | | | |
| Orangespotted sunfish | | 0.41 (0.21) | | | | | | | |
| Bluegill | | 42.93 (15.69) | | | | | | | |
| Green sunfish x bluegill | | 0.07 (0.07) | | | | | | | |
| Smallmouth bass | | 1.35 (0.44) | | | | | | | |

Strata: BWCS - Backwater, contiguous, shoreline.
BWCO - Backwater, contiguous, offshore.
IMPS - Impounded, shoreline.
IMPO - Impounded, offshore.
MCBU - Main channel border, unstructured.
MCBW - Main channel border, wing dam.
SCB - Side channel border.
TRI - Tributary mouth.
TWZ - Tailwater.

Table 2.4.1. Mean catch-per-unit-effort and (standard error) for fishes collected by day electrofishing in Pool 8 of the Mississippi River using fixed-site sampling during 1996. See text for definitions of catch-per-unit-effort and standard error.



| Common name | BWCO | BWCS | IMPO | IMPS | MCBU | MCBW | SCB | TRI | TWZ |
|---|---|---|---|---|---|---|---|---|---|
| Largemouth bass | | 23.31 | | | | | | | |
| | | (4.83) | | | | | | | |
| Black crappie | | 0.48 | | | | | | | |
| | | (0.22) | | | | | | | |
| Johnny darter | | 1.81 | | | | | | | |
| | | (0.66) | | | | | | | |
| Yellw perch | | 1.83 | | | | | | | |
| | | (0.69) | | | | | | | |
| Logperch | | 2.73 | | | | | | | |
| | | (1.08) | | | | | | | |
| Slenderhead darter | | 0.06 | | | | | | | |
| | | (0.06) | | | | | | | |
| Sauger | | 0.99 | | | | | | | |
| | | (0.20) | | | | | | | |
| Walleye | | 0.41 | | | | | | | |
| | | (0.23) | | | | | | | |
| Freshwater drum | | 1.16 | | | | | | | |
| | | (0.42) | | | | | | | |

Strata: BWCS - Backwater, contiguous, shoreline.
BWCO - Backwater, contiguous, offshore.
IMPS - Impounded, shoreline.
IMPO - Impounded, offshore.
MCBU - Main channel border, unstructured.
MCBW - Main channel border, wing dam.
SCB - Side channel border.
TRI - Tributary mouth.
TWZ - Tailwater.

Table 2.4.2. Mean catch-per-unit-effort and (standard error) for fishes collected by night electrofishing in Pool 8 of the Mississippi River using fixed-site sampling during 1996. See text for definitions of catch-per-unit-effort and standard error.



| Common name | BWCO | BWCS | IMPO | IMPS | MCBU | MCBW | SCB | TRI | TWZ |
|---|---|---|---|---|---|---|---|---|---|
| Chestnut lamprey | | | | | | | | | 0.05 (0.05) |
| Silver lamprey | | | | | | | | | 0.27 (0.10) |
| American brook lamprey | | | | | | | | | 0.04 (0.04) |
| Shortnose gar | | | | | | | | | 0.16 (0.11) |
| Bowfin | | | | | | | | | 0.62 (0.35) |
| Mooneye | | | | | | | | | 0.86 (0.45) |
| Gizzard shad | | | | | | | | | 3.92 (1.82) |
| Spotfin shiner | | | | | | | | | 1.86 (0.83) |
| Common carp | | | | | | | | | 4.67 (1.26) |
| Silver chub | | | | | | | | | 0.05 (0.05) |
| Emerald shiner | | | | | | | | | 17.42 (10.87) |
| River shiner | | | | | | | | | 7.25 (3.57) |
| Spottail shiner | | | | | | | | | 0.82 (0.64) |
| Channel shiner | | | | | | | | | 4.18 (1.78) |
| Bullhead minnow | | | | | | | | | 1.36 (0.73) |
| River carpsucker | | | | | | | | | 0.70 (0.22) |
| Quillback | | | | | | | | | 5.65 (3.06) |
| Highfin carpsucker | | | | | | | | | 0.33 (0.33) |
| White sucker | | | | | | | | | 0.04 (0.04) |
| Smallmouth buffalo | | | | | | | | | 0.50 (0.32) |
| Spotted sucker | | | | | | | | | 0.93 (0.49) |
| Silver redhorse | | | | | | | | | 4.35 (1.34) |
| River redhorse | | | | | | | | | 0.26 (0.12) |
| Golden redhorse | | | | | | | | | 4.66 (1.33) |
| Shorthead redhorse | | | | | | | | | 9.54 (2.04) |
| Channel catfish | | | | | | | | | 0.21 (0.09) |
| Flathead catfish | | | | | | | | | 0.72 (0.37) |
| Northern pike | | | | | | | | | 1.60 (0.47) |
| Brown trout | | | | | | | | | 0.04 (0.04) |
| Burbot | | | | | | | | | 0.16 (0.12) |

Strata: BWCS - Backwater, contiguous, shoreline.
BWCO - Backwater, contiguous, offshore.
IMPS - Impounded, shoreline.
IMPO - Impounded, offshore.
MCBU - Main channel border, unstructured.
MCBW - Main channel border, wing dam.
SCB - Side channel border.
TRI - Tributary mouth.
TWZ - Tailwater.

Table 2.4.2. Mean catch-per-unit-effort and (standard error) for fishes collected by night electrofishing in Pool 8 of the Mississippi River using fixed-site sampling during 1996. See text for definitions of catch-per-unit-effort and standard error.



| Common name | BWCO | BWCS | IMPO | IMPS | MCBU | MCBW | SCB | TRI | TWZ |
|---|---|---|---|---|---|---|---|---|---|
| Brook silverside | | | | | | | | | 0.60 (0.20) |
| White bass | | | | | | | | | 92.75 (33.11) |
| Rock bass | | | | | | | | | 2.40 (1.08) |
| Green sunfish | | | | | | | | | 0.10 (0.07) |
| Bluegill | | | | | | | | | 8.81 (3.23) |
| Green sunfish x bluegill | | | | | | | | | 0.05 (0.05) |
| Smallmouth bass | | | | | | | | | 14.68 (5.14) |
| Largemouth bass | | | | | | | | | 6.26 (2.44) |
| White crappie | | | | | | | | | 0.10 (0.07) |
| Black crappie | | | | | | | | | 2.50 (0.57) |
| Western sand darter | | | | | | | | | 1.34 (0.60) |
| Johnny darter | | | | | | | | | 0.05 (0.05) |
| Yellow perch | | | | | | | | | 0.85 (0.55) |
| Logperch | | | | | | | | | 0.60 (0.25) |
| Slenderhead darter | | | | | | | | | 0.20 (0.11) |
| Sauger | | | | | | | | | 38.98 (9.91) |
| Walleye | | | | | | | | | 11.52 (3.02) |
| Freshwater drum | | | | | | | | | 9.49 (2.56) |

Strata: BWCS - Backwater, contiguous, shoreline.
BWCO - Backwater, contiguous, offshore.
IMPS - Impounded, shoreline.
IMPO - Impounded, offshore.
MCBU - Main channel border, unstructured.
MCBW - Main channel border, wing dam.
SCB - Side channel border.
TRI - Tributary mouth.
TWZ - Tailwater.

Table 2.4.3. Mean catch-per-unit-effort and (standard error) for fishes collected by fyke netting in Pool 8 of the Mississippi River using fixed-site sampling during 1996. See text for definitions of catch-per-unit-effort and standard error.



| Common name | BWCO | BWCS | IMPO | IMPS | MCBU | MCBW | SCB | TRI | TWZ |
|---|---|---|---|---|---|---|---|---|---|
| Longnose gar | | 0.74 (033) | | | | | | | |
| Shortnose gar | | 4.30 (3.19) | | | | | | | |
| Bowfin | | 0.56 (0.18) | | | | | | | |
| Gizzard shad | | 0.32 (0.18) | | | | | | | |
| Common carp | | 0.49 (0.19) | | | | | | | |
| Golden shiner | | 0.24 (0.24) | | | | | | | |
| River carpsucker | | 0.08 (0.08) | | | | | | | |
| Smallmouth buffalo | | 0.24 (0.13) | | | | | | | |
| Spotted sucker | | 0.23 (0.12) | | | | | | | |
| Silver redhorse | | 0.81 (0.23) | | | | | | | |
| Shorthead redhorse | | 0.41 (0.25) | | | | | | | |
| Channel catfish | | 0.24 (0.17) | | | | | | | |
| Flathead catfish | | 0.41 (0.34) | | | | | | | |
| Northern pike | | 0.87 (0.32) | | | | | | | |
| White bass | | 32.93 (22.44) | | | | | | | |
| Rock bass | | 0.46 (0.22) | | | | | | | |
| Pumpkinseed | | 0.52 (0.30) | | | | | | | |
| Bluegill | | 32.57 (12.72) | | | | | | | |
| Green sunfish x pumpkinseed | | 0.08 (0.08) | | | | | | | |
| Largemouth bass | | 0.36 (0.28) | | | | | | | |
| White crappie | | 0.08 (0.08) | | | | | | | |
| Black crappie | | 24.73 (5.15) | | | | | | | |
| Yellow perch | | 3.45 (1.01) | | | | | | | |
| Sauger | | 0.71 (0.29) | | | | | | | |
| Walleye | | 0.15 (0.10) | | | | | | | |
| Freshwater drum | | 1.04 (0.32) | | | | | | | |

Strata: BWCS - Backwater, contiguous, shoreline.
BWCO - Backwater, contiguous, offshore.
IMPS - Impounded, shoreline.
IMPO - Impounded, offshore.
MCBU - Main channel border, unstructured.
MCBW - Main channel border, wing dam.
SCB - Side channel border.
TRI - Tributary mouth.
TWZ - Tailwater.

Table 2.4.4. Mean catch-per-unit-effort and (standard error) for fishes collected by mini fyke netting in Pool 8 of the Mississippi River using fixed-site sampling during 1996. See text for definitions of catch-per-unit-effort and standard error.



| Common name | BWCO | BWCS | IMPO | IMPS | MCBU | MCBW | SCB | TRI | TWZ |
|---|---|---|---|---|---|---|---|---|---|
| Shortnose gar | | | | | | | | | 0.16 (0.16) |
| Gizzard shad | | | | | | | | | 0.16 (0.16) |
| Spotfin shiner | | | | | | | | | 35.26 (19.59) |
| Common carp | | | | | | | | | 0.32 (0.32) |
| Emerald shiner | | | | | | | | | 4.01 (1.73) |
| River shiner | | | | | | | | | 1.99 (9.21) |
| Spottail shiner | | | | | | | | | 4.01 (3.25) |
| Channel shiner | | | | | | | | | 27.24 (23.56) |
| Pugnose minnow | | | | | | | | | 0.80 (0.80) |
| Bullhead minnow | | | | | | | | | 4.81 (2.25) |
| Spotted sucker | | | | | | | | | 0.16 (0.16) |
| Burbot | | | | | | | | | 0.33 (0.33) |
| Brook silverside | | | | | | | | | 0.32 (0.32) |
| White bass | | | | | | | | | 4.85 (2.65) |
| Rock bass | | | | | | | | | 0.16 (0.16) |
| Bluegill | | | | | | | | | 4.85 (2.37) |
| Smallmouth bass | | | | | | | | | 0.48 (0.48) |
| Largemouth bass | | | | | | | | | 1.13 (0.80) |
| Johnny darter | | | | | | | | | 0.64 (0.41) |
| Logperch | | | | | | | | | 2.09 (1.04) |
| Slenderhead darter | | | | | | | | | 0.16 (0.16) |
| River darter | | | | | | | | | 0.32 (0.32) |
| Sauger | | | | | | | | | 0.16 (0.16) |
| Walleye | | | | | | | | | 0.16 (0.16) |

Strata: BWCS - Backwater, contiguous, shoreline.
BWCO - Backwater, contiguous, offshore.
IMPS - Impounded, shoreline.
IMPO - Impounded, offshore.
MCBU - Main channel border, unstructured.
MCBW - Main channel border, wing dam.
SCB - Side channel border.
TRI - Tributary mouth.
TWZ - Tailwater.

Table 2.4.5. Mean catch-per-unit-effort and (standard error) for fishes collected by small hoop netting in Pool 8 of the Mississippi River using fixed-site sampling during 1996. See text for definitions of catch-per-unit-effort and standard error.



| Common name | BWCO | BWCS | IPO | IMPS | MCBU | MCBW | SCB | TRI | TWZ |
|---|---|---|---|---|---|---|---|---|---|
| Common carp | | | | | | | | | 0.50 (0.31) |
| Smallmouth buffalo | | | | | | | | | 0.40 (0.26) |
| Silver redhorse | | | | | | | | | 0.08 (0.08) |
| Shorthead redhorse | | | | | | | | | 0.16 (0.16) |
| Channel catfish | | | | | | | | | 11.48 (11.10) |
| Flathead catfish | | | | | | | | | 0.09 (0.09) |
| White bass | | | | | | | | | 0.16 (0.16) |
| Rock bass | | | | | | | | | 0.26 (0.26) |
| Bluegill | | | | | | | | | 0.32 (0.23) |
| Sauger | | | | | | | | | 0.08 (0.08) |
| Freshwater drum | | | | | | | | | 2.62 (1.59) |

Strata: BWCS - Backwater, contiguous, shoreline.
BWCO - Backwater, contiguous, offshore.
IMPS - Impounded, shoreline.
IMPO - Impounded, offshore.
MCBU - Main channel border, unstructured.
MCBW - Main channel border, wing dam.
SCB - Side channel border.
TRI - Tributary mouth.
TWZ - Tailwater.

Table 2.4.6. Mean catch-per-unit-effort and (standard error) for fishes collected by large hoop netting in Pool 8 of the Mississippi River using fixed-site sampling during 1996. See text for definitions of catch-per-unit-effort and standard error.



| Common name | BWCO | BWCS | IMPO | IMPS | MCBU | MCBW | SCB | TRI | TWZ |
|---|---|---|---|---|---|---|---|---|---|
| Common carp | | | | | | | | | 1.36 (0.76) |
| Smallmouth buffalo | | | | | | | | | 7.49 (3.48) |
| Silver redhorse | | | | | | | | | 0.16 (0.10) |
| Channel catfish | | | | | | | | | 1.74 (1.03) |
| Flathead catfish | | | | | | | | | 0.35 (0.35) |
| Northern pike | | | | | | | | | 0.09 (0.09) |
| White bass | | | | | | | | | 0.80 (0.36) |
| Bluegill | | | | | | | | | 0.63 (0.63) |
| Black crappie | | | | | | | | | 0.96 (0.53) |
| Freshwater drum | | | | | | | | | 1.35 (0.71) |

Strata: BWCS - Backwater, contiguous, shoreline.
BWCO - Backwater, contiguous, offshore.
IMPS - Impounded, shoreline.
IMPO - Impounded, offshore.
MCBU - Main channel border, unstructured.
MCBW - Main channel border, wing dam.
SCB - Side channel border.
TRI - Tributary mouth.
TWZ - Tailwater.

Table 2.4.7. Mean catch-per-unit-effort and (standard error) for fishes collected by seining in Pool 8 of the Mississippi River using fixed-site sampling during 1996. See text for definitions of catch-per-unit-effort and standard error.



| Common name | BWCO | BWCS | IMPO | IMPS | MCBU | MCBW | SCB | TRI | TWZ |
|---|---|---|---|---|---|---|---|---|---|
| Longnose gar | | 0.17 (0.11) | | | | | | | |
| Gizzard shad | | 1.58 (1.58) | | | | | | | |
| Spotfin shiner | | 21.25 (8.56) | | | | | | | 1.67 (0.69) |
| Common carp | | 0.08 (0.08) | | | | | | | |
| Emerald shiner | | 7.08 (4.87) | | | | | | | 20.58 (14.86) |
| River shiner | | 1.00 (0.48) | | | | | | | 10.08 (6.15) |
| Spottail shiner | | 0.33 (0.19) | | | | | | | 3.00 (2.28) |
| Sand shiner | | | | | | | | | 0.17 (0.11) |
| Channel shiner | | 3.83 (2.40) | | | | | | | 64.42 (48.15) |
| Pugnose minnow | | 8.75 (5.62) | | | | | | | |
| Bullhead minnow | | 48.50 (14.52) | | | | | | | 5.17 (3.05) |
| River carpsucker | | | | | | | | | 0.08 (0.08) |
| Quillback | | | | | | | | | 1.50 (0.89) |
| White sucker | | | | | | | | | 0.08 (0.08) |
| Blue sucker | | | | | | | | | 0.17 (0.17) |
| Bigmouth buffalo | | | | | | | | | 0.08 (0.08) |
| Spotted sucker | | 0.25 (0.13) | | | | | | | |
| Silver rdhorse | | 0.17 (0.11) | | | | | | | 0.25 (0.18) |
| Shorthead redhorse | | 0.08 (0.08) | | | | | | | |
| Northern pike | | 0.08 (0.08) | | | | | | | |
| Brook silverside | | 5.33 (3.56) | | | | | | | 0.58 (0.23) |
| White bass | | 1.17 (0.99) | | | | | | | 1.75 (0.80) |
| Rock bass | | 0.67 (0.51) | | | | | | | |
| Green sunfish | | 0.08 (0.08) | | | | | | | |
| Pumpkinseed | | 0.08 (0.08) | | | | | | | |
| Orangespotted sunfish | | 0.25 (0.18) | | | | | | | |
| Bluegill | | 26.50 (18.62) | | | | | | | 0.08 (0.08) |
| Smallmouth bass | | 0.25 (0.25) | | | | | | | 0.17 (0.17) |
| Largemouth bass | | 3.33 (1.20) | | | | | | | 0.25 (0.25) |
| Crystal darter | | | | | | | | | 0.08 (0.08) |

Strata: BWCS - Backwater, contiguous, shoreline.
BWCO - Backwater, contiguous, offshore.
IMPS - Impounded, shoreline.
IMPO - Impounded, offshore.
MCBU - Main channel border, unstructured.
MCBW - Main channel border, wing dam.
SCB - Side channel border.
TRI - Tributary mouth.
TWZ - Tailwater.

Table 2.4.7. Mean catch-per-unit-effort and (standard error) for fishes collected by seining in Pool 8 of the Mississippi River using fixed-site sampling during 1996. See text for definitions of catch-per-unit-effort and standard error.



| Common name | BWCO | BWCS | IMPO | IMPS | MCBU | MCBW | SCB | TRI | TWZ |
|---|---|---|---|---|---|---|---|---|---|
| Western sand darter | | | | | | | | | 1.92 (1.50) |
| Mud darter | | 0.83 (0.59) | | | | | | | 0.08 (0.08) |
| Johnny darter | | 3.33 (1.84) | | | | | | | 0.08 (0.08) |
| Yellow perch | | 4.92 (3.61) | | | | | | | 0.25 (0.18) |
| Logperch | | 1.08 (0.53) | | | | | | | 0.58 (0.36) |
| Walleye | | | | | | | | | 0.25 (0.25) |

Strata: BWCS - Backwater, contiguous, shoreline.
BWCO - Backwater, contiguous, offshore.
IMPS - Impounded, shoreline.
IMPO - Impounded, offshore.
MCBU - Main channel border, unstructured.
MCBW - Main channel border, wing dam.
SCB - Side channel border.
TRI - Tributary mouth.
TWZ - Tailwater.

Table 2.4.8. Mean catch-per-unit-effort and (standard error) for fishes collected by bottom trawling in Pool 8 of the Mississippi River using fixed-site sampling during 1996. See text for definitions of catch-per-unit-effort and standard error.



| Common name | BWCO | BWCS | IMPO | IMPS | MCBU | MCBW | SCB | TRI | TWZ |
|---|---|---|---|---|---|---|---|---|---|
| Gizzard shad | | | | | | | | | 0.25 (0.25) |
| Silver chub | | | | | | | | | 0.17 (0.17) |
| Shorthead redhorse | | | | | | | | | 0.08 (0.08) |
| Channel catfish | | | | | | | | | 0.17 (0.11) |
| Western sand darter | | | | | | | | | 0.08 (0.08) |
| Sauger | | | | | | | | | 0.08 (0.08) |
| Walleye | | | | | | | | | 0.08 (0.08) |
| Freshwater drum | | | | | | | | | 6.67 (2.93) |

Strata: BWCS - Backwater, contiguous, shoreline. MCBW - Main channel border, wing dam.
BWCO Backwater, contiguous, offshore. SCB - Side channel border.
IMPS - Impounded, shoreline. TRI - Tributary mouth.
IMPO - Impounded, offshore. TWZ - Tailwater.
MCBU - Main channel border, unstructured.

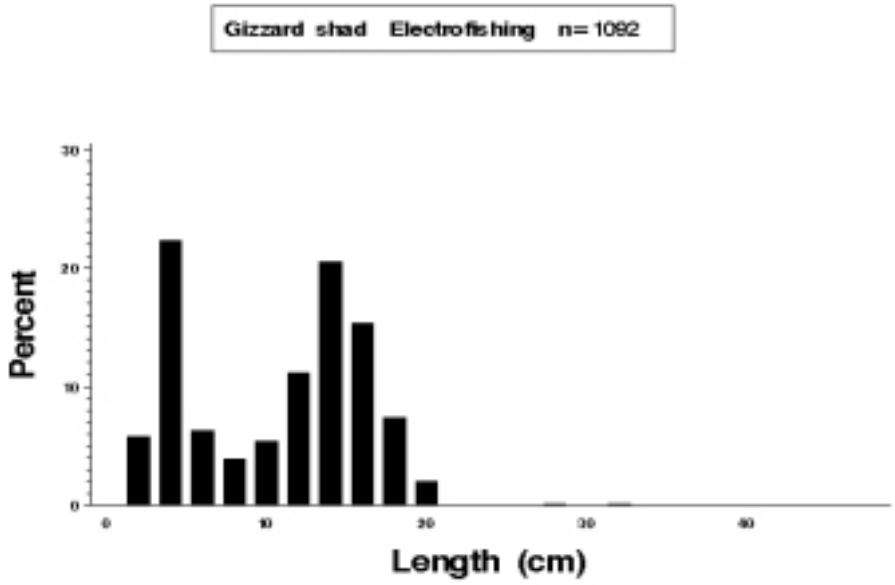


**Figure 2.2.** Length distributions (*length*) as a percentage of catch (*percent*) for gizzard shad (*Dorosoma cepedianum*) collected by electrofishing in Upper Mississippi River Pool 8 during 1996.

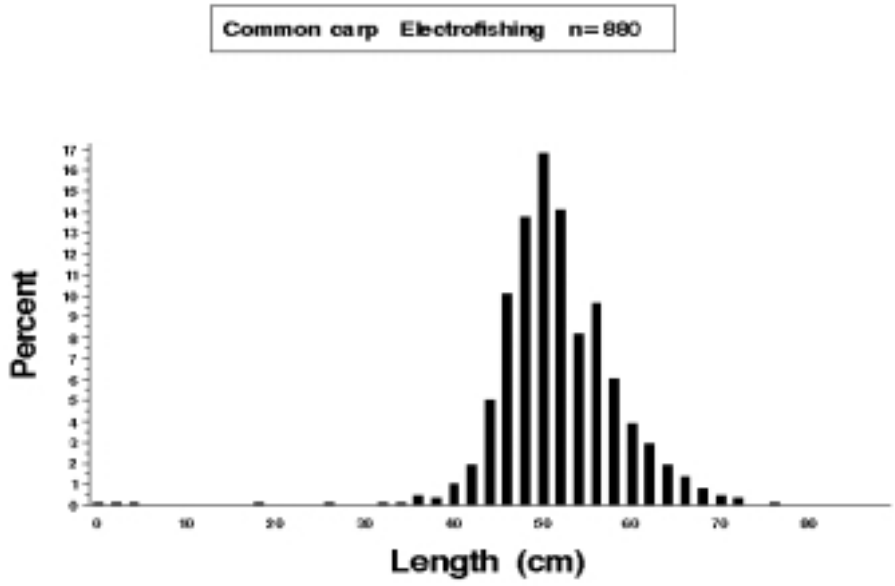


**Figure 2.3.** Length distributions (*length*) as a percentage of catch (*percent*) for common carp (*Cyprinus carpio*) collected by electrofishing in Upper Mississippi River Pool 8 during 1996.

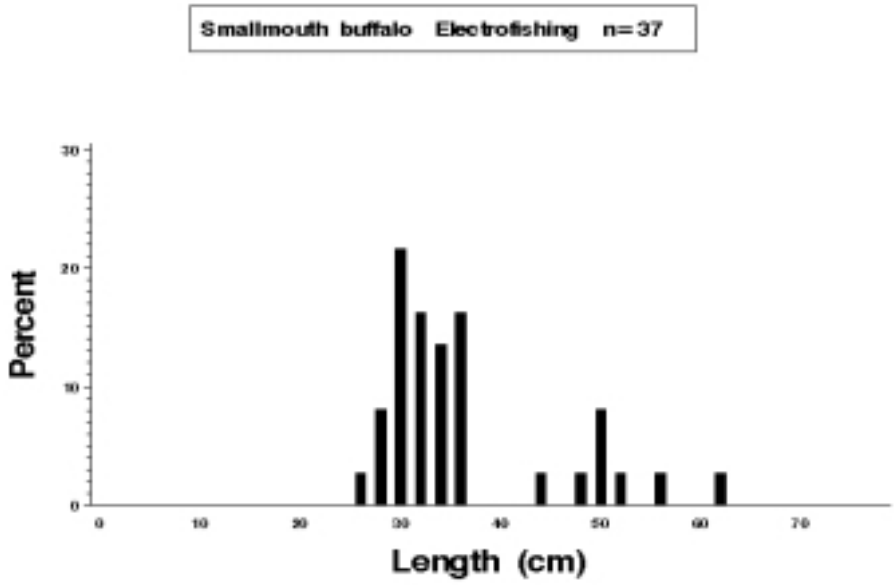


**Figure 2.4.** Length distributions (*length*) as a percentage of catch (*percent*) for smallmouth buffalo (*Ictiobus bubalus*) collected by electrofishing in Upper Mississippi River Pool 8 during 1996.

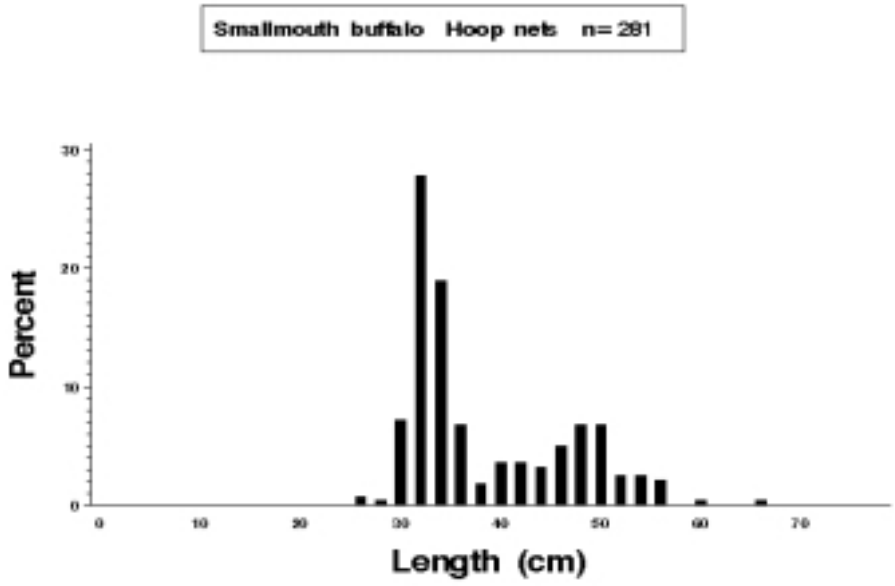


**Figure 2.5.** Length distributions (*length*) as a percentage of catch (*percent*) for smallmouth buffalo (*Ictiobus bubalus*) collected by large and small hoop netting in Upper Mississippi River Pool 8 during 1996.

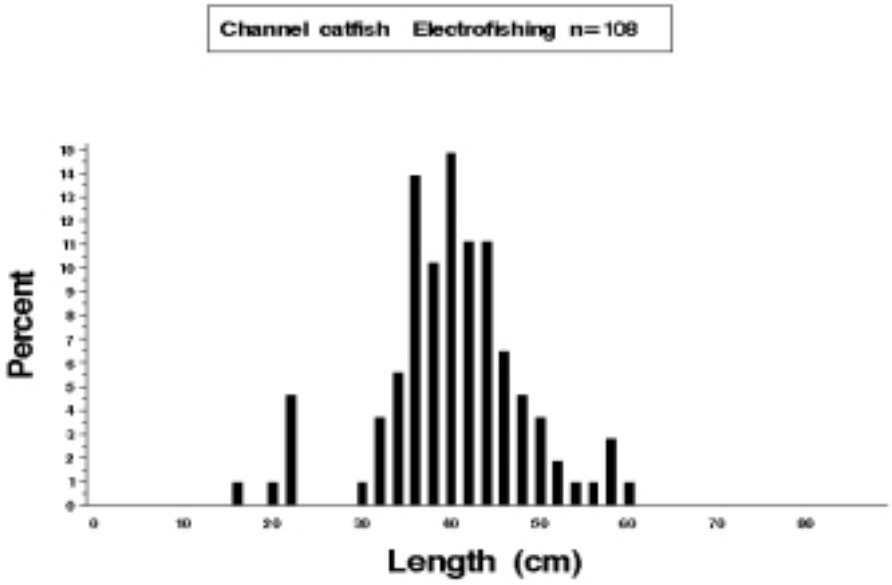


**Figure 2.6.** Length distributions (*length*) as a percentage of catch (*percent*) for channel catfish (*Ictalurus punctatus*) collected by electrofishing in Upper Mississippi River Pool 8 during 1996.

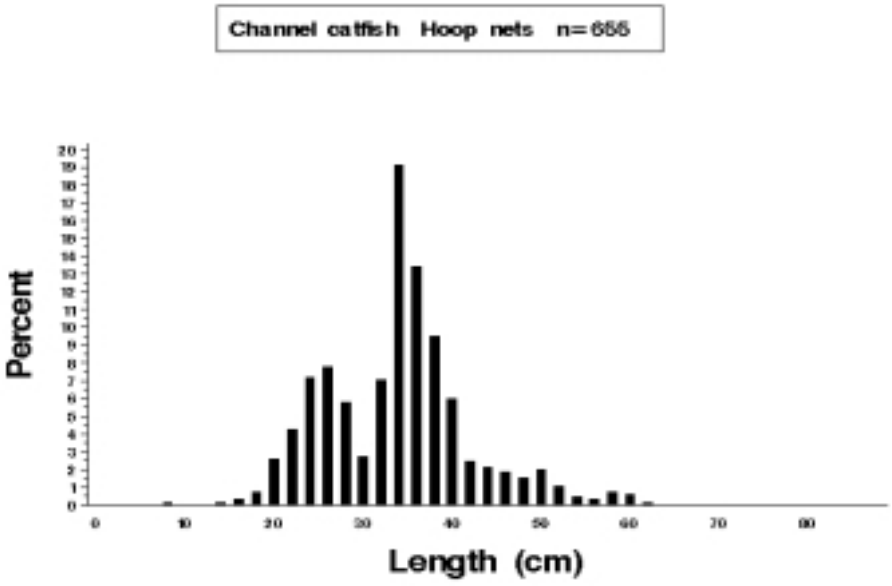


**Figure 2.7.** Length distributions (*length*) as a percentage of catch (*percent*) for channel catfish (*Ictalurus punctatus*) collected by large and small hoop netting in Upper Mississippi River Pool 8 during 1996.

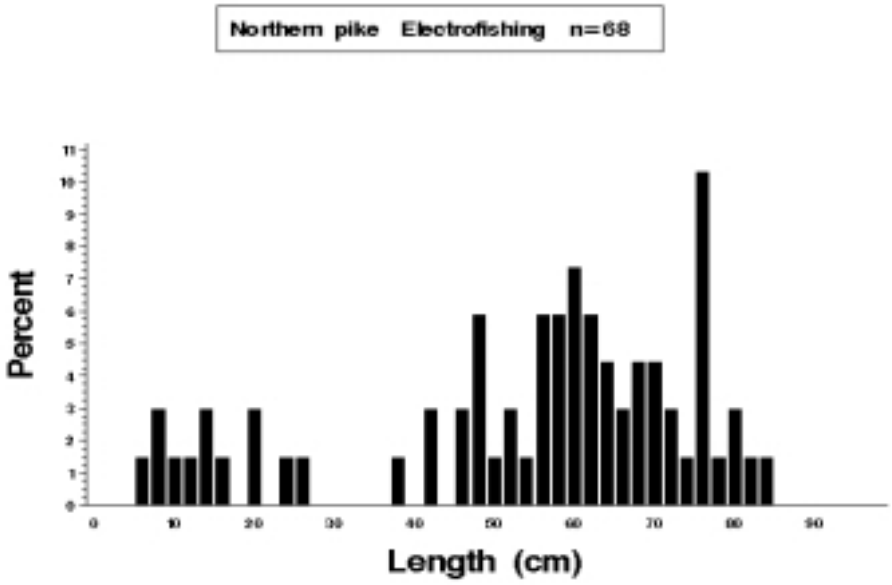


**Figure 2.8.** Length distributions (*length*) as a percentage of catch (*percent*) for northern pike (*Esox lucius*) collected by electrofishing in Upper Mississippi River Pool 8 during 1996.

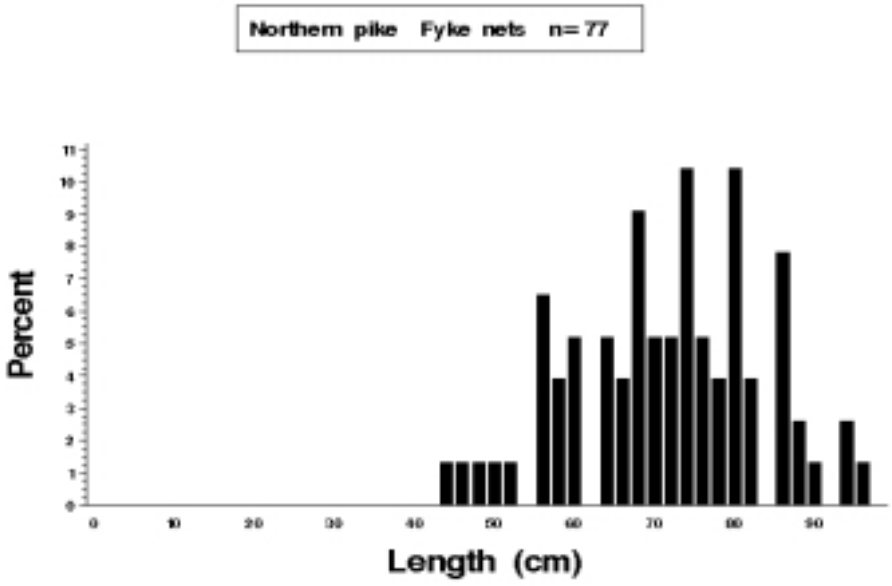


**Figure 2.9.** Length distributions (*length*) as a percentage of catch (*percent*) for northern pike (*Esox lucius*) collected by fyke netting in Upper Mississippi River Pool 8 during 1996.

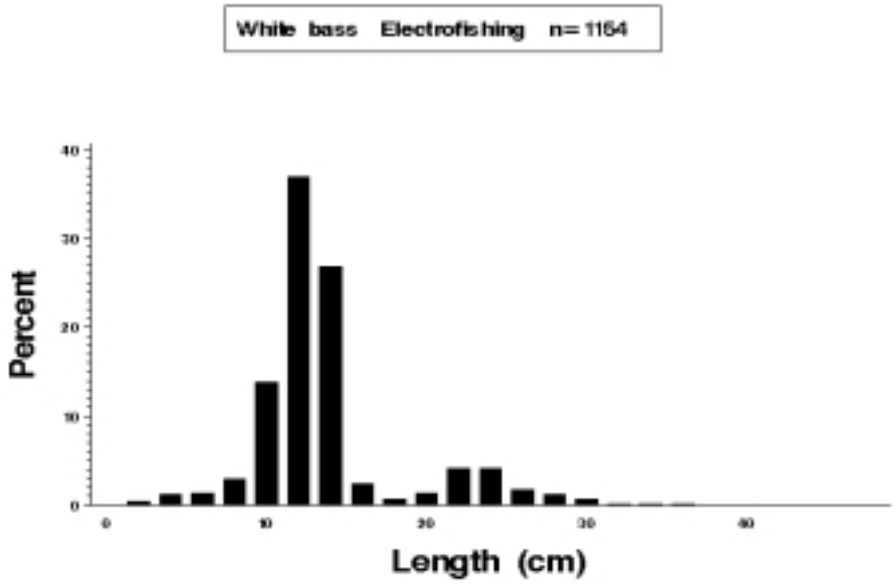


**Figure 2.10.** Length distributions (*length*) as a percentage of catch (*percent*) for white bass (*Morone chrysops*) collected by electrofishing in Upper Mississippi River Pool 8 during 1996.

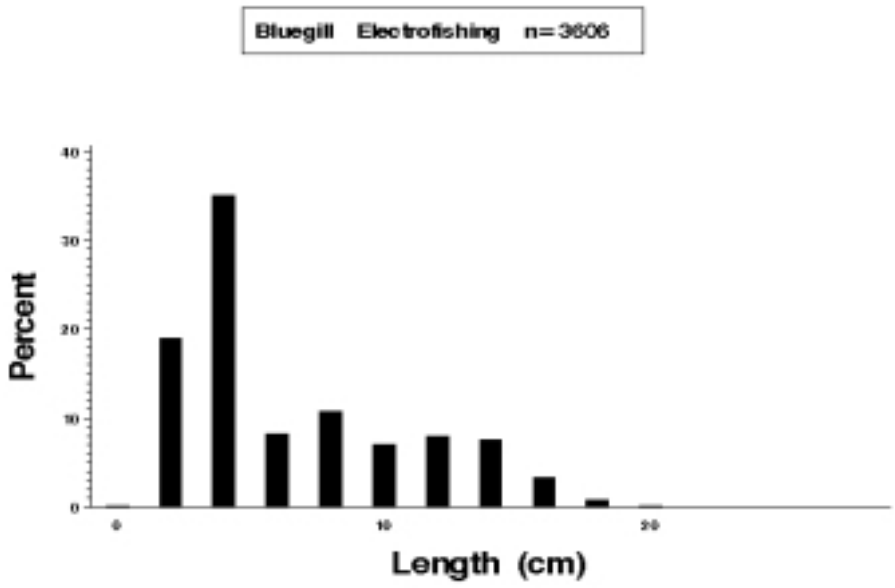


**Figure 2.11.** Length distributions (*length*) as a percentage of catch (*percent*) for bluegill (*Lepomis macrochirus*) collected by electrofishing in Upper Mississippi River Pool 8 during 1996.

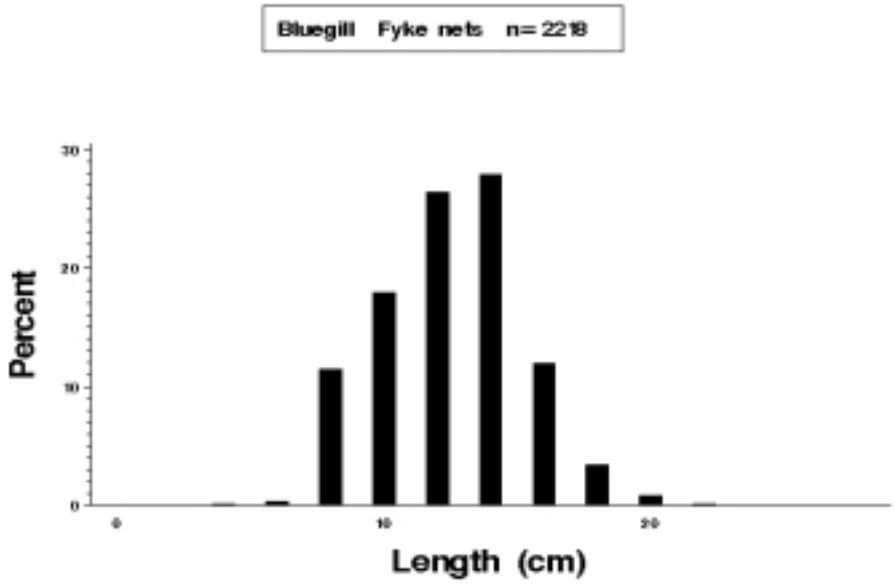


**Figure 2.12.** Length distributions (*length*) as a percentage of catch (*percent*) for bluegill (*Lepomis macrochirus*) collected by fyke netting in Upper Mississippi River Pool 8 during 1996.

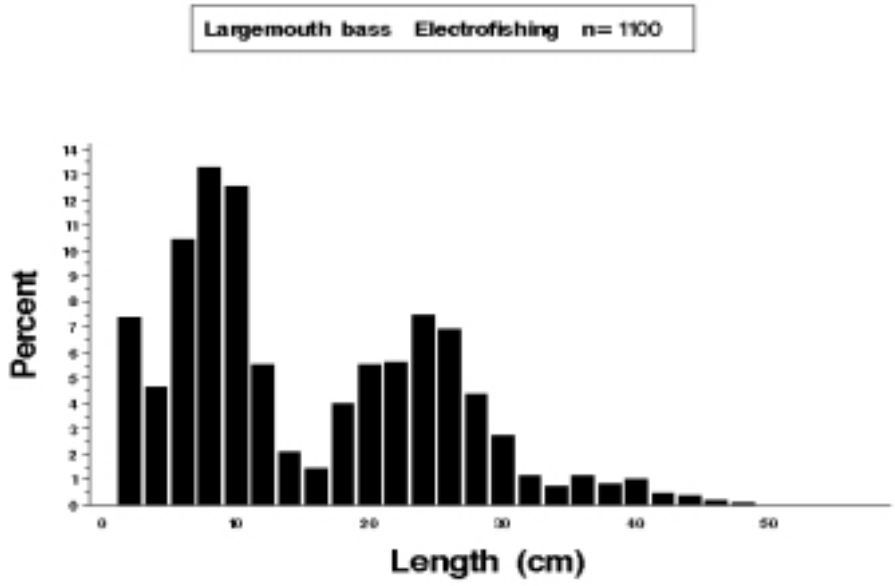


**Figure 2.13.** Length distributions (*length*) as a percentage of catch (*percent*) for largemouth bass (*Micropterus salmoides*) collected by electrofishing in Upper Mississippi River Pool 8 during 1996.

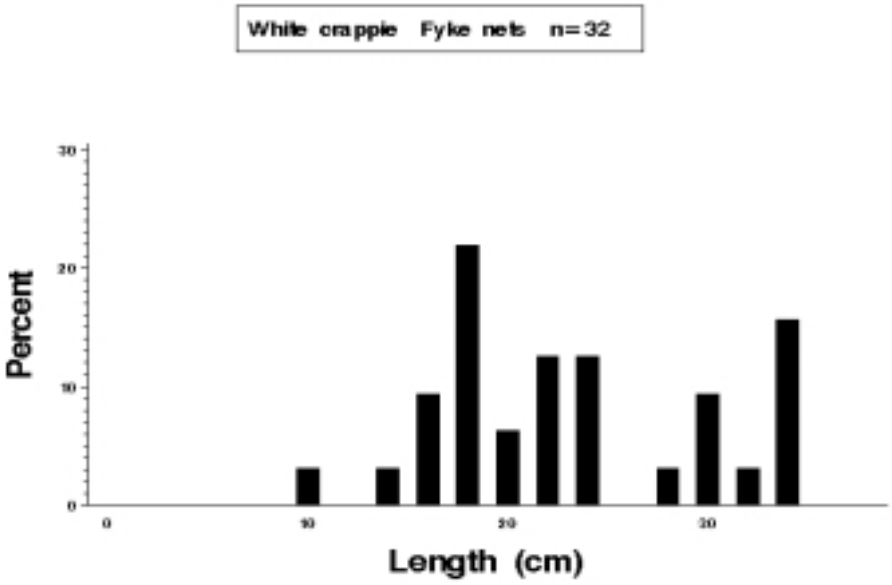


**Figure 2.14.** Length distributions (*length*) as a percentage of catch (*percent*) for white crappie (*Pomoxis annularus*) collected by electrofishing in Upper Mississippi River Pool 8 during 1996.

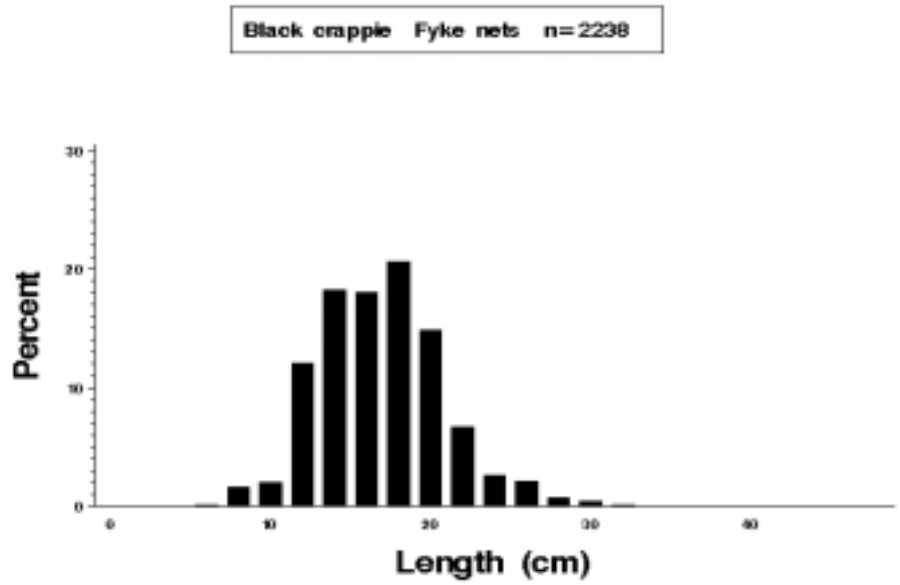


**Figure 2.15.** Length distributions (*length*) as a percentage of catch (*percent*) for black crappie (*Pomoxis nigromaculatus*) collected by electrofishing in Upper Mississippi River Pool 8 during 1996.

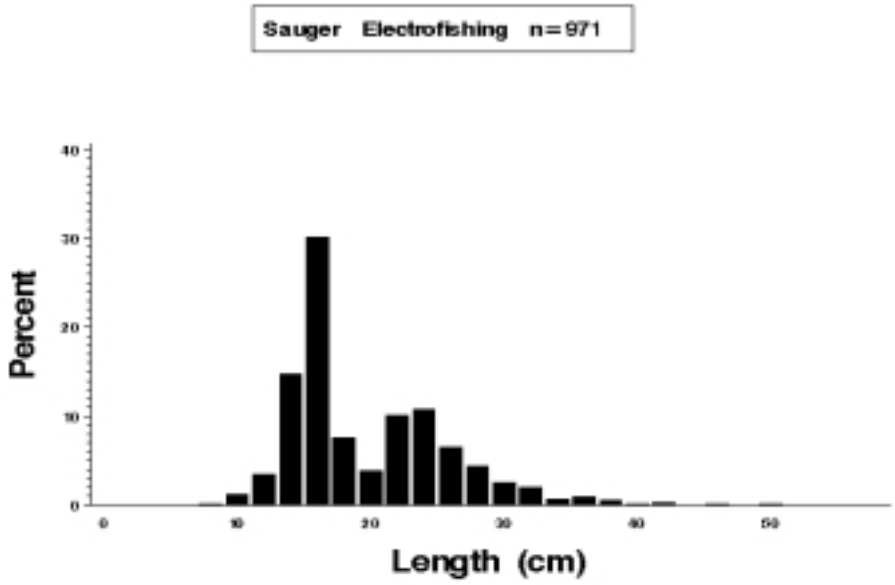


**Figure 2.16.** Length distributions (*length*) as a percentage of catch (*percent*) for sauger (*Stizostedion canadense*) collected by electrofishing in Upper Mississippi River Pool 8 during 1996.

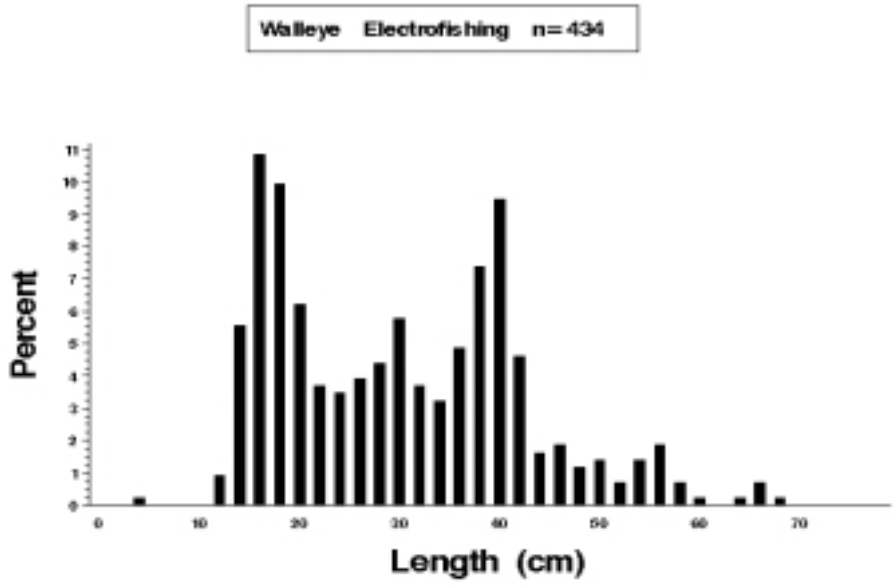


**Figure 2.17.** Length distributions (*length*) as a percentage of catch (*percent*) for walleye (*Stizostedion vitreum*) collected by electrofishing in Upper Mississippi River Pool 8 during 1996.

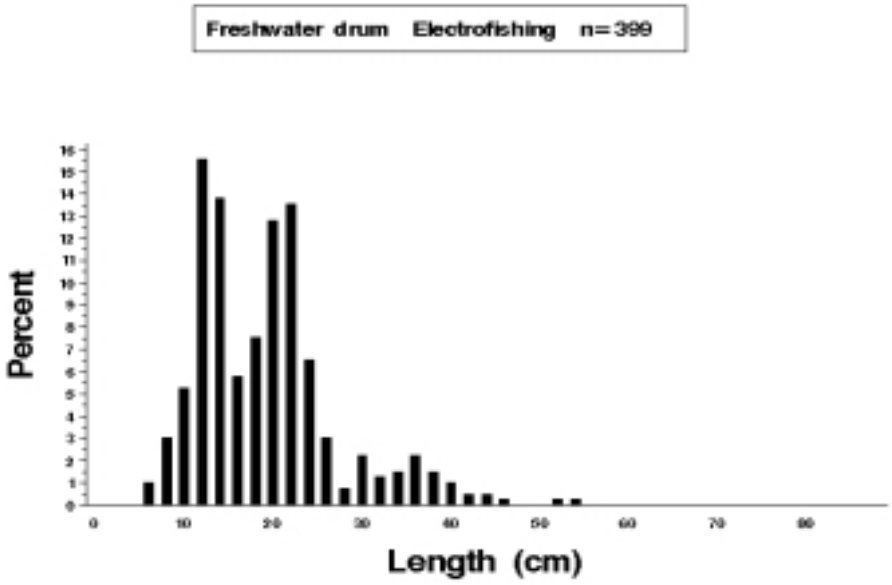


**Figure 2.18.** Length distributions (*length*) as a percentage of catch (*percent*) for freshwater drum (*Aplodinotus grunniens*) collected by electrofishing in Upper Mississippi River Pool 8 during 1996.

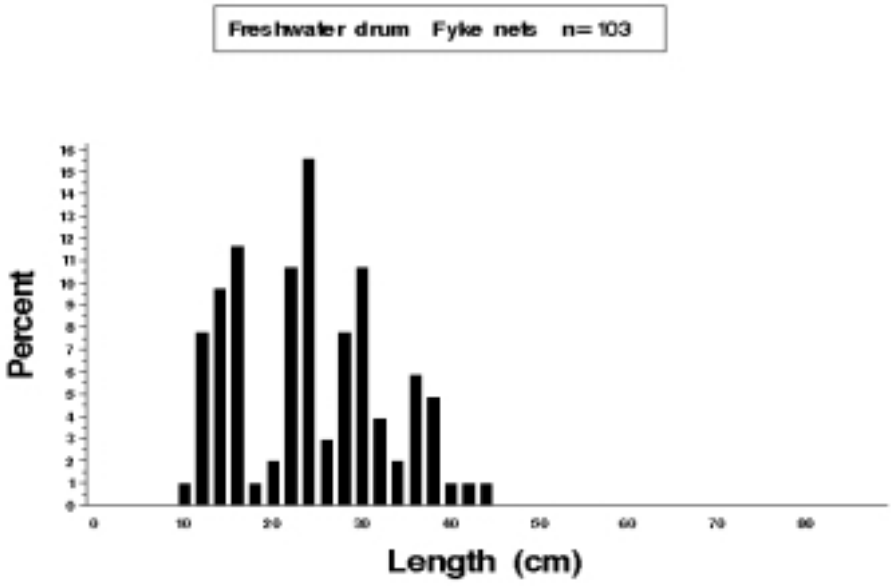


**Figure 2.19**. Length distributions (*length*) as a percentage of catch (*percent*) for freshwater drum (*Aplodinotus grunniens*) collected by fyke netting in Upper Mississippi River Pool 8 during 1996.

# Chapter 3. Pool 13, Upper Mississippi River

by

Melvin C. Bowler

Iowa Department of Natural Resources
Mississippi River Monitoring Station
206 Rose Street
Bellevue, Iowa 52031

## Hydrograph

Water levels throughout the sampling period followed along the 55-year mean at the Lock and Dam 12 tailwater gage (Figure 3.1). During sampling, we encountered highest water levels in the first 3 weeks of the first period (June 17–July 5), and the lowest water levels in the first week of the third period (September 16–20). Water levels did not affect sampling effort in 1996. The U.S. Army Corps of Engineers discharge data were obtained from the Environmental Management Technical Center (Wlosinski et al. 1995).

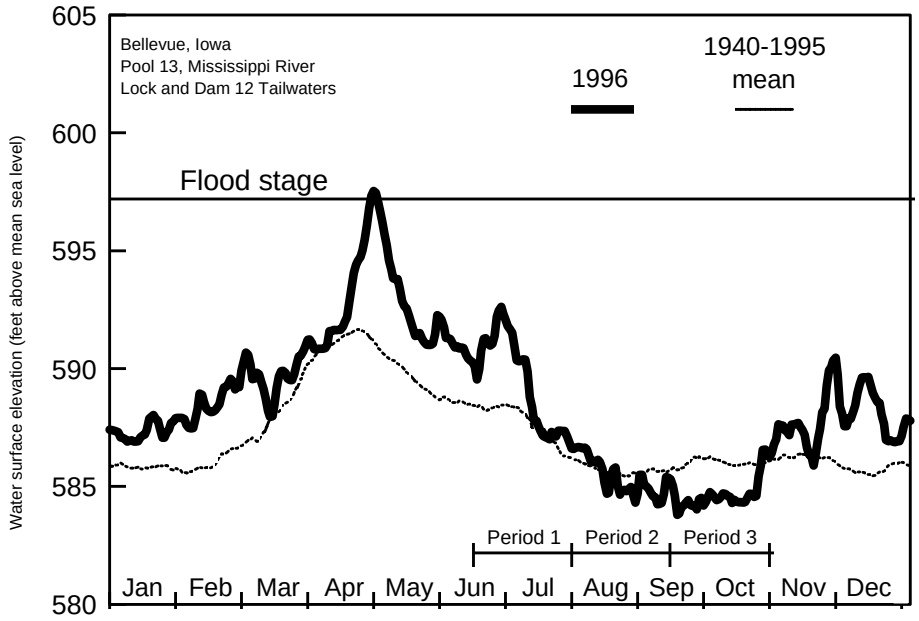


**Figure 3.1.** Daily water surface elevation from Lock and Dam 12 for Pool 13, Upper Mississippi River, during 1996 and mean elevation since 1940. The U.S. Army Corps of Engineers discharge data were obtained from the Environmental Management Technical Center (Wlosinski et al. 1995).

## Summary of Sampling Effort

We sampled the fish population in Pool 13 in 1996 using 10 types of gear that were deployed among eight stratum types. A total of 486 samples were allocated during the three periods, and 486 samples were completed. Sampling effort was uniform among all three periods. We completed 162 samples in the first period, 162 samples in the second, and 162 samples in the third (Table 3.1). Of the 486 samples collected, 438 were at stratified random sites and 48 were at fixed sites.

## Total Catch by Gear

We collected a total of 44,467 fish represented by 59 species with no hybrids reported. The top five species collected with all gears combined were bluegill (8,475), emerald shiner (7,898), river shiner (7,872), channel shiner (2,678), and largemouth bass (2,380).

We collected 5,068 fish (50 species) by day electrofishing, 6,446 fish (46 species) by night electrofishing, 2,277 fish (31 species) by fyke netting, 1,370 fish (27 species) by tandem fyke netting, 11,127 fish (42 species) by mini fyke netting, 1,842 fish (29 species) by tandem mini fyke netting, 15,012 fish (36 species) by seining, 320 fish (16 species) by small hoop netting, 876 fish (22 species) by large hoop netting, and 129 fish (13 species) by trawling (Table 3.2).

We collected no Federal or State threatened or endangered fishes in 1996, however, we collected 46 pugnose minnows—this species is listed as of special concern in Iowa. Other notable species we collected were 2 Mississippi silvery minnows, 3 fathead minnows, 60 quillback, 1 blue sucker, 1 silver redhorse, 3 stonecat, 4 green sunfish, 41 smallmouth bass, and 5 slenderhead darters. These species are listed as uncommon, rare, or tributary strays in Pool 13 by Pitlo et al. (1995) and are infrequently encountered in Long Term Resource Monitoring Program sampling.

## Random Sampling, Mean *C/f* by Gear and Stratum

Mean catch-per-unit-effort (*C/f*) of dominant fish species for random sampling by gear type and stratum is listed in Tables 3.3.1 to 3.3.9.

### *Day Electrofishing*

Day electrofishing *C/f* (fish/15 min) was highest for bluegill (45.21) in the BWCS stratum, bluegill (13.50) in the IMPS stratum, common carp (16.17) in the MCBU stratum, common carp (5.33) in the MCBW stratum, bluegill (24.33) in the SCB stratum, and bluegill (22.83) for all strata combined (Table 3.3.1).

### *Night Electrofishing*

Night electrofishing *C/f* (fish/15 min) was highest for bluegill (28.67) in the BWCS stratum, emerald shiner (36.00) in the MCBU stratum, common carp (21.00) in the SCB stratum, and freshwater drum (19.62) for all strata combined (Table 3.3.2).

### *Fyke Net*

Fyke netting *C/f* (fish per net-day) was highest for black crappie (22.48) in the BWCS stratum, gizzard shad (2.38) in the IMPS stratum, and black crappie (20.47) for all strata combined (Table 3.3.3).

### *Tandem Fyke Net*

Tandem fyke netting *C/f* (fish per net-day) was highest for gizzard shad (14.04) in the BWCO stratum, pumpkinseed (4.81) in the IMPO stratum, and gizzard shad (6.48) for all strata combined (Table 3.3.4).

### *Mini Fyke Net*

Mini fyke netting *C/f* (fish per net-day) was highest for bluegill (108.48) in the BWCS stratum, largemouth bass (107.22) in the IMPS stratum, bluegill (58.07) in the MCBU stratum, bluegill (32.99) in the MCBW stratum, bluegill (28.88) in the SCB stratum, and bluegill (65.66) for all strata combined (Table 3.3.5).

### *Tandem Mini Fyke Net*

Tandem mini fyke netting *C/f* (fish per net-day) was highest for bluegill (19.28) in the BWCO stratum, bluegill (17.05) in the IMPO stratum, and bluegill (17.87) for all strata combined (Table 3.3.6).

### *Small Hoop Net*

Small hoop netting *C/f* (fish per net-day) was highest for bluegill (1.36) in the BWCO stratum, channel catfish (8.92) in the IMPO stratum, channel catfish (2.37) in the MCBU stratum, channel catfish (0.90) in the MCBW stratum, channel catfish (0.60) in the SCB stratum, and channel catfish (4.46) for all strata combined (Table 3.3.7).

### *Large Hoop Net*

Large hoop netting *C/f* (fish per net-day) was highest for smallmouth buffalo (3.00) in the BWCO stratum, channel catfish (2.38) in the IMPO stratum, freshwater drum (2.31) in the MCBU stratum, smallmouth buffalo (2.00) in the MCBW stratum, freshwater drum (3.20) in the SCB stratum, and channel catfish (1.35) for all strata combined (Table 3.3.8).

### *Seine*

Seining *C/f* (fish per haul) was highest for emerald shiner (81.69) in the BWCS stratum, river shiner (164.96) in the IMPS stratum, river shiner (63.56) in the MCBU stratum, river shiner (58.17) in the SCB stratum, and river shiner (47.05) for all strata combined (Table 3.3.9).

## Fixed Sampling, Mean *C/f* by Gear and Stratum

All fixed-site sampling was confined in the TWZ stratum using night electrofishing, mini fyke nets, small and large hoop nets, and trawls. Mean catch-per-unit-effort (*C/f*) of dominant fish species for fixed-site sampling by gear type is listed in Tables 3.4.1 to 3.4.5.

### *Night Electrofishing*

Night electrofishing *C/f* (fish/15 min) was highest for emerald shiner (227.50; Table 3.4.1).

### *Mini Fyke Net*

Mini fyke netting *C/f* (fish per net-day) was highest for channel shiner (34.46; Table 3.4.2).

### *Small Hoop Net*

Small hoop netting *C/f* (fish per net-day) was highest for smallmouth buffalo and freshwater drum (0.59; Table 3.4.3).

### *Large Hoop Net*

Large hoop netting *C/f* (fish per net-day) was highest for smallmouth buffalo (15.57; Table 3.4.4).

### *Trawl*

Trawling *C/f* (fish per haul) was highest for shovelnose sturgeon (1.96; Table 3.4.5).

## Length Distributions of Selected Species

Length distributions (expressed as a percentage of total catch by species by gears) for gizzard shad, common carp, smallmouth buffalo, channel catfish, northern pike, white bass, bluegill, largemouth bass, white crappie, black crappie, sauger, walleye, and freshwater drum are illustrated in Figures 3.2 to 3.16. Because data within a single sampling season are taken over a long time and size ranges for certain species of fish can overlap (e.g., a 6-cm-long bluegill collected early in period 1 is not of the same cohort as a 6-cm-long bluegill collected late in period 3), interpretations in the length distributions should be made cautiously. Length distributions from small samples ($n < 100$) may be included but are not statistically meaningful (Anderson and Neumann 1996).

### *Gizzard Shad*

We collected 442 gizzard shad from day and night electrofishing with lengths ranging from 2.5 to 35.8 cm (Figure 3.2). Mean length was 12.3 cm, and peak distribution occurred at 12 cm. Minimal numbers were collected from 18 to 36 cm and none were collected between 22 and 32 cm.

### *Common Carp*

We collected 967 common carp from day and night electrofishing with lengths ranging from 3.4 to 80.2 cm (Figure 3.3). Mean length was 50.0 cm, and modal distribution occurred at 50 cm. Smaller peaks occurred

around 38 and 66 cm. Young-of-the-year fish (<1.4 cm) constituted a small fraction of total catch. No common carp were collected between 22 and 30 cm.

### *Smallmouth Buffalo*

We collected 357 smallmouth buffalo from small and large hoop netting with lengths ranging from 21.5 to 52.1 cm (Figure 3.4). Mean length was 30.0 cm, and peak distribution occurred at 28 cm. Fish greater than 34 cm constituted a small fraction of total catch.

### *Channel Catfish*

We collected 289 channel catfish from small and large hoop netting with lengths ranging from 5.7 to 53.5 cm (Figure 3.5). Mean length was 23.1 cm, and peak distribution occurred at 18 cm. Smaller peaks occurred at 24 and 32 cm. About 4% were greater than 38.1 cm (>15 inches).

### *Northern Pike*

We collected only 28 northern pike from fyke netting with lengths ranging from 41.7 to 79.0 cm (Figure 3.6). Mean length of the northern pike collected was 61.9 cm.

### *White Bass*

We collected 893 white bass from day and night electrofishing with lengths ranging from 2.1 to 40.9 cm (Figure 3.7). Mean length was 12.7 and peak distribution occurred at 12 cm, and a smaller peak occurred at 6 cm. Fish less than 14.0 cm are probably age 0 and contributed to 70% of the total catch. About 3% were greater than 22.9 cm (>9 inches). Two hundred-seventy-three white bass were grouped into a 5-cm-length category from 90 to 140 cm, and these fish were not included in the length–frequency analysis.

### *Bluegill*

We collected 2,126 bluegill from day and night electrofishing with lengths ranging from 2.1 to 21.0 cm (Figure 3.8). Mean length was 8.6 cm, and peak distribution occurred at 8 cm. About 68% were less than 10 cm (<4 inches) and about 6% were greater than 15.2 cm (>6 inches). We also collected 695 bluegill from fyke netting with lengths ranging from 2.0 to 21.5 cm (Figure 3.9). Mean length was 12.3 cm, and peak distribution occurred at 12 cm. About 19% were greater than 15.2 cm (>6 inches).

### *Largemouth Bass*

We collected 662 largemouth bass from day and night electrofishing with lengths from 3.0 to 51.5 cm (Figure 3.10). Mean length was 19.3 cm, and peak distribution occurred at 6 cm. Smaller peaks that probably represent different age classes occurred at 22–28 and 36–44 cm, and the number of largemouth bass associated with these peaks suggests good recruitment from the past 2 to 3 years. Fish less than 12.0 cm are probably age 0 and contributed to 38% of the total catch. About 9% were greater than 35.5 cm (>14 inches).

### *White Crappie*

We collected 129 white crappie from fyke netting with lengths ranging from 5.8 to 37.2 cm (Figure 3.11). Mean length was 20.2 cm, and peak distribution occurred at 22 cm. A smaller peak occurred at 30 cm. About 51% were greater than 20.3 cm (>8 inches).

### *Black Crappie*

We collected 848 black crappie from fyke netting with lengths ranging from 5.7 to 40.3 cm (Figure 3.12). Mean length was 17.7 cm, and peak distribution occurred at 16 cm. About 19% were greater than 20.3 cm (>8 inches).

### *Sauger*

We collected 306 sauger from day and night electrofishing with lengths ranging from 7.2 to 46.7 cm (Figure 3.13). Mean length was 20.3 cm, and peak distribution occurred at 14 cm. The majority of fish less than 23.0 cm are probably age 0 and contributed to 70% of the total catch. About 11% were greater than 30.5 cm (>12 inches).

### *Walleye*

We collected 119 walleye from day and night electrofishing with lengths ranging from 5.8 to 55.0 cm (Figure 3.14). Mean length was 24.2 cm, and peak distribution occurred at 12–14 cm. Other peaks occurred at 24, 30, and 42 cm. The majority of fish less than 23.0 cm are probably age 0 and contributed to 65% of the total catch. About 10% were greater than 38.1 cm (>15 inches).

### *Freshwater Drum*

We collected 1,084 freshwater drum from day and night electrofishing with lengths ranging from 2.5 to 49.6 cm (Figure 3.15). Mean length was 14.5 cm and peak distribution occurred at 12 cm, and a smaller peak occurred at 22 cm. About 2% were greater than 30.5 cm (>12 inches). We also collected 265 freshwater drum from fyke netting with lengths ranging from 9.4 to 64.5 cm (Figure 3.16). Mean length was 19.8 cm, and peak distribution occurred at 12 cm. Smaller peaks occurred at 20 and 32–34 cm. About 11% were greater than 38.1 cm (>12 inches).

Table 3.1. Allocation of fish sampling effort mong strata by the Long Term Resource Monitoring Program in Pool 13 of the Mississippi River during 1996. Table entries are numbers of successfully completed standardized monitoring collections.



Sampling period = 1: June 15 - July 31

| Sampling gear | BWCS | BWCO | SCB | MCBU | MCBW | IMPS | IMPO | TRI | TWZ | TOTAL |
|---|---|---|---|---|---|---|---|---|---|---|
| Day electrofishing | 8 | | 2 | 4 | 3 | 4 | | | | 21 |
| Fyke net | 10 | | | | | 4 | | | | 14 |
| Large hoop net | | 5 | 2 | 4 | 3 | | 2 | | 2 | 18 |
| Small hoop net | | 5 | 2 | 4 | 3 | | 2 | | 2 | 18 |
| Mini fyke net | 10 | | 2 | 4 | 3 | 4 | | | 2 | 25 |
| Night electrofishing | 2 | | 2 | 2 | | | | | 2 | 8 |
| Seine | 12 | | 4 | 12 | | 8 | | | | 36 |
| Trawling | | | | | | | | | 8 | 8 |
| Tandem fyke net | | 5 | | | | | 2 | | | 7 |
| Tandem mini fyke net | | 5 | | | | | 2 | | | 7 |
| SUBTOTAL | 42 | 20 | 14 | 30 | 12 | 20 | 8 | 0 | 16 | 162 |

Sampling period = 2: August 1 - September 14

| Sampling gear | BWCS | BWCO | SCB | MCBU | MCBW | IMPS | IMPO | TRI | TWZ | TOTAL |
|---|---|---|---|---|---|---|---|---|---|---|
| Day electrofishing | 8 | | 2 | 4 | 3 | 4 | | | | 21 |
| Fyke net | 10 | | | | | 4 | | | | 14 |
| Large hoop net | | 5 | 2 | 4 | 3 | | 2 | | 2 | 18 |
| Small hoop net | | 5 | 2 | 4 | 3 | | 2 | | 2 | 18 |
| Mini fyke net | 10 | | 2 | 4 | 3 | 4 | | | 2 | 25 |
| Night electrofishing | 2 | | 2 | 2 | | | | | 2 | 8 |
| Seine | 12 | | 4 | 12 | | 8 | | | | 36 |
| Trawling | | | | | | | | | 8 | 8 |
| Tandem fyke net | | 5 | | | | | 2 | | | 7 |
| Tandem mini fyke net | | 5 | | | | | 2 | | | 7 |
| SUBTOTAL | 42 | 20 | 14 | 30 | 12 | 20 | 8 | 0 | 16 | 162 |

Sampling period = 3: September 15 - October 31

| Sampling gear | BWCS | BWCO | SCB | MCBU | MCBW | IMPS | IMPO | TRI | TWZ | TOTAL |
|---|---|---|---|---|---|---|---|---|---|---|
| Day electrofishing | 8 | | 2 | 4 | 3 | 4 | | | | 21 |
| Fyke net | 10 | | | | | 4 | | | | 14 |
| Large hoop net | | 5 | 2 | 4 | 3 | | 2 | | 2 | 18 |
| Small hoop net | | 5 | 2 | 4 | 3 | | 2 | | 2 | 18 |
| Mini fyke net | 10 | | 2 | 4 | 3 | 4 | | | 2 | 25 |
| Night electrofishing | 2 | | 2 | 2 | | | | | 2 | 8 |
| Seine | 12 | | 4 | 12 | | 8 | | | | 36 |
| Trawling | | | | | | | | | 8 | 8 |
| Tandem fyke net | | 5 | | | | | 2 | | | 7 |
| Tandem mini fyke net | | 5 | | | | | 2 | | | 7 |
| SUBTOTAL | 42 | 20 | 14 | 30 | 12 | 20 | 8 | 0 | 16 | 162 |
| | 126 | 60 | 42 | 90 | 36 | 60 | 24 | 0 | 48 | 486 |

Strata: BWCS - Backwater, contiguous, shoreline.
BWCO - Backwater, contiguous, offshore.
IMPS - Impounded, shoreline.
IMPO - Impounded, offshore.
MCBU - Main channel border, unstructured.
MCBW - Main channel border, wing dam.
SCB - Side channel border.
TRI - Tributary mouth.
TWZ - Tailwater.

Table 3.2. Total catches, by gear type, of fishes collected by the Long Term Resource Program during 1996 in Pool 13 of the Mississippi River. See Table 3.1 for the list of sampling gears actually deployed in this study reach.



| Species | Common name | Scientific name | D | N | F | X | M | Y | S | HS | HL | G | TA | T | TOTAL |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | Silver lamprey | Ichthyomyzon unicuspis | 1 | 1 | 1 | - | - | - | - | - | - | - | - | - | 3 |
| 2 | Shovelnose sturgeon | Scaphirhynchus platorynchus | - | 1 | - | - | - | - | - | 1 | 5 | - | - | 47 | 54 |
| 3 | Longnose gar | Lepisosteus osseus | 4 | 8 | 13 | 5 | 1 | - | 2 | - | 3 | - | - | - | 36 |
| 4 | Shortnose gar | Lepisosteus platostomus | 9 | 9 | 61 | 32 | 37 | 5 | 5 | - | 3 | - | - | - | 161 |
| 5 | Bowfin | Amia calva | 22 | 3 | 15 | 5 | 10 | - | - | 2 | - | - | - | - | 57 |
| 6 | Mooneye | Hiodon tergisus | 2 | 3 | - | 2 | - | - | - | - | 1 | - | - | - | 8 |
| 7 | Gizzard shad | Dorosoma cepedianum | 317 | 125 | 314 | 420 | 25 | 106 | 15 | 1 | 12 | - | - | - | 1335 |
| 8 | Spotfin shiner | Cyprinella spiloptera | 43 | 9 | - | - | 33 | 1 | 78 | - | - | - | - | - | 164 |
| 9 | Common carp | Cyprinus carpio | 711 | 256 | 53 | 44 | 161 | 2 | 19 | 1 | 22 | - | - | - | 1269 |
| 10 | Mississippi silvery minnow | Hybognathus nuchalis | - | - | - | - | 2 | - | - | - | - | - | - | - | 2 |
| 11 | Speckled chub | Macrhybopsis aestivalis | - | - | - | - | - | - | 1 | - | - | - | - | - | 1 |
| 12 | Silver chub | Macrhybopsis storeriana | 16 | 88 | - | - | 45 | 7 | 80 | 3 | - | - | - | 31 | 270 |
| 13 | Golden shiner | Notemigonus crysoleucas | 62 | 12 | 7 | 11 | 41 | 6 | 17 | 1 | 1 | - | - | - | 158 |
| 14 | Emerald shiner | Notropis atherinoides | 620 | 1686 | - | - | 1510 | 290 | 3792 | - | - | - | - | - | 7898 |
| 15 | River shiner | Notropis blennius | 108 | 99 | - | - | 440 | 2 | 7223 | - | - | - | - | - | 7872 |
| 16 | Spottail shiner | Notropis hudsonius | 11 | 12 | - | - | 16 | 27 | 11 | - | - | - | - | - | 77 |
| 17 | Channel shiner | Notropis wickliffi | 52 | 203 | - | - | 1277 | 57 | 1089 | - | - | - | - | - | 2678 |
| 18 | Pugnose minnow | Opsopoeodus emiliae | - | - | - | - | 25 | 13 | 8 | - | - | - | - | - | 46 |
| 19 | Fathead minnow | Pimephales promelas | - | 1 | - | - | 1 | 1 | - | - | - | - | - | - | 3 |
| 20 | Bullhead minnow | Pimephales vigilax | 117 | 76 | - | - | 485 | 90 | 778 | - | - | - | - | - | 1546 |
| 21 | River carpsucker | Carpiodes carpio | 18 | 11 | 21 | 6 | 1 | - | 439 | - | 6 | - | - | - | 502 |
| 22 | Quillback | Carpiodes cyprinus | 8 | 38 | 6 | 3 | - | - | 3 | - | 2 | - | - | - | 60 |
| 23 | Highfin carpsucker | Carpiodes velifer | 1 | 17 | - | - | - | - | - | - | - | - | - | - | 18 |
| 24 | Blue sucker | Cycleptus elongatus | - | - | - | - | - | - | - | - | - | - | - | 1 | 1 |
| 25 | Smallmouth buffalo | Ictiobus bubalus | 29 | 21 | 17 | 19 | - | - | - | 8 | 349 | - | - | - | 443 |
| 26 | Bigmouth buffalo | Ictiobus cyprinellus | 20 | 5 | 2 | 2 | - | - | - | - | 4 | - | - | - | 33 |
| 27 | Unidentified buffalo | Ictiobus sp. | 2 | - | - | - | 4 | - | - | - | - | - | - | - | 6 |
| 28 | Spotted sucker | Minytrema melanops | 37 | 2 | 13 | 10 | - | - | - | - | - | - | - | - | 62 |
| 29 | Silver redhorse | Moxostoma anisurum | 1 | - | - | - | - | - | - | - | - | - | - | - | 1 |
| 30 | Golden redhorse | Moxostoma erythrurum | 3 | 11 | - | - | - | - | 1 | - | - | - | - | - | 15 |
| 31 | Shorthead redhorse | Moxostoma macrolepidotum | 58 | 89 | 8 | 28 | 3 | - | 4 | 6 | 3 | - | - | 3 | 202 |
| 32 | Unidentified redhorse | Moxostoma sp. | - | - | - | - | 3 | - | 16 | - | - | - | - | 1 | 20 |
| 33 | Black bullhead | Ameiurus melas | 1 | - | 2 | - | - | - | - | - | - | - | - | - | 3 |
| 34 | Yellow bullhead | Ameiurus natalis | 1 | - | 21 | - | 12 | - | - | - | - | - | - | - | 34 |
| 35 | Channel catfish | Ictalurus punctatus | 35 | 27 | 13 | 7 | 33 | 4 | 29 | 198 | 91 | - | - | 24 | 461 |
| 36 | Stonecat | Noturus flavus | - | - | - | - | 1 | - | - | - | - | - | - | 2 | 3 |
| 37 | Tadpole madtom | Noturus gyrinus | - | - | - | - | 139 | 10 | 33 | - | 2 | - | - | - | 184 |
| 38 | Flathead catfish | Pylodictis olivaris | 20 | 18 | 8 | - | 9 | - | - | 5 | 12 | - | - | 2 | 74 |
| 39 | Northern pike | Esox lucius | 6 | 1 | 16 | 12 | 3 | - | - | - | - | - | - | - | 38 |

Gears: D - Day electrofishing
N - Night electrofishing
F - Fyke netting
X - Tandem fyke netting
M - Mini fyke netting
Y - Tandem mini fyke netting
S - Seining
HS - Small hoop netting
HL - Large hoop netting
G - Gill netting
TA - Trammel netting, anchored sets
T - Trawling (4.8-m bottom trawl)

Table 3.2. Total catches, by gear type, of fishes collected by the Long Term Resource Program during 1996 in Pool 13 of the Mississippi River. See Table 3.1 for the list of sampling gears actually deployed in this study reach.



| Species | Common name | Scientific name | D | N | F | X | M | Y | S | HS | HL | G | TA | T | TOTAL |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 40 | Brook silverside | Labidesthes sicculus | 11 | 22 | - | - | 6 | - | 29 | - | - | - | - | - | 68 |
| 41 | White bass | Morone chrysops | 64 | 1102 | 173 | 131 | 64 | 23 | 38 | 3 | 8 | - | - | - | 1606 |
| 42 | Yellow bass | Morone mississippiensis | 17 | 8 | 4 | 2 | - | - | - | - | - | - | - | - | 31 |
| 43 | Rock bass | Ambloplites rupestris | 5 | 5 | - | - | 1 | - | - | - | - | - | - | - | 11 |
| 44 | Green sunfish | Lepomis cyanellus | 1 | 3 | - | - | - | - | - | - | - | - | - | - | 4 |
| 45 | Pumpkinseed | Lepomis gibbosus | 112 | 8 | 27 | 65 | 60 | 14 | 38 | 1 | - | - | - | - | 325 |
| 46 | Warmouth | Lepomis gulosus | 15 | - | 4 | - | 5 | - | - | - | - | - | - | - | 24 |
| 47 | Orangespotted sunfish | Lepomis humilis | 248 | 179 | 6 | 1 | 780 | 41 | 388 | - | - | - | - | - | 1643 |
| 48 | Bluegill | Lepomis macrochirus | 1473 | 653 | 596 | 99 | 4380 | 738 | 420 | 57 | 58 | - | - | 1 | 8475 |
| 49 | Smallmouth bass | Micropterus dolomieu | 4 | 37 | - | - | - | - | - | - | - | - | - | - | 41 |
| 50 | Largemouth bass | Micropterus salmoides | 441 | 221 | 40 | 5 | 1325 | 4 | 344 | - | - | - | - | - | 2380 |
| 51 | White crappie | Pomoxis annularis | 33 | 10 | 93 | 36 | 16 | 21 | 1 | 3 | 15 | - | - | - | 228 |
| 52 | Black crappie | Pomoxis nigromaculatus | 56 | 51 | 657 | 191 | 23 | 47 | 6 | 10 | 48 | - | - | 1 | 1090 |
| 53 | Mud darter | Etheostoma asprigene | 1 | - | - | - | 31 | 6 | 7 | - | - | - | - | - | 45 |
| 54 | Johnny darter | Etheostoma nigrum | 6 | - | - | - | 35 | - | 32 | - | - | - | - | - | 3 |
| 55 | Yellow perch | Perca flavescens | 7 | - | 7 | 7 | - | 1 | - | - | 4 | - | - | - | 26 |
| 56 | Logperch | Percina caprodes | 17 | 22 | - | - | 11 | 2 | 7 | - | - | - | - | - | 59 |
| 57 | Slenderhead darter | Percina phoxocephala | - | 1 | - | - | 1 | - | 3 | - | - | - | - | - | 5 |
| 58 | River darter | Percina shumardi | 1 | 3 | - | - | 33 | 1 | 1 | - | - | - | - | - | 39 |
| 59 | Sauger | Stizostedion canadense | 51 | 256 | 12 | 10 | 2 | 5 | 1 | - | 2 | - | - | 4 | 343 |
| 60 | Walleye | Stizostedion vitreum | 23 | 96 | 11 | 8 | 3 | 3 | 3 | - | - | - | - | 1 | 148 |
| 61 | Freshwater drum | Aplodinotus grunniens | 147 | 937 | 56 | 209 | 34 | 305 | 51 | 20 | 225 | - | - | 11 | 1995 |
| 62 | Unidentified | Unidentified | - | - | - | - | - | 10 | - | - | - | - | - | - | 10 |
| | | | 5068 | 6446 | 2277 | 1370 | 11127 | 1842 | 15012 | 320 | 876 | 0 | 0 | 129 | 44467 |

Gears:
D - Day electrofishing
N - Night electrofishing
F - Fyke netting
X - Tandem fyke netting
M - Mini fyke netting
Y - Tandem mini fyke netting
S - Seining
HS - Small hoop netting
HL - Large hoop netting
G - Gill netting
TA - Trammel netting, anchored sets
T - Trawling (4.8-m bottom trawl)

Table 3.3.1. Mean catch-per-unit-effort and (standard error) for fishes collected by day electrofishing in Pool 13 of the Mississippi River using stratified random sampling during 1996. The statistics under ALL pertain to unbiased means over all strata sampled using this gear (as indicated by nonmissing entries below and by Table 3.1). See text for definitions of catch-per-unit-effort and standard error.



| Common name | ALL | BWCO | BWCS | IMPO | IMPS | MCBU | MCBW | SCB | TRI | TWZ |
|---|---|---|---|---|---|---|---|---|---|---|
| Silver lamprey | 0.03 | | | | | 0.08 | | | | |
| | (0.03) | | | | | (0.08) | | | | |
| Longnose gar | 0.11 | | | | 0.08 | 0.17 | | 0.17 | | |
| | (0.07) | | | | (0.08) | (0.17) | | (0.17) | | |
| Shortnose gar | 0.15 | | 0.21 | | 0.17 | 0.08 | | 0.17 | | |
| | (0.07) | | (0.13) | | (0.11) | (0.08) | | (0.17) | | |
| Bowfin | 0.33 | | 0.88 | | | | | 0.17 | | |
| | (0.13) | | (0.37) | | | | | (0.17) | | |
| Mooneye | | | | | | | 0.22 | | | |
| | | | | | | | (0.22) | | | |
| Gizzard shad | 5.90 | | 6.33 | | 2.33 | 5.25 | 3.67 | 6.83 | | |
| | (1.37) | | (1.69) | | (1.62) | (2.30) | (2.71) | (3.57) | | |
| Spotfin shiner | 0.75 | | 0.25 | | 0.58 | 0.92 | 1.33 | 1.17 | | |
| | (0.22) | | (0.11) | | (0.34) | (0.50) | (1.21) | (0.48) | | |
| Common carp | 14.30 | | 12.42 | | 6.58 | 16.17 | 5.33 | 15.33 | | |
| | (2.27) | | (3.48) | | (2.10) | (3.77) | (2.54) | (5.40) | | |
| Silver chub | 0.33 | | 0.29 | | 0.25 | 0.25 | | 0.50 | | |
| | (0.14) | | (0.13) | | (0.18) | (0.13) | | (0.50) | | |
| Golden shiner | 0.89 | | 2.54 | | | | | 0.17 | | |
| | (0.52) | | (1.57) | | | | | (0.17) | | |
| Emerald shiner | 11.68 | | 10.92 | | 8.00 | 15.00 | 3.44 | 8.50 | | |
| | (2.78) | | (5.59) | | (3.79) | (5.26) | (1.12) | (2.67) | | |
| River shiner | 2.69 | | 0.38 | | 1.50 | 5.83 | 0.33 | 1.33 | | |
| | (0.94) | | (0.15) | | (0.63) | (2.50) | (0.24) | (0.61) | | |
| Spottail shiner | 0.18 | | 0.13 | | 0.33 | 0.33 | | | | |
| | (0.08) | | (0.09) | | (0.19) | (0.19) | | | | |
| Channel shiner | 1.30 | | 0.63 | | 0.17 | 1.67 | 0.44 | 1.83 | | |
| | (0.42) | | (0.18) | | (0.17) | (0.91) | (0.34) | (0.98) | | |
| Bullhead minnow | 2.28 | | 3.04 | | 1.00 | 0.92 | | 3.50 | | |
| | (0.60) | | (1.41) | | (0.44) | (0.38) | | (1.34) | | |
| River carpsucker | 0.27 | | 0.21 | | 0.50 | 0.50 | 0.11 | | | |
| | (0.09) | | (0.08) | | (0.29) | (0.23) | (0.11) | | | |
| Quillback | 0.08 | | 0.08 | | 0.42 | | | 0.17 | | |
| | (0.05) | | (0.06) | | (0.42) | | | (0.17) | | |
| Highfin carpsucker | 0.03 | | | | | 0.08 | | | | |
| | (0.03) | | | | | (0.08) | | | | |
| Smallmouth buffalo | 0.40 | | 0.67 | | | 0.25 | 0.89 | 0.33 | | |
| | (0.09) | | (0.17) | | | (0.13) | (0.68) | (0.21) | | |
| Bigmouth buffalo | 0.42 | | 0.42 | | | 0.42 | 0.22 | 0.50 | | |
| | (0.16) | | (0.28) | | | (0.26) | (0.15) | (0.34) | | |
| Spotted sucker | 0.59 | | 1.38 | | 0.08 | | | 0.50 | | |
| | (0.22) | | (0.54) | | (0.08) | | | (0.50) | | |
| Silver redhorse | 0.01 | | 0.04 | | | | | | | |
| | (0.01) | | (0.04) | | | | | | | |
| Golden redhorse | 0.07 | | | | | 0.08 | 0.11 | 0.17 | | |
| | (0.05) | | | | | (0.08) | (0.11) | (0.17) | | |
| Shorthead redhorse | 0.23 | | 0.17 | | 0.58 | 0.33 | 4.78 | | | |
| | (0.08) | | (0.10) | | (0.34) | (0.19) | (1.61) | | | |
| Black bullhead | 0.01 | | 0.04 | | | | | | | |
| | (0.01) | | (0.04) | | | | | | | |
| Yellow bullhead | 0.01 | | 0.04 | | | | | | | |
| | (0.01) | | (0.04) | | | | | | | |
| Channel catfish | 0.70 | | 0.50 | | 0.33 | 1.17 | 0.33 | 0.33 | | |
| | (0.20) | | (0.38) | | (0.14) | (0.34) | (0.24) | (0.33) | | |
| Flathead catfish | 0.33 | | 0.38 | | 0.17 | 0.42 | 0.33 | 0.17 | | |
| | (0.08) | | (0.15) | | (0.11) | (0.15) | (0.24) | (0.17) | | |
| Northern pike | 0.11 | | 0.21 | | | | | 0.17 | | |
| | (0.05) | | (0.10) | | | | | (0.17) | | |

Strata: BWCS - Backwater, contiguous, shoreline.
BWCO - Backwater, contiguous, offshore.
IMPS - Impounded, shoreline.
IMPO - Impounded, offshore.
MCBU - Main channel border, unstructured.
MCBW - Main channel border, wing dam.
SCB - Side channel border.
TRI - Tributary mouth.
TWZ - Tailwater.

Table 3.3.1. Mean catch-per-unit-effort and (standard error) for fishes collected by day electrofishing in Pool 13 of the Mississippi River using stratified random sampling during 1996. The statistics under ALL pertain to unbiased means over all strata sampled using this gear (as indicated by nonmissing entries below and by Table 3.1). See text for definitions of catch-per-unit-effort and standard error.



| Common name | ALL | BWCO | BWCS | IMPO | IMPS | MCBU | MCBW | SCB | TRI | TWZ |
|---|---|---|---|---|---|---|---|---|---|---|
| Brook silverside | 0.10 | | 0.13 | | 0.58 | | | 0.17 | | |
| | (0.05) | | (0.09) | | (0.34) | | | (0.17) | | |
| White bass | 1.19 | | 0.88 | | 1.25 | 1.50 | 0.33 | 1.17 | | |
| | (0.26) | | (0.45) | | (0.57) | (0.38) | (0.24) | (0.65) | | |
| Yellow bass | 0.24 | | 0.71 | | | | | | | |
| | (0.20) | | (0.59) | | | | | | | |
| Rock bass | 0.01 | | | | 0.42 | | | | | |
| | (0.01) | | | | (0.26) | | | | | |
| Green sunfish | | | | | 0.08 | | | | | |
| | | | | | (0.08) | | | | | |
| Pumpkinseed | 1.09 | | 1.50 | | 5.42 | 0.17 | 0.11 | 1.33 | | |
| | (0.35) | | (0.51) | | (2.33) | (0.17) | (0.11) | (1.15) | | |
| Warmouth | 0.21 | | 0.63 | | | | | | | |
| | (0.10) | | (0.30) | | | | | | | |
| Orangespotted sunfish | 4.05 | | 9.29 | | 0.08 | 0.50 | | 3.00 | | |
| | (0.88) | | (2.02) | | (0.08) | (0.23) | | (2.24) | | |
| Bluegill | 22.83 | | 45.21 | | 13.50 | 2.92 | 5.00 | 24.33 | | |
| | (5.16) | | (10.47) | | (6.30) | (0.76) | (3.46) | (14.97) | | |
| Smallmouth bass | 0.10 | | | | | 0.17 | 0.11 | 0.17 | | |
| | (0.06) | | | | | (0.11) | (0.11) | (0.17) | | |
| Largemouth bass | 6.62 | | 11.04 | | 7.08 | 3.92 | 1.67 | 4.83 | | |
| | (0.76) | | (1.35) | | (2.81) | (0.93) | (0.99) | (1.99) | | |
| White crappie | 0.48 | | 1.33 | | | 0.08 | | | | |
| | (0.12) | | (0.36) | | | (0.08) | | | | |
| Black crappie | 0.92 | | 1.96 | | 0.08 | 0.25 | 0.11 | 0.67 | | |
| | (0.20) | | (0.43) | | (0.08) | (0.13) | (0.11) | (0.49) | | |
| Mud darter | 0.04 | | | | | | | 0.17 | | |
| | (0.04) | | | | | | | (0.17) | | |
| Johnny darter | 0.12 | | 0.17 | | | 0.17 | | | | |
| | (0.06) | | (0.12) | | | (0.11) | | | | |
| Yellow perch | 0.09 | | 0.25 | | 0.08 | | | | | |
| | (0.05) | | (0.14) | | (0.08) | | | | | |
| Logperch | 0.13 | | 0.21 | | 0.50 | | 0.56 | 0.17 | | |
| | (0.06) | | (0.13) | | (0.4) | | (0.44) | (0.17) | | |
| River darter | 0.01 | | 0.04 | | | | | | | |
| | (0.01) | | (0.04) | | | | | | | |
| Sauger | 0.81 | | 1.46 | | 0.50 | 0.25 | 0.22 | 0.83 | | |
| | (0.22) | | (0.37) | | (0.23) | (0.18) | (0.22) | (0.65) | | |
| Walleye | 0.34 | | 0.42 | | 0.58 | 0.25 | 0.11 | 0.33 | | |
| | (0.11) | | (0.16) | | (0.34) | (0.13) | (0.11) | (0.33) | | |
| Freshwater drum | 2.39 | | 2.38 | | 3.58 | 3.17 | 0.22 | 1.17 | | |
| | (0.70) | | (0.52) | | (1.52) | (1.79) | (0.15) | (0.48) | | |

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Table 3.3.2. Mean catch-per-unit-effort and (standard error) for fishes collected by night electrofishing in Pool 13 of the Mississippi River using stratified random sampling during 1996. The statistics under ALL pertain to unbiased means over all strata sampled using this gear (as indicated by nonmissing entries below and by Table 3.1). See text for definitions of catch-per-unit-effort and standard error.



| Common name | ALL | BWCO | BWCS | IMPO | IMPS | MCBU | MCBW | SCB | TRI | TWZ |
|---|---|---|---|---|---|---|---|---|---|---|
| Silver lamprey | 0.04 | | | | | | | 0.17 | | |
| | (0.04) | | | | | | | (0.17) | | |
| Shovelnose sturgeon | 0.06 | | 0.17 | | | | | | | |
| | (0.06) | | (0.17) | | | | | | | |
| Longnose gar | 0.43 | | 0.17 | | | 0.50 | | 0.67 | | |
| | (0.19) | | (0.17) | | | (0.34) | | (0.49) | | |
| Sortnose gar | 0.43 | | 0.67 | | | 0.50 | | | | |
| | (0.20) | | (0.42) | | | (0.34) | | | | |
| Bowfin | 0.12 | | 0.17 | | | 0.17 | | | | |
| | (0.09) | | (0.17) | | | (0.17) | | | | |
| Mooneye | 0.09 | | | | | | | 0.33 | | |
| | (0.06) | | | | | | | (0.21) | | |
| Gizzard shad | 2.40 | | 4.67 | | | 2.00 | | | | |
| | (1.15) | | (2.62) | | | (1.81) | | | | |
| Spotfin shiner | 0.30 | | | | | 0.67 | | 0.17 | | |
| | (0.26) | | | | | (0.67) | | (0.17) | | |
| Common carp | 11.94 | | 10.00 | | | 7.50 | | 21.00 | | |
| | (2.01) | | (2.34) | | | (2.73) | | (5.69) | | |
| Silver chub | 3.85 | | 4.67 | | | 2.67 | | 4.50 | | |
| | (1.19) | | (1.86) | | | (1.73) | | (2.80) | | |
| Golden shiner | 0.23 | | 0.17 | | | 0.33 | | 0.17 | | |
| | (0.15) | | (0.17) | | | (0.33) | | (0.17) | | |
| Emerald shiner | 19.32 | | 8.83 | | | 36.00 | | 8.67 | | |
| | (8.22) | | (5.50) | | | (20.53) | | (3.02) | | |
| River shiner | 1.09 | | 0.17 | | | 2.67 | | | | |
| | (0.81) | | (0.17) | | | (2.09) | | | | |
| Spottail shiner | 0.25 | | 0.17 | | | 0.50 | | | | |
| | (0.20) | | (0.17) | | | (0.50) | | | | |
| Channel shiner | 1.81 | | 1.67 | | | 2.50 | | 1.00 | | |
| | (0.64) | | (1.12) | | | (1.23) | | (0.63) | | |
| Bullhead minnow | 1.00 | | 1.00 | | | 1.00 | | 1.00 | | |
| | (0.28) | | (0.63) | | | (0.37) | | (0.37) | | |
| River carpsucker | 0.25 | | 0.33 | | | | | 0.50 | | |
| | (0.12) | | (0.21) | | | | | (0.34) | | |
| Quillback | 1.48 | | 0.67 | | | 1.17 | | 3.00 | | |
| | (0.48) | | (0.49) | | | (0.79) | | (1.21) | | |
| Highfin carpsucker | 0.50 | | 0.17 | | | | | 1.67 | | |
| | (0.32) | | (0.17) | | | | | (1.17) | | |
| Smallmouth buffalo | 0.33 | | 0.33 | | | 0.33 | | 0.33 | | |
| | (0.18) | | (0.33) | | | (0.33) | | (0.21) | | |
| Bigmouth buffalo | 0.28 | | | | | 0.50 | | 0.33 | | |
| | (0.14) | | | | | (0.34) | | (0.21) | | |
| Golden redhorse | 0.44 | | | | | 0.33 | | 1.17 | | |
| | (0.32) | | | | | (0.21) | | (1.17) | | |
| Shorthead redhorse | 4.03 | | 0.83 | | | 8.17 | | 2.17 | | |
| | (2.13) | | (0.48) | | | (5.45) | | (0.79) | | |
| Channel catfish | 1.17 | | 1.00 | | | 1.33 | | 1.17 | | |
| | (0.32) | | (0.63) | | | (0.42) | | (0.65) | | |
| Flathead catfish | 0.64 | | 0.50 | | | 0.17 | | 1.50 | | |
| | (0.24) | | (0.50) | | | (0.17) | | (0.56) | | |
| Brook silverside | 0.57 | | 1.33 | | | 0.17 | | 0.17 | | |
| | (0.35) | | (0.99) | | | (0.17) | | (0.17) | | |
| White bass | 6.28 | | 4.17 | | | 8.83 | | 5.33 | | |
| | (1.85) | | (2.20) | | | (3.66) | | (3.43) | | |
| Yellow bass | 0.06 | | 0.17 | | | | | | | |
| | (0.06) | | (0.17) | | | | | | | |
| Rock bass | 0.18 | | 0.33 | | | 0.17 | | | | |
| | (0.10) | | (0.21) | | | (0.17) | | | | |

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Table 3.3.2. Mean catch-per-unit-effort and (standard error) for fishes collected by night electrofishing in Pool 13 of the Mississippi River using stratified random sampling during 1996. The statistics under ALL pertain to unbiased means over all strata sampled using this gear (as indicated by nonmissing entries below and by Table 3.1). See text for definitions of catch-per-unit-effort and standard error.



| Common name | ALL | BWCO | BWCS | IMPO | IMPS | MCBU | MCBW | SCB | TRI | TWZ |
|---|---|---|---|---|---|---|---|---|---|---|
| Green sunfish | 0.04 | | | | | | | 0.17 | | |
| | (0.04) | | | | | | | (0.17) | | |
| Pumpkinseed | 0.17 | | 0.17 | | | 0.17 | | 0.17 | | |
| | (0.10) | | (0.17) | | | (0.17) | | (0.17) | | |
| Orangespotted sunfish | 1.97 | | 3.67 | | | 1.00 | | 1.17 | | |
| | (1.03) | | (2.69) | | | (1.00) | | (0.79) | | |
| Bluegill | 19.10 | | 28.67 | | | 13.67 | | 14.50 | | |
| | (4.80) | | (10.97) | | | (6.92) | | (4.35) | | |
| Smallmouth bass | 0.15 | | 0.17 | | | | | 0.33 | | |
| | (0.11) | | (0.17) | | | | | (0.33) | | |
| Largemouth bass | 5.28 | | 8.33 | | | 4.33 | | 2.67 | | |
| | (1.18) | | (2.99) | | | (1.23) | | (1.12) | | |
| White crappie | 0.35 | | 0.50 | | | 0.33 | | 0.17 | | |
| | (0.15) | | (0.34) | | | (0.21) | | (0.17) | | |
| Black crappie | 0.95 | | 1.17 | | | 0.83 | | 0.83 | | |
| | (0.27) | | (0.48) | | | (0.48) | | (0.40) | | |
| Logperch | 0.50 | | | | | 1.17 | | 0.17 | | |
| | (0.26) | | | | | (0.65) | | (0.17) | | |
| Slenderhead darter | 0.04 | | | | | | | 0.17 | | |
| | (0.04) | | | | | | | (0.17) | | |
| River darter | 0.11 | | | | | 0.17 | | 0.17 | | |
| | (0.08) | | | | | (0.17) | | (0.17) | | |
| Sauger | 7.53 | | 2.67 | | | 12.83 | | 6.17 | | |
| | (3.50) | | (1.61) | | | (8.56) | | (3.70) | | |
| Walleye | 1.58 | | 1.50 | | | 2.50 | | 0.33 | | |
| | (0.67) | | (0.81) | | | (1.57) | | (0.21) | | |
| Freshwater drum | 19.62 | | 14.67 | | | 29.83 | | 11.17 | | |
| | (7.41) | | (4.52) | | | (18.42) | | (4.60) | | |

Strata: BWCS - Backwater, contiguous, shoreline.
BWCO - Backwater, contiguous, offshore.
IMPS - Impounded, shoreline.
IMPO - Impounded, offshore.
MCBU - Main channel border, unstructured.
MCBW - Main channel border, wing dam.
SCB - Side channel border.
TRI - Tributary mouth.
TWZ - Tailwater.

Table 3.3.3. Mean catch-per-unit-effort and (standard error) for fishes collected by fyke netting in Pool 1 of the Mississippi River using stratified random sampling during 1996. The statistics under ALL pertain to unbiased means over all strata sampled using this gear (as indicated by nonmissing entries below and by Table 3.1). See text for definitions of catch-per-unit-effort and standard error.



| Common name | ALL | BWCO | BWCS | IMPO | IMPS | MCBU | MCBW | SCB | TRI | TWZ |
|---|---|---|---|---|---|---|---|---|---|---|
| Silver lamprey | 0.01 | | | | 0.09 | | | | | |
| | (0.01) | | | | (0.09) | | | | | |
| Longnose gar | 0.24 | | 0.19 | | 0.70 | | | | | |
| | (0.10) | | (0.10) | | (0.54) | | | | | |
| Shortnose gar | 1.79 | | 1.89 | | 0.89 | | | | | |
| | (0.63) | | (0.69) | | (0.42) | | | | | |
| Bowfin | 0.47 | | 0.52 | | | | | | | |
| | (0.27) | | (0.30) | | | | | | | |
| Gizzard shad | 8.95 | | 9.64 | | 2.38 | | | | | |
| | (4.23) | | (4.69) | | (1.85) | | | | | |
| Common carp | 1.27 | | 1.23 | | 1.63 | | | | | |
| | (0.33) | | (0.36) | | (0.98) | | | | | |
| Golden shiner | 0.18 | | 0.18 | | 0.17 | | | | | |
| | (0.07) | | (0.08) | | (0.11) | | | | | |
| River carpsucker | 0.57 | | 0.58 | | 0.47 | | | | | |
| | (0.23) | | (0.26) | | (0.30) | | | | | |
| Quillback | 0.20 | | 0.22 | | | | | | | |
| | (0.14) | | (0.16) | | | | | | | |
| Smallmouth buffalo | 0.54 | | 0.59 | | 0.09 | | | | | |
| | (0.26) | | (0.29) | | (0.09) | | | | | |
| Bigmouth buffalo | 0.07 | | 0.08 | | | | | | | |
| | (0.07) | | (0.08) | | | | | | | |
| Spotted sucker | 0.43 | | 0.47 | | | | | | | |
| | (0.27) | | (0.30) | | | | | | | |
| Shorthead redhorse | 0.25 | | 0.27 | | 0.09 | | | | | |
| | (0.13) | | (0.15) | | (0.09) | | | | | |
| Black bullhead | 0.07 | | 0.07 | | | | | | | |
| | (0.05) | | (0.05) | | | | | | | |
| Yellow bullhead | 0.65 | | 0.71 | | 0.09 | | | | | |
| | (0.45) | | (0.50) | | (0.09) | | | | | |
| Channel catfish | 0.34 | | 0.33 | | 0.34 | | | | | |
| | (0.13) | | (0.15) | | (0.26) | | | | | |
| Flathead catfish | 0.26 | | 0.28 | | | | | | | |
| | (0.11) | | (0.12) | | | | | | | |
| Northern pike | 0.50 | | 0.54 | | 0.09 | | | | | |
| | (0.16) | | (0.18) | | (0.09) | | | | | |
| White bass | 4.68 | | 4.94 | | 2.25 | | | | | |
| | (1.91) | | (2.11) | | (0.63) | | | | | |
| Yellow bass | 0.13 | | 0.14 | | | | | | | |
| | (0.06) | | (0.07) | | | | | | | |
| Pumpkinseed | 0.35 | | 0.21 | | 1.72 | | | | | |
| | (0.13) | | (0.10) | | (0.95) | | | | | |
| Warmouth | 0.13 | | 0.14 | | | | | | | |
| | (0.09) | | (0.10) | | | | | | | |
| Orangespotted sunfish | 0.20 | | 0.22 | | | | | | | |
| | (0.12) | | (0.13) | | | | | | | |
| Bluegill | 18.45 | | 20.19 | | 2.01 | | | | | |
| | (6.67) | | (7.40) | | (0.78) | | | | | |
| Largemouth bass | 1.13 | | 1.19 | | 0.52 | | | | | |
| | (0.30) | | (0.33) | | (0.20) | | | | | |
| White crappie | 2.76 | | 3.03 | | 0.26 | | | | | |
| | (0.79) | | (0.88) | | (0.26) | | | | | |
| Black crappie | 20.47 | | 22.48 | | 1.42 | | | | | |
| | (4.18) | | (4.63) | | (0.66) | | | | | |
| Yellow perch | 0.12 | | 0.10 | | 0.34 | | | | | |
| | (0.10) | | (0.10) | | (0.34) | | | | | |
| Sauger | 0.39 | | 0.43 | | | | | | | |
| | (0.14) | | (0.16) | | | | | | | |

Strata: BWCS - Backwater, contiguous, shoreline. MCBW - Main channel border, wing dam.
BWCO Backwater, contiguous, offshore. SCB - Side channel border.
IMPS - Impounded, shoreline. TRI - Tributary mouth.
IMPO - Impounded, offshore. TWZ - Tailwater.
MCBU - Main channel border, unstructured.

Table 3.3.3. Mean catch-per-unit-effort and (standard error) for fishes collected by fyke netting in Pool 13 of the Mississippi River using stratified random sampling during 1996. The statistics under ALL pertain to unbiased means over all strata sampled using this gear (as indicated by nonmissing entries below and by Table 3.1). See text for definitions of catch-per-unit-effort and standard error.



| Common name | ALL | BWCO | BWCS | IMPO | IMPS | MCBU | MCBW | SCB | TRI | TWZ |
|---|---|---|---|---|---|---|---|---|---|---|
| Walleye | 0.37 | | 0.41 | | | | | | | |
| | (0.17) | | (0.19) | | | | | | | |
| Freshwater drum | 1.61 | | 1.72 | | 0.63 | | | | | |
| | (0.63) | | (0.69) | | (0.31) | | | | | |

Strata: BWCS - Backwater, contiguous, shoreline.
BWCO - Backwater, contiguous, offshore.
IMPS - Impounded, shoreline.
IMPO - Impounded, offshore.
MCBU - Main channel border, unstructured.
MCBW - Main channel border, wing dam.
SCB - Side channel border.
TRI - Tributary mouth.
TWZ - Tailwater.

Table 3.3.4. Mean catch-per-unit-effort and (standard error) for fishes collected by tandem fyke netting in Pool 13 of the Mississippi River using stratified random sampling during 1996. The statistics under ALL pertain to unbiased means over all strata sampled using this gear (as indicated by nonmissing entries below and by Table 3.1). See text for definitions of catch-per-unit-effort and standard error.



| Common name | ALL | BWCO | BWCS | IMPO | IMPS | MCBU | MCBW | SCB | TRI | TWZ |
|---|---|---|---|---|---|---|---|---|---|---|
| Longnose gar | 0.11 | 0.14 | | 0.09 | | | | | | |
| | (0.06) | (0.06) | | (0.09) | | | | | | |
| Shortnose gar | 0.45 | 1.07 | | 0.09 | | | | | | |
| | (0.18) | (0.45) | | (0.09) | | | | | | |
| Bowfin | 0.06 | 0.17 | | | | | | | | |
| | (0.02) | (0.07) | | | | | | | | |
| Mooneye | 0.07 | 0.04 | | 0.08 | | | | | | |
| | (0.05) | (0.04) | | (0.08) | | | | | | |
| Gizzard shad | 6.48 | 14.04 | | 2.08 | | | | | | |
| | (4.24) | (11.16) | | (1.70) | | | | | | |
| Common carp | 0.82 | 1.31 | | 0.54 | | | | | | |
| | (0.33) | (0.47) | | (0.45) | | | | | | |
| Golden shiner | 0.18 | 0.35 | | 0.09 | | | | | | |
| | (0.07) | (0.13) | | (0.09) | | | | | | |
| River carpsucker | 0.08 | 0.21 | | | | | | | | |
| | (0.05) | (0.14) | | | | | | | | |
| Quillback | 0.04 | 0.10 | | | | | | | | |
| | (0.02) | (0.06) | | | | | | | | |
| Smallmouth buffalo | 0.25 | 0.67 | | | | | | | | |
| | (0.13) | (0.34) | | | | | | | | |
| Bigmouth buffalo | 0.03 | 0.07 | | | | | | | | |
| | (0.02) | (0.05) | | | | | | | | |
| Spotted sucker | 0.17 | 0.32 | | 0.09 | | | | | | |
| | (0.12) | (0.29) | | (0.09) | | | | | | |
| Shorthead redhorse | 0.49 | 0.88 | | 0.26 | | | | | | |
| | (0.18) | (0.45) | | (0.12) | | | | | | |
| Channel catfish | 0.25 | 0.11 | | 0.34 | | | | | | |
| | (0.21) | (0.06) | | (0.34) | | | | | | |
| Northern pike | 0.24 | 0.34 | | 0.18 | | | | | | |
| | (0.09) | (0.16) | | (0.11) | | | | | | |
| White bass | 2.83 | 3.60 | | 2.39 | | | | | | |
| | (1.19) | (1.82) | | (1.56) | | | | | | |
| Yellow bass | 0.03 | 0.07 | | | | | | | | |
| | (0.03) | (0.07) | | | | | | | | |
| Pumpkinseed | 3.15 | 0.31 | | 4.81 | | | | | | |
| | (2.91) | (0.15) | | (4.61) | | | | | | |
| Orangespotted sunfish | 0.01 | 0.03 | | | | | | | | |
| | (0.01) | (0.03) | | | | | | | | |
| Bluegill | 1.75 | 2.98 | | 1.03 | | | | | | |
| | (0.66) | (1.44) | | (0.64) | | | | | | |
| Largemouth bass | 0.07 | 0.18 | | | | | | | | |
| | (0.04) | (0.11) | | | | | | | | |
| White crappie | 0.50 | 1.20 | | 0.09 | | | | | | |
| | (0.21) | (0.54) | | (0.09) | | | | | | |
| Black crappie | 2.53 | 6.57 | | 0.18 | | | | | | |
| | (0.69) | (1.88) | | (0.11) | | | | | | |
| Yellow perch | 0.30 | 0.07 | | 0.43 | | | | | | |
| | (0.27) | (0.05) | | (0.43) | | | | | | |
| Sauger | 0.17 | 0.31 | | 0.08 | | | | | | |
| | (0.07) | (0.11) | | (0.08) | | | | | | |
| Walleye | 0.11 | 0.29 | | | | | | | | |
| | (0.05) | (0.13) | | | | | | | | |
| Freshwater drum | 3.36 | 6.76 | | 1.37 | | | | | | |
| | (0.87) | (2.19) | | (0.52) | | | | | | |

Strata: BWCS - Backwater, contiguous, shoreline.
BWCO - Backwater, contiguous, offshore.
IMPS - Impounded, shoreline.
IMPO - Impounded, offshore.
MCBU - Main channel border, unstructured.
MCBW - Main channel border, wing dam.
SCB - Side channel border.
TRI - Tributary mouth.
TWZ - Tailwater.

Table 3.3.5. Mean catch-per-unit-effort and (standard error) for fishes collected by mini fyke netting in Pool 13 of the Mississippi River using stratified random sampling during 1996. The statistics under ALL pertain to unbiased means over all strata sampled using this gear (as indicated by nonmissing entries below and by Table 3.1). See text for definitions of catch-per-unit-effort and standard error.



| Common name | ALL | BWCO | BWCS | IMPO | IMPS | MCBU | MCBW | SCB | TRI | TWZ |
|---|---|---|---|---|---|---|---|---|---|---|
| Longnose gar | 0.01 | | 0.03 | | | | | | | |
| | (0.01) | | (0.03) | | | | | | | |
| Shortnose gar | 0.54 | | 0.73 | | 0.63 | 0.52 | 0.11 | 0.34 | | |
| | (0.20) | | (0.27) | | (0.46) | (043) | (0.11) | (0.34) | | |
| Bowfin | 0.13 | | 0.29 | | | 0.09 | | | | |
| | (0.04) | | (0.09) | | | (0.09) | | | | |
| Gizzard shad | 0.41 | | 0.70 | | | | | 0.69 | | |
| | (0.20) | | (0.27) | | | | | (0.69) | | |
| Spotfin shiner | 0.56 | | 0.28 | | | 0.78 | 0.12 | 0.68 | | |
| | (0.23) | | (0.21) | | | (0.53) | (0.12) | (0.34) | | |
| Common carp | 2.77 | | 0.63 | | 5.61 | 6.36 | 0.32 | | | |
| | (2.20) | | (0.28) | | (4.02) | (5.90) | (0.23) | | | |
| Mississippi silvery minnow | 0.04 | | | | | | 0.11 | 0.17 | | |
| | (0.04) | | | | | | (0.11) | (0.17) | | |
| Silver chub | 0.59 | | 1.46 | | | 0.17 | | 0.17 | | |
| | (0.33) | | (0.97) | | | (0.17) | | (0.17) | | |
| Golden shiner | 0.60 | | 0.91 | | 0.09 | 0.54 | | 0.34 | | |
| | (0.22) | | (0.43) | | (0.09) | (0.37) | | (0.34) | | |
| Emerald shiner | 21.43 | | 39.95 | | 8.34 | 11.04 | 3.74 | 14.55 | | |
| | (9.64) | | (26.66) | | (7.60) | (6.67) | (2.94) | (11.37) | | |
| River shiner | 6.85 | | 3.79 | | 11.61 | 12.33 | 4.00 | 2.23 | | |
| | (2.09) | | (2.33) | | (9.53) | (5.09) | (2.40) | (1.29) | | |
| Spottail shiner | 0.33 | | 0.21 | | | 0.69 | 0.11 | | | |
| | (0.26) | | (0.14) | | | (0.69) | (0.11) | | | |
| Channel shiner | 27.62 | | 10.74 | | | 57.14 | 2.51 | 10.95 | | |
| | (15.22) | | (6.02) | | | (40.47) | (1.70) | (5.52) | | |
| Pugnose minnow | 0.30 | | 0.67 | | | 0.09 | 0.47 | 0.17 | | |
| | (0.11) | | (0.30) | | | (0.09) | (0.34) | (0.17) | | |
| Fathead minnow | 0.01 | | 0.03 | | | | | | | |
| | (0.01) | | (0.03) | | | | | | | |
| Bullhead minnow | 7.01 | | 13.17 | | 1.20 | 4.48 | 0.97 | 3.57 | | |
| | (2.56) | | (7.38) | | (1.20) | (1.72) | (0.56) | (1.41) | | |
| River carpsucker | | | | | 0.09 | | | | | |
| | | | | | (0.09) | | | | | |
| Shorthead redhorse | 0.05 | | 0.04 | | | 0.10 | | | | |
| | (0.04) | | (0.04) | | | (0.10) | | | | |
| Yellow bullhead | 0.12 | | 0.36 | | | | | | | |
| | (0.11) | | (0.32) | | | | | | | |
| Channel catfish | 0.54 | | 0.25 | | 0.52 | 1.06 | 0.35 | 0.17 | | |
| | (0.26) | | (0.18) | | (0.35) | (0.67) | (0.18) | (0.17) | | |
| Stonecat | 0.04 | | | | | | | 0.17 | | |
| | (0.04) | | | | | | | (0.17) | | |
| Tadpole madtom | 0.49 | | 0.21 | | 10.99 | 0.09 | | | | |
| | (0.36) | | (0.08) | | (10.29) | (0.09) | | | | |
| Flathead catfish | 0.12 | | | | 0.09 | 0.20 | 0.22 | 0.17 | | |
| | (0.07) | | | | (0.09) | (0.13) | (0.22) | (0.17) | | |
| Northern pike | 0.01 | | 0.04 | | | | 0.11 | | | |
| | (0.01) | | (0.04) | | | | (0.11) | | | |
| Brook silverside | 0.07 | | 0.11 | | 0.09 | 0.09 | | | | |
| | (0.04) | | (0.08) | | (0.09) | (0.09) | | | | |
| White bass | 0.70 | | 1.00 | | 0.86 | 0.79 | 0.46 | 0.17 | | |
| | (0.20) | | (0.47) | | (0.49) | (0.32) | (.46) | (0.17) | | |
| Rock bass | | | | | | | 0.11 | | | |
| | | | | | | | (0.11) | | | |
| Pumpkinseed | 0.43 | | 0.89 | | 2.66 | 0.10 | | | | |
| | (0.19) | | (0.55) | | (1.29) | (0.10) | | | | |
| Warmouth | 0.04 | | 0.11 | | | | 0.22 | | | |
| | (0.03) | | (0.08) | | | | (0.22) | | | |

Strata: BWCS - Backwater, contiguous, shoreline. MCBW - Main channel border, wing dam.
BWCO - Backwater, contiguous, offshore. SCB - Side channel border.
IMPS - Impounded, shoreline. TRI - Tributary mouth.
IMPO - Impounded, offshore. TWZ - Tailwater.
MCBU - Main channel border, unstructured.

Table 3.3.5. Mean catch-per-unit-effort and (standard error) for fishes collected by mini fyke netting in Pool 13 of the Mississippi River using stratified random sampling during 1996. The statistics under ALL pertain to unbiased means over all strata sampled using this gear (as indicated by nonmissing entries below and by Table 3.1). See text for definitions of catch-per-unit-effort and standard error.



| Common name | ALL | BWCO | BWCS | IMPO | IMPS | MCBU | MCBW | SCB | TRI | TWZ |
|---|---|---|---|---|---|---|---|---|---|---|
| Orangespotted sunfish | 9.59 | | 27.71 | | 0.34 | 0.45 | | 0.68 | | |
| | (5.00) | | (15.05) | | (0.34) | (0.16) | | (0.34) | | |
| Bluegill | 65.66 | | 108.48 | | 10.91 | 58.07 | 32.99 | 28.88 | | |
| | (22.71) | | (47.05) | | (6.30) | (42.68) | (30.15) | (17.86) | | |
| Largemouth bass | 4.67 | | 1.11 | | 107.22 | 1.30 | | 0.17 | | |
| | (3.72) | | (0.41) | | (106.23) | (1.30) | | (0.17) | | |
| White crappie | 0.16 | | 0.48 | | 0.09 | | | | | |
| | (0.08) | | (0.25) | | (0.09) | | | | | |
| Black crappie | 0.34 | | 0.56 | | | 0.19 | | 0.34 | | |
| | (0.13) | | (0.25) | | | (0.13) | | (0.34) | | |
| Mud darter | 0.37 | | 0.91 | | 0.18 | 0.17 | 0.22 | | | |
| | (0.24) | | (0.71) | | (0.12) | (0.11) | (0.15) | | | |
| Johnny darter | 0.46 | | 1.19 | | | 0.17 | | | | |
| | (0.15) | | (0.41) | | | (0.17) | | | | |
| Logperch | 0.09 | | 0.06 | | | 0.19 | 0.11 | | | |
| | (0.05) | | (0.04) | | | (0.13) | (0.11) | | | |
| Slenderhead darter | 0.04 | | | | | | | 0.17 | | |
| | (0.04) | | | | | | | (0.17) | | |
| River darter | 0.08 | | 0.11 | | 0.09 | 0.10 | | | | |
| | (0.04) | | (0.06) | | (0.09) | (0.10) | | | | |
| Sauger | 0.04 | | 0.03 | | | 0.09 | | | | |
| | (0.03) | | (0.03) | | | (0.09) | | | | |
| Walleye | 0.05 | | 0.03 | | 0.09 | 0.08 | | | | |
| | (0.03) | | (0.03) | | (0.09) | (0.08) | | | | |
| Freshwater drum | 0.39 | | 0.34 | | 0.71 | 0.45 | 0.20 | 0.34 | | |
| | (0.15) | | (0.14) | | (0.71) | (0.35) | (0.13) | (0.22) | | |

Strata: BWCS - Backwater, contiguous, shoreline.
BWCO - Backwater, contiguous, offshore.
IMPS - Impounded, shoreline.
IMPO - Impounded, offshore.
MCBU - Main channel border, unstructured.
MCBW - Main channel border, wing dam.
SCB - Side channel border.
TRI - Tributary mouth.
TWZ - Tailwater.

Table 3.3.6. Mean catch-per-unit-effort and (standard error) for fishes collected y Table page: 1
tandem mini fyke netting in Pool 13 of the Mississippi River using stratified random sampling during 1996. The statistics under ALL pertain to unbiased means over all strata sampled using this gear (as indicated by nonmissing entries below and by Table 3.1). See text for definitions of catch-per-unit-effort and standard error.

| Common name | ALL | BWCO | BWCS | IMPO | IMPS | MCBU | MCBW | SCB | TRI | TWZ |
|---|---|---|---|---|---|---|---|---|---|---|
| Shortnose gar | 0.06 | 0.17 | | | | | | | | |
| | (0.04) | (0.11) | | | | | | | | |
| Gizzard shad | 1.37 | 3.72 | | | | | | | | |
| | (0.63) | (1.72) | | | | | | | | |
| Spotfin shiner | 0.01 | 0.03 | | | | | | | | |
| | (0.01) | (0.03) | | | | | | | | |
| Common carp | 0.07 | 0.04 | | 0.08 | | | | | | |
| | (0.05) | (0.04) | | (0.08) | | | | | | |
| Silver chub | 0.13 | 0.21 | | 0.09 | | | | | | |
| | (0.07) | (0.12) | | (0.09) | | | | | | |
| Golden shiner | 0.08 | 0.21 | | | | | | | | |
| | (0.04) | (0.11) | | | | | | | | |
| Emerald shiner | 6.22 | 8.30 | | 5.01 | | | | | | |
| | (3.29) | (6.18) | | (3.76) | | | | | | |
| River shiner | 0.03 | 0.07 | | | | | | | | |
| | (0.02) | (0.05) | | | | | | | | |
| Spottail shiner | 0.47 | 0.85 | | 0.25 | | | | | | |
| | (0.18) | (0.41) | | (0.17) | | | | | | |
| Channel shiner | 1.59 | 1.29 | | 1.76 | | | | | | |
| | (0.89) | (0.97) | | (1.29) | | | | | | |
| Pugnose minnow | 0.46 | 0.21 | | 0.61 | | | | | | |
| | (0.32) | (0.12) | | (0.51) | | | | | | |
| Fathead minnow | 0.06 | | | 0.09 | | | | | | |
| | (0.06) | | | (0.09) | | | | | | |
| Bullhead minnow | 2.14 | 2.47 | | 1.95 | | | | | | |
| | (1.25) | (1.20) | | (1.85) | | | | | | |
| Channel catfish | 0.17 | 0.03 | | 0.25 | | | | | | |
| | (0.11) | (0.03) | | (0.17) | | | | | | |
| Tadpole madtom | 0.26 | 0.25 | | 0.7 | | | | | | |
| | (0.13) | (0.13) | | (0.19) | | | | | | |
| White bass | 0.50 | 0.64 | | 0.42 | | | | | | |
| | (0.20) | (0.28) | | (0.27) | | | | | | |
| Pumpkinseed | 0.41 | 0.32 | | 0.47 | | | | | | |
| | (0.30) | (0.17) | | (0.47) | | | | | | |
| Orangespotted sunfish | 0.72 | 1.31 | | 0.37 | | | | | | |
| | (0.29) | (0.46) | | (0.37) | | | | | | |
| Bluegill | 17.87 | 19.28 | | 17.05 | | | | | | |
| | (8.86) | (8.18) | | (13.20) | | | | | | |
| Largemouth bass | 0.13 | 0.07 | | 0.17 | | | | | | |
| | (0.11) | (0.07) | | (0.17) | | | | | | |
| White crappie | 0.31 | 0.68 | | 0.09 | | | | | | |
| | (0.13) | (0.32) | | (0.09) | | | | | | |
| Black crappie | 0.66 | 1.63 | | 0.09 | | | | | | |
| | (0.20) | (0.51) | | (0.09) | | | | | | |
| Mud darter | 0.12 | 0.17 | | 0.09 | | | | | | |
| | (0.09) | (0.17) | | (0.09) | | | | | | |
| Yellow perch | 0.01 | 0.04 | | | | | | | | |
| | (0.01) | (0.04) | | | | | | | | |
| Logperch | 0.03 | 0.07 | | | | | | | | |
| | (0.03) | (0.07) | | | | | | | | |
| River darter | 0.01 | 0.04 | | | | | | | | |
| | (0.01) | (0.04) | | | | | | | | |
| Sauger | 0.06 | 0.17 | | | | | | | | |
| | (0.05) | (0.14) | | | | | | | | |
| Walleye | 0.04 | 0.11 | | | | | | | | |
| | (0.02) | (0.06) | | | | | | | | |
| Freshwater drum | 10.49 | 4.88 | | 13.77 | | | | | | |
| | (7.00) | (3.03) | | (10.94) | | | | | | |

Strata: BWCS - Backwater, contiguous, shoreline. MCBW - Main channel border, wing dam.
BWCO - Backwater, contiguous, offshore. SCB - Side channel border.
IMPS - Impounded, shoreline. TRI - Tributary mouth.
IMPO - Impounded, offshore. TWZ - Tailwater.
MCBU - Main channel border, unstructured.

Table 3.3.7. Mean catch-per-unit-effort and (standard error) for fishes collected by small hoop netting in Pool 13 of the Mississippi River using stratified random sampling during 1996. The statistics under ALL pertain to unbiased means over all strata sampled using this gear (as indicated by nonmissing entries below and by Table 3.1). See text for definitions of catch-per-unit-effort and standard error.



| Common name | ALL | BWCO | BWCS | IMPO | IMPS | MCBU | MCBW | SCB | TRI | TWZ |
|---|---|---|---|---|---|---|---|---|---|---|
| Shovelnose sturgeon | | | | | | | 0.06 | | | |
| | | | | | | | (0.06) | | | |
| Bowfin | 0.02 | 0.07 | | | | | | | | |
| | (0.02) | (0.07) | | | | | | | | |
| Gizzard shad | 0.01 | 0.04 | | | | | | | | |
| | (0.01) | (0.04) | | | | | | | | |
| Common carp | 0.01 | 0.03 | | | | | | | | |
| | (0.01) | (0.03) | | | | | | | | |
| Silver chub | 0.03 | 0.10 | | | | | | | | |
| | (0.03) | (0.10) | | | | | | | | |
| Golden shiner | 0.01 | 0.03 | | | | | | | | |
| | (0.01) | (0.03) | | | | | | | | |
| Smallmouth buffalo | 0.01 | | | | | | | 0.09 | | |
| | (0.01) | | | | | | | (0.09) | | |
| Shorthead redhorse | 0.07 | | | 0.17 | | | 0.17 | | | |
| | (0.05) | | | (0.11) | | | (0.17) | | | |
| Channel catfish | 4.46 | 0.41 | | 8.92 | | 2.37 | 0.90 | 0.60 | | |
| | (3.67) | (0.18) | | (8.52) | | (1.65) | (0.37) | (0.28) | | |
| Flathead catfish | 0.02 | | | | | 0.09 | 0.11 | | | |
| | (0.01) | | | | | (0.06) | (0.08) | | | |
| White bass | 0.05 | | | 0.09 | | 0.04 | | | | |
| | (0.04) | | | (0.09) | | (0.04) | | | | |
| Pumpkinseed | 0.01 | 0.04 | | | | | | | | |
| | (0.01) | (0.04) | | | | | | | | |
| Bluegill | 0.76 | 1.36 | | 0.85 | | 0.18 | 0.06 | 0.17 | | |
| | (0.43) | (0.93) | | (0.85) | | (0.18) | (0.06) | (0.17) | | |
| White crappie | 0.02 | 0.03 | | | | 0.09 | | | | |
| | (0.02) | (0.03) | | | | (0.09) | | | | |
| Black crappie | 0.08 | 0.24 | | | | 0.13 | | | | |
| | (0.04) | (0.11) | | | | (0.13) | | | | |
| Freshwater drum | 0.11 | | | 0.09 | | 0.30 | 0.22 | 0.09 | | |
| | (0.06) | | | (0.09) | | (0.26) | (0.22) | (0.09) | | |

Strata: BWCS - Backwater, contiguous, shoreline.
BWCO - Backwater, contiguous, offshore.
IMPS - Impounded, shoreline.
IMPO - Impounded, offshore.
MCBU - Main channel border, unstructured.
MCBW - Main channel border, wing dam.
SCB - Side channel border.
TRI - Tributary mouth.
TWZ - Tailwater.

Table 3.3.8. Mean catch-per-unit-effort and (standard error) for fishes collected by large hoop netting in Pool 13 of the Mississippi River using stratified random sampling during 1996. The statistics under ALL pertain to unbiased means over all strata sampled using this gear (as indicated by nonmissing entries below and by Table 3.1). See text for definitions of catch-per-unit-effort and standard error.



| Common name | ALL | BWCO | BWCS | IMPO | IMPS | MCBU | MCBW | SCB | TRI | TWZ |
|---|---|---|---|---|---|---|---|---|---|---|
| Shovelnose sturgeon | 0.01 (0.01) | | | | | | 0.22 (0.22) | 0.09 (0.09) | | |
| Longnose gar | 0.03 (0.02) | 0.07 (0.07) | | | | 0.04 (0.04) | | | | |
| Shortnose gar | 0.03 (0.02) | 0.11 (0.08) | | | | | | | | |
| Mooneye | 0.04 (0.04) | | | 0.08 (0.08) | | | | | | |
| Gizzard shad | 0.11 (0.08) | 0.45 (0.33) | | | | | | | | |
| Common carp | 0.12 (0.10) | 0.43 (0.39) | | | | | 0.22 (0.17) | 0.09 (0.09) | | |
| Golden shiner | 0.01 (0.01) | 0.04 (0.04) | | | | | | | | |
| River carpsucker | 0.01 (0.01) | | | | | 0.04 (0.04) | | | | |
| Quillback | 0.01 (0.01) | 0.04 (0.04) | | | | | | | | |
| Smallmouth buffalo | 1.28 (0.50) | 3.00 (1.76) | | 0.25 (0.11) | | 1.18 (0.81) | 2.00 (1.34) | 1.47 (1.47) | | |
| Bigmouth buffalo | 0.04 (0.03) | 0.15 (0.11) | | | | | | | | |
| Shorthead redhorse | | | | | | | 0.17 (0.12) | | | |
| Channel catfish | 1.35 (0.99) | 0.30 (0.13) | | 2.38 (2.28) | | 0.89 (0.57) | 1.18 (0.45) | 0.61 (0.34) | | |
| Tadpole madtom | 0.02 (0.02) | 0.07 (0.07) | | | | | | | | |
| Flathead catfish | 0.04 (0.02) | | | | | 0.13 (0.09) | 0.28 (0.28) | 0.09 (0.09) | | |
| White bass | 0.12 (0.05) | 0.07 (0.05) | | 0.17 (0.11) | | 0.13 (0.13) | 0.06 (0.06) | | | |
| Bluegill | 0.50 (0.31) | 1.71 (1.21) | | | | 0.30 (0.18) | 0.17 (0.12) | 0.08 (0.08) | | |
| White crappie | 0.14 (0.04) | 0.48 (0.15) | | | | 0.09 (0.09) | | | | |
| Black crappie | 0.41 (0.17) | 1.59 (0.67) | | | | 0.09 (0.06) | 0.06 (0.06) | | | |
| Yellow perch | 0.04 (0.02) | 0.15 (0.08) | | | | | | | | |
| Sauger | 0.02 (0.01) | 0.04 (0.04) | | | | 0.04 (0.4) | | | | |
| Freshwater drum | 0.91 (0.40) | 0.07 (0.05) | | 0.09 (0.09) | | 2.31 (1.85) | 1.24 (0.99) | 3.20 (1.46) | | |

Strata: BWCS - Backwater, contiguous, shoreline.
BWCO - Backwater, contiguous, offshore.
IMPS - Impounded, shoreline.
IMPO - Impounded, offshore.
MCBU - Main channel border, unstructured.
MCBW - Main channel border, wing dam.
SCB - Side channel border.
TRI - Tributary mouth.
TWZ - Tailwater.

Table 3.3.9. Mean catch-per-unit-effort and (standard error) for fishes collected by seining in Pool 13 of the Mississippi River using stratified random sampling during 1996. The statistics under ALL pertain to unbiased means over all strata sampled using this gear (as indicated by nonmissing entries below and by Table 3.1). See text for definitions of catch-per-unit-effort and standard error.



| Common name | ALL | BWCO | BWCS | IMPO | IMPS | MCBU | MCBW | SCB | TRI | TWZ |
|---|---|---|---|---|---|---|---|---|---|---|
| Longnose gar | 0.02 | | 0.06 | | | | | | | |
| | (0.02) | | (0.06) | | | | | | | |
| Shortnose gar | 0.05 | | 0.03 | | 0.04 | 0.06 | | 0.08 | | |
| | (0.03) | | (0.03) | | (0.04) | (0.06) | | (0.08) | | |
| Gizzard shad | 0.16 | | 0.22 | | | 0.17 | | 0.08 | | |
| | (0.07) | | (0.16) | | | (0.10) | | (0.08) | | |
| Spotfin shiner | 0.87 | | 1.53 | | 0.08 | 0.22 | | 1.08 | | |
| | (0.37) | | (1.01) | | (0.08) | (0.10) | | (0.63) | | |
| Common carp | 0.09 | | 0.03 | | 0.54 | 0.11 | | 0.08 | | |
| | (0.04) | | (0.03) | | (0.39) | (0.09) | | (0.08) | | |
| Speckled chub | 0.01 | | | | | 0.03 | | | | |
| | (0.01) | | | | | (0.03) | | | | |
| Silver chub | 1.01 | | 1.56 | | | 0.06 | | 1.83 | | |
| | (0.41) | | (0.79) | | | (0.04) | | (1.23) | | |
| Golden shiner | 0.12 | | 0.25 | | 0.29 | | | 0.08 | | |
| | (0.07) | | (0.20) | | (0.29) | | | (0.08) | | |
| Emerald shiner | 38.02 | | 81.69 | | 4.38 | 13.78 | | 20.83 | | |
| | (18.72) | | (55.42) | | (3.27) | (6.02) | | (7.09) | | |
| River shiner | 47.05 | | 7.72 | | 164.96 | 63.56 | | 58.17 | | |
| | (12.67) | | (2.31) | | (65.22) | (25.67) | | (31.28) | | |
| Spottail shiner | 0.05 | | 0.06 | | 0.29 | 0.06 | | | | |
| | (0.03) | | (0.06) | | (0.29) | (0.04) | | | | |
| Channel shiner | 9.90 | | 3.50 | | 14.83 | 12.03 | | 14.50 | | |
| | (2.46) | | (1.67) | | (6.74) | (3.14) | | (8.16) | | |
| Pugnose minnow | 0.07 | | 0.22 | | | | | | | |
| | (0.07) | | (0.20) | | | | | | | |
| Bullhead minnow | 10.83 | | 9.03 | | 1.54 | 2.81 | | 26.25 | | |
| | (3.93) | | (3.56) | | (0.67) | (0.79) | | (14.65) | | |
| River carpsucker | 1.39 | | 0.17 | | 16.17 | 0.50 | | 2.25 | | |
| | (0.60) | | (0.10) | | (13.60) | (0.39) | | (1.36) | | |
| Quillback | 0.03 | | 0.06 | | | 0.03 | | | | |
| | (0.02) | | (0.04) | | | (0.03) | | | | |
| Golden redhorse | 0.01 | | | | | 0.03 | | | | |
| | (0.01) | | | | | (0.03) | | | | |
| Shorthead redhorse | 0.03 | | | | 0.04 | 0.08 | | | | |
| | (0.02) | | | | (0.04) | (0.05) | | | | |
| Chanel catfish | 0.30 | | | | | 0.81 | | | | |
| | (0.22) | | | | | (0.59) | | | | |
| Tadpole madtom | 0.10 | | 0.08 | | 1.13 | 0.08 | | | | |
| | (0.05) | | (0.05) | | (1.08) | (0.06) | | | | |
| Brook silverside | 0.28 | | 0.17 | | 0.08 | 0.58 | | | | |
| | (0.15) | | (0.07) | | (0.08) | (0.39) | | | | |
| White bass | 0.41 | | 0.58 | | 0.04 | 0.33 | | 0.33 | | |
| | (0.16) | | (0.41) | | (0.04) | (0.20) | | (0.19) | | |
| Pumpkinseed | 0.11 | | 0.11 | | 1.33 | 0.06 | | | | |
| | (0.04) | | (0.07) | | (0.78) | (0.06) | | | | |
| Orangespotted sunfish | 3.79 | | 10.36 | | | | | 1.25 | | |
| | (2.85) | | (8.50) | | | | | (0.84) | | |
| Bluegill | 3.98 | | 8.61 | | 1.42 | 1.47 | | 1.92 | | |
| | (0.72) | | (1.97) | | (0.95) | (0.59) | | (0.76) | | |
| Largemouth bass | 3.26 | | 5.25 | | 1.63 | 2.61 | | 1.83 | | |
| | (0.90) | | (2.14) | | (0.72) | (1.39) | | (0.68) | | |
| White crappie | 0.01 | | 0.03 | | | | | | | |
| | (0.01) | | (0.03) | | | | | | | |
| Black crappie | 0.06 | | 0.17 | | | | | | | |
| | (0.03) | | (0.10) | | | | | | | |
| Mud darter | 0.07 | | 0.11 | | | 0.08 | | | | |
| | (0.04) | | (0.09) | | | (0.06) | | | | |

Strata: BWCS - Backwater, contiguous, shoreline.
BWCO - Backwater, contiguous, offshore.
IMPS - Impounded, shoreline.
IMPO - Impounded, offshore.
MCBU - Main channel border, unstrucured.
MCBW - Main channel border, wing dam.
SCB - Side channel border.
TRI - Tributary mouth.
TWZ - Tailwater.

Table 3.3.9. Mean catch-per-unit-effort and (standard error) for fishes collected by seining in Pool 13 of the Mississippi River using stratified random sampling during 1996. The statistics under ALL pertain to unbiased means over all strata sampled using this gear (as indicated by nonmissing entries below and by Table 3.1). See text for definitions of catch-per-unit-effort and standard error.



| Common name | ALL | BWCO | BWCS | IMPO | IMPS | MCBU | MCBW | SCB | TRI | TWZ |
|---|---|---|---|---|---|---|---|---|---|---|
| Johnny darter | 0.40 | | 0.28 | | 0.04 | 0.36 | | 0.67 | | |
| | (0.10) | | (0.10) | | (0.04) | (0.14) | | (0.31) | | |
| Logperch | 0.09 | | 0.06 | | | 0.08 | | 0.17 | | |
| | (0.04) | | (0.04) | | | (0.08) | | (0.11) | | |
| Slenderhead darter | 0.03 | | 0.08 | | | | | | | |
| | (0.02) | | (0.05) | | | | | | | |
| River darter | 0.01 | | | | | 0.03 | | | | |
| | (0.01) | | | | | (0.03) | | | | |
| Sauger | 0.01 | | | | | 0.03 | | | | |
| | (0.01) | | | | | (0.03) | | | | |
| Walleye | 0.03 | | 0.06 | | | 0.03 | | | | |
| | (0.02) | | (0.04) | | | (0.03) | | | | |
| Freshwater drum | 0.53 | | 0.97 | | 0.13 | 0.19 | | 0.50 | | |
| | (0.18) | | (0.49) | | (0.13) | (0.12) | | (0.23) | | |

Strata: BWCS - Backwater, contiguous, shoreline.
BWCO - Backwater, contiguous, offshore.
IMPS - Impounded, shoreline.
IMPO - Impounded, offshore.
MCBU - Main channel border, unsructured.
MCBW - Main channel border, wing dam.
SCB - Side channel border.
TRI - Tributary mouth.
TWZ - Tailwater.

Table 3.4.1. Mean catch-per-unit-effort and (standard error) for fishes collected by night electrofishing in Pool 13 of the Mississippi River using fixed-site sampling during 1996. See text for definitions of catch-per-unit-effort and standard error.



| Common name | BWCO | BWCS | IMPO | IMPS | MCBU | MCBW | SCB | TRI | TWZ |
|---|---|---|---|---|---|---|---|---|---|
| Shortnose gar | | | | | | | | | 0.33 (0.21) |
| Bowfin | | | | | | | | | 0.17 (0.17) |
| Mooneye | | | | | | | | | 0.17 (0.17) |
| Gizzard shad | | | | | | | | | 14.17 (4.88) |
| Spotfin shiner | | | | | | | | | 0.67 (0.67) |
| Common carp | | | | | | | | | 4.17 (1.56) |
| Silver chub | | | | | | | | | 2.83 (0.95) |
| Golden shiner | | | | | | | | | 1.33 (1.33) |
| Emerald shiner | | | | | | | | | 227.50 (152.23) |
| River shiner | | | | | | | | | 13.67 (10.04) |
| Spottail shiner | | | | | | | | | 1.33 (1.15) |
| Channel shiner | | | | | | | | | 28.67 (25.09) |
| Fathead minnow | | | | | | | | | 0.17 (0.17) |
| Bullhead minnow | | | | | | | | | 9.67 (6.58) |
| River carpsucker | | | | | | | | | 1.00 (0.68) |
| Quillback | | | | | | | | | 1.50 (0.85) |
| Highfin carpsucker | | | | | | | | | 1.00 (0.82) |
| Smallmouth buffalo | | | | | | | | | 2.50 (1.34) |
| Spotted scker | | | | | | | | | 0.33 (0.21) |
| Golden redhorse | | | | | | | | | 0.33 (0.21) |
| Shorthead redhorse | | | | | | | | | 3.67 (2.35) |
| Channel catfish | | | | | | | | | 1.00 (0.68) |
| Flathead catfish | | | | | | | | | 0.83 (0.40) |
| Northern pike | | | | | | | | | 0.17 (0.17) |
| Brook silverside | | | | | | | | | 2.00 (1.81) |
| White bass | | | | | | | | | 165.33 (68.44) |
| Yellow bass | | | | | | | | | 1.17 (0.40) |
| Rock bass | | | | | | | | | 0.33 (0.33) |
| Green sunfish | | | | | | | | | 0.33 (0.21) |
| Pumpkinseed | | | | | | | | | 0.83 (0.65) |

Strata: BWCS - Backwater, contiguous, shoreline.
BWCO - Backwater, contiguous, offshore.
IMPS - Impounded, shoreline.
IMPO - Impounded, offshore.
MCBU - Main channel border, unstructured.
MCBW - Main channel border, wing dam.
SCB - Side channel border.
TRI - Tributary mouth.
TWZ - Tailwater.

Table 3.4.1. Mean catch-per-unit-effort and (standard error) for fishes collected by night electrofishing in Pool 13 of the Mississippi River using fixed-site sampling during 1996. See text for definitions of catch-per-unit-effort and standard error.



| Common name | BWCO | BWCS | IMPO | IMPS | MCBU | MCBW | SCB | TRI | TWZ |
|---|---|---|---|---|---|---|---|---|---|
| Orangespotted sunfish | | | | | | | | | 24.00 (12.65) |
| Bluegill | | | | | | | | | 52.00 (20.21) |
| Smallmouth bass | | | | | | | | | 5.67 (1.67) |
| Largemouth bass | | | | | | | | | 21.50 (6.33) |
| White crappie | | | | | | | | | 0.67 (0.49) |
| Black crappie | | | | | | | | | 5.67 (1.17) |
| Logperch | | | | | | | | | 2.33 (1.23) |
| River darter | | | | | | | | | 0.17 (0.17) |
| Sauger | | | | | | | | | 21.00 (10.13) |
| Walleye | | | | | | | | | 11.67 (3.37) |
| Freshwater drum | | | | | | | | | 100.50 (69.88) |

Strata: BWCS - Backwater, contiguous, shoreline.
BWCO - Backwater, contiguous, offshore.
IMPS - Impounded, shoreline.
IMPO - Impounded, offshore.
MCBU - Main channel border, unstructured.
MCBW - Main channel border, wing dam.
SCB - Side channel border.
TRI - Tributary mouth.
TWZ - Tailwater.

Table 3.4.2. Mean catch-per-unit-effort and (standard error) for fishes collected by mini fyke netting in Pool 13 of the Mississippi River using fixed-site sampling during 1996. See text for definitions of catch-per-unit-effort and standard error.



| Common name | BWCO | BWCS | IMPO | IMPS | MCBU | MCBW | SCB | TRI | TWZ |
|---|---|---|---|---|---|---|---|---|---|
| Bowfin | | | | | | | | | 0.17 (0.17) |
| Gizzard shad | | | | | | | | | 0.18 (0.18) |
| Spotfin shiner | | | | | | | | | 1.73 (0.94) |
| Common carp | | | | | | | | | 0.17 (0.17) |
| Golden shiner | | | | | | | | | 1.04 (1.04) |
| Emerald shiner | | | | | | | | | 3.78 (1.85) |
| River shiner | | | | | | | | | 1.47 (1.47) |
| Spottail shiner | | | | | | | | | 0.18 (0.18) |
| Channel shiner | | | | | | | | | 34.46 (22.80) |
| Bullhead minnow | | | | | | | | | 1.90 (1.38) |
| Shorthead redhorse | | | | | | | | | 0.17 (0.17) |
| Yellow bullhead | | | | | | | | | 0.34 (0.22) |
| Chanel catfish | | | | | | | | | 0.52 (0.35) |
| Flathead catfish | | | | | | | | | 0.51 (0.23) |
| Northern pike | | | | | | | | | 0.18 (0.18) |
| Brook silverside | | | | | | | | | 0.17 (0.17) |
| White bass | | | | | | | | | 1.94 (0.99) |
| Orangespotted sunfish | | | | | | | | | 0.52 (0.52) |
| Bluegill | | | | | | | | | 7.40 (4.15) |
| Largemouth bass | | | | | | | | | 0.88 (0.68) |
| White crappie | | | | | | | | | 0.17 (0.17) |
| Black crappie | | | | | | | | | 0.52 (0.23) |
| Logperch | | | | | | | | | 1.04 (1.04) |
| River darter | | | | | | | | | 4.86 (4.86) |
| Freshwater drum | | | | | | | | | 1.21 (0.49) |

Strata: BWCS - Backwater, contiguous, shoreline.
BWCO - Backwater, contiguous, offshore.
IMPS - Impounded, shoreline.
IMPO - Impounded, offshore.
MCBU - Main channel border, unstructured.
MCBW - Main channel border, wing dam.
SCB - Side channel border.
TRI - Tributary mouth.
TWZ - Tailwater.

Table 3.4.3. Mean catch-per-unit-effort and (standard error) for fishes collected by small hoop netting in Pool 13 of the Mississippi River using fixed-site sampling during 1996. See text for definitions of catch-per-unit-effort and standard error.



| Common name | BWCO | BWCS | IMPO | IMPS | MCBU | MCBW | SCB | TRI | TWZ |
|---|---|---|---|---|---|---|---|---|---|
| Smallmouth buffalo | | | | | | | | | 0.59 (0.59) |
| Shorthead redhorse | | | | | | | | | 0.08 (0.08) |
| Channel catfish | | | | | | | | | 0.08 (0.08) |
| Flathead catfish | | | | | | | | | 0.08 (0.08) |
| White bass | | | | | | | | | 0.08 (0.08) |
| Freshwater drum | | | | | | | | | 0.59 (0.33) |

Strata: BWCS - Backwater, contiguous, shoreline.
BWCO - Backwater, contiguous, offshore.
IMPS - Impounded, shoreline.
IMPO - Impounded, offshore.
MCBU - Main channel border, unstructured.
MCBW - Main channel border, wing dam.
SCB - Side channel border.
TRI - Tributary mouth.
TWZ - Tailwater.

Table 3.4.4. Mean catch-per-unit-effort and (standard error) for fishes collected by large hoop netting in Pool 13 of the Mississippi River using fixed-site sampling during 1996. See text for definitions of catch-per-unit-effort and standard error.



| Common name | BWCO | BWCS | IMPO | IMPS | MCBU | MCBW | SCB | TRI | TWZ |
|---|---|---|---|---|---|---|---|---|---|
| Common carp | | | | | | | | | 0.42 (0.42) |
| River carpsucker | | | | | | | | | 0.42 (0.42) |
| Quillback | | | | | | | | | 0.08 (0.08) |
| Smallmouth buffalo | | | | | | | | | 15.57 (10.13) |
| Channel catfish | | | | | | | | | 0.51 (0.32) |
| Flathead catfish | | | | | | | | | 0.25 (0.17) |
| Black crappie | | | | | | | | | 0.17 (0.17) |
| Freshwater drum | | | | | | | | | 9.10 (7.29) |

Strata: BWCS - Backwater, contiguous, shoreline.
BWCO - Backwater, contiguous, offshore.
IMPS - Impounded, shoreline.
IMPO - Impounded, offshore.
MCBU - Main channel border, unstructured.
MCBW - Main channel border, wing dam.
SCB - Side channel border.
TRI - Tributary mouth.
TWZ - Tailwater.

Table 3.4.5. Mean catch-per-unit-effort and (standard error) for fishes collected by bottom trawling in Pool 13 of the Mississippi River using fixed-site sampling during 1996. See text for definitions of catch-per-unit-effort and standard error.



| Common name | BWCO | BWCS | IMPO | IMPS | MCBU | MCBW | SCB | TRI | TWZ |
|---|---|---|---|---|---|---|---|---|---|
| Shovelnose sturgeon | | | | | | | | | 1.96 (0.55) |
| Silver chub | | | | | | | | | 1.29 (0.56) |
| Blue sucker | | | | | | | | | 0.04 (0.04) |
| Shorthead redhorse | | | | | | | | | 0.13 (0.09) |
| Channel catfish | | | | | | | | | 1.00 (0.36) |
| Stonecat | | | | | | | | | 0.08 (0.06) |
| Flathead catfish | | | | | | | | | 0.08 (0.08) |
| Bluegill | | | | | | | | | 0.04 (0.04) |
| Black crappie | | | | | | | | | 0.04 (0.04) |
| Sauger | | | | | | | | | 0.17 (0.08) |
| Walleye | | | | | | | | | 0.04 (0.04) |
| Freshwater drum | | | | | | | | | 0.46 (0.18) |

Strata: BWCS - Backwater, contiguous, shoreline.
BWCO - Backwater, contiguous, offshore.
IMPS - Impounded, shoreline.
IMPO - Impounded, offshore.
MCBU - Main channel border, unstructured.
MCBW - Main channel border, wing dam.
SCB - Side channel border.
TRI - Tributary mouth.
TWZ - Tailwater.

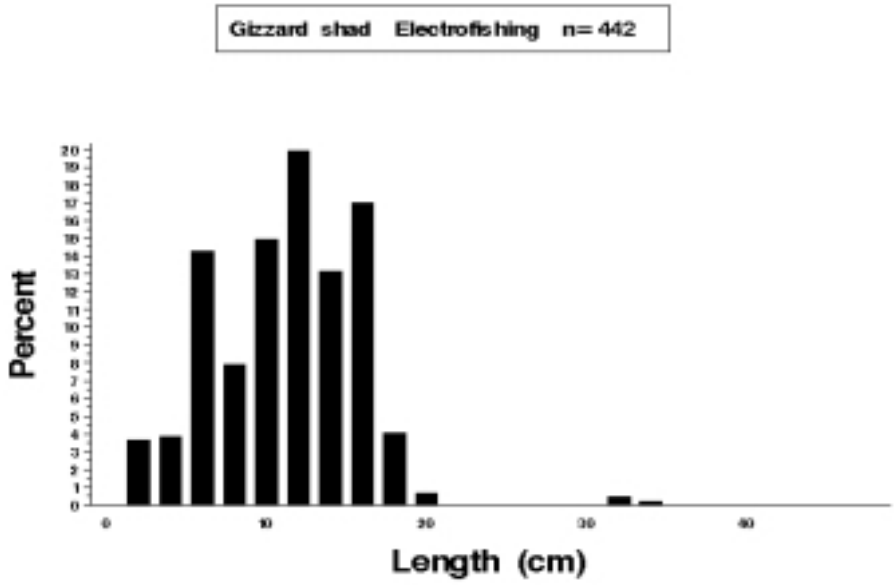


**Figure 3.2.** Length distributions (*length*) as a percentage of catch (*percent*) for gizzard shad (*Dorosoma cepedianum*) collected by electrofishing in Upper Mississippi River Pool 13 during 1996.

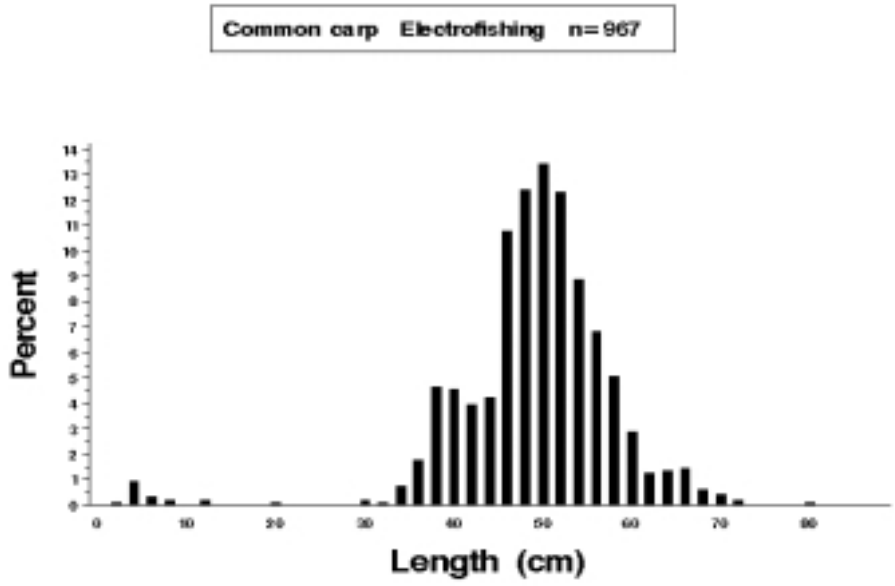


**Figure 3.3.** Length distributions (*length*) as a percentage of catch (*percent*) for common carp (*Cyprinus carpio*) collected by electrofishing in Upper Mississippi River Pool 13 during 1996.

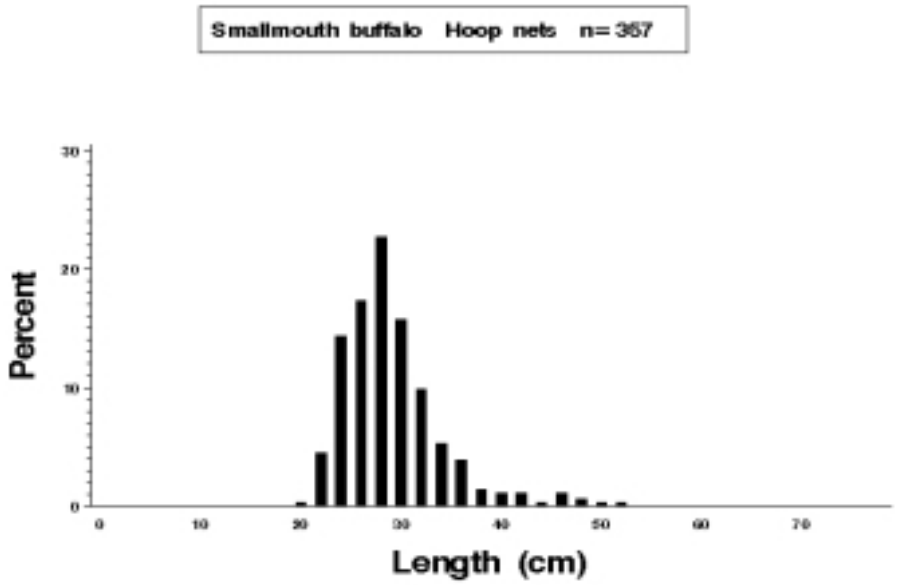


**Figure 3.4.** Length distributions (*length*) as a percentage of catch (*percent*) for smallmouth buffalo (*Ictiobus bubalus*) collected by large and small hoop netting in Upper Mississippi River Pool 13 during 1996.

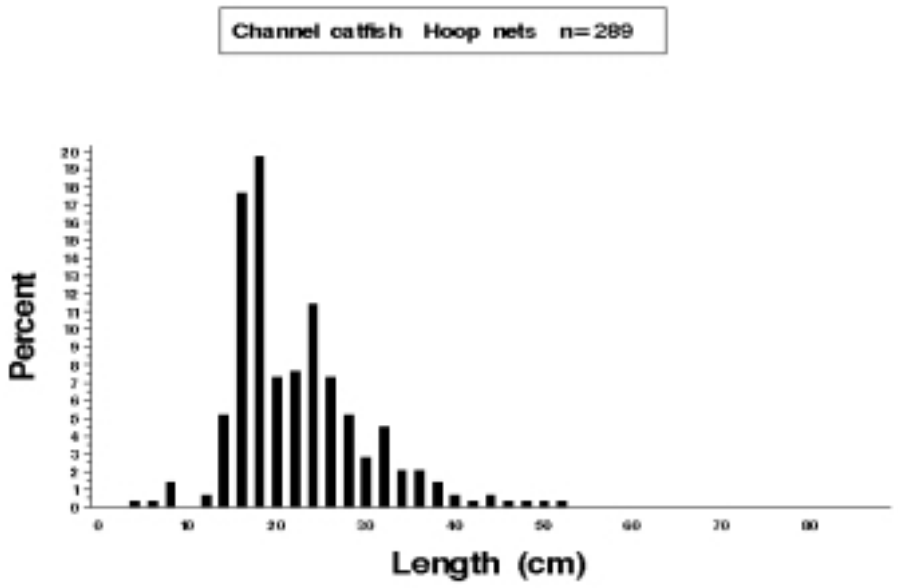


**Figure 3.5.** Length distributions (*length*) as a percentage of catch (*percent*) for channel catfish (*Ictalurus punctatus*) collected by large and small hoop netting in Upper Mississippi River Pool 13 during 1996.

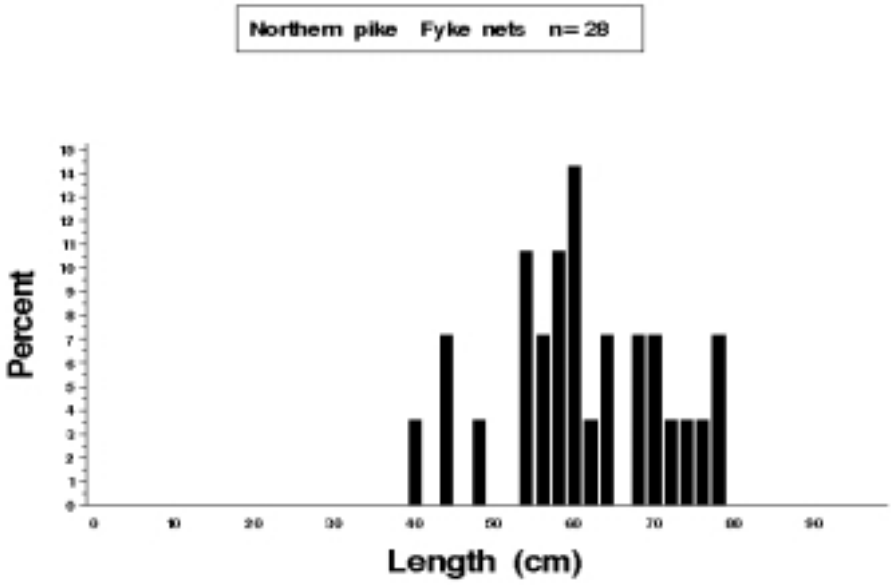


**Figure 3.6.** Length distributions (*length*) as a percentage of catch (*percent*) for northern pike (*Esox lucius*) collected by fyke netting in Upper Mississippi River Pool 13 during 1996.

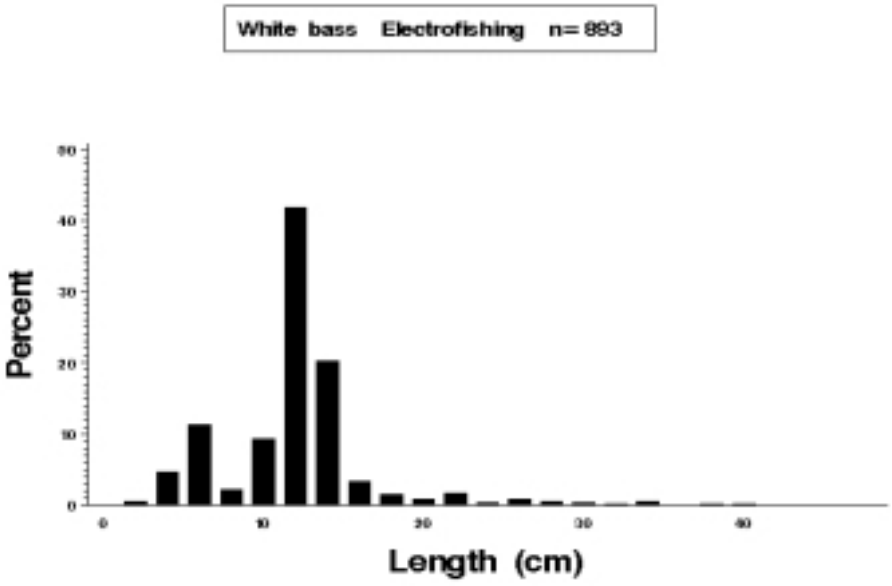


**Figure 3.7.** Length distributions (*length*) as a percentage of catch (*percent*) for white bass (*Morone chryops*) collected by electrofishing in Upper Mississippi River Pool 13 during 1996.

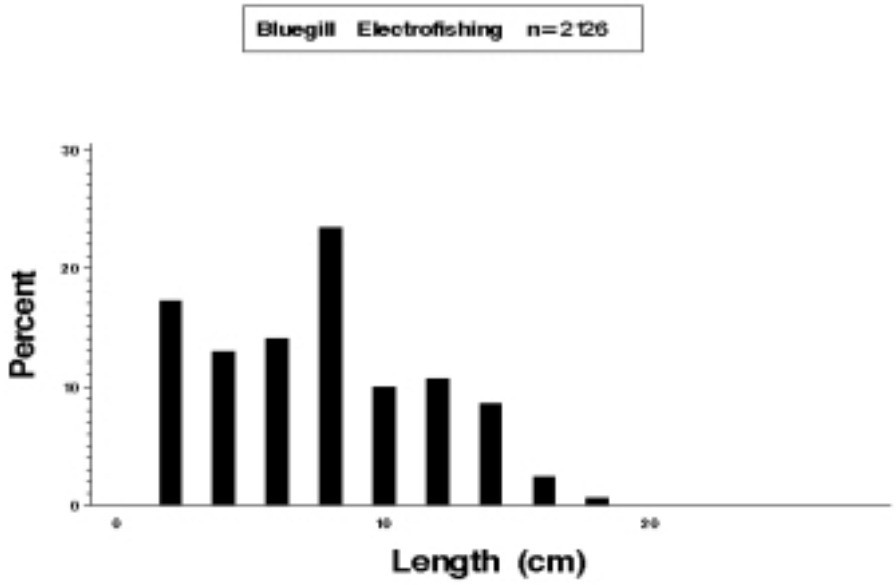


**Figure 3.8.** Length distributions (*length*) as a percentage of catch (*percent*) for bluegill (*Lepomis macrochirus*) collected by electrofishing in Upper Mississippi River Pool 13 during 1996.

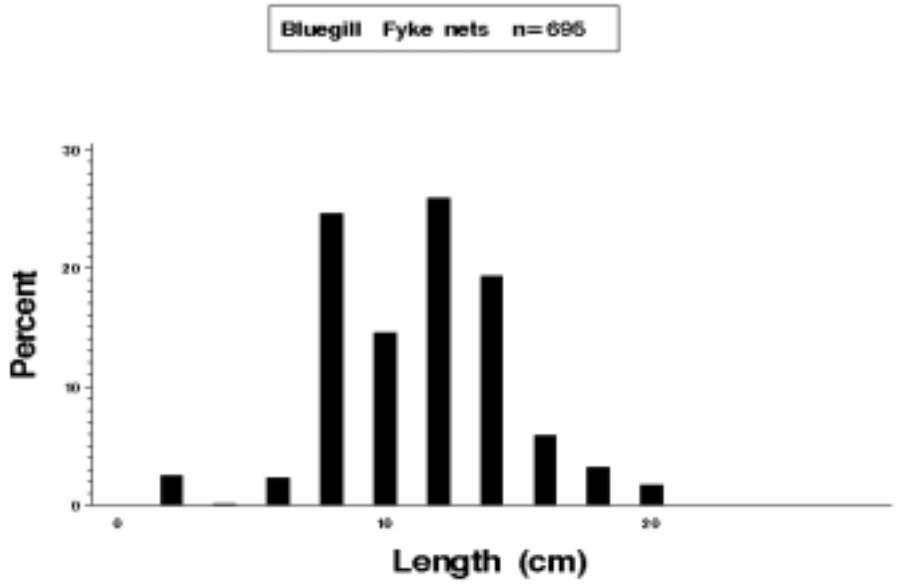


**Figure 3.9.** Length distributions (*length*) as a percentage of catch (*percent*) for bluegill (*Lepomis macrochirus*) collected by fyke netting in Upper Mississippi River Pool 13 during 1996.

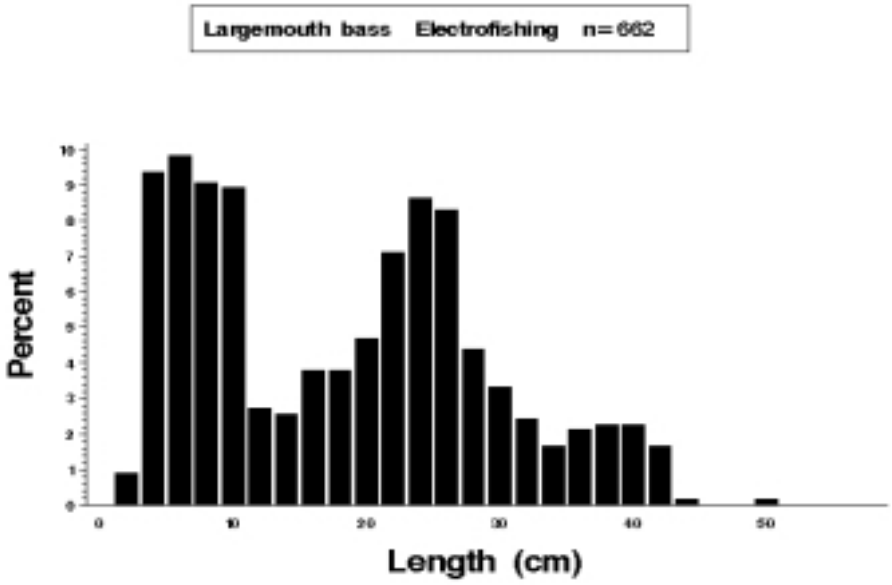


**Figure 3.10.** Length distributions (*length*) as a percentage of catch (*percent*) for largemouth bass (*Micropterus salmoides*) collected by electrofishing in Upper Mississippi River Pool 13 during 1996.

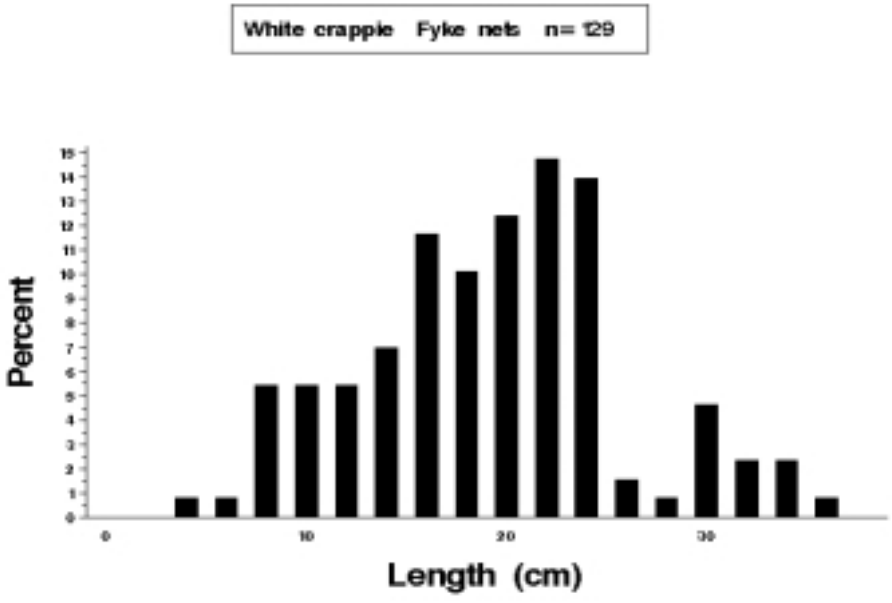


**Figure 3.11.** Length distributions (*length*) as a percentage of catch (*percent*) for black white (*Pomoxis annularus*) collected by fyke netting in Upper Mississippi River Pool 13 during 1996.

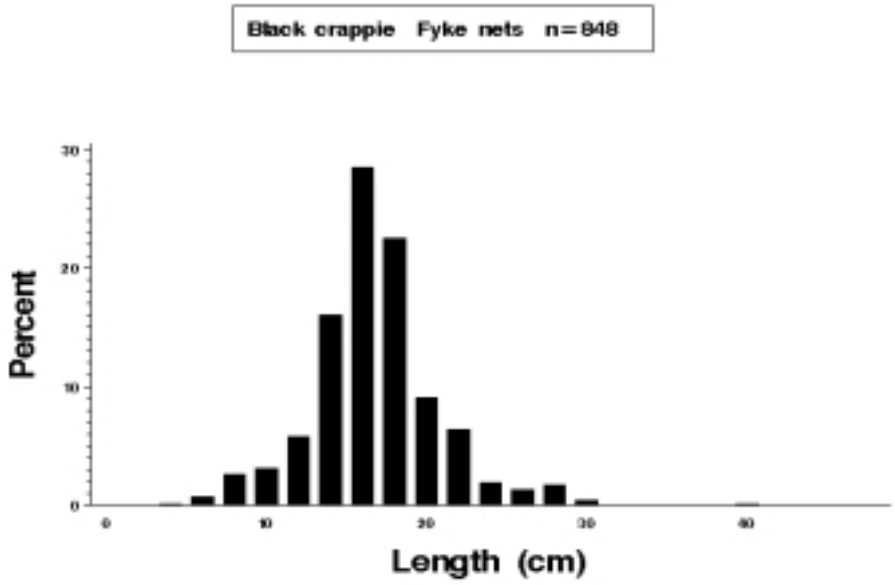


**Figure 3.12.** Length distributions (*length*) as a percentage of catch (*percent*) for black crappie (*Pomoxis nigromaculatus*) collected by fyke netting in Upper Mississippi River Pool 13 during 1996.

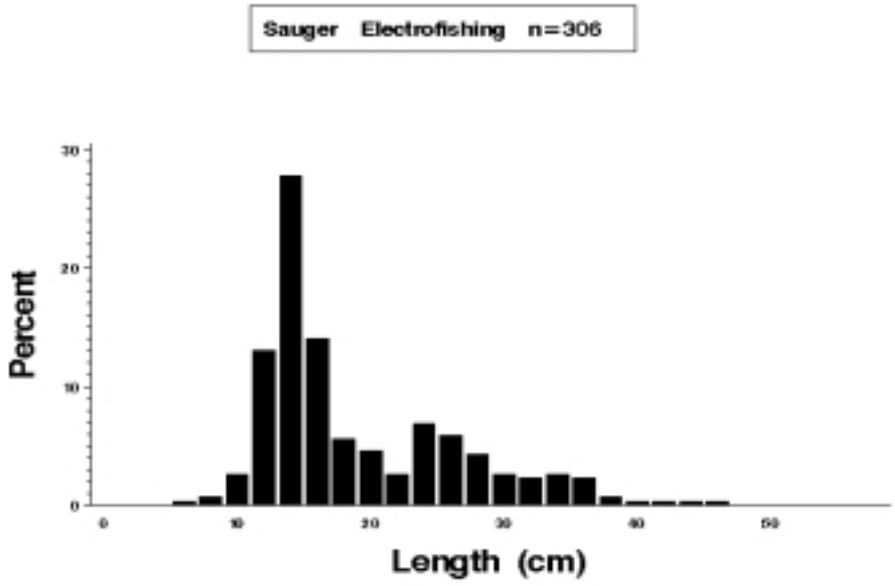


**Figure 3.13.** Length distributions (*length*) as a percentage of catch (*percent*) for sauger (*Stizostedion canadense*) collected by electrofishing in Upper Mississippi River Pool 13 during 1996.

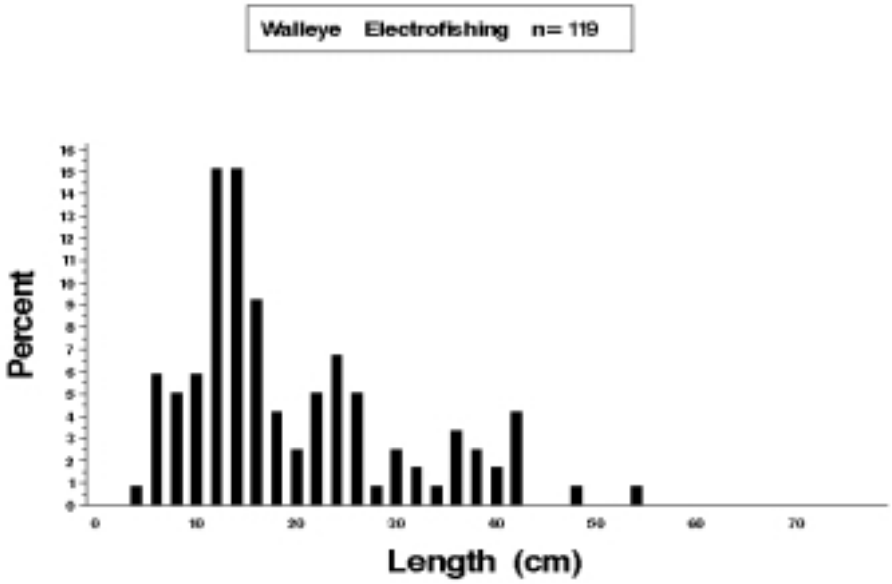


**Figure 3.14.** Length distributions (*length*) as a percentage of catch (*percent*) for walleye (*Stizostedion vitreum*) collected by electrofishing in Upper Mississippi River Pool 13 during 1996.

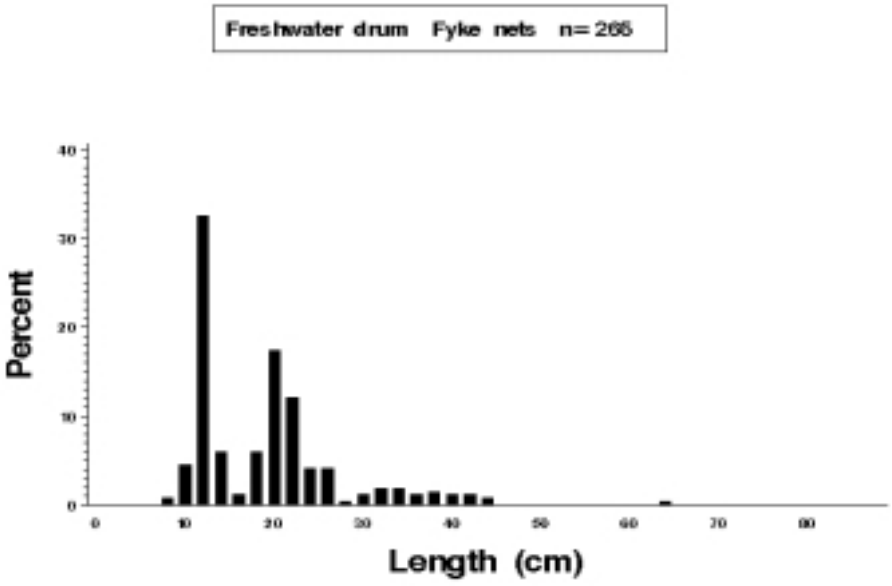


**Figure 3.15.** Length distributions (*length*) as a percentage of catch (*percent*) for freshwater drum (*Aplodinotus grunniens*) collected by electrofishing in Upper Mississippi River Pool 13 during 1996.

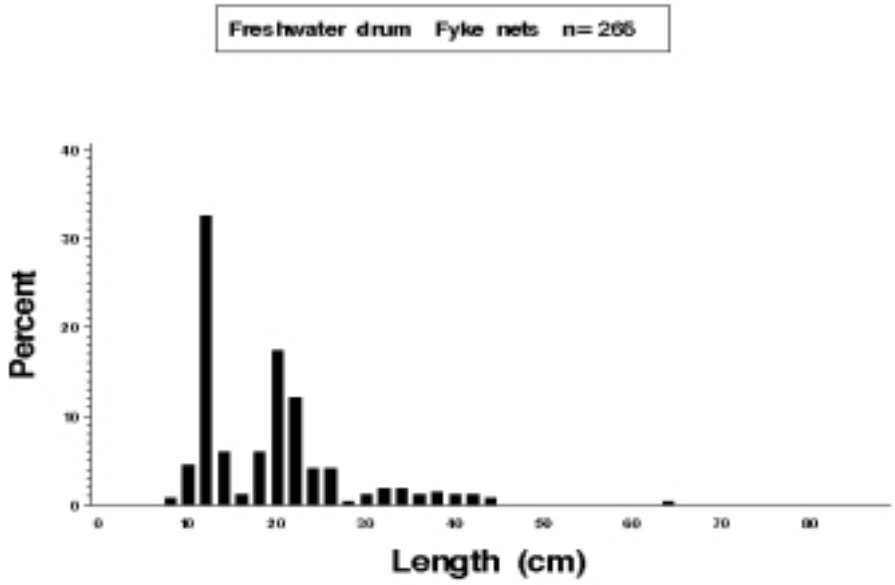


**Figure 3.16.** Length distributions (*length*) as a percentage of catch (*percent*) for freshwater drum (*Aplodinotus grunniens*) collected by fyke netting in Upper Mississippi River Pool 13 during 1996.

# Chapter 4. Pool 26, Upper Mississippi River

by

Frederick A. Cronin and Dirk W. Soergel

Illinois Natural History Survey
Alton Field Station
4134 Alby Street
Alton, Illinois 62002

## Hydrograph

Water levels at Pool 26 are influenced by discharge from the Mississippi, Illinois, and Missouri Rivers. The pool is regulated at a midpool control point by the U.S. Army Corps of Engineers. These factors combine to give Pool 26 a highly fluctuating hydrologic regime. Three sets of hydrographs are shown to accurately represent these fluctuations (Figure 4.1). Gages are located at Lock and Dam 25 tailwater (Winfield Gage), midreach (Grafton Gage), and Lock and Dam 26 impoundment (Alton Gage). Each graph shows 1940–95 daily means and 1996 daily water levels.

The Winfield Gage shows 1996 daily fluctuations near the mean through February, then below the mean for March and April. Water levels rose above flood stage and peaked in mid-May and again in early June. The daily water level dropped by the end of July and fluctuated near the mean through December. The Grafton Gage shows 1996 daily water levels near the mean until March, below the mean through April, then significant flooding in May and June. In July, water levels stabilized and remained near the mean for the rest of the year. The Alton Gage shows a similar pattern but with periods of very low water in April through July. Discharge data were obtained from the U.S. Army Corps of Engineers, St. Louis District.

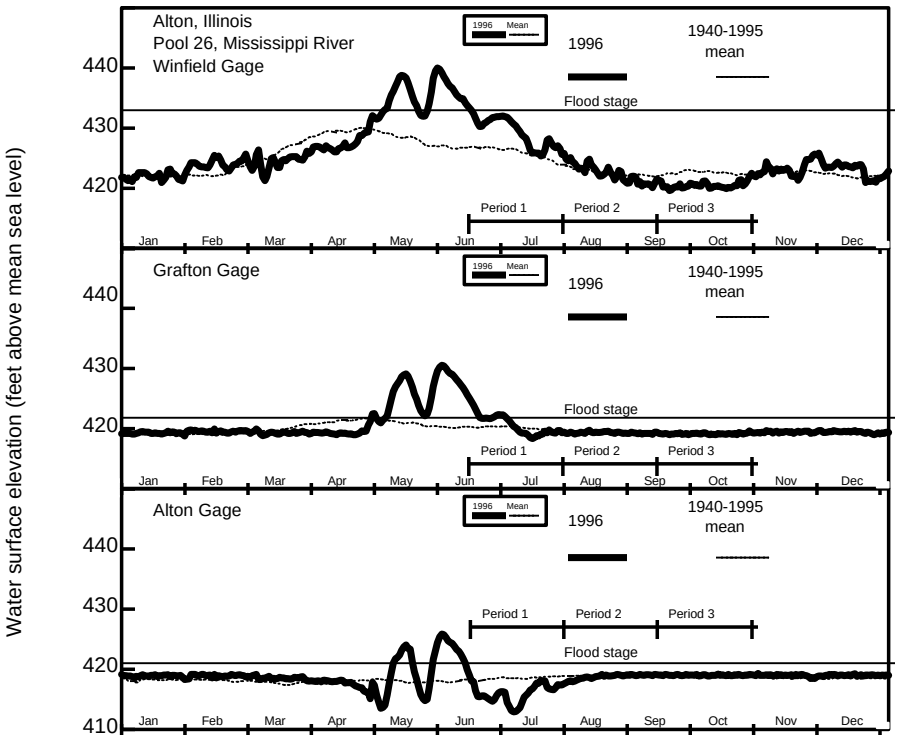


**Figure 4.1.** Daily water surface elevation from Winfield, Grafton, and Alton Gages for Pool 26, Upper Mississippi River, during 1996 and mean elevation since 1940. Discharge data were obtained from the U.S. Army Corps of Engineers, St. Louis District.

## Summary of Sampling Effort

We collected 387 samples in 1996, 129 from each of the three sampling periods (Table 4.1). Of those, 369 were from randomly selected sites in the BWCS, BWCO, SCB, MCBU, MCBW, IMPS, and IMPO strata, and 18 were from fixed sites in the TWZ stratum.

## Total Catch by Gear

During the 1996 field season, we collected 32,518 fish representing 67 species and 2 hybrids cross (Table 4.2). The five most abundant species numerically were gizzard shad (8,947), channel shiner (6,794), river shiner (3,528), common carp (2,218), and white bass (1,783). Total number of fish and species (excluding hybrids) collected by gear type were day electrofishing, 8,502 fish of 46 species; night electrofishing, 1,125 fish of 32 species; fyke nets, 543 fish of 23 species; tandem fyke nets, 301 fish of 19 species; mini fyke nets, 10,201 fish of 45 species; tandem mini fyke nets, 1,281 fish of 28 species; seines, 7,397 fish of 33 species; small hoop nets, 447 fish of 12 species; large hoop nets, 1,302 fish of 19 species; and trawls, 75 fish of 8 species. The bigeye shiner is the only species collected in 1996 that was not collected in previous LTRMP sampling at Pool 26.

## Random Sampling, Mean *C/f* by Gear and Stratum

### *Day Electrofishing*

For day electrofishing (Table 4.3.1), gizzard shad had the highest *C/f* in all strata combined (73.85), followed by common carp (21.55) and freshwater drum (3.70). Gizzard shad also had the highest *C/f* in the BWCS (50.72), IMPS (76.33), MCBU (85.39), MCBW (47.17), and SCB (50.17) strata. The second and third highest *C/f* by stratum were BWCS (common carp, 11.56; orangespotted sunfish 8.17), IMPS (bluegill, 11.17; orangespotted sunfish, 6.92), MCBU (common carp, 21.61; freshwater drum, 4.41), MCBW (common carp, 21.33; white bass, 17.50), and SCB (common carp, 23.39; emerald shiner, 3.17; white bass, 3.17).

### *Fyke Netting*

For fyke netting (Table 4.3.2), white bass had the highest *C/f* in all strata combined (5.08), followed by bluegill (2.42) and shortnose gar (1.82). In the BWCS stratum, shortnose gar had the highest *C/f* with 7.13, followed by black crappie (6.52) and bluegill (4.11). In the IMPS stratum, bluegill had the highest *C/f* (9.74), followed by black crappie (5.24) and shortnose gar (2.59). In the SCB stratum, white bass had the highest *C/f* (5.66), followed by bluegill (1.95) and freshwater drum (1.39).

### *Tandem Fyke Net*

For tandem fyke netting (Table 4.3.3), gizzard shad had the highest *C/f* in all strata combined (4.26), followed by white bass (1.66) and bluegill (1.45). In the BWCO stratum, gizzard shad had the highest *C/f* (9.29), followed by bluegill (2.21) and shortnose gar (2.17). In the IMPO stratum, white bass had the highest *C/f* (1.77), followed by black crappie (1.11) and bluegill (0.92).

### *Mini Fyke Net*

For mini fyke netting (Table 4.3.4), white bass had the highest *C/f* in all strata combined (60.13), followed by channel shiner (54.16) and river shiner (20.22). Gizzard shad had the highest *C/f* in the BWCS stratum (25.99), followed by silverband shiner (12.49) and spotfin shiner (7.92). Gizzard shad had the highest *C/f* in the IMPS stratum (23.78), followed by common carp (9.08) and white bass (6.26). White bass had the highest *C/f* in the MCBU stratum (82.75), followed by channel shiner (41.80) and spotfin shiner (10.57). Channel shiner had the highest *C/f* in the MCBW stratum (668.82), followed by spotfin shiner (93.84) and river shiner (28.26). Channel shiner had the highest *C/f* in SCB stratum (91.19), followed by river shiner (62.93) and spotfin shiner (22.25).

### *Tandem Mini Fyke Net*

For tandem mini fyke netting (Table 4.3.5), gizzard shad had the highest *C/f* in all strata combined (23.85), followed by freshwater drum (10.11) and white bass (6.65). The three highest *C/f*s by stratum were BWCO (gizzard shad, 57.61; white bass, 14.95; freshwater drum, 11.00), and IMPO (freshwater drum, 9.48; white bass, 0.85; black crappie, 0.42; sauger, 0.42).

### *Small Hoop Net*

For small hoop netting (Table 4.3.6), channel catfish had the highest *C/f* in all strata combined (2.45), followed by common carp (0.97) and smallmouth buffalo (0.18). The three highest *C/f*s by stratum were BWCO (common carp, 2.69; bluegill, 0.50; smallmouth buffalo, 0.25; channel catfish, 0.25), IMPO (common carp, 5.89; smallmouth buffalo, 1.49; channel catfish, 0.99), MCBU (channel catfish, 1.92; common carp, 0.95; smallmouth buffalo, 0.17), MCBW (common carp, 0.93; smallmouth buffalo, 0.17; bowfin, 0.09; white bass, 0.09; bluegill, 0.09), and SCB (channel catfish, 3.96; common carp, 0.47; smallmouth buffalo, 0.10; white bass, 0.10).

### *Large Hoop Net*

For large hoop netting (Table 4.3.7), smallmouth buffalo had the highest *C/f* in all strata combined (6.96), followed by common carp (2.66) and freshwater drum (0.61). Smallmouth buffalo also had the highest *C/f* for the BWCO stratum (7.24), followed by common carp (5.51) and bighead carp (1.27). Common carp had the highest *C/f* in the IMPO stratum (14.90), followed by smallmouth buffalo (14.68) and river carpsucker (0.59). Smallmouth buffalo had the highest *C/f* in the MCBU stratum (7.32), followed by common carp (2.83) and freshwater drum (0.83). In the MCBW stratum, common carp had the highest *C/f* (2.69), followed by smallmouth buffalo (0.78) and freshwater drum (0.42). Smallmouth buffalo had the highest *C/f* in the SCB stratum (5.42), followed by common carp (0.98) and channel catfish (0.24).

### *Seine*

For seining (Table 4.3.8), gizzard shad had the highest *C/f* in all strata combined (29.30), followed by river shiner (23.03) and channel shiner (13.05). Gizzard shad also had the highest *C/f* in the MCBU stratum (37.73), followed by river shiner (10.81) and emerald shiner (7.56). In SCB stratum, river shiner had the highest *C/f* (51.47), followed by channel shiner (37.56) and spotfin shiner (10.08).

## Fixed Sampling, Mean *C/f* by Gear and Stratum

### *Night Electrofishing*

For night electrofishing at the TWZ stratum (Table 4.4.1), gizzard shad had the highest *C/f* (69.67), followed by common carp (36.67) and white bass (23.83).

### *Trawl*

For trawling at the TWZ stratum (Table 4.4.2), channel catfish had the highest *C/f* (2.33), followed by freshwater drum (2.25) and speckled chub (0.92).

## Length Distributions of Selected Species

Length distributions are presented for selected species in Figures 4.2 to 4.14. The length distributions for some gears may be limited by the size selectiveness of the particular gear. Length distributions from small samples ($n < 100$) may be included but are not statistically meaningful (Anderson and Neumann 1996).

### *Gizzard Shad*

The electrofishing length distribution from 5,482 gizzard shad (Figure 4.2) is dominated by small fish, with a mode of 10 cm.

### *Common Carp*

The electrofishing length distribution from 1,533 common carp (Figure 4.3) indicates very few fish smaller than 30 cm, with most fish between 30 and 50 cm, and a few fish between 60 and 70 cm.

### *Smallmouth Buffalo*

The electrofishing length distribution from 300 smallmouth buffalo (Figure 4.4) shows a bimodal distribution. The first group represents young fish between 4 and 10 cm, with a mode of 6 and the other group represents larger fish between 24 and 26 cm, with a mode of 28 cm. The hoop net length distribution from 737 smallmouth buffalo (Figure 4.5) shows a similar group of adult fish, with a mode of 30 cm.

### *Channel Catfish*

The electrofishing length distribution from 188 channel catfish (Figure 4.6) shows a group of age 0 fish between 4 and 12 cm and the remainder spread between 20 and 70 cm, with a mode at 38 and 46 cm. The hoop net length distribution from 243 channel catfish (Figure 4.7) appears bimodal, with a group of fish between 12 and 20 cm and another group between 24 and 32 cm. There are also some larger fish between 34 and 60 cm.

### *White Bass*

The electrofishing length distribution from 457 white bass (Figure 4.8) is dominated by small fish between 4 and 12 cm, with a mode of 8 cm. Larger fish are also present to 42 cm.

### *Bluegill*

The electrofishing length distribution from 260 bluegill (Figure 4.9) shows an even distribution between 2 and 12 cm, with few fish greater than 14 cm. The fyke net length distribution from 149 bluegill (Figure 4.10) also shows an even distribution between 6 and 18 cm.

### *Largemouth Bass*

The electrofishing length distribution from 36 largemouth bass (Figure 4.11) shows an uneven distribution between 12 and 50 cm, with modes at 28 and 36 cm.

### *Black Crappie*

The fyke netting length distribution from 133 black crappie (Figure 4.12) shows a mode of 22 cm, with many smaller fish and a few larger fish.

### *Sauger*

The electrofishing length distribution from 52 sauger (Figure 4.13) shows fish spread between 8 and 44 cm, with a mode of 10 cm.

### *Freshwater Drum*

The electrofishing length distribution from 319 freshwater drum (Figure 4.14) shows a mode of 6 cm, with a few smaller fish and many larger fish.

Table 4.1. Allocation of fish sampling effort among strata by the Long Term Resource Monitoring Program in Pool 26 of the Mississippi River during 1996. Table entries are numbers of successfully completed standardized monitoring collections.



Sampling period = 1: June 15 - July 31

| Sampling gear | BWCS | BWCO | SCB | MCBU | MCBW | IMPS | IMPO | TRI | TWZ | TOTAL |
|---|---|---|---|---|---|---|---|---|---|---|
| Day electrofishing | 6 | | 6 | 8 | 2 | 4 | | | | 26 |
| Fyke net | 4 | | 2 | | | 2 | | | | 8 |
| Large hoop net | | 2 | 5 | 8 | 2 | | 2 | | | 19 |
| Small hoop net | | 2 | 5 | 8 | 2 | | 2 | | | 19 |
| Mini fyke net | 4 | | 5 | 2 | 2 | 2 | | | | 15 |
| Night electrofishing | | | | | | | | | 2 | 2 |
| Seine | | | 12 | 16 | | | | | | 28 |
| Trawling | | | | | | | | | 4 | 4 |
| Tandem fyke net | | 2 | | | | | 2 | | | 4 |
| Tandem mini fyke net | | 2 | | | | | 2 | | | 4 |
| SUBTOTAL | 14 | 8 | 35 | 42 | 8 | 8 | 8 | 0 | 6 | 129 |

Sampling period = 2: August 1 - September 14

| Sampling gear | BWCS | BWCO | SCB | MCBU | MCBW | IMPS | IMPO | TRI | TWZ | TOTAL |
|---|---|---|---|---|---|---|---|---|---|---|
| Day electrofishing | 6 | | 6 | 8 | 2 | 4 | | | | 26 |
| Fyke net | 4 | | 2 | | | 2 | | | | 8 |
| Large hoop net | | 2 | 5 | 8 | 2 | | 2 | | | 19 |
| Small hoop net | | 2 | 5 | 8 | 2 | | 2 | | | 19 |
| Mini fyke net | 4 | | 5 | 2 | 2 | 2 | | | | 15 |
| Night electrofishing | | | | | | | | | 2 | 2 |
| Seine | | | 12 | 16 | | | | | | 28 |
| Trawling | | | | | | | | | 4 | 4 |
| Tandem fyke net | | 2 | | | | | 2 | | | 4 |
| Tandem mini fyke net | | 2 | | | | | 2 | | | 4 |
| SUBTOTAL | 14 | 8 | 35 | 42 | 8 | 8 | 8 | 0 | 6 | 129 |

Sampling period = 3: September 15 - October 31

| Sampling gear | BWCS | BWCO | SCB | MCBU | MCBW | IMPS | IMPO | TRI | TWZ | TOTAL |
|---|---|---|---|---|---|---|---|---|---|---|
| Day electrofishing | 6 | | 6 | 8 | 2 | 4 | | | | 26 |
| Fyke net | 4 | | 2 | | | 2 | | | | 8 |
| Large hoop net | | 2 | 5 | 8 | 2 | | 2 | | | 19 |
| Small hoop net | | 2 | 5 | 8 | 2 | | 2 | | | 19 |
| Mini fyke net | 4 | | 5 | 2 | 2 | 2 | | | | 15 |
| Night electrofishing | | | | | | | | | 2 | 2 |
| Seine | | | 12 | 16 | | | | | | 28 |
| Trawling | | | | | | | | | 4 | 4 |
| Tandem fyke net | | 2 | | | | | 2 | | | 4 |
| Tandem mini fyke net | | 2 | | | | | 2 | | | 4 |
| SUBTOTAL | 14 | 8 | 35 | 42 | 8 | 8 | 8 | 0 | 6 | 129 |
| | 42 | 24 | 105 | 126 | 24 | 24 | 24 | 0 | 18 | 387 |

Strata: BWCS - Backwater, contiguous, shoreline.
BWCO - Backwater, contiguous, offshore.
IMPS - Impounded, shoreline.
IMPO - Impounded, offshore.
MCBU - Main channel border, unstructured.
MCBW - Main channel border, wing dam.
SCB - Side channel border.
TRI - Tributary mouth.
TWZ - Tailwater.

Table 4.2. Total catches, by gear type, of fishes collected by the Long Term Resource Program during 1996 in Pool 26 of he Mississippi River. See Table 4.1 for the list of sampling gears actually deployed in this study reach.



| Species | Common name | Scientific name | D | N | F | X | M | Y | S | HS | HL | G | TA | T | TOTAL |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | Shovelnose sturgeon | Scaphirhynchus platorynchus | - | - | - | - | - | - | - | - | - | - | - | 3 | 3 |
| 2 | Paddlefish | Polyodon spathula | 1 | - | - | - | - | - | - | - | - | - | - | - | 1 |
| 3 | Spotted gar | Lepisosteus oculatus | 2 | - | 4 | - | 3 | - | - | - | - | - | - | - | 9 |
| 4 | Longnose gar | Lepisosteus osseus | 2 | 7 | - | - | - | - | - | - | - | - | - | - | 9 |
| 5 | Shortnose gar | Lepisosteus platostomus | 93 | 32 | 101 | 28 | 94 | 11 | 1 | - | 6 | - | - | - | 366 |
| 6 | Bowfin | Amia calva | 1 | - | 10 | - | - | - | - | 1 | - | - | - | - | 12 |
| 7 | Goldeye | Hiodon alosoides | 5 | 5 | - | - | - | - | 3 | - | 5 | - | - | - | 18 |
| 8 | Mooneye | Hiodon tergisus | 1 | - | - | - | 4 | - | 5 | - | - | - | - | - | 10 |
| 9 | American eel | Anguilla rostrata | 2 | - | - | - | - | - | - | - | - | - | - | - | 2 |
| 10 | Skipjack herring | Alosa chrysochloris | 23 | 4 | - | - | 1 | - | 4 | - | - | - | - | - | 32 |
| 11 | Gizzard shad | Dorosoma cepedianum | 5064 | 418 | 14 | 122 | 500 | 655 | 2159 | - | 14 | - | - | 1 | 8947 |
| 12 | Threadfin shad | Dorosoma petenense | 35 | - | 1 | - | - | 1 | 13 | - | - | - | - | - | 50 |
| 13 | Central stoneroller | ampostoma anomalum | - | - | - | - | 4 | - | - | - | - | - | - | - | 4 |
| 14 | Goldfish | Carassius auratus | 2 | - | - | - | - | - | - | - | - | - | - | - | 2 |
| 15 | Grass carp | Ctenopharyngodon idella | 5 | - | - | - | - | - | - | - | - | - | - | - | 5 |
| 16 | Red shiner | Cyprinella lutrensis | - | - | - | - | 39 | - | 9 | - | - | - | - | - | 48 |
| 17 | Spotfin shiner | Cyprinella spiloptera | 27 | 5 | - | - | 1010 | 2 | 398 | - | - | - | - | - | 1442 |
| 18 | Common carp | Cyprinus carpio | 1313 | 220 | 36 | 5 | 68 | 2 | 14 | 168 | 391 | - | - | 1 | 2218 |
| 19 | Goldfish x carp | Carassius auratus x C. carpio | 1 | - | - | - | - | - | - | - | - | - | - | - | 1 |
| 20 | Western silvery minnow | Hybognathus argyritis | - | - | - | - | 85 | - | 3 | - | - | - | - | - | 88 |
| 21 | Mississippi silvery minnow | Hybognathus nuchalis | - | - | - | - | - | - | 1 | - | - | - | - | - | 1 |
| 22 | Bighead carp | Hypopthalmichthys nobilis | 1 | - | - | - | - | - | - | - | 15 | - | - | - | 16 |
| 23 | Speckled chub | Macrhybopsis aestivalis | 2 | - | - | - | - | 3 | 2 | - | - | - | - | 11 | 18 |
| 24 | Silver chub | Macrhybopsis storeriana | 2 | 6 | - | - | 3 | 3 | 10 | - | - | - | - | - | 24 |
| 25 | Golden shiner | Notemigonus crysoleucas | 1 | - | - | - | 4 | - | 3 | - | - | - | - | - | 8 |
| 26 | Emerald shiner | Notropis atherinoides | 126 | 12 | - | - | 200 | 11 | 595 | - | - | - | - | - | 944 |
| 27 | River shiner | Notrpis blennius | 28 | 9 | - | - | 1117 | 2 | 2372 | - | - | - | - | - | 3528 |
| 28 | Bigeye shiner | Notropis boops | - | - | - | - | 1 | - | 1 | - | - | - | - | - | 2 |
| 29 | Spottail shiner | Notropis hudsonius | - | - | - | - | 8 | 2 | - | - | - | - | - | - | 10 |
| 30 | Silverband shiner | Notropis shumardi | - | - | - | - | 176 | 14 | 2 | - | - | - | - | - | 192 |
| 31 | Sand shiner | Notropis stramineus | - | - | - | - | 6 | - | 12 | - | - | - | - | - | 18 |
| 32 | Channel shiner | Notropis wickliffi | 16 | 5 | - | - | 5293 | 7 | 1473 | - | - | - | - | - | 6794 |
| 33 | Suckermouth minnow | Phenacobius mirabilis | 1 | - | - | - | 2 | - | - | - | - | - | - | - | 3 |
| 34 | Bluntnose minnow | Pimephales notatus | - | - | - | - | 2 | - | - | - | - | - | - | - | 2 |
| 35 | Bullhead minnow | Pimephales vigilax | 50 | 2 | - | - | 208 | 5 | 28 | - | - | - | - | - | 293 |
| 36 | River carpsucker | Carpiodes carpio | 34 | 17 | 8 | 8 | 3 | 4 | 18 | - | 10 | - | - | - | 102 |
| 37 | Quillback | Carpiodes cyprinus | - | 1 | - | - | - | - | 1 | - | - | - | - | - | 2 |
| 38 | Blue sucker | Cycleptus elongatus | 2 | - | - | - | - | - | - | - | - | - | - | - | 2 |
| 39 | Smallmouth buffalo | Ictiobus bubalus | 227 | 73 | 8 | 4 | 12 | 5 | 6 | 33 | 704 | - | - | - | 1072 |

Gears: D - Day electrofishing
N - Night electrofishing
F - Fyke netting
X - andem fyke netting
M - Mini fyke netting
Y - Tandem mini fyke netting
S - Seining
HS - Small hoop netting
HL - Large hoop netting
G - Gill netting
TA - Trammel netting, anchored sets
T - Trawling (4.8-m bottom trawl)

Table 4.2. Total catches, by gear type, of fishes collected by the Long Term Resource Program during 1996 in Pool 26 of the Mississippi River. See Table 4.1 for the list of sampling gears actually deployed in this study reach.



| Species | Common name | Scientific name | D | N | F | X | M | Y | S | HS | HL | G | TA | T | TOTAL |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 40 | Bigmouth buffalo | Ictiobus cyprinellus | 32 | 10 | 2 | 4 | 2 | 3 | - | 2 | 19 | - | - | - | 74 |
| 41 | Black buffalo | Ictiobus niger | 20 | 3 | - | - | - | 1 | - | 2 | 17 | - | - | - | 43 |
| 42 | Unidentified buffalo | Ictiobus sp. | 9 | - | - | - | 411 | 23 | 791 | - | - | - | - | - | 1234 |
| 43 | Shorthead redhorse | Moxostoma macrolepidotum | 6 | 1 | 2 | 1 | - | - | - | - | - | - | - | - | 10 |
| 44 | Black bullhead | Ameiurus melas | - | - | 1 | - | 1 | - | - | - | - | - | - | - | 2 |
| 45 | Yellow bullhead | Ameiurus natalis | - | - | - | 1 | - | - | - | 1 | - | - | - | - | 2 |
| 46 | Brown bullhead | Ameiurus nebulosus | - | - | - | - | - | - | - | - | 1 | - | - | - | 1 |
| 47 | Blue catfish | Ictalurus furcatus | - | - | - | - | - | - | - | - | 2 | - | - | 3 | 5 |
| 48 | Channel catfish | Ictalurus punctatus | 173 | 15 | 6 | 4 | 17 | 4 | 42 | 217 | 26 | - | - | 28 | 532 |
| 49 | Flathead catfish | Pylodictis olivaris | 59 | 7 | 5 | - | 2 | 1 | 1 | 4 | 5 | - | - | - | 84 |
| 50 | Grass pickerel | Esox americanus vermiculatus | - | - | - | - | 1 | - | - | - | - | - | - | - | 1 |
| 51 | Blackstripe topminnow | Fundulus notatus | - | - | - | - | 1 | - | - | - | - | - | - | - | 1 |
| 52 | Western mosquitofish | Gambusia affinis | 4 | - | - | - | 118 | 3 | 18 | - | - | - | - | - | 143 |
| 53 | Brook silverside | Labidesthes sicculus | 5 | - | - | - | 3 | - | 3 | - | - | - | - | - | 11 |
| 54 | White bass | Morone chrysops | 314 | 143 | 66 | 39 | 837 | 175 | 169 | 7 | 32 | - | - | 1 | 1783 |
| 55 | Yellow bass | Morone mississippiensis | 1 | 1 | 1 | - | - | - | - | - | - | - | - | - | 3 |
| 56 | White x Striped bass | M. chrysops x M. saxatilis | - | 1 | - | - | - | - | - | - | - | - | - | - | 1 |
| 57 | Green sunfish | Lepomis cyanellus | - | 1 | - | 1 | - | - | - | - | - | - | - | - | 2 |
| 58 | Warmouth | Lepomis gulosus | 2 | - | - | 1 | 4 | - | - | - | - | - | - | - | 7 |
| 59 | Orangespotted sunfish | Lepomis humilis | 230 | - | 1 | 1 | 75 | 105 | - | - | - | - | - | - | 412 |
| 60 | Bluegill | Lepomis macrochirus | 224 | 36 | 113 | 36 | 99 | 2 | 3 | 6 | 1 | - | - | - | 520 |
| 61 | Largemouth bass | Micropterus salmoides | 33 | 3 | 4 | 1 | 3 | - | - | - | - | - | - | - | 44 |
| 62 | White crappie | Pomoxis annularis | 7 | 3 | 15 | 4 | 13 | 13 | 3 | - | 3 | - | - | - | 61 |
| 63 | Black crappie | Pomoxis nigromaculatus | 18 | 12 | 107 | 26 | 29 | 6 | 1 | 1 | 1 | - | - | - | 201 |
| 64 | Mud darter | Etheostoma asprigene | - | - | - | - | 3 | 1 | - | - | - | - | - | - | 4 |
| 65 | Logperch | Percina caprodes | 2 | 1 | - | - | - | - | - | - | - | - | - | - | 3 |
| 66 | Slenderhead darter | Percina phoxocephala | 3 | 1 | - | - | 1 | - | - | - | - | - | - | - | 5 |
| 67 | River darter | Percina shumardi | - | - | - | - | 5 | - | - | - | - | - | - | - | 5 |
| 68 | Sauger | Stizostedion canadense | 40 | 12 | 3 | 2 | 14 | 5 | - | - | 1 | - | - | - | 77 |
| 69 | Walleye | Stizostedion vitreum | - | 2 | 1 | - | 3 | - | - | - | - | - | - | - | 6 |
| 70 | Freshwater drum | Aplodinotus grunniens | 262 | 57 | 34 | 13 | 127 | 235 | 24 | 5 | 49 | - | - | 27 | 833 |
| 71 | Unidentified | Unidentified | - | - | - | - | 110 | - | - | - | - | - | - | - | 110 |
| | | | 8511 | 1125 | 543 | 301 | 10722 | 1304 | 8188 | 447 | 1302 | 0 | 0 | 75 | 32518 |

Gears: D - Day electrofishing
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Table 4.3.1. Mean catch-per-unit-effort and (standard error) for fishes collected by day electrofishing in Pool 26 of the Mississippi River using stratified random sampling during 1996. The statistics under ALL pertain to unbiased means over all strata sampled using this gear (as indicated by nonmissing entries below and by Table 4.1). See text for definitions of catch-per-unit-effort and standard error.



| Common name | ALL | BWCO | BWCS | IMPO | IMPS | MCBU | MCBW | SCB | TRI | TWZ |
|---|---|---|---|---|---|---|---|---|---|---|
| Paddlefish | | | | | 0.08 | | | | | |
| | | | | | (0.08) | | | | | |
| Spotted gar | | | 0.11 | | | | | | | |
| | | | (0.08) | | | | | | | |
| Longnose gar | 0.04 | | | | | 0.04 | | 0.06 | | |
| | (0.03) | | | | | (0.04) | | (0.06) | | |
| Shortnose gar | 1.34 | | 1.44 | | 0.42 | 1.23 | 0.67 | 1.61 | | |
| | (0.32) | | (0.41) | | (0.19) | (0.40) | (0.49) | (0.65) | | |
| Bowfin | 0.02 | | | | | | | 0.06 | | |
| | (0.02) | | | | | | | (0.06) | | |
| Goldeye | 0.13 | | | | | 0.17 | | 0.06 | | |
| | (0.09) | | | | | (0.13) | | (0.06) | | |
| Mooneye | 0.03 | | | | | 0.04 | | | | |
| | (0.03) | | | | | (0.04) | | | | |
| American eel | 0.06 | | | | | 0.09 | | | | |
| | (0.04) | | | | | (0.06) | | | | |
| Skipjack herring | 0.36 | | 0.06 | | 0.33 | 0.25 | | 0.67 | | |
| | (0.14) | | (0.06) | | (0.19) | (0.11) | | (0.44) | | |
| Gizzard shad | 73.85 | | 50.72 | | 76.33 | 85.39 | 47.17 | 50.17 | | |
| | (16.48) | | (17.18) | | (18.09) | (23.59) | (20.06) | (17.63) | | |
| Threadfin shad | 0.18 | | 0.61 | | 1.42 | 0.17 | 0.17 | 0.11 | | |
| | (0.08) | | (0.39) | | (0.88) | (0.12) | (0.17) | (0.08) | | |
| Goldfish | | | | | 0.17 | | | | | |
| | | | | | (0.11) | | | | | |
| Grass carp | 0.04 | | 0.11 | | 0.08 | | | 0.11 | | |
| | (0.02) | | (0.08) | | (0.08) | | | (0.08) | | |
| Spotfin shiner | 0.23 | | 0.22 | | 0.33 | 0.08 | 1.17 | 0.56 | | |
| | (0.09) | | (0.10) | | (0.33) | (0.08) | (1.17) | (0.25) | | |
| Common carp | 21.55 | | 11.56 | | 3.33 | 21.61 | 21.33 | 23.39 | | |
| | (4.23) | | (2.44) | | (0.96) | (6.08) | (6.01) | (4.40) | | |
| Goldfish x carp | | | | | | | 0.17 | | | |
| | | | | | | | (0.17) | | | |
| Bighead carp | 0.03 | | | | | 0.04 | | | | |
| | (0.03) | | | | | (0.04) | | | | |
| Speckled chub | 0.03 | | | | | | | 0.11 | | |
| | (0.03) | | | | | | | (0.11) | | |
| Silver chub | 0.03 | | | | 0.08 | 0.04 | | | | |
| | (0.03) | | | | (0.08) | (0.04) | | | | |
| Golden shiner | | | | | 0.08 | | | | | |
| | | | | | (0.08) | | | | | |
| Emerald shiner | 1.50 | | 1.06 | | 2.58 | 0.79 | | 3.17 | | |
| | (0.54) | | (0.34) | | (1.70) | (0.42) | | (1.61) | | |
| River shiner | 0.37 | | | | 0.58 | 0.13 | | 1.00 | | |
| | (0.21) | | | | (0.42) | (0.07) | | (0.72) | | |
| Channel shiner | 0.10 | | | | 1.00 | 0.08 | | 0.11 | | |
| | (0.05) | | | | (1.00) | (0.06) | | (0.11) | | |
| Suckermouth minnow | 0.02 | | | | | | | 0.06 | | |
| | (0.02) | | | | | | | (0.06) | | |
| Bullhead minnow | 0.27 | | 0.72 | | 2.00 | 0.13 | 0.17 | 0.50 | | |
| | (0.15) | | (0.34) | | (1.73) | (0.07) | (0.17) | (0.50) | | |
| River carpsucker | 0.19 | | 0.39 | | 1.58 | 0.13 | | 0.28 | | |
| | (0.09) | | (0.18) | | (0.72) | (0.13) | | (0.16) | | |
| Blue sucker | | | | | | | 0.33 | | | |
| | | | | | | | (0.33) | | | |
| Smallmouth buffalo | 1.94 | | 4.06 | | 5.75 | 1.81 | 1.50 | 1.83 | | |
| | (0.35) | | (1.46) | | (0.92) | (0.46) | (0.96) | (0.54) | | |
| Bigmouth buffalo | 0.19 | | 0.61 | | 0.67 | 0.13 | 0.83 | 0.28 | | |
| | (0.06) | | (0.22) | | (0.31) | (0.07) | (0.31) | (0.14) | | |

Strata: BWCS - Backwater, contiguous, shoreline. MCBW - Main channel border, wing dam.
BWCO - Backwater, contiguous, offshore. SCB - Side channel border.
IMPS - Impounded, shoreline. TRI - Tributary mouth.
IMPO - Impounded, offshore. TWZ - Tailwater.
MCBU - Main channel border, unstructured.

Table 4.3.1. Mean catch-per-unit-effort and (standard error) for fishes collected by day electrofishing in Pool 26 of the Mississippi River using stratified random sampling during 1996. The statistics under ALL pertain to unbiased means over all strata sampled using this gear (as indicated by nonmissing entries below and by Table 4.1). See text for definitions of catch-per-unit-effort and standard error.



| Common name | ALL | BWCO | BWCS | IMPO | IMPS | MCBU | MCBW | SCB | TRI | TWZ |
|---|---|---|---|---|---|---|---|---|---|---|
| Black buffalo | 0.15 | | 0.61 | | 0.08 | 0.04 | 0.17 | 0.33 | | |
| | (0.05) | | (0.24) | | (0.08) | (0.04) | (0.17) | (0.16) | | |
| Shorthead redhorse | 0.09 | | | | | 0.08 | 0.33 | 0.11 | | |
| | (0.04) | | | | | (0.06) | (0.33) | (0.08) | | |
| Channel catfish | 2.58 | | 1.33 | | 0.83 | 2.54 | 4.50 | 2.89 | | |
| | (0.56) | | (0.49) | | (0.21) | (0.73) | (1.82) | (0.99) | | |
| Flathead catfish | 0.71 | | 0.06 | | 0.58 | 0.89 | 3.83 | 0.39 | | |
| | (0.18) | | (0.06) | | (0.29) | (0.26) | (2.02) | (0.14) | | |
| Western mosquitofish | 0.03 | | 0.11 | | 0.08 | 0.04 | | | | |
| | (0.03) | | (0.08) | | (0.08) | (0.04) | | | | |
| Brook silverside | 0.01 | | 0.17 | | 0.17 | | | | | |
| | (0.00) | | (0.09) | | (0.11) | | | | | |
| White bass | 2.69 | | 3.50 | | 2.58 | 2.43 | 17.50 | 3.17 | | |
| | (0.37) | | (0.97) | | (0.45) | (0.41) | (10.79) | (0.88) | | |
| Yellow bass | | | 0.06 | | | | | | | |
| | | | (0.06) | | | | | | | |
| Warmouth | 0.02 | | 0.06 | | | | | 0.06 | | |
| | (0.02) | | (0.06) | | | | | (0.06) | | |
| Orangespotted sunfish | 0.39 | | 8.17 | | 6.92 | | | | | |
| | (0.16) | | (3.84) | | (4.18) | | | | | |
| Bluegill | 0.64 | | 3.00 | | 11.17 | 0.29 | 2.50 | 0.78 | | |
| | (0.27) | | (0.90) | | (2.90) | (0.21) | (1.34) | (0.78) | | |
| Largemouth bass | 0.13 | | 0.11 | | 2.08 | 0.08 | 0.17 | 0.17 | | |
| | (0.05) | | (0.08) | | (0.51) | (0.06) | (0.17) | (0.09) | | |
| White crappie | 0.01 | | 0.33 | | | | 0.17 | | | |
| | (0.01) | | (0.18) | | | | (0.17) | | | |
| Black crappie | 0.17 | | 0.33 | | 0.25 | 0.08 | 0.17 | 0.33 | | |
| | (0.08) | | (0.11) | | (0.13) | (0.06) | (0.17) | (0.23) | | |
| Logperch | 0.03 | | | | 0.08 | 0.04 | | | | |
| | (0.03) | | | | (0.08) | (0.04) | | | | |
| Slenderhead darter | 0.08 | | | | | 0.13 | | | | |
| | (0.08) | | | | | (0.13) | | | | |
| Sauger | 0.47 | | 0.22 | | 1.33 | 0.59 | 0.33 | 0.22 | | |
| | (0.19) | | (0.15) | | (0.45) | (0.28) | (0.33) | (0.10) | | |
| Freshwater drum | 3.70 | | 3.78 | | 3.58 | 4.41 | 1.83 | 2.06 | | |
| | (1.14) | | (0.62) | | (1.31) | (1.69) | (1.25) | (0.70) | | |

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IMPO - Impounded, offshore. TWZ - Tailwater.
MCBU - Main channel border, unstructured.

Table 4.3.2. Mean catch-per-unit-effort and (standard error) for fishes collected by fyke netting in Pool 26 of the Mississippi River using stratified random sampling during 1996. The statistics under ALL pertain to unbiased means over all strata sampled using this gear (as indicated by nonmissing entries below and by Table 4.1). See text for definitions of catch-per-unit-effort and standard error.



| Common name | ALL | BWCO | BWCS | IMPO | IMPS | MCBU | MCBW | SCB | TRI | TWZ |
|---|---|---|---|---|---|---|---|---|---|---|
| Spotted gar | 0.04 | | 0.35 | | | | | | | |
| | (0.04) | | (0.35) | | | | | | | |
| Shortnose gar | 1.82 | | 7.13 | | 2.59 | | | 1.05 | | |
| | (0.82) | | (.07) | | (1.34) | | | (0.86) | | |
| Bowfin | 0.10 | | 0.77 | | 0.17 | | | | | |
| | (0.03) | | (0.28) | | (0.17) | | | | | |
| Gizzard shad | 0.39 | | 0.64 | | 0.87 | | | 0.34 | | |
| | (0.19) | | (0.32) | | (0.43) | | | (0.21) | | |
| Threadfin shad | | | | | 0.17 | | | | | |
| | | | | | (0.17) | | | | | |
| Common carp | 0.47 | | 2.33 | | 1.64 | | | 0.18 | | |
| | (0.20) | | (1.02) | | (1.26) | | | (0.18) | | |
| River carpsucker | 0.06 | | 0.41 | | 0.52 | | | | | |
| | (0.02) | | (0.19) | | (0.35) | | | | | |
| Smallmouth buffalo | 0.08 | | 0.63 | | 0.19 | | | | | |
| | (0.03) | | (0.29) | | (0.19) | | | | | |
| Bigmouth buffalo | 0.02 | | 0.18 | | | | | | | |
| | (0.02) | | (0.18) | | | | | | | |
| Shorthead redhorse | 0.02 | | 0.17 | | | | | | | |
| | (0.01) | | (0.11) | | | | | | | |
| Black bullhead | 0.01 | | 0.10 | | | | | | | |
| | (0.01) | | (0.10) | | | | | | | |
| Channel catfish | 0.19 | | 0.35 | | 0.17 | | | 0.17 | | |
| | (0.15) | | (0.20) | | (0.17) | | | (0.17) | | |
| Flathead catfish | 0.33 | | 0.26 | | | | | 0.35 | | |
| | (0.19) | | (0.14) | | | | | (0.22) | | |
| White bass | 5.08 | | 1.58 | | 2.32 | | | 5.66 | | |
| | (3.47) | | (0.71) | | (1.42) | | | (4.06) | | |
| Yellow bass | 0.01 | | 0.09 | | | | | | | |
| | (0.01) | | (0.09) | | | | | | | |
| Orangespotted sunfish | 0.01 | | | | 0.19 | | | | | |
| | (0.01) | | | | (0.19) | | | | | |
| Bluegill | 2.42 | | 4.11 | | 9.74 | | | 1.95 | | |
| | (1.52) | | (2.10) | | (4.90) | | | (1.75) | | |
| Largemouth bass | 0.04 | | 0.29 | | 0.19 | | | | | |
| | (0.02) | | (0.21) | | (0.19) | | | | | |
| White crappie | 0.12 | | 0.83 | | 0.92 | | | | | |
| | (0.06) | | (0.46) | | (0.73) | | | | | |
| Black crappie | 1.22 | | 6.52 | | 5.24 | | | 0.35 | | |
| | (0.47) | | (2.98) | | (2.17) | | | (0.35) | | |
| Sauger | 0.02 | | 0.10 | | 0.33 | | | | | |
| | (0.01) | | (0.10) | | (0.33) | | | | | |
| Walleye | 0.15 | | | | | | | 0.18 | | |
| | (0.15) | | | | | | | (0.18) | | |
| Freshwater drum | 1.47 | | 2.41 | | | | | 1.39 | | |
| | (0.65) | | (1.41) | | | | | (0.74) | | |

Strata: BWCS - Backwater, contiguous, shoreline.
BWCO - Backwater, contiguous, offshore.
IMPS - Impounded, shoreline.
IMPO - Impounded, offshore.
MCBU - Main channel border, unstructured.
MCBW - Main channel border, wing dam.
SCB - Side channel border.
TRI - Tributary mouth.
TWZ - Tailwater.

Table 4.3.3. Mean catch-per-unit-effort and (standard error) for fishes collected by tandem fyke netting in Pool 26 of the Mississippi River using stratified random sampling during 1996. The statistics under ALL pertain to unbiased means over all strata sampled using this gear (as indicated by nonmissing entries below and by Table 4.1). See text for definitions of catch-per-unit-effort and standard error.



| Common name | ALL | BWCO | BWCS | IMPO | IMPS | MCBU | MCBW | SCB | TRI | TWZ |
|---|---|---|---|---|---|---|---|---|---|---|
| Shortnose gar | 1.04 | 2.17 | | 0.26 | | | | | | |
| | (0.44) | (1.07) | | (0.11) | | | | | | |
| Gizzard shad | 4.26 | 9.29 | | 0.75 | | | | | | |
| | (2.35) | (5.68) | | (0.66) | | | | | | |
| Common carp | 0.19 | 0.34 | | 0.08 | | | | | | |
| | (0.07) | (0.11) | | (0.08) | | | | | | |
| River carpsucker | 0.36 | 0.25 | | 0.44 | | | | | | |
| | (0.21) | (0.11) | | (0.35) | | | | | | |
| Smallmouth buffalo | 0.17 | 0.17 | | 0.17 | | | | | | |
| | (0.08) | (0.10) | | (0.11) | | | | | | |
| Bigmouth buffalo | 0.15 | 0.25 | | 0.08 | | | | | | |
| | (0.07) | (0.11) | | (0.08) | | | | | | |
| Shorthead redhorse | 0.03 | 0.08 | | | | | | | | |
| | (0.03) | (0.08) | | | | | | | | |
| Yellow bullhead | 0.04 | 0.09 | | | | | | | | |
| | (0.04) | (0.09) | | | | | | | | |
| Channel catfish | 0.20 | | | 0.35 | | | | | | |
| | (0.10) | | | (0.18) | | | | | | |
| White bass | 1.66 | 1.49 | | 1.77 | | | | | | |
| | (0.51) | (0.47) | | (0.81) | | | | | | |
| Green sunfish | 0.04 | 0.09 | | | | | | | | |
| | (0.04) | (0.09) | | | | | | | | |
| Warmouth | 0.04 | 0.09 | | | | | | | | |
| | (0.04) | (0.09) | | | | | | | | |
| Orangespotted sunfish | 0.04 | 0.09 | | | | | | | | |
| | (0.04) | (0.09) | | | | | | | | |
| Bluegill | 1.45 | 2.21 | | 0.92 | | | | | | |
| | (0.75) | (1.62) | | (0.59) | | | | | | |
| Largemouth bass | 0.04 | 0.09 | | | | | | | | |
| | (0.04) | (0.09) | | | | | | | | |
| White crappie | 0.18 | 0.08 | | 0.25 | | | | | | |
| | (0.11) | (0.08) | | (0.17) | | | | | | |
| Black crappie | 1.13 | 1.17 | | 1.11 | | | | | | |
| | (0.54) | (1.17) | | (0.44) | | | | | | |
| Sauger | 0.10 | | | 0.17 | | | | | | |
| | (0.06) | | | (0.11) | | | | | | |
| Freshwater drum | 0.58 | 0.43 | | 0.68 | | | | | | |
| | (0.18) | (0.25) | | (0.25) | | | | | | |

Strata: BWCS - Backwater, contiguous, shoreline.
BWCO - Backwater, contiguous, offshore.
IMPS - Impounded, shoreline.
IMPO - Impounded, offshore.
MCBU - Main channel border, unstructured.
MCBW - Main channel border, wing dam.
SCB - Side channel border.
TRI - Tributary mouth.
TWZ - Tailwater.

Table 4.3.4. Mean catch-per-unit-effort and (standard error) for fishes collected by mini fyke netting in Pool 26 of the Mississippi River using stratified random sampling during 1996. The statistics under ALL pertain to unbiased means over all strata sampled using this gear (as indicated by nonmissing entries below and by Table 4.1). See text for definitions of catch-per-unit-effort and standard error.



| Common name | ALL | BWCO | BWCS | IMPO | IMPS | MCBU | MCBW | SCB | TRI | TWZ |
|---|---|---|---|---|---|---|---|---|---|---|
| Spotted gar | 0.01 | | 0.25 | | | | | | | |
| | (0.01) | | (0.25) | | | | | | | |
| Shortnose gar | 3.94 | | 3.71 | | 1.80 | 5.49 | 0.49 | 0.43 | | |
| | (3.11) | | (1.48) | | (0.83) | (4.67) | (0.34) | (0.31) | | |
| Mooneye | 0.49 | | | | | 0.73 | | | | |
| | (0.49) | | | | | (0.73) | | | | |
| Skipjack herring | 0.11 | | | | | 0.17 | | | | |
| | (0.11) | | | | | (0.17) | | | | |
| Gizzard shad | 5.37 | | 25.99 | | 23.78 | 4.93 | 0.69 | 2.93 | | |
| | (2.16) | | (18.83) | | (14.12) | (2.96) | (0.36) | (1.55) | | |
| Central stoneroller | 0.34 | | 0.09 | | | 0.51 | | | | |
| | (0.34) | | (0.09) | | | (0.51) | | | | |
| Red shiner | 2.61 | | | | 0.33 | 3.92 | 2.54 | | | |
| | (2.47) | | | | (0.33) | (3.71) | (2.54) | | | |
| Spotfin shiner | 13.75 | | 7.92 | | 1.81 | 10.57 | 93.84 | 22.25 | | |
| | (4.24) | | (6.37) | | (1.12) | (4.67) | (93.84) | (10.08) | | |
| Common carp | 0.61 | | 0.71 | | 9.08 | 0.52 | | 0.54 | | |
| | (0.27) | | (0.33) | | (8.85) | (0.35) | | (0.34) | | |
| Western silvery minnow | 2.95 | | 1.85 | | | 2.93 | 0.17 | 3.26 | | |
| | (1.72) | | (1.85) | | | (2.33) | (0.17) | (2.59) | | |
| Silver chub | 0.15 | | | | | 0.17 | | 0.14 | | |
| | (0.12) | | | | | (0.17) | | (0.09) | | |
| Golden shiner | 0.25 | | | | 0.19 | 0.34 | | 0.07 | | |
| | (0.23) | | | | (0.19) | (0.34) | | (0.07) | | |
| Emerald shiner | 4.82 | | 5.98 | | 5.89 | 5.54 | 2.54 | 2.96 | | |
| | (1.46) | | (3.12) | | (3.91) | (2.09) | (2.54) | (1.53) | | |
| River shiner | 20.22 | | 1.65 | | | 3.26 | 28.26 | 62.93 | | |
| | (10.50) | | (0.91) | | | (2.24) | (28.26) | (36.43) | | |
| Bigeye shiner | 0.02 | | | | | | | 0.07 | | |
| | (0.02) | | | | | | | (0.07) | | |
| Spottail shiner | 0.40 | | | | | 0.51 | 0.33 | 0.21 | | |
| | (0.34) | | | | | (0.51) | (0.33) | (0.15) | | |
| Silverband shiner | 1.06 | | 12.49 | | 1.33 | 0.71 | 0.18 | 0.28 | | |
| | (0.51) | | (10.47) | | (1.33) | (0.45) | (0.18) | (0.21) | | |
| Sand shiner | 0.04 | | | | 0.16 | | 0.54 | 0.14 | | |
| | (0.03) | | | | (0.16) | | (0.54) | (0.09) | | |
| Channel shiner | 54.16 | | 1.84 | | | 41.80 | 668.82 | 91.19 | | |
| | (24.01) | | (1.11) | | | (30.62) | (668.63) | (44.61) | | |
| Suckermouth minnow | 0.23 | | | | | 0.34 | | | | |
| | (0.23) | | | | | (0.34) | | | | |
| Bluntnose minnow | | | 0.09 | | | | 0.18 | | | |
| | | | (0.09) | | | | (0.18) | | | |
| Bullhead minnow | 1.60 | | 2.55 | | 1.05 | 1.54 | 25.18 | 1.59 | | |
| | (0.65) | | (1.39) | | (0.38) | (0.94) | (25.18) | (0.58) | | |
| River carpsucker | 0.23 | | 0.08 | | | 0.34 | | | | |
| | (0.23) | | (0.08) | | | (0.34) | | | | |
| Smallmouth buffalo | 0.28 | | 0.45 | | 0.76 | 0.35 | | 0.07 | | |
| | (0.15) | | (0.31) | | (0.76) | (0.22) | | (0.07) | | |
| Bigmouth buffalo | 0.01 | | 0.18 | | | | | | | |
| | (0.00) | | (0.12) | | | | | | | |
| Black bullhead | | | 0.09 | | | | | | | |
| | | | (0.09) | | | | | | | |
| Channel catfish | 0.84 | | 0.25 | | 0.33 | 1.06 | | 0.44 | | |
| | (0.45) | | (0.13) | | (0.21) | (0.67) | | (0.26) | | |
| Flathead catfish | 0.12 | | | | 0.16 | 0.18 | | | | |
| | (0.12) | | | | (0.16) | (0.18) | | | | |
| Grass pickerel | 0.11 | | | | | 0.17 | | | | |
| | (0.11) | | | | | (0.17) | | | | |

Strata: BWCS - Backwater, contiguous, shoreline. MCBW - Main channel border, wing dam.
BWCO - Backwater, contiguous, offshore. SCB - Side channel border.
IMPS - Impounded, shoreline. TRI - Tributary mouth.
IMPO - Impounded, offshore. TWZ - Tailwater.
MCBU - Main channel border, unstructured.

Table 4.3.4. Mean catch-per-unit-effort and (standard error) for fishes collected by mini fyke netting in Poo 26 of the Mississippi River using stratified random sampling during 1996. The statistics under ALL pertain to unbiased means over all strata sampled using this gear (as indicated by nonmissing entries below and by Table 4.1). See text for definitions of catch-per-unit-effort and standard error.



| Common name | ALL | BWCO | BWCS | IMPO | IMPS | MCBU | MCBW | SCB | TRI | TWZ |
|---|---|---|---|---|---|---|---|---|---|---|
| Blackstripe topminnow | 0.02 | | | | | | | 0.07 | | |
| | (0.02) | | | | | | | (0.07) | | |
| Western mosquitofish | 2.75 | | 5.46 | | 3.33 | 3.23 | | 1.25 | | |
| | (2.04) | | (2.23) | | (3.33) | (3.03) | | (1.04) | | |
| Brook silverside | 0.03 | | 0.17 | | | | | 0.07 | | |
| | (0.02) | | (0.12) | | | | | (0.07) | | |
| White bass | 60.13 | | 5.29 | | 6.26 | 82.75 | 1.15 | 16.91 | | |
| | (53.48) | | (2.93) | | (3.58) | (80.20) | (0.74) | (14.53) | | |
| Warmouth | 0.17 | | | | | 0.17 | | 0.21 | | |
| | (0.12) | | | | | (0.17) | | (0.11) | | |
| Orangespotted sunfish | 0.24 | | 5.94 | | 0.51 | | | | | |
| | (0.13) | | (3.19) | | (0.34) | | | | | |
| Bluegill | 1.40 | | 2.68 | | 1.48 | 0.35 | 0.35 | 3.67 | | |
| | (0.51) | | (1.89) | | (0.71) | (0.22) | (0.22) | (1.70) | | |
| Largemouth bass | 0.01 | | 0.26 | | | | | | | |
| | (0.01) | | (0.19) | | | | | | | |
| White crappie | 0.10 | | 0.51 | | 0.57 | | | 0.27 | | |
| | (0.06) | | (0.26) | | (0.57) | | | (0.21) | | |
| Black crappie | 0.11 | | 1.47 | | 1.65 | | 0.17 | 0.14 | | |
| | (0.04) | | (0.61) | | (1.08) | | (0.17) | (0.10) | | |
| Mud darter | 0.06 | | | | | | | 0.21 | | |
| | (0.03) | | | | | | | (0.11) | | |
| Slenderhead darter | 0.02 | | | | | | | 0.07 | | |
| | (0.02) | | | | | | | (0.07) | | |
| River darter | 0.12 | | 0.09 | | 0.54 | 0.17 | | | | |
| | (0.11) | | (0.09) | | (0.38) | (0.17) | | | | |
| Sauger | 0.73 | | 0.19 | | 1.13 | 1.07 | | | | |
| | (0.49) | | (0.19) | | (0.77) | (0.74) | | | | |
| Walleye | 0.02 | | | | | | 0.33 | 0.07 | | |
| | (0.02) | | | | | | (0.33) | (0.07) | | |
| Freshwater drum | 4.20 | | 0.69 | | 1.33 | 3.59 | 0.18 | 6.20 | | |
| | (1.98) | | (0.30) | | (0.79) | (2.77) | (0.18) | (2.60) | | |

Strata: BWCS - Backwater, contiguous, shoreline.
BWCO - Backwater, contiguous, offshore.
IMPS - Impounded, shoreline.
IMPO - Impounded, offshore.
MCBU - Main channel border, unstructured.
MCBW - Main channel border, wing dam.
SCB - Side channel border.
TRI - Tributary mouth.
TWZ - Tailwater.

Table 4.3.5. Mean catch-per-unit-effort and (standard error) for fishes collected by tandem mini fyke netting in Pool 26 of the Mississippi River using stratified random sampling during 1996. The statistics under ALL pertain to unbiased means over all strata sampled using this gear (as indicated by nonmissing entries below and by Table 4.1). See text for definitions of catch-per-unit-effort and standard error.



| Common name | ALL | BWCO | BWCS | IMPO | IMPS | MCBU | MCBW | SCB | TRI | TWZ |
|---|---|---|---|---|---|---|---|---|---|---|
| Shortnose gar | 0.41 | 0.99 | | | | | | | | |
| | (0.23) | (0.5) | | | | | | | | |
| Gizzard shad | 23.85 | 57.61 | | 0.25 | | | | | | |
| | (10.31) | (25.28) | | (0.11) | | | | | | |
| Threadfin shad | 0.05 | | | 0.08 | | | | | | |
| | (0.05) | | | (0.08) | | | | | | |
| Spotfin shiner | 0.09 | 0.08 | | 0.09 | | | | | | |
| | (0.06) | (0.08) | | (0.09) | | | | | | |
| Common carp | 0.07 | 0.17 | | | | | | | | |
| | (0.04) | (0.10) | | | | | | | | |
| Speckled chub | 0.10 | 0.25 | | | | | | | | |
| | (0.10) | (0.25) | | | | | | | | |
| Silver chub | 0.12 | 0.16 | | 0.08 | | | | | | |
| | (0.06) | (0.10) | | (0.08) | | | | | | |
| Emerald shiner | 0.37 | 0.90 | | | | | | | | |
| | (0.26) | (0.63) | | | | | | | | |
| River shiner | 0.07 | 0.17 | | | | | | | | |
| | (0.07) | (0.17) | | | | | | | | |
| Spottail shiner | 0.07 | 0.18 | | | | | | | | |
| | (0.05) | (0.12) | | | | | | | | |
| Silverband shiner | 0.53 | 0.91 | | 0.26 | | | | | | |
| | (0.33) | (0.72) | | (0.26) | | | | | | |
| Channel shiner | 0.27 | 0.42 | | 0.17 | | | | | | |
| | (0.09) | (0.16) | | (0.11) | | | | | | |
| Bullhead minnow | 0.20 | 0.25 | | 0.16 | | | | | | |
| | (0.12) | (0.17) | | (0.16) | | | | | | |
| River carpsucker | 0.19 | 0.09 | | 0.26 | | | | | | |
| | (0.16) | (0.09) | | (0.26) | | | | | | |
| Smallmouth buffalo | 0.17 | 0.42 | | | | | | | | |
| | (0.11) | (0.27) | | | | | | | | |
| Bigmouth buffalo | 0.11 | 0.27 | | | | | | | | |
| | (0.11) | (0.27) | | | | | | | | |
| Black buffalo | 0.04 | 0.09 | | | | | | | | |
| | (0.04) | (0.09) | | | | | | | | |
| Channel catfish | 0.16 | 0.16 | | 0.17 | | | | | | |
| | (0.11) | (0.10) | | (0.17) | | | | | | |
| Flathead catfish | 0.03 | 0.08 | | | | | | | | |
| | (0.03) | (0.08) | | | | | | | | |
| Western mosquitofish | 0.11 | 0.26 | | | | | | | | |
| | (0.07) | (0.18) | | | | | | | | |
| White bass | 6.65 | 14.95 | | 0.85 | | | | | | |
| | (4.57) | (11.17) | | (0.50) | | | | | | |
| Orangespotted sunfish | 3.66 | 8.88 | | | | | | | | |
| | (3.62) | (8.88) | | | | | | | | |
| Bluegill | 0.10 | | | 0.17 | | | | | | |
| | (0.06) | | | (0.11) | | | | | | |
| White crappie | 0.51 | 0.77 | | 0.33 | | | | | | |
| | (0.21) | (0.39) | | (0.24) | | | | | | |
| Black crappie | 0.28 | 0.08 | | 0.42 | | | | | | |
| | (0.10) | (0.08) | | (0.15) | | | | | | |
| Mud darter | 0.04 | 0.09 | | | | | | | | |
| | (0.04) | (0.09) | | | | | | | | |
| Sauger | 0.25 | | | 0.42 | | | | | | |
| | (0.16) | | | (0.27) | | | | | | |
| Freshwater drum | 10.11 | 11.00 | | 9.48 | | | | | | |
| | (5.63) | (7.43) | | (8.11) | | | | | | |

Strata: BWCS - Backwater, contiguous, shoreline.
BWCO - Backwater, contiguous, offshore.
IMPS - Impounded, shoreline.
IMPO - Impounded, offshore.
MCBU - Main channel border, unstructured.
MCBW - Main channel border, wing dam.
SCB - Side channel border.
TRI - Tributary mouth.
TWZ - Tailwater.

Table 4.3.6. Mean catch-per-unit-effort and (standard error) for fishes collected by small hoop netting in Pool 26 of the Mississippi River using stratified random sampling during 1996. The statistics under ALL pertain to unbiased means over all strata sampled using this gear (as indicated by nonmissing entries below and by Table 4.1). See text for definitions of catch-per-unit-effort and standard error.



| Common name | ALL | BWCO | BWCS | IMPO | IMPS | MCBU | MCBW | SCB | TRI | TWZ |
|---|---|---|---|---|---|---|---|---|---|---|
| Bowfin | | | | | | | 0.09 | | | |
| | | | | | | | (0.09) | | | |
| Common carp | 0.97 | 2.69 | | 5.89 | | 0.95 | 0.93 | 0.47 | | |
| | (0.26) | (.68) | | (3.13) | | (0.36) | (0.65) | (0.21) | | |
| Smallmouth buffalo | 0.18 | 0.25 | | 1.49 | | 0.17 | 0.17 | 0.10 | | |
| | (0.07) | (0.17) | | (0.75) | | (0.09) | (0.17) | (0.05) | | |
| Bigmouth buffalo | 0.02 | 0.08 | | | | 0.02 | | | | |
| | (0.01) | (0.08) | | | | (0.02) | | | | |
| Black buffalo | | | | 0.17 | | | | | | |
| | | | | (0.17) | | | | | | |
| Yellow bullhead | 0.03 | | | | | 0.04 | | | | |
| | (0.03) | | | | | (0.04) | | | | |
| Channel catfish | 2.45 | 0.25 | | 0.99 | | 1.92 | | 3.96 | | |
| | (1.42) | (0.17) | | (0.63) | | (1.64) | | (3.17) | | |
| Flathead catfish | 0.04 | 0.08 | | | | 0.04 | | 0.03 | | |
| | (0.02) | (0.08) | | | | (0.03) | | (0.03) | | |
| White bass | 0.06 | | | 0.08 | | 0.04 | 0.09 | 0.10 | | |
| | (0.02) | | | (0.08) | | (0.03) | (0.09) | (0.05) | | |
| Bluegill | 0.04 | 0.50 | | | | 0.04 | 0.09 | | | |
| | (0.03) | (0.50) | | | | (0.04) | (0.09) | | | |
| Black crappie | | | | 0.08 | | | | | | |
| | | | | (0.08) | | | | | | |
| Freshwater drum | 0.08 | | | | | 0.09 | | 0.07 | | |
| | (0.04) | | | | | (0.05) | | (0.05) | | |

Strata: BWCS - Backwater, contiguous, shoreline.
BWCO - Backwater, contiguous, offshore.
IMPS - Impounded, shoreline.
IMPO - Impounded, offshore.
MCBU - Main channel border, unstructured.
MCBW - Main channel border, wing dam.
SCB - Side channel border.
TRI - Tributary mouth.
TWZ - Tailwater.

Table 4.3.7. Mean catch-per-unit-effort and (standard error) for fishes collected by large hoop netting in Pool 26 of the Mississippi River using stratified random sampling during 1996. The statistics under ALL pertain to unbiased means over all strata sampled using this gear (as indicated by nonmissing entries below and by Table 4.1). See text for definitions of catch-per-unit-effort and standard error.



| Common name | ALL | BWCO | BWCS | IMPO | IMPS | MCBU | MCBW | SCB | TRI | TWZ |
|---|---|---|---|---|---|---|---|---|---|---|
| Shortnose gar | 0.02 | 0.43 | | | | | | 0.03 | | |
| | (0.01) | (0.16) | | | | | | (0.03) | | |
| Goldeye | 0.04 | 0.08 | | 0.34 | | 0.04 | | | | |
| | (0.02) | (0.08) | | (0.34) | | (0.03) | | | | |
| Gizzard shad | 0.04 | 0.85 | | 0.34 | | 0.02 | | | | |
| | (0.02) | (0.56) | | (0.21) | | (0.02) | | | | |
| Common carp | 2.66 | 5.51 | | 14.90 | | 2.83 | 2.69 | 0.98 | | |
| | (0.62) | (2.02) | | (3.72) | | (0.89) | (1.49) | (0.53) | | |
| Bighead carp | 0.04 | 1.27 | | 0.08 | | 0.02 | | | | |
| | (0.02) | (0.36) | | (0.08) | | (0.02) | | | | |
| River carpsucker | 0.04 | 0.34 | | 0.59 | | 0.02 | | | | |
| | (0.02) | (0.17) | | (0.33) | | (0.02) | | | | |
| Smallmouth buffalo | 6.96 | 7.24 | | 14.68 | | 7.32 | 0.78 | 5.42 | | |
| | (2.00) | (7.04) | | (4.46) | | (2.59) | (0.50) | (3.47) | | |
| Bigmouth buffalo | 0.04 | 1.11 | | 0.58 | | | | | | |
| | (0.01) | (0.56) | | (0.37) | | | | | | |
| Black buffalo | 0.08 | 0.51 | | 0.58 | | 0.07 | 0.18 | 0.03 | | |
| | (0.03) | (0.26) | | (0.20) | | (0.05) | (0.18) | (0.03) | | |
| Brown bullhead | | | | 0.08 | | | | | | |
| | | | | (0.08) | | | | | | |
| Blue catfish | 0.02 | | | | | | | 0.07 | | |
| | (0.02) | | | | | | | (0.07) | | |
| Channel catfish | 0.34 | 0.09 | | 0.17 | | 0.39 | 0.08 | 0.24 | | |
| | (0.11) | (0.09) | | (0.17) | | (0.14) | (0.08) | (0.15) | | |
| Flathead catfish | 0.07 | | | | | 0.09 | | 0.03 | | |
| | (0.03) | | | | | (0.04) | | (0.03) | | |
| White bass | 0.25 | 0.85 | | 0.41 | | 0.32 | 0.26 | 0.03 | | |
| | (0.12) | (0.34) | | (0.41) | | (0.18) | (0.17) | (0.03) | | |
| Bluegill | | 0.09 | | | | | | | | |
| | | (0.09) | | | | | | | | |
| White crappie | | | | | | | 0.26 | | | |
| | | | | | | | (0.26) | | | |
| Black crappie | | | | | | | 0.09 | | | |
| | | | | | | | (0.09) | | | |
| Sauger | 0.01 | | | | | 0.02 | | | | |
| | (0.01) | | | | | (0.02) | | | | |
| Freshwater drum | 0.61 | 0.09 | | 0.33 | | 0.83 | 0.42 | 0.17 | | |
| | (0.23) | (0.09) | | (0.17) | | (0.34) | (0.24) | (0.08) | | |

Strata: BWCS - Backwater, contiguous, shoreline. MCBW - Main channel border, wing dam.
BWCO - Backwater, contiguous, offshore. SCB - Side channel border.
IMPS - Impounded, shoreline. TRI - Tributary mouth.
IMPO - Impounded, offshore. TWZ - Tailwater.
MCBU - Main channel border, unstructured.

Table 4.3.8. Mean catch-per-unit-effort and (standard error) for fishes collected by seining in Pool 26 of the Mississippi River using stratified random sampling during 1996. The statistics under ALL pertain to unbiased means over all strata sampled using this gear (as indicated by nonmissing entries below and by Table 4.1). See text for definitions of catch-per-unit-effrt and standard error.



| Common name | ALL | BWCO | BWCS | IMPO | IMPS | MCBU | MCBW | SCB | TRI | TWZ |
|---|---|---|---|---|---|---|---|---|---|---|
| Shortnose gar | 0.01 | | | | | 0.02 | | | | |
| | (0.01) | | | | | (0.02) | | | | |
| Goldeye | 0.03 | | | | | | | 0.08 | | |
| | (0.02) | | | | | | | (0.08) | | |
| Mooneye | 0.06 | | | | | 0.06 | | 0.06 | | |
| | (0.03) | | | | | (0.05) | | (0.04) | | |
| Skipjack herring | 0.05 | | | | | 0.04 | | 0.06 | | |
| | (0.02) | | | | | (0.03) | | (0.04) | | |
| Gizzard shad | 29.30 | | | | | 37.73 | | 9.67 | | |
| | (11.89) | | | | | (16.96) | | (3.44) | | |
| Threadfin shad | 0.13 | | | | | 0.08 | | 0.25 | | |
| | (0.07) | | | | | (0.05) | | (0.20) | | |
| Red shiner | 0.10 | | | | | 0.08 | | 0.14 | | |
| | (0.05) | | | | | (0.07) | | (0.09) | | |
| Spotfin shiner | 3.54 | | | | | 0.73 | | 10.08 | | |
| | (2.45) | | | | | (0.32) | | (8.15) | | |
| Common carp | 0.16 | | | | | 0.15 | | 0.19 | | |
| | (0.05) | | | | | (0.07) | | (0.10) | | |
| Western silvery minnow | 0.04 | | | | | 0.06 | | | | |
| | (0.02) | | | | | (0.04) | | | | |
| Mississippi silvery minnow | 0.01 | | | | | | | 0.03 | | |
| | (0.01) | | | | | | | (0.03) | | |
| Speckled chub | 0.02 | | | | | | | 0.06 | | |
| | (0.01) | | | | | | | (0.04) | | |
| Silver chub | 0.11 | | | | | 0.10 | | 0.14 | | |
| | (0.06) | | | | | (0.09) | | (0.08) | | |
| Golden shiner | 0.03 | | | | | | | 0.08 | | |
| | (0.01) | | | | | | | (0.05) | | |
| Emerald shiner | 7.23 | | | | | 7.56 | | 6.44 | | |
| | (2.13) | | | | | (2.76) | | (2.99) | | |
| River shiner | 23.03 | | | | | 10.81 | | 51.47 | | |
| | (14.08) | | | | | (6.55) | | (44.46) | | |
| Bigeye shiner | 0.01 | | | | | | | 0.03 | | |
| | (0.01) | | | | | | | (0.03) | | |
| Silverband shiner | 0.02 | | | | | | | 0.06 | | |
| | (0.01) | | | | | | | (0.04) | | |
| Sand shiner | 0.14 | | | | | 0.13 | | 0.17 | | |
| | (0.10) | | | | | (0.13) | | (0.14) | | |
| Channel shiner | 13.05 | | | | | 2.52 | | 37.56 | | |
| | (8.84) | | | | | (1.21) | | (29.36) | | |
| Bullhead minnow | 0.25 | | | | | 0.06 | | 0.69 | | |
| | (0.09) | | | | | (0.05) | | (0.27) | | |
| River carpsucker | 0.25 | | | | | 0.33 | | 0.06 | | |
| | (0.18) | | | | | (0.25) | | (0.06) | | |
| Quillback | 0.01 | | | | | 0.02 | | | | |
| | (0.01) | | | | | (0.02) | | | | |
| Smallmouth buffalo | 0.08 | | | | | 0.10 | | 0.03 | | |
| | (0.04) | | | | | (0.06) | | (0.03) | | |
| Channel catfish | 0.56 | | | | | 0.71 | | 0.22 | | |
| | (0.30) | | | | | (0.42) | | (0.10) | | |
| Flathead catfish | 0.01 | | | | | | | 0.03 | | |
| | (0.01) | | | | | | | (0.03) | | |
| Western mosquitofish | 0.21 | | | | | 0.21 | | 0.22 | | |
| | (0.09) | | | | | (0.10) | | (0.20) | | |
| Brook silverside | 0.04 | | | | | 0.06 | | | | |
| | (0.02) | | | | | (0.04) | | | | |
| White bass | 1.97 | | | | | 1.88 | | 2.19 | | |
| | (0.59) | | | | | (0.76) | | (0.89) | | |

Strata: BWCS - Backwater, contiguous, shoreline. MCBW - Main channel border, wing dam.
BWCO - Backwater, contiguous, offshore. SCB - Side channel border.
IMPS - Impounded, shoreline. TRI - Tributary mouth.
IMPO - Impounded, offshore. TWZ - Tailwater.
MCBU - Main channel border, unstructured.

Table 4.3.8. Mean catch-per-unit-effort and (standard error) for fishes collected by seining in Pool 26 of the Mississippi River using stratified random sampling during 1996. The statistics under ALL pertain to unbiased means over all strata sampled using this gear (as indicated by nonmissing entries below and by Table 4.1). See text for definitions of catch-per-unit-effort and standard error. Table page: 2

| Common name | ALL | BWCO | BWCS | IMPO | IMPS | MCBU | MCBW | SCB | TRI | TWZ |
|---|---|---|---|---|---|---|---|---|---|---|
| Bluegill | 0.04 | | | | | 0.04 | | 0.03 | | |
| | (0.02) | | | | | (0.03) | | (0.03) | | |
| White crappie | 0.03 | | | | | 0.02 | | 0.06 | | |
| | (0.02) | | | | | (0.02) | | (0.04) | | |
| Black crappie | 0.01 | | | | | 0.02 | | | | |
| | (0.01) | | | | | (0.02) | | | | |
| Freshwater drum | 0.26 | | | | | 0.21 | | 0.39 | | |
| | (0.09) | | | | | (0.11) | | (0.13) | | |

Strata: BWCS - Backwater, contiguous, shoreline. MCBW - Main channel border, wing dam.
BWCO - Backwater, contiguous, offshore. SCB - Side channel border.
IMPS - Impounded, shoreline. TRI - Tributary mouth.
IMPO - Impounded, offshore. TWZ - Tailwater.
MCBU - Main channel border, unstructured.

Table 4.4.1. Mean catch-per-unit-effort and (standard error) for fishes collected by night electrofishing in Pool 26 of the Mississippi River using fixed-site sampling during 1996. See text for definitions of catch-per-unit-effort and standard error.



| Common name | BWCO | BWCS | IMPO | IMPS | MCBU | MCBW | SCB | TRI | TWZ |
|---|---|---|---|---|---|---|---|---|---|
| Longnose gar | | | | | | | | | 1.17 |
| | | | | | | | | | (0.83) |
| Shortnose gar | | | | | | | | | 5.33 |
| | | | | | | | | | (0.99) |
| Goldeye | | | | | | | | | 0.83 |
| | | | | | | | | | (0.31) |
| Skipjack herring | | | | | | | | | 0.67 |
| | | | | | | | | | (0.49) |
| Gizzard shad | | | | | | | | | 69.67 |
| | | | | | | | | | (29.66) |
| Spotfin shiner | | | | | | | | | 0.83 |
| | | | | | | | | | (0.83) |
| Common carp | | | | | | | | | 36.67 |
| | | | | | | | | | (9.45) |
| Silver chub | | | | | | | | | 1.00 |
| | | | | | | | | | (0.82) |
| Emerald shiner | | | | | | | | | 2.00 |
| | | | | | | | | | (0.77) |
| River shiner | | | | | | | | | 1.50 |
| | | | | | | | | | (0.43) |
| Channel shiner | | | | | | | | | 0.83 |
| | | | | | | | | | (0.40) |
| Bullhead minnow | | | | | | | | | 0.33 |
| | | | | | | | | | (0.21) |
| River carpsucker | | | | | | | | | 2.83 |
| | | | | | | | | | (1.17) |
| Quillback | | | | | | | | | 0.17 |
| | | | | | | | | | (0.17) |
| Smallmouth buffalo | | | | | | | | | 12.17 |
| | | | | | | | | | (4.96) |
| Bigmouth buffalo | | | | | | | | | 1.67 |
| | | | | | | | | | (0.76) |
| Black buffalo | | | | | | | | | 0.50 |
| | | | | | | | | | (0.34) |
| Shorthead redhorse | | | | | | | | | 0.17 |
| | | | | | | | | | (0.17) |
| Channel catfish | | | | | | | | | 2.50 |
| | | | | | | | | | (1.73) |
| Flathead catfish | | | | | | | | | 1.17 |
| | | | | | | | | | (0.48) |
| White bass | | | | | | | | | 23.83 |
| | | | | | | | | | (0.87) |
| Yellow bass | | | | | | | | | 0.17 |
| | | | | | | | | | (0.17) |
| White x striped bass | | | | | | | | | 0.17 |
| | | | | | | | | | (0.17) |
| Green sunfish | | | | | | | | | 0.17 |
| | | | | | | | | | (0.17) |
| Bluegill | | | | | | | | | 6.00 |
| | | | | | | | | | (3.81) |
| Largemouth bass | | | | | | | | | 0.50 |
| | | | | | | | | | (0.22) |
| White crappie | | | | | | | | | 0.50 |
| | | | | | | | | | (0.34) |
| Black crappie | | | | | | | | | 2.00 |
| | | | | | | | | | (1.29) |
| Logperch | | | | | | | | | 0.17 |
| | | | | | | | | | (0.17) |
| Slenderhead darter | | | | | | | | | 0.17 |
| | | | | | | | | | (0.17) |

Strata: BWCS - Backwater, contiguous, shoreline. MCBW - Main channel border, wing dam.
BWCO - Backwater, contiguous, offshore. SCB - Side channel border.
IMPS - Impounded, shoreline. TRI - Tributary mouth.
IMPO - Impounded, offshore. TWZ - Tailwater.
MCBU - Main channel border, unstructured.

Table 4.4.1. Mean catch-per-unit-effort and (standard error) for fishes collected by night electrofishing in Pool 26 of the Mississippi River using fixed-site sampling during 1996. See text for definitions of catch-per-unit-effort and standard error.



| Common name | BWCO | BWCS | IMPO | IMPS | MCBU | MCBW | SCB | TRI | TWZ |
|---|---|---|---|---|---|---|---|---|---|
| Sauger | | | | | | | | | 2.00 |
| | | | | | | | | | (0.86) |
| Walleye | | | | | | | | | 0.33 |
| | | | | | | | | | (0.33) |
| Freshwater drum | | | | | | | | | 9.50 |
| | | | | | | | | | (3.87) |

Strata: BWCS - Backwater, contiguous, shoreline. MCBW - Main channel border, wing dam.
BWCO - Backwater, contiguous, offshore. SCB - Side channel border.
IMPS - Impounded, shoreline. TRI - Tributary mouth.
IMPO - Impounded, offshore. TWZ - Tailwater.
MCBU - Main channel border, unstructured.

Table 4.4.2. Mean catch-per-unit-effort and (standard error) for fishes collected by bottom trawling in Pool 26 of the Mississippi River using fixed-site sampling during 1996. See text for definitions of catch-per-unit-effort and standard error.



| Common name | BWCO | BWCS | IMPO | IMPS | MCBU | MCBW | SCB | TRI | TWZ |
|---|---|---|---|---|---|---|---|---|---|
| Shovelnose sturgeon | | | | | | | | | 0.25 (0.18) |
| Gizzard shad | | | | | | | | | 0.08 (0.08) |
| Common carp | | | | | | | | | 0.08 (0.08) |
| Speckled chub | | | | | | | | | 0.92 (0.45) |
| Blue catfish | | | | | | | | | 0.25 (0.13) |
| Channel catfish | | | | | | | | | 2.33 (1.08) |
| White bass | | | | | | | | | 0.08 (0.08) |
| Freshwater drum | | | | | | | | | 2.25 (0.97) |

Strata: BWCS - Backwater, contiguous, shoreline.
BWCO - Backwater, contiguous, offshore.
IMPS - Impounded, shoreline.
IMPO - Impounded, offshore.
MCBU - Main channel border, unstructured.
MCBW - Main channel border, wing dam.
SCB - Side channel border.
TRI - Tributary mouth.
TWZ - Tailwater.

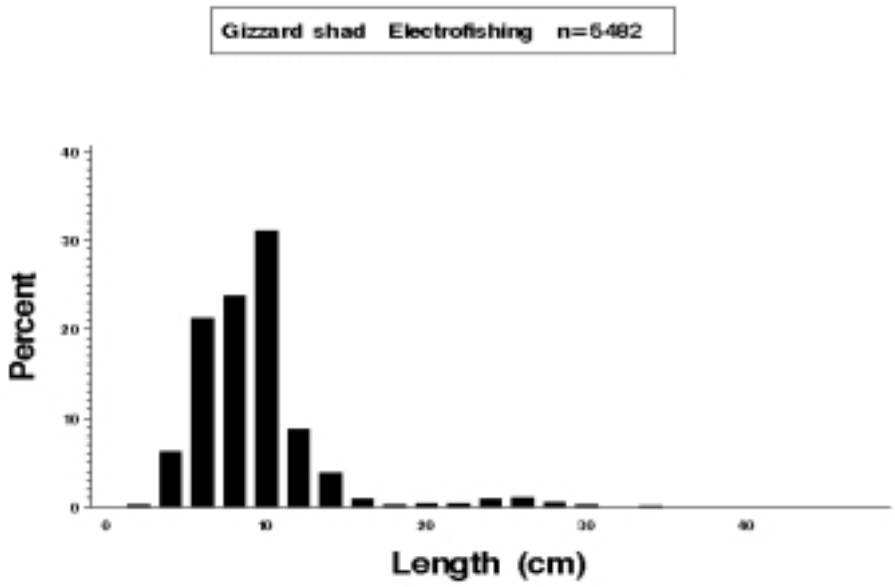


**Figure 4.2.** Length distributions (*length*) as a percentage of catch (*percent*) for gizzard shad (*Dorosoma cepedianum*) collected by electrofishing in Upper Mississippi River Pool 26 during 1996.

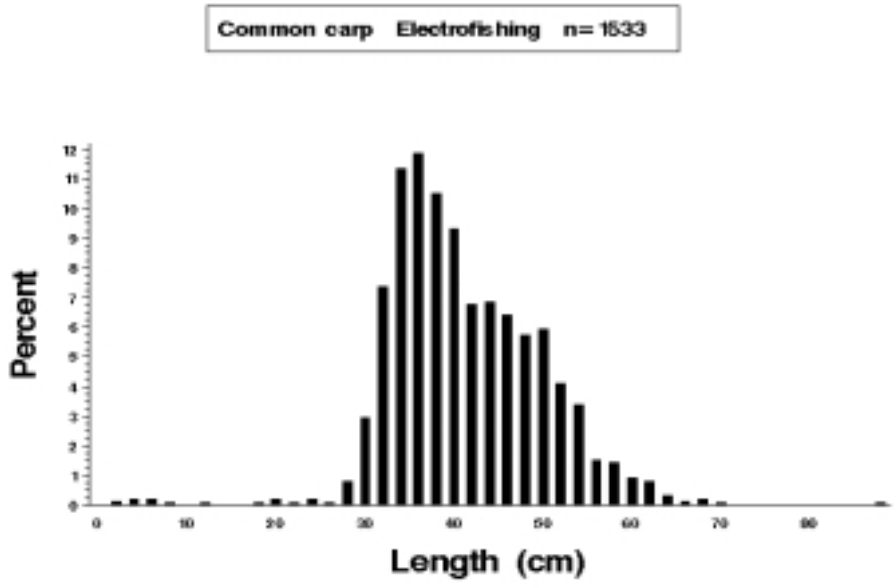


**Figure 4.3.** Length distributions (*length*) as a percentage of catch (*percent*) for common carp (*Cyprinus carpio*) collected by electrofishing in Upper Mississippi River Pool 26 during 1996.

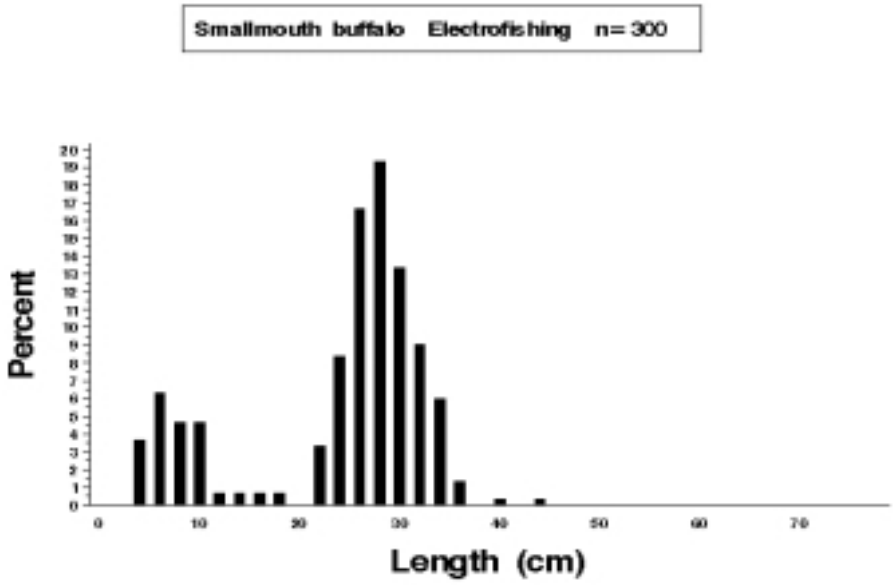


**Figure 4.4.** Length distributions (*length*) as a percentage of catch (*percent*) for smallmouth buffalo (*Ictiobus bubalus*) collected by electrofishing in Upper Mississippi River Pool 26 during 1996.

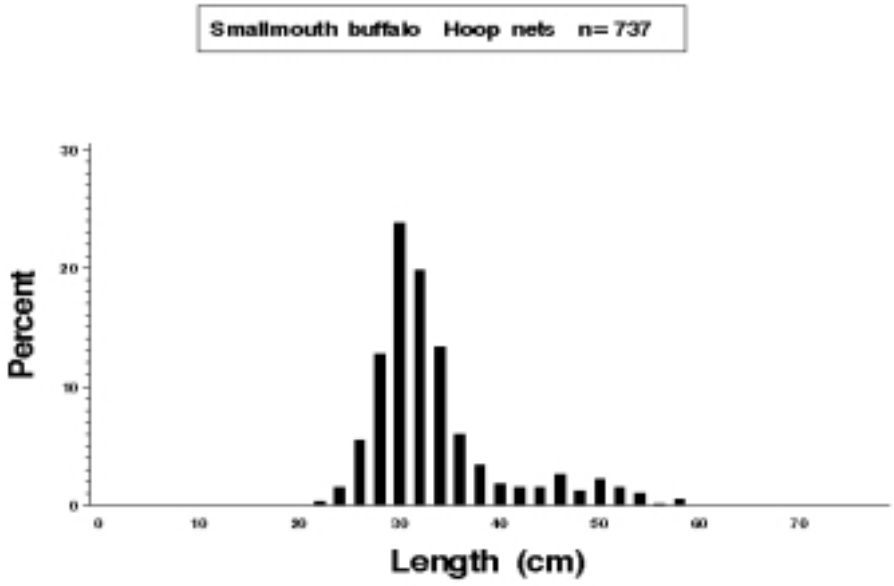


**Figure 4.5.** Length distributions (*length*) as a percentage of catch (*percent*) for smallmouth buffalo (*Ictiobus bubalus*) collected by large and small hoop netting in Upper Mississippi River Pool 26 during 1996.

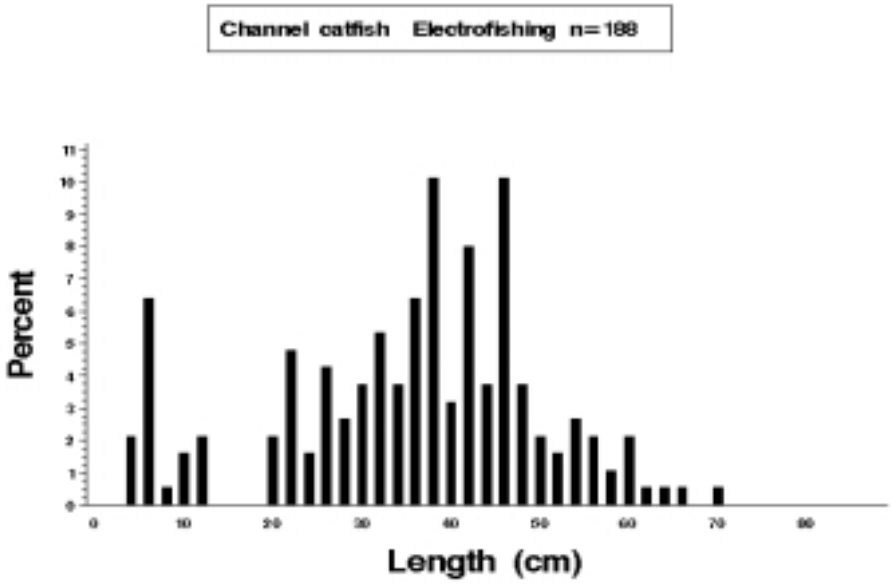


**Figure 4.6.** Length distributions (*length*) as a percentage of catch (*percent*) for channel catfish (*Ictalurus punctatus*) collected by electrofishing in Upper Mississippi River Pool 26 during 1996.

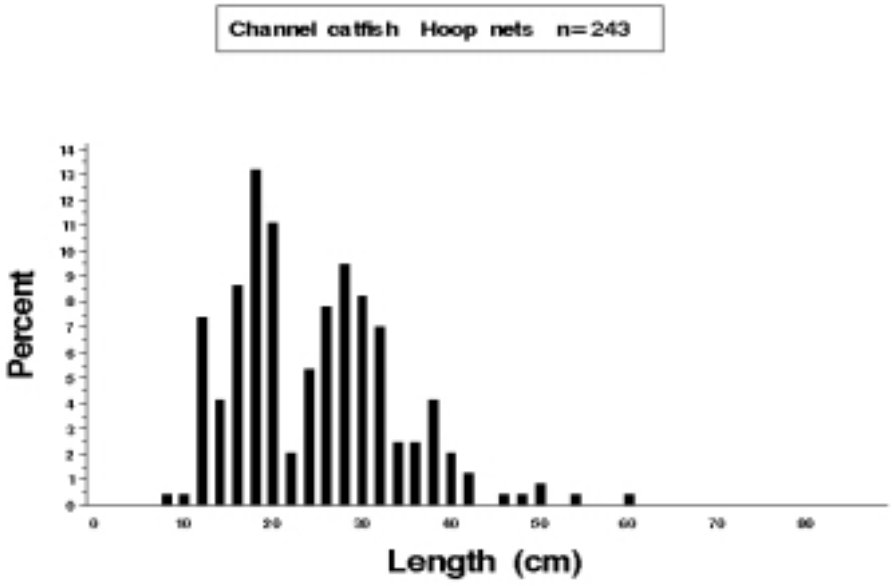


**Figure 4.7.** Length distributions (*length*) as a percentage of catch (*percent*) for channel catfish (*Ictalurus punctatus*) collected by large and small hoop netting in Upper Mississippi River Pool 26 during 1996.

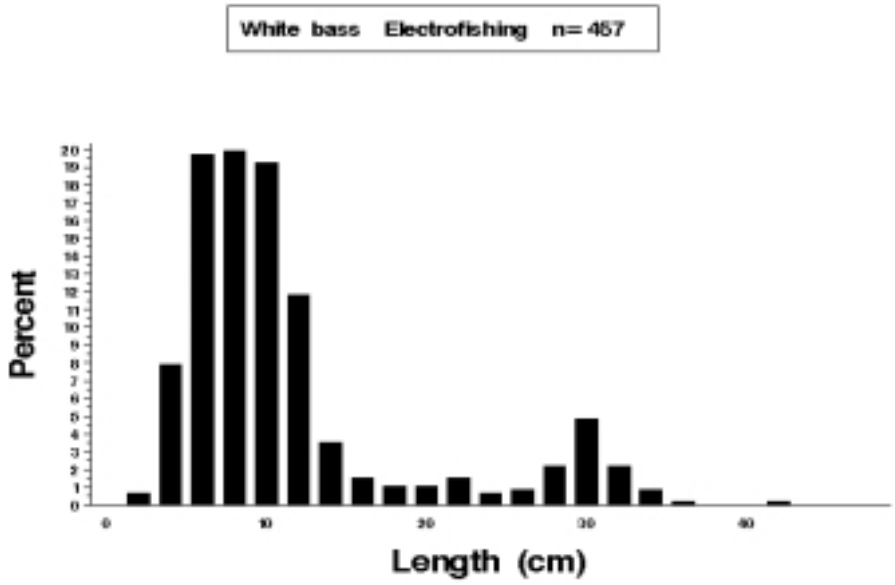


**Figure 4.8.** Length distributions (*length*) as a percentage of catch (*percent*) for white bass (*Morone chryops*) collected by electrofishing in Upper Mississippi River Pool 26 during 1996.

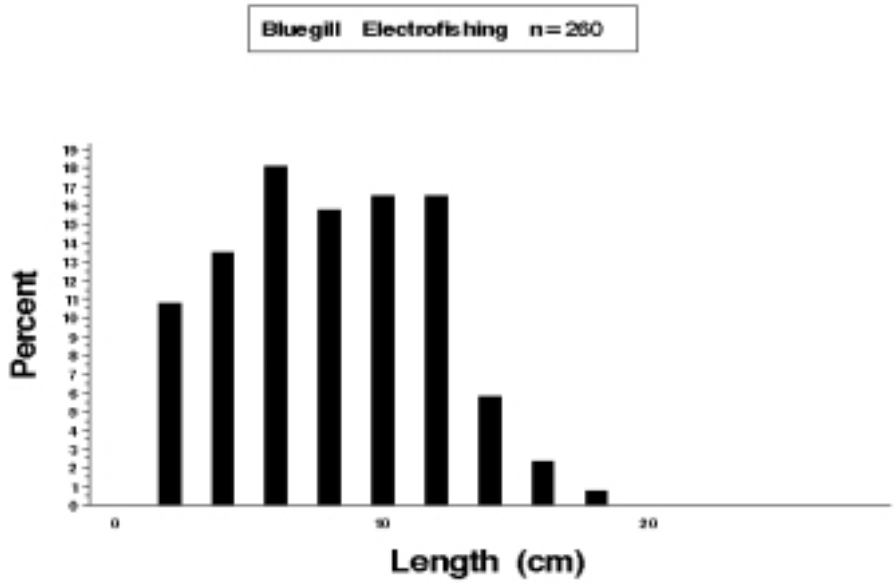


**Figure 4.9.** Length distributions (*length*) as a percentage of catch (*percent*) for bluegill (*Lepomis macrochirus*) collected by electrofishing in Upper Mississippi River Pool 26 during 1996.

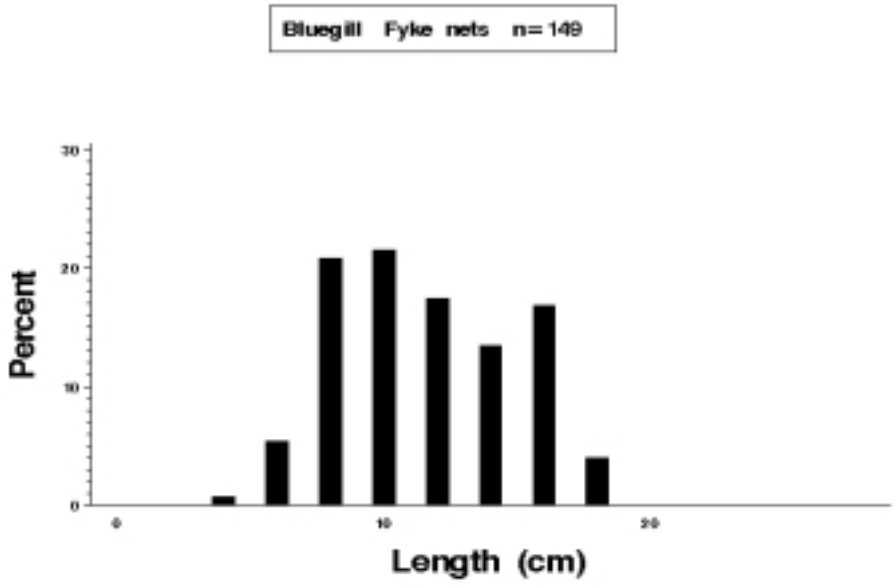


**Figure 4.10.** Length distributions (*length*) as a percentage of catch (*percent*) for bluegill (*Lepomis macrochirus*) collected by fyke netting in Upper Mississippi River Pool 26 during 1996.

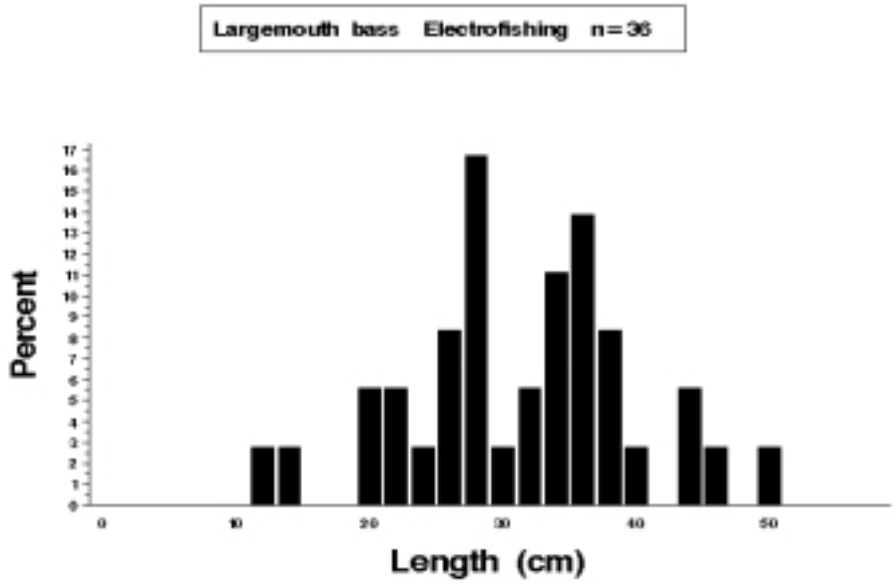


**Figure 4.11.** Length distributions (*length*) as a percentage of catch (*percent*) for largemouth bass (*Micropterus salmoides*) collected by electrofishing in Upper Mississippi River Pool 26 during 1996.

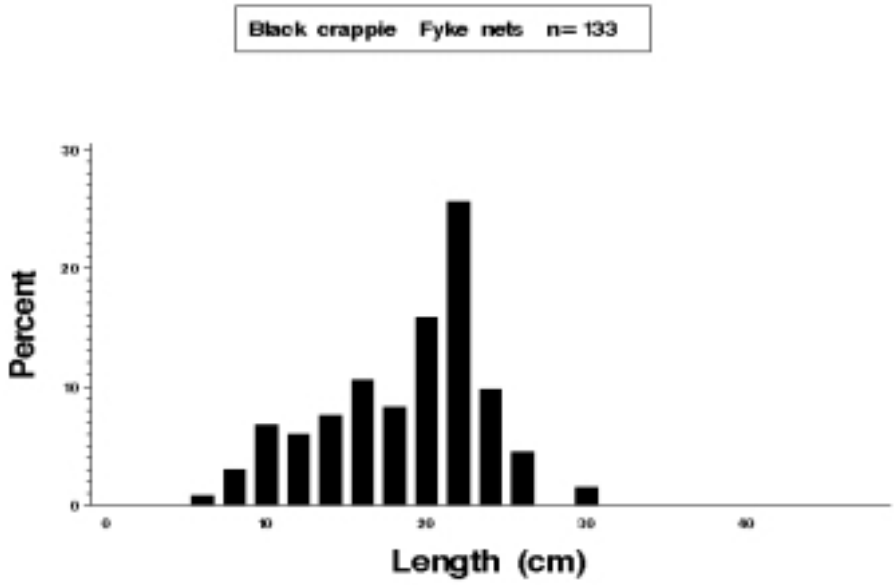


**Figure 4.12.** Length distributions (*length*) as a percentage of catch (*percent*) for black crappie (*Pomoxis nigromacula*tus) collected by fyke netting in Upper Mississippi River Pool 26 during 1996.

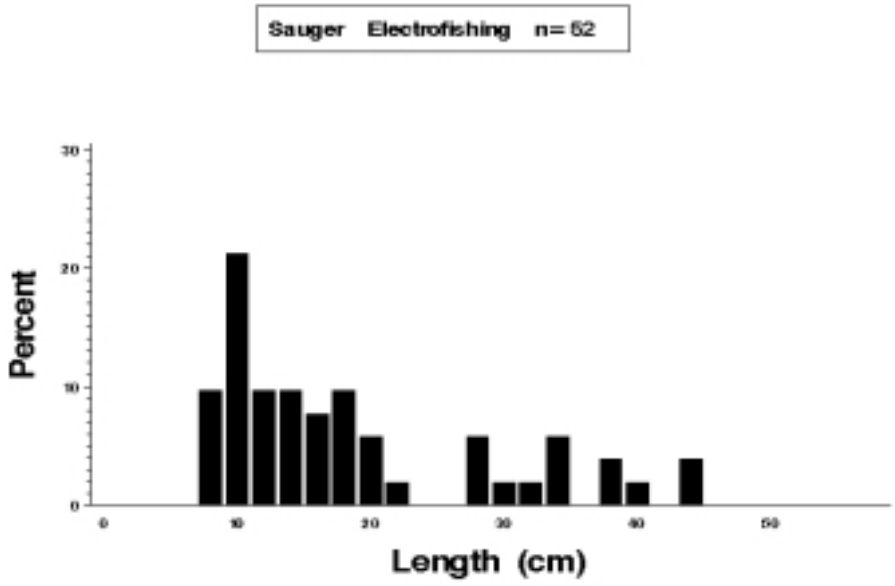


**Figure 4.13.** Length distributions (*length*) as a percentage of catch (*percent*) for sauger (*Stizostedion canade*nse) collected by electrofishing in Upper Mississippi River Pool 26 during 1996.

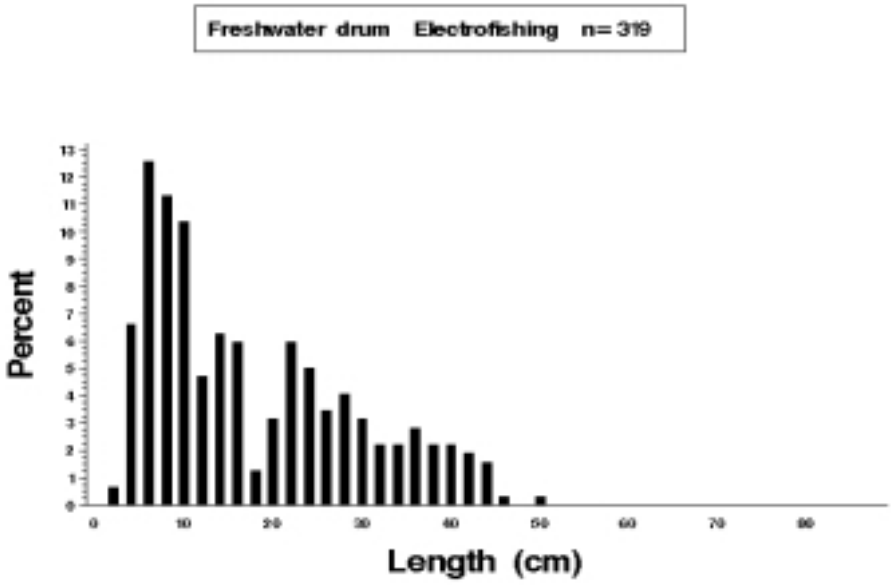


**Figure 4.14.** Length distributions (*length*) as a percentage of catch (*percent*) for freshwater drum (*Aplodinotus grunniens*) collected by electrofishing in Upper Mississippi River Pool 26 during 1996.

# Chapter 5. Mississippi River Open Reach

by

Michael D. Petersen and David P. Herzog

Missouri Department of Conservation
3815 E. Jackson Boulevard
Jackson, Missouri 63755

## Hydrograph

Open Mississippi River water stages are influenced by discharges from the Upper Mississippi, Missouri, Illinois, and to a lesser extent, Ohio Rivers. Water stage may fluctuate in the open river by 3–5 feet/week and more than 20 feet/year. At stages above 22.0 feet, (Cape Girardeau Gage, 326 feet above mean sea level), successful gear sets are reduced by high water velocity and flooded riparian vegetation. At stages between 22.0 and 17.0 feet, wing dams become totally to partly submerged. Water velocity above submerged wing dams limits the use of most sampling gear. At stages below 17.0 feet, closing structures emerge making it difficult to access side channels. Gear must be carried in or private landowner permission must be granted to access isolated waters. The SCB is the most difficult stratum to sample, primarily because of access problems.

In 1996, water stages were higher than normal from late spring to fall, with stages close to the historical mean (55-year daily mean) in March, April, and October. Fluctuations in water stage were typically 4–10 feet during 2-week periods. The lowest stage occurred on January 12 at 9.1 feet, and the highest stage occurred on May 25 at 46.6 feet. Water stages during LTRMP sampling in 1996 could be characterized as high and unstable (Figure 5.1). The U.S. Army Corps of Engineers discharge data were obtained from the Environmental Management Technical Center (Wlosinski et al. 1995).

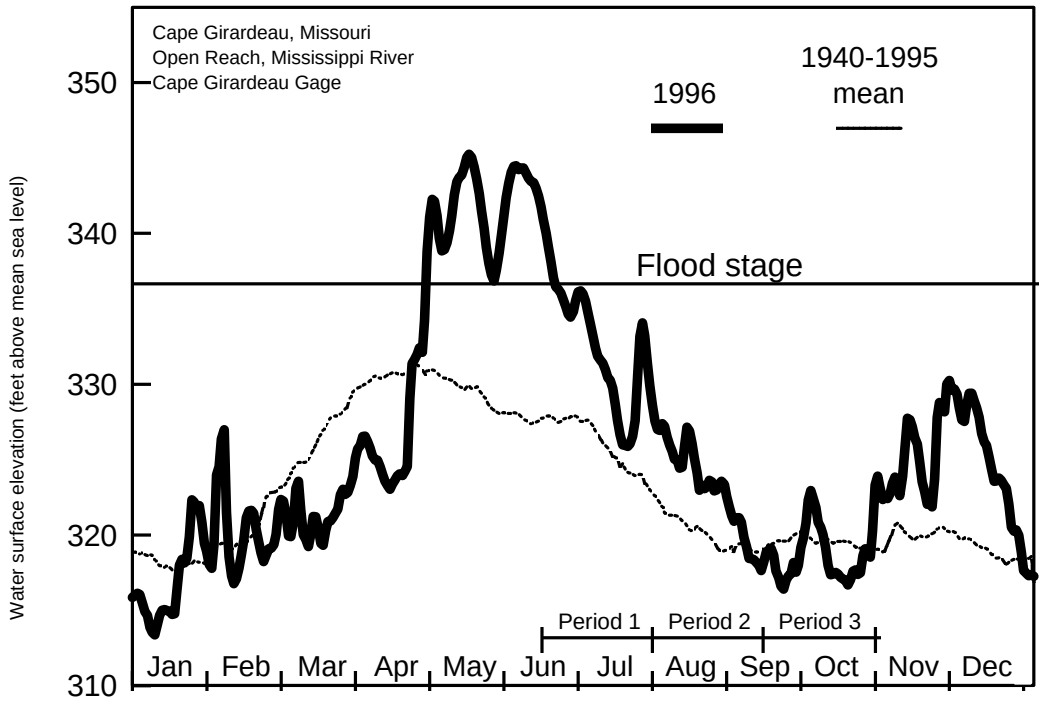


**Figure 5.1.** Daily water surface elevation from Cape Girardeau Gage for the Upper Mississippi River Open Reach, during 1996 and mean elevation since 1940. The U.S. Army Corps of Engineers discharge data were obtained from the Environmental Management Technical Center (Wlosinski et al. 1995).

## Summary of Sampling Effort

In 1996, 405 random and fixed-site samples were planned consisting of 135 samples in each of three periods. We planned 336 random samples in three strata: MCBU (composing 27% of the total planned random sampling effort), MCBW (25%), and SCB (48%). We also planned 69 samples in three fixed sites—two TRI (52%) and one MCBU stratum (49%).

We completed 319 samples (79% of what we planned to do) in 1996 consisting of 98, 137 (two extra samples), and 84 samples in periods 1, 2, and 3, respectively (Table 5.1). We completed 274 random samples, 30 TRI fixed-site samples, and 15 MCBU fixed-site samples. The low effort for the MCBW stratum in period 1 was due to high water.

## Total Catch by Gear

Historically, 129 fish species have been collected from the open river (Pitlo et al. 1995). Open River field station biologists have collected 96 species from 1991 to 1996. In 1996, we collected 67 species representing 14,075 fish (Table 5.2). This total does not include 78 fish <30 mm long identified only to genus or unidentified. The five most numerically abundant species were gizzard shad (5,013), freshwater drum (3,370), common carp (1,018), channel shiner (754), and channel catfish (640).

The following summarizes total fish catch and number of species by gear: day electrofishing, 5,593 fish and 45 species; fyke netting, 399 fish and 21 species; mini fyke netting, 5,538 fish and 48 species; seining, 994 fish and 17 species; small hoop netting, 459 fish and 13 species; large hoop netting, 898 fish and 18 species; and trawling, 194 fish and 11 species.

In 1996, three new species were collected: creek chub, muskellunge, and western sand darter. Three Missouri-listed species were collected: paddlefish, western sand darter, and blue sucker. The paddlefish and blue sucker are candidates for Federal listing.

## Random Sampling, Mean *C/f* by Gear and Stratum

### *Day Electrofishing*

Gizzard shad (21.07 fish/15 min), common carp (5.77), and freshwater drum (5.14) had the highest day electrofishing *C/f* when combining all strata (Table 5.3.1). The highest *C/f* by stratum were MCBU: gizzard shad (16.92), freshwater drum (5.58), and goldeye (5.17); MCBW: gizzard shad (16.50), common carp (14.62), freshwater drum (8.75); and SCB: gizzard shad (51.96), common carp (5.83), and goldeye (4.91).

### *Fyke Net*

Freshwater drum (3.19 fish/net-day), shortnose gar (2.00), and common carp and white bass (1.20) had the highest fyke netting *C/f* in the SCB stratum (Table 5.3.2).

### *Mini Fyke Net*

Channel shiner (46.84 fish/net-day), freshwater drum (21.39), and gizzard shad (3.26) had the highest mini fyke netting *C/f* when combining all strata (Table 5.3.3). The highest *C/f* by stratum were MCBU: channel shiner (53.42), freshwater drum (13.99), and white bass (2.27); MCBW: freshwater drum (10.59), bluegill (6.96), and gizzard shad (5.47); and SCB: freshwater drum (76.69), gizzard shad (12.56), and channel catfish (2.41).

### *Small Hoop Net*

Channel catfish (1.72 fish/net-day) and common carp (1.28) had the highest small hoop netting *C/f* when combining all strata (Table 5.3.4). Channel catfish also had the highest *C/f* in MCBU (1.48) and SCB (3.64) strata. Common carp (2.53) had the highest *C/f* in the MCBW stratum.

### *Large Hoop Net*

Smallmouth buffalo (3.66 fish/net-day), common carp (2.90), and freshwater drum (0.88) had the highest large hoop netting *C/f* when combining all strata (Table 5.3.5). The highest *C/f* by stratum were MCBU: smallmouth buffalo (3.94), common carp (2.92), and freshwater drum (0.97); MCBW: common carp (0.71), freshwater drum (0.33), and smallmouth buffalo and channel catfish (0.07); and SCB: common carp (2.93), smallmouth buffalo (1.89), and river carpsucker (1.07).

### *Seine*

Gizzard shad (9.81 fish/haul), river shiner (4.94), and red shiner (2.47) had the highest seining *C/f* when combining all strata (Table 5.3.6). The highest *C/f* by stratum were MCBU: river shiner (5.55), gizzard shad (4.35), and red shiner (2.80); and SCB: gizzard shad (50.00), white bass (1.92), and Mississippi silvery minnow (1.75).

### *Trawl*

Channel catfish (0.50 fish/haul) and freshwater drum (0.50) had the highest trawling *C/f* in the MCBU stratum (Table 5.3.7).

## Fixed Sampling, Mean *C/f* by Gear and Stratum

### *Day Electrofishing*

Gizzard shad (32.00 fish/15 min), common carp (3.33), and goldeye (2.00) had the highest day electrofishing *C/f* in the MCBU stratum (Table 5.4.1). Gizzard shad (348.33), common carp (13.50), and bluegill (11.33) had the highest *C/f* in the TRI stratum.

### *Fyke Net*

White bass (4.93 fish/net-day), freshwater drum (4.73), and common carp (2.20) had the highest fyke netting *C/f* in the MCBU stratum (Table 5.4.2). Black crappie (6.09), gizzard shad (4.98), and freshwater drum (4.83) had the highest *C/f* in the TRI stratum.

### *Mini Fyke Net*

Freshwater drum (25.38 fish/net-day), gizzard shad (9.22), and white bass (6.25) had the highest mini fyke netting *C/f* in the MCBU stratum (Table 5.4.3). Bluegill (21.09), freshwater drum (9.72), and white crappie (9.30) had the highest *C/f* in the TRI stratum.

### *Small Hoop Net*

Channel catfish (4.47 fish/net-day) and common carp (1.15) had the highest small hoop netting *C/f* in the MCBU stratum (Table 5.4.4). Common carp (3.89) and channel catfish (0.26) had the highest *C/f* in the TRI stratum.

### *Large Hoop Net*

Common carp (6.69 fish/net-day), smallmouth buffalo (0.88), channel catfish (0.68), and black buffalo (0.68) had the highest large hoop netting *C/f* in the MCBU stratum (Table 5.4.5). Common carp (5.50), black buffalo (3.31), and smallmouth buffalo (2.67) had the highest *C/f* in the TRI stratum.

### *Trawl*

Freshwater drum (1.23 fish/haul), channel catfish (1.10), and blue catfish (0.83) had the highest trawling *C/f* in the MCBU stratum (Table 5.4.6). Freshwater drum (21.00), channel catfish (10.00), and blue catfish (1.50) had the highest *C/f* in the SCB stratum.

## Length Distributions of Selected Species

Length–frequency histograms are presented for selected species in Figures 5.2 to 5.14. Meaningful biological interpretation of the histograms is limited because of small sample size or size selectivity of the gear (Anderson and Neumann 1996). Despite these biases, some river managers may find the histograms useful, therefore we have included them in this report. No age–growth data are available at this time for the open Mississippi River study reach.

### *Gizzard Shad*

We collected 3,716 gizzard shad by day electrofishing and measured 1,633 subsampled gizzard shad for length–frequency (Figure 5.2). The length–frequency distribution was composed largely of 60–120-mm-long

fish. The 2,083 unmeasured gizzard shad were not applied to the length–frequency distribution. Most unmeasured shad were 60 to 100 mm long.

### *Common Carp*

Four hundred eight common carp were collected by day electrofishing (Figure 5.3). Most common carp were 340 to 440 mm long.

### *Smallmouth Buffalo*

One hundred smallmouth buffalo were collected by day electrofishing (Figure 5.4). The length–frequency distribution comprised 160–360 mm long fish, with a mode of 300 mm. Two hundred forty smallmouth buffalo were collected with small and large hoop nets (Figure 5.5). The length–frequency distribution comprised 200–520-mm-long fish. Most smallmouth buffalo were 280 to 380 mm long.

### *Channel Catfish*

One hundred twenty-four channel catfish were collected by day electrofishing (Figure 5.6). The length–frequency distribution comprised 20–640-mm-long fish. The greatest percentage of channel catfish were 380 to 480 mm long. Three hundred nine channel catfish were collected with small and large hoop nets (Figure 5.7). The length–frequency distribution comprised 120–660-mm-long fish, with a mode of 160 mm.

### *White Bass*

One hundred sixty-six white bass were collected by day electrofishing (Figure 5.8). The length–frequency distribution comprised 20–380-mm-long fish, with modes at 40, 200, and 320 mm.

### *Bluegill*

Eighty-one bluegill were collected by day electrofishing (Figure 5.9). The length–frequency distribution comprised 20- to 180-mm-long fish.

### *White Crappie*

Twenty-three white crappie were collected with fyke nets (Figure 5.10). The length–frequency distribution comprised 40- to 280-mm-long fish.

### *Black Crappie*

Thirty-nine black crappie were collected with fyke nets (Figure 5.11). The length–frequency distribution comprised 120- to 260-mm-long fish.

### *Sauger*

Twelve sauger were collected by day electrofishing (Figure 5.12). The length–frequency distribution comprised 80- to 460-mm-long fish.

### *Freshwater Drum*

Two hundred seven freshwater drum were collected by day electrofishing (Figure 5.13). The length–frequency distribution comprised 20–400-mm-long fish, with a mode of 280 mm. Eighty-six freshwater drum were collected with fyke nets (Figure 5.14). The length–frequency distribution comprised 120–540-mm-long fish, with modes at 180 and 280 mm.

Table 5.1. Allocation of fish sampling effort among strata by the Long Term Resource Monitoring Program in the open Mississippi River during 1996. Table entries are numbers of successfully completed standardized monitoring collections.



Sampling period = 1: June 15 - July 31

| Sampling gear | BWCS | BWCO | SCB | MCBU | MCBW | IMPS | IMPO | TRI | TWZ | TOTAL |
|---|---|---|---|---|---|---|---|---|---|---|
| Day electrofishing | | | 7 | 5 | | | | 2 | | 14 |
| Fyke net | | | 6 | 1 | | | | 2 | | 9 |
| Large hoop net | | | 8 | 6 | | | | 2 | | 16 |
| Small hoop net | | | 9 | 5 | | | | 2 | | 16 |
| Mini fyke net | | | 16 | 6 | | | | 2 | | 24 |
| Seine | | | 4 | | | | | | | 4 |
| Trawling | | | | 15 | | | | | | 15 |
| SUBTOTAL | 0 | 0 | 50 | 38 | 0 | 0 | 0 | 10 | 0 | 98 |

Sampling period = 2: August 1 - September 14

| Sampling gear | BWCS | BWCO | SCB | MCBU | MCBW | IMPS | IMPO | TRI | TWZ | TOTAL |
|---|---|---|---|---|---|---|---|---|---|---|
| Day electrofishing | | | 8 | 5 | 4 | | | 2 | | 19 |
| Fyke net | | | 4 | 1 | | | | 2 | | 7 |
| Large hoop net | | | 9 | 5 | 4 | | | 2 | | 20 |
| Small hoop net | | | 9 | 5 | 4 | | | 2 | | 20 |
| Mini fyke net | | | 12 | 5 | 4 | | | 2 | | 23 |
| Seine | | | 8 | 20 | | | | | | 28 |
| Trawling | | | 2 | 18 | | | | | | 20 |
| SUBTOTAL | 0 | 0 | 52 | 59 | 16 | 0 | 0 | 10 | 0 | 137 |

Sampling period = 3: September 15 - October 31

| Sampling gear | BWCS | BWCO | SCB | MCBU | MCBW | IMPS | IMPO | TRI | TWZ | TOTAL |
|---|---|---|---|---|---|---|---|---|---|---|
| Day electrofishing | | | 8 | 5 | 4 | | | 2 | | 19 |
| Fyke net | | | 4 | 1 | | | | 2 | | 7 |
| Large hoop net | | | 8 | 5 | 4 | | | 2 | | 19 |
| Small oop net | | | 8 | 5 | 4 | | | 2 | | 19 |
| Mini fyke net | | | 9 | 5 | 4 | | | 2 | | 20 |
| SUBTOTAL | 0 | 0 | 37 | 21 | 16 | 0 | 0 | 10 | 0 | 84 |
| | 0 | 0 | 139 | 118 | 32 | 0 | 0 | 30 | 0 | 319 |

Strata: BWCS - Backwater, contiguous, shoreline.
BWCO - Backwater, contiguous, offshore.
IMPS - Impounded, shoreline.
IMPO - Impounded, offshore.
MCBU - Main channel border, unstructured.
MCBW - Main channel border, wing dam.
SCB - Side channel border.
TRI - Tributary mouth.
TWZ - Tailwater.

Table 5.2. Total catches, by gear type, of fishes collected by the Long Term Resource Program during 1996 in the open Mississppi River. See Table 5.1 for the list of sampling gears actually deployed in this study reach.



| Species | Common name | Scientific name | D | N | F | X | M | Y | S | HS | HL | G | TA | T | TOTAL |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | Chestnut lamprey | Ichthyomyzon castaneus | 3 | - | - | - | 1 | - | - | - | - | - | - | - | 4 |
| 2 | Shovelnose sturgeon | Scaphirhynchus platorynchus | - | - | - | - | 2 | - | - | - | - | - | - | 14 | 16 |
| 3 | Paddlefish | Polyodon spathula | - | - | - | - | - | - | - | - | 1 | - | - | - | 1 |
| 4 | Spotted gar | Lepisosteus oculatus | 4 | - | - | - | - | - | - | - | - | - | - | - | 4 |
| 5 | Longnose gar | Lepisosteus osseus | 6 | - | - | - | 12 | - | - | - | - | - | - | - | 18 |
| 6 | Shortnose gar | Lepisosteus platostomus | 38 | - | 56 | - | 17 | - | - | 3 | 4 | - | - | - | 118 |
| 7 | Bowfin | Amia calva | 12 | - | 8 | - | 1 | - | - | - | 3 | - | - | - | 24 |
| 8 | Goldeye | Hiodon alosoides | 196 | - | 1 | - | 20 | - | 2 | - | - | - | - | 2 | 221 |
| 9 | American eel | Anguilla rostrata | 2 | - | - | - | - | - | - | 1 | - | - | - | - | 3 |
| 10 | Skipjack herring | Alosa chrysochloris | 7 | - | - | - | - | - | 4 | - | - | - | - | - | 11 |
| 11 | Gizzard shad | Dorosoma cepedianum | 3716 | - | 42 | - | 560 | - | 687 | - | 5 | - | - | 3 | 5013 |
| 12 | Threadfin shad | Dorosoma petenense | 4 | - | - | - | 2 | - | 2 | - | - | - | - | - | 8 |
| 13 | Central stoneroller | Campostoma anomalum | - | - | - | - | 2 | - | - | - | - | - | - | - | 2 |
| 14 | Grass carp | Ctenopharyngodon idella | - | - | - | - | - | - | - | - | 1 | - | - | - | 1 |
| 15 | Red shiner | Cyprinella lutrensis | 117 | - | - | - | 41 | - | 57 | - | - | - | - | - | 215 |
| 16 | Blacktail shiner | Cyprinella venusta | - | - | - | - | 1 | - | - | - | - | - | - | - | 1 |
| 17 | Common carp | Cyprinus carpio | 408 | - | 45 | - | 66 | - | - | 164 | 335 | - | - | - | 1018 |
| 18 | Mississippi silvery minnow | Hybognathus nuchalis | 4 | - | - | - | 181 | - | 34 | - | - | - | - | - | 219 |
| 19 | Plains minnow | Hybognathus placitus | - | - | - | - | 2 | - | - | - | - | - | - | - | 2 |
| 20 | Bighead carp | Hypopthalmichthys nobilis | - | - | 1 | - | 10 | - | - | - | 1 | - | - | - | 12 |
| 21 | Speckled chub | Macrhybopsis aestivalis | - | - | - | - | - | - | - | - | - | - | - | 5 | 5 |
| 22 | Silver chub | Macrhybopsis storeriana | 7 | - | - | - | 11 | - | 2 | - | - | - | - | 2 | 22 |
| 23 | Unidentified chub | Macrhybopsis sp. | - | - | - | - | 1 | - | - | - | - | - | - | - | 1 |
| 24 | Golden shiner | Notemigonus crysoleucas | - | - | - | - | 1 | - | - | - | - | - | - | - | 1 |
| 25 | Emerald shiner | Notropis atherinoides | 25 | - | - | - | 35 | - | 28 | - | - | - | - | - | 88 |
| 26 | River shiner | Notropis blennius | 5 | - | - | - | 18 | - | 116 | - | - | - | - | - | 139 |
| 27 | Bigeye shiner | Notropis boops | - | - | - | - | 1 | - | - | - | - | - | - | - | 1 |
| 28 | Silverband shiner | Notropis shumardi | 15 | - | - | - | 83 | - | 10 | - | - | - | - | - | 108 |
| 29 | Channel shiner | Notropis wickliffi | 12 | - | - | - | 739 | - | 3 | - | - | - | - | - | 754 |
| 30 | Bullhead minnow | Pimephales vigilax | - | - | - | - | 4 | - | - | - | - | - | - | - | 4 |
| 31 | Creek chub | Semotilus atromaculatus | - | - | - | - | 1 | - | - | - | - | - | - | - | 1 |
| 32 | River carpsucker | Carpiodes carpio | 46 | - | 16 | - | 7 | - | 1 | 6 | 84 | - | - | - | 160 |
| 33 | Blue sucker | Cycleptus elongatus | 1 | - | - | - | - | - | - | - | - | - | - | - | 1 |
| 34 | Smallmouth buffalo | Ictiobus bubalus | 100 | - | 6 | - | - | - | - | 11 | 229 | - | - | - | 346 |
| 35 | Bigmouth buffalo | Ictiobus cyprinellus | 12 | - | 2 | - | - | - | - | - | - | - | - | - | 14 |
| 36 | Black buffalo | Ictiobus niger | 7 | - | 3 | - | - | - | - | 8 | 79 | - | - | - | 97 |
| 37 | Unidentified buffalo | Ictiobus sp. | - | - | - | - | 32 | - | 3 | - | - | - | - | - | 35 |
| 38 | Shorthead redhorse | Moxostoma macrolepidotum | 2 | - | 1 | - | - | - | - | - | - | - | - | - | 3 |
| 39 | Black bullhead | Ameiurus melas | - | - | - | - | - | - | - | - | - | - | - | 1 | 1 |

Gears:
D - Day electrofishing
N - Night electrofishing
F - Fyke netting
X - Tandem fyke netting
M - Mini fyke netting
Y - Tandem mini fyke netting
S - Seining
HS - Small hoop netting
HL - Lage hoop netting
G - Gill netting
TA - Trammel netting, anchored sets
T - Trawling (4.8-m bottom trawl)

Table 5.2. Total catches, by gear type, of fishes collected by the Long Term Resource Program during 1996 in the open Mississippi River. See Table 5.1 for the list of sampling gears actually deployed in this study reach.



| Species | Common name | Scientific name | D | N | F | X | M | Y | S | HS | HL | G | TA | T | TOTAL |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 40 | Yellow bullhead | Ameiurus natalis | - | - | - | - | 1 | - | - | - | - | - | - | - | 1 |
| 41 | Blue catfish | Ictalurus furcatus | 11 | - | - | - | 8 | - | - | 1 | 5 | - | - | 28 | 53 |
| 42 | Channel catfish | Ictalurus punctatus | 124 | - | 4 | - | 141 | - | 8 | 244 | 65 | - | - | 54 | 640 |
| 43 | Unidentified catfish | Ictalurus sp. | - | - | - | - | 1 | - | - | - | - | - | - | - | 1 |
| 44 | Stonecat | Noturus flavus | 1 | - | - | - | - | - | - | - | - | - | - | - | 1 |
| 45 | Freckled madtom | Noturus nocturnus | 11 | - | - | - | 4 | - | - | - | - | - | - | - | 15 |
| 46 | Unidentified madtom | Noturus sp. | - | - | - | - | 4 | - | - | - | - | - | - | - | 4 |
| 47 | Flathead catfish | Pylodictis olivaris | 61 | - | 11 | - | 16 | - | - | 7 | 26 | - | - | 3 | 124 |
| 48 | Muskellunge | Esox masquinongy | - | - | - | - | - | - | - | - | 1 | - | - | - | 1 |
| 49 | Blackstripe topminnow | Fundulus notatus | 5 | - | - | - | 3 | - | - | - | - | - | - | - | 8 |
| 50 | Western mosquitofish | Gambusia affinis | - | - | - | - | 11 | - | - | - | - | - | - | - | 11 |
| 51 | Brook silverside | Labidesthes sicculus | 29 | - | - | - | 4 | - | - | - | - | - | - | - | 33 |
| 52 | White bass | Morone chrysops | 166 | - | 37 | - | 89 | - | 29 | 2 | 8 | - | - | 2 | 333 |
| 53 | Yellow bass | Morone mississippiensis | - | - | 4 | - | - | - | - | - | - | - | - | - | 4 |
| 54 | Striped bass | Morone saxatilis | - | - | 1 | - | - | - | - | - | - | - | - | - | 1 |
| 55 | Green sunfish | Lepomis cyanellus | 3 | - | - | - | 11 | - | - | - | - | - | - | - | 14 |
| 56 | Warmouth | Lepomis gulosus | 1 | - | 1 | - | 19 | - | - | - | - | - | - | - | 21 |
| 57 | Orangespotted sunfish | Lepomis humilis | 8 | - | - | - | 10 | - | - | - | - | - | - | - | 18 |
| 58 | Bluegill | Lepomis macrochirus | 81 | - | 9 | - | 233 | - | - | 2 | - | - | - | - | 325 |
| 59 | Longear sunfish | Lepomis megalotis | 3 | - | - | - | 2 | - | - | - | - | - | - | - | 5 |
| 60 | Spotted bass | Micropterus punctulatus | 66 | - | - | - | 9 | - | - | - | - | - | - | - | 75 |
| 61 | Largemouth bass | Micropterus salmoides | 7 | - | - | - | - | - | - | - | - | - | - | - | 7 |
| 62 | White crappie | Pomoxis annularis | 28 | - | 23 | - | 130 | - | - | 2 | 2 | - | - | - | 185 |
| 63 | Black crappie | Pomoxis nigromaculatus | 7 | - | 39 | - | 64 | - | - | - | 1 | - | - | - | 121 |
| 64 | Western sand darter | Ammocrypta clara | - | - | - | - | - | - | 1 | - | - | - | - | - | 1 |
| 65 | Mud darter | Etheostoma asprigene | - | - | - | - | 4 | - | - | - | - | - | - | - | 4 |
| 66 | Bluntnose darter | Etheostoma chlorosomum | - | - | - | - | 5 | - | - | - | - | - | - | - | 5 |
| 67 | Logperch | Percina caprodes | 2 | - | - | - | 2 | - | - | - | - | - | - | - | 4 |
| 68 | Dusky darter | Percina sciera | 1 | - | - | - | - | - | - | - | - | - | - | - | 1 |
| 69 | River darter | Percina shumardi | - | - | - | - | 2 | - | - | - | - | - | - | - | 2 |
| 70 | Sauger | Stizostedion canadense | 12 | - | 3 | - | 12 | - | 9 | - | - | - | - | - | 36 |
| 71 | Freshwater drum | Aplodinotus grunniens | 207 | - | 86 | - | 2940 | - | 1 | 8 | 48 | - | - | 80 | 3370 |
| 72 | Unidentified | Unidentified | - | - | - | - | 38 | - | - | - | - | - | - | - | 38 |
| | | | 5593 | 0 | 399 | 0 | 5614 | 0 | 997 | 459 | 898 | 0 | 0 | 194 | 14154 |

Gears:
- D - Day electrofishing
- N - Night electrofishing
- F - Fyke netting
- X - Tandem fyke netting
- M - Mini fyke netting
- Y - Tandem mini fyke netting
- S - Seining
- HS - Small hoop netting
- HL - Large hoop netting
- G - Gill netting
- TA - Trammel netting, anchored sets
- T - Trawling (4.8-m bottom trawl)

Table 5.3.1. Mean catch-per-unit-effort and (standard error) for fishes collected by day electrofishing in the open Mississippi River using stratified random sampling during 1996. The statistics under ALL pertain to unbiased means over all strata sampled using this gear (as indicated by nonmissing entries below and by Table 5.1). See text for definitions of catch-per-unit-effort and standard error.



| Common name | ALL | BWCO | BWCS | IMPO | IMPS | MCBU | MCBW | SCB | TRI | TWZ |
|---|---|---|---|---|---|---|---|---|---|---|
| Chestnut lamprey | 0.08 | | | | | 0.08 | 0.13 | 0.04 | | |
| | (0.07) | | | | | (0.08) | (0.13) | (0.04) | | |
| Spotted gar | 0.01 | | | | | | | 0.04 | | |
| | (0.01) | | | | | | | (0.04) | | |
| Longnose gar | 0.02 | | | | | | 0.25 | 0.13 | | |
| | (0.01) | | | | | | (0.25) | (0.10) | | |
| Shortnose gar | 0.47 | | | | | 0.42 | | 0.87 | | |
| | (0.17) | | | | | (0.19) | | (0.23) | | |
| Bowfin | 0.03 | | | | | | | 0.26 | | |
| | (0.02) | | | | | | | (0.18) | | |
| Goldeye | 5.10 | | | | | 5.17 | 1.75 | 4.91 | | |
| | (1.68) | | | | | (1.92) | (0.90) | (1.75) | | |
| American eel | 0.07 | | | | | 0.08 | 0.13 | | | |
| | (0.07) | | | | | (0.08) | (0.13) | | | |
| Skipjack herring | 0.30 | | | | | 0.33 | 0.13 | 0.09 | | |
| | (0.22) | | | | | (0.26) | (0.13) | (0.09) | | |
| Gizzard shad | 21.07 | | | | | 16.92 | 16.50 | 51.96 | | |
| | (4.06) | | | | | (4.26) | (6.87) | (13.87) | | |
| Threadfin shad | 0.02 | | | | | | | 0.17 | | |
| | (0.01) | | | | | | | (0.10) | | |
| Red shiner | 1.23 | | | | | 0.83 | 1.13 | 4.13 | | |
| | (0.31) | | | | | (0.30) | (0.67) | (1.51) | | |
| Common carp | 5.77 | | | | | 5.67 | 14.62 | 5.83 | | |
| | (1.46) | | | | | (1.67) | (5.77) | (1.05) | | |
| Mississippi silvery minnow | 0.02 | | | | | | | 0.17 | | |
| | (0.02) | | | | | | | (0.14) | | |
| Silver chub | 0.23 | | | | | 0.25 | | 0.09 | | |
| | (0.16) | | | | | (0.18) | | (0.06) | | |
| Emerald shiner | 0.36 | | | | | 0.33 | 0.38 | 0.57 | | |
| | (0.13) | | | | | (0.14) | (0.38) | (0.18) | | |
| River shiner | 0.22 | | | | | 0.25 | | 0.04 | | |
| | (0.16) | | | | | (0.18) | | (0.04) | | |
| Silverband shiner | 0.25 | | | | | 0.25 | 0.38 | 0.22 | | |
| | (0.11) | | | | | (0.13) | (0.38) | (0.11) | | |
| Channel shiner | 0.04 | | | | | | | 0.35 | | |
| | (0.02) | | | | | | | (0.13) | | |
| River carpsucker | 1.15 | | | | | 1.17 | 0.50 | 1.04 | | |
| | (0.55) | | | | | (0.63) | (0.27) | (0.36) | | |
| Blue sucker | 0.01 | | | | | | | 0.04 | | |
| | (0.01) | | | | | | | (0.04) | | |
| Smallmouth buffalo | 1.39 | | | | | 1.33 | 2.88 | 1.70 | | |
| | (0.52) | | | | | (0.58) | (1.27) | (0.82) | | |
| Bigmouth buffalo | 0.06 | | | | | | | 0.48 | | |
| | (0.02) | | | | | | | (0.15) | | |
| Black buffalo | 0.17 | | | | | 0.17 | 0.13 | 0.17 | | |
| | (0.10) | | | | | (0.11) | (0.13) | (0.10) | | |
| Shorthead redhorse | | | | | | | 0.25 | | | |
| | | | | | | | (0.25) | | | |
| Blue catfish | 0.04 | | | | | | 0.56 | 0.30 | | |
| | (0.04) | | | | | | (0.29) | (0.30) | | |
| Channel catfish | 1.82 | | | | | 1.67 | 3.44 | 2.78 | | |
| | (0.45) | | | | | (0.50) | (1.50) | (1.09) | | |
| Stonecat | 0.01 | | | | | | | 0.04 | | |
| | (0.01) | | | | | | | (0.04) | | |
| Freckled madtom | 0.04 | | | | | | 0.38 | 0.35 | | |
| | (0.02) | | | | | | (0.26) | (0.19) | | |
| Flathead catfish | 1.12 | | | | | 1.17 | 3.68 | 0.61 | | |
| | (0.41) | | | | | (0.47) | (0.69) | (0.21) | | |

Strata: BWCS - Backwater, contiguous, shoreline.
BWCO - Backwater, contiguous, offshore.
IMPS - Impounded, shoreline.
IMPO - Impounded, offshore.
MCBU - Main channel border, unstructured.
MCBW - Main channel border, wing dam.
SCB - Side channel border.
TRI - Tributary mouth.
TWZ - Tailwater.

Table 5.3.1. Mean catch-per-unit-effort and (standard error) for fishes collected by day electrofishing in the open Mississippi River using stratified random sampling during 1996. The statistics under ALL pertain to unbiased means over all strata sampled using this gear (as indicated by nonmissing entries below and by Table 5.1). See text for definitions of catch-per-unit-effort and standard error.



| Common name | ALL | BWCO | BWCS | IMPO | IMPS | MCBU | MCBW | SCB | TRI | TWZ |
|---|---|---|---|---|---|---|---|---|---|---|
| Brook silverside | 0.01 | | | | | | | 0.04 | | |
| | (0.01) | | | | | | | (0.04) | | |
| White bass | 3.09 | | | | | 3.08 | 5.0 | 2.96 | | |
| | (1.29) | | | | | (1.47) | (2.53) | (1.11) | | |
| Green sunfish | 0.02 | | | | | | | 0.13 | | |
| | (0.01) | | | | | | | (0.07) | | |
| Orangespotted sunfish | 0.01 | | | | | | | 0.09 | | |
| | (0.01) | | | | | | | (0.06) | | |
| Bluegill | 0.13 | | | | | 0.08 | 0.25 | 0.43 | | |
| | (0.08) | | | | | (0.08) | (0.25) | (0.29) | | |
| Spotted bass | 0.05 | | | | | | 0.25 | 0.43 | | |
| | (0.02) | | | | | | (0.16) | (0.14) | | |
| Largemouth bass | 0.08 | | | | | 0.08 | | 0.04 | | |
| | (0.07) | | | | | (0.08) | | (0.04) | | |
| White crappie | 0.01 | | | | | | | 0.04 | | |
| | (0.01) | | | | | | | (0.04) | | |
| Black crappie | 0.01 | | | | | | | 0.04 | | |
| | (0.01) | | | | | | | (0.04) | | |
| Logperch | 0.01 | | | | | | | 0.09 | | |
| | (0.01) | | | | | | | (0.06) | | |
| Sauger | 0.31 | | | | | 0.33 | 0.13 | 0.17 | | |
| | (0.12) | | | | | (0.14) | (0.13) | (0.10) | | |
| Freshwater drum | 5.14 | | | | | 5.58 | 8.75 | 1.61 | | |
| | (2.75) | | | | | (3.15) | (3.48) | (0.41) | | |

Strata: BWCS - Backwater, contiguous, shoreline.
BWCO - Backwater, contiguous, offshore.
IMPS - Impounded, shoreline.
IMPO - Impounded, offshore.
MCBU - Main channel border, unstructured.
MCBW - Main channe border, wing dam.
SCB - Side channel border.
TRI - Tributary mouth.
TWZ - Tailwater.

Table 5.3.2. Mean catch-per-unit-effort and (standard error) for fishes collected by fyke netting in the open Mississippi River using stratified random sampling during 1996. The statistics under ALL pertain to unbiased means over all strata sampled using this gear (as indicated by nonmissing entries below and by Table 5.1). See text for definitions of catch-per-unit-effort and standard error.



| Common name | ALL | BWCO | BWCS | IMPO | IMPS | MCBU | MCBW | SCB | TRI | TWZ |
|---|---|---|---|---|---|---|---|---|---|---|
| Shortnose gar | 2.00 | | | | | | | 2.00 | | |
| | (0.91) | | | | | | | (0.91) | | |
| Gizzard shad | 0.37 | | | | | | | 0.37 | | |
| | (0.30) | | | | | | | (0.30) | | |
| Common carp | 1.20 | | | | | | | 1.20 | | |
| | (0.54) | | | | | | | (0.54) | | |
| River carpsucker | 0.29 | | | | | | | 0.29 | | |
| | (0.22) | | | | | | | (0.22) | | |
| Smallmouth buffalo | 0.15 | | | | | | | 0.15 | | |
| | (0.10) | | | | | | | (0.10) | | |
| Channel catfish | 0.29 | | | | | | | 0.29 | | |
| | (0.16) | | | | | | | (0.16) | | |
| Flathead catfish | 0.35 | | | | | | | 0.35 | | |
| | (0.25) | | | | | | | (0.25) | | |
| White bas | 1.20 | | | | | | | 1.20 | | |
| | (0.66) | | | | | | | (0.67) | | |
| Bluegill | 0.16 | | | | | | | 0.16 | | |
| | (0.16) | | | | | | | (0.16) | | |
| Black crappie | 0.14 | | | | | | | 0.14 | | |
| | (0.14) | | | | | | | (0.14) | | |
| Sauger | 0.07 | | | | | | | 0.07 | | |
| | (0.07) | | | | | | | (0.07) | | |
| Freshwater drum | 3.19 | | | | | | | 3.19 | | |
| | (0.73) | | | | | | | (0.74) | | |

Strata: BWCS - Backwater, contiguous, shoreline.
BWCO - Backwater, contiguous, offshore.
IMPS - Impounded, shoreline.
IMPO - Impounded, offshore.
MCBU - Main channel border, unstructured.
MCBW - Main channel border, wing dam.
SCB - Side channel border.
TRI - Tributary mouth.
TWZ - Tailwater.

Table 5.3.3. Mean catch-per-unit-effort and (standard error) for fishes collected by mini fyke netting in the open Mississippi River using stratified random sampling during 1996. The statistics under ALL pertain to unbiased means over all strata sampled using this gear (as indicated by nonmissing entries below and by Table 5.1). See text for definitions of catch-per-unit-effort and standard error.



| Common name | ALL | BWCO | BWCS | IMPO | IMPS | MCBU | MCBW | SCB | TRI | TWZ |
|---|---|---|---|---|---|---|---|---|---|---|
| Chestnut lamprey | 0.07 | | | | | 0.09 | | | | |
| | (0.07) | | | | | (0.09) | | | | |
| Shovelnose sturgeon | 0.01 | | | | | | | 0.06 | | |
| | (0.00) | | | | | | | (0.04) | | |
| Longnose gar | 0.04 | | | | | | | 0.32 | | |
| | (0.04) | | | | | | | (0.32) | | |
| Shortnose gar | 0.10 | | | | | 0.10 | 0.44 | 0.10 | | |
| | (0.09) | | | | | (0.10) | (0.21) | (0.08) | | |
| Goldeye | 0.82 | | | | | 0.90 | | 0.33 | | |
| | (0.62) | | | | | (0.71) | | (0.17) | | |
| Gizzard shad | 3.26 | | | | | 1.97 | 5.47 | 12.56 | | |
| | (1.09) | | | | | (0.97) | (1.54) | (5.87) | | |
| Threadfin shad | 0.09 | | | | | 0.10 | 0.15 | | | |
| | (0.09) | | | | | (0.10) | (0.15) | | | |
| Central stoneroller | 0.09 | | | | | 0.10 | | 0.03 | | |
| | (0.09) | | | | | (0.10) | | (0.03) | | |
| Red shiner | 0.72 | | | | | 0.77 | 0.59 | 0.32 | | |
| | (0.29) | | | | | (0.33) | (0.31) | (0.14) | | |
| Blacktail shiner | 0.07 | | | | | 0.08 | | | | |
| | (0.07) | | | | | (0.08) | | | | |
| Common carp | 0.32 | | | | | 0.10 | | 1.93 | | |
| | (0.14) | | | | | (0.10) | | (0.95) | | |
| Mississippi silvery minnow | 0.88 | | | | | 0.39 | 0.16 | 4.54 | | |
| | (0.58) | | | | | (0.31) | (0.16) | (4.42) | | |
| Plains minnow | 0.01 | | | | | | | 0.05 | | |
| | (0.01) | | | | | | | (0.05) | | |
| Bighead carp | 0.12 | | | | | 0.10 | | 0.29 | | |
| | (0.09) | | | | | (0.10) | | (0.21) | | |
| Silver chub | 0.09 | | | | | 0.10 | | 0.06 | | |
| | (0.09) | | | | | (0.10) | | (0.04) | | |
| Golden shiner | | | | | | | | 0.03 | | |
| | | | | | | | | (0.03) | | |
| Emerald shiner | 1.14 | | | | | 1.27 | 0.30 | 0.28 | | |
| | (0.74) | | | | | (0.85) | (0.20) | (0.12) | | |
| River shiner | 0.21 | | | | | 0.19 | 0.27 | 0.36 | | |
| | (0.11) | | | | | (0.13) | (0.18) | (0.22) | | |
| Bigeye shiner | | | | | | | 0.16 | | | |
| | | | | | | | (0.16) | | | |
| Silverband shiner | 0.53 | | | | | 0.32 | 0.27 | 2.07 | | |
| | (0.22) | | | | | (0.18) | (0.27) | (1.28) | | |
| Channel shiner | 46.84 | | | | | 53.42 | 1.41 | 2.10 | | |
| | (41.19) | | | | | (47.27) | (0.62) | (1.19) | | |
| Bullhead minnow | 0.01 | | | | | | 0.14 | 0.09 | | |
| | (0.01) | | | | | | (0.14) | (0.09) | | |
| River carpsucker | 0.10 | | | | | 0.10 | | 0.14 | | |
| | (0.09) | | | | | (0.10) | | (0.11) | | |
| Yellow bullhead | | | | | | | | 0.03 | | |
| | | | | | | | | (0.03) | | |
| Blue catfish | 0.03 | | | | | | | 0.22 | | |
| | (0.02) | | | | | | | (0.19) | | |
| Channel catfish | 1.75 | | | | | 1.66 | 2.31 | 2.41 | | |
| | (0.94) | | | | | (1.07) | (0.62) | (0.60) | | |
| Freckled madtom | 0.01 | | | | | | | 0.09 | | |
| | (0.01) | | | | | | | (0.05) | | |
| Flathead catfish | 0.13 | | | | | 0.10 | 0.30 | 0.33 | | |
| | (0.09) | | | | | (0.10) | (0.30) | (0.11) | | |
| Western mosquitofish | 0.38 | | | | | 0.44 | | | | |
| | (0.23) | | | | | (0.27) | | | | |

Strata: BWCS - Backwater, contiguous, shoreline.
BWCO - Backwater, contiguous, offshore.
IMPS - Impounded, shoreline.
IMPO - Impounded, offshore.
MCBU - Main channel border, unstructured.
MCBW - Main channel border, wing dam.
SCB - Side channel border.
TRI - Tributary mouth.
TWZ - Tailwater.

Table 5.3.3. Mean catch-per-unit-effort and (standard error) for fishes collected by mini fyke netting in the open Mississippi River using stratified random sampling during 1996. The statistics under ALL pertain to unbiased means over all strata sampled using this gear (as indicated by nonmissing entries below and by Table 5.1). See text for definitions of catch-per-unit-effort and standard error.



| Common name | ALL | BWCO | BWCS | IMPO | IMPS | MCBU | MCBW | SCB | TRI | TWZ |
|---|---|---|---|---|---|---|---|---|---|---|
| Brook silverside | 0.08 | | | | | 0.09 | | 0.06 | | |
| | (0.07) | | | | | (0.09) | | (0.04) | | |
| White bas | 2.11 | | | | | 2.27 | 0.86 | 1.00 | | |
| | (1.09) | | | | | (1.25) | (0.42) | (0.38) | | |
| Green sunfish | 0.01 | | | | | | 0.14 | 0.06 | | |
| | (0.01) | | | | | | (0.14) | (0.06) | | |
| Warmouth | 0.24 | | | | | 0.25 | 1.82 | | | |
| | (0.12) | | | | | (0.13) | (1.82) | | | |
| Orangespotted sunfish | 0.17 | | | | | 0.18 | 0.14 | 0.07 | | |
| | (0.11) | | | | | (0.12) | (0.14) | (0.07) | | |
| Bluegill | 1.39 | | | | | 1.46 | 6.96 | 0.40 | | |
| | (0.47) | | | | | (0.54) | (3.39) | (0.15) | | |
| Longear sunfish | 0.09 | | | | | 0.10 | | 0.03 | | |
| | (0.09) | | | | | (0.10) | | (0.03) | | |
| Spotted bass | 0.22 | | | | | 0.26 | 0.15 | | | |
| | (0.22) | | | | | (0.26) | (0.15) | | | |
| White crappie | 1.36 | | | | | 1.44 | 1.19 | 0.76 | | |
| | (0.48) | | | | | (0.55) | (0.71) | (0.26) | | |
| Black crappie | 1.98 | | | | | 2.25 | 0.15 | 0.18 | | |
| | (1.07) | | | | | (1.23) | (0.15) | (0.18) | | |
| Sauger | 0.10 | | | | | 0.08 | | 0.25 | | |
| | (0.07) | | | | | (0.08) | | (0.12) | | |
| Freshwater drum | 21.39 | | | | | 13.99 | 10.59 | 76.69 | | |
| | (7.85) | | | | | (8.38) | (5.83) | (24.61) | | |

Strata: BWCS - Backwater, contiguous, shoreline.
BWCO - Backwater, contiguous, offshore.
IMPS - Impounded, shoreline.
IMPO - Impounded, offshore.
MCBU - Main channel border, unstructured.
MCBW - Main channel border, wing dam.
SCB - Side channel border.
TRI - Tributary mouth.
TWZ - Tailwater.

Table 5.3.4. Mean catch-per-unit-effort and (standard error) for fishes collected by small hoop netting in the open Mississippi River using stratified random sampling during 1996. The statistics under ALL pertain to unbiased means over all strata sampled using this gear (as indicated by nonmissing entries below and by Table 5.1). See text for definitions of catch-per-unit-effort and standard error.



| Common name | ALL | BWCO | BWCS | IMPO | IMPS | MCBU | MCBW | SCB | TRI | TWZ |
|---|---|---|---|---|---|---|---|---|---|---|
| Shortnose gar | | | | | | | | 0.04 | | |
| | | | | | | | | (0.03) | | |
| American eel | | | | | | | | 0.02 | | |
| | | | | | | | | (0.02) | | |
| Common carp | 1.28 | | | | | 1.32 | 2.53 | 0.86 | | |
| | (0.45) | | | | | (0.52) | (0.64) | (0.19) | | |
| River carpsucker | 0.01 | | | | | | | 0.12 | | |
| | (0.01) | | | | | | | (0.05) | | |
| Smallmouth buffalo | 0.13 | | | | | 0.13 | | 0.14 | | |
| | (0.06) | | | | | (0.07) | | (0.09) | | |
| Black buffalo | 0.02 | | | | | | 0.07 | 0.12 | | |
| | (0.01) | | | | | | (0.07) | (0.05) | | |
| Blue catfish | | | | | | | | 0.02 | | |
| | | | | | | | | (0.02) | | |
| Channel catfish | 1.72 | | | | | 1.48 | 0.14 | 3.64 | | |
| | (0.51) | | | | | (0.55) | (0.09) | (1.44) | | |
| Flathead catfish | 0.11 | | | | | 0.13 | 0.14 | 0.02 | | |
| | (0.06) | | | | | (0.07) | (0.09) | (0.02) | | |
| White bass | | | | | | | | 0.04 | | |
| | | | | | | | | (0.03) | | |
| Freshwater drum | 0.08 | | | | | 0.09 | 0.06 | 0.06 | | |
| | (0.05) | | | | | (0.06) | (0.06) | (0.03) | | |

Strata: BWCS - Backwater, contiguous, shoreline.
BWCO - Backwater, contiguous, offshore.
IMPS - Impounded, shoreline.
IMPO - Impounded, offshore.
MCBU - Main channel border, unstructured.
MCBW - Main channel border, wing dam.
SCB - Side channel border.
TRI - Tributary mouth.
TWZ - Tailwater.

Table 5.3.5. Mean catch-per-unit-effort and (standard error) for fishes collected by large hoop netting in the open Mississippi River using stratified random sampling during 1996. The statistics under ALL pertain to unbiased means over all strata sampled using this gear (as indicated by nonmissing entries below and by Table 5.1). See text for definitions of catch-per-unit-effort and standard error.



| Common name | ALL | BWCO | BWCS | IMPO | IMPS | MCBU | MCBW | SCB | TRI | TWZ |
|---|---|---|---|---|---|---|---|---|---|---|
| Shortnose gar | | | | | | | | 0.02 | | |
| | | | | | | | | (0.02) | | |
| Common carp | 2.90 | | | | | 2.2 | 0.71 | 2.93 | | |
| | (1.40) | | | | | (1.61) | (0.42) | (0.95) | | |
| River carpsucker | 0.22 | | | | | 0.11 | | 1.07 | | |
| | (0.07) | | | | | (0.06) | | (0.46) | | |
| Smallmouth buffalo | 3.66 | | | | | 3.94 | 0.07 | 1.89 | | |
| | (2.66) | | | | | (3.05) | (0.07) | (0.63) | | |
| Black buffalo | 0.25 | | | | | 0.20 | | 0.64 | | |
| | (0.10) | | | | | (0.11) | | (0.27) | | |
| Blue catfish | 0.07 | | | | | 0.07 | | 0.04 | | |
| | (0.04) | | | | | (0.05) | | (0.04) | | |
| Channel catfish | 0.69 | | | | | 0.68 | 0.07 | 0.79 | | |
| | (0.35) | | | | | (0.40) | (0.07) | (0.29) | | |
| Flathead catfish | 0.21 | | | | | 0.21 | | 0.16 | | |
| | (0.15) | | | | | (0.18) | | (0.08) | | |
| White bass | 0.05 | | | | | 0.04 | | 0.12 | | |
| | (0.04) | | | | | (0.04) | | (0.06) | | |
| Black crappie | | | | | | | 0.06 | | | |
| | | | | | | | (0.06) | | | |
| Freshwater drum | 0.88 | | | | | 0.97 | 0.33 | 0.29 | | |
| | (0.63) | | | | | (0.73) | (0.33) | (0.08) | | |

Strata: BWCS - Backwater, contiguous, shoreline. MCBW - Main channel border, wing dam.
BWCO - Backwater, contiguous, offshore. SCB - Side channel border.
IMPS - Impounded, shoreline. TRI - Tributary mouth.
IMPO - Impounded, offshore. TWZ - Tailwater.
MCBU - Main channel border, unstructured.

Table 5.3.6. Mean catch-per-unit-effort and (standard error) for fishes collected by seining in the open Mississippi River using stratified random sampling during 1996. The statistics under ALL pertain to unbiased means over all strata sampled using this gear (as indicated by nonmissing entries below and by Table 5.1). See text for definitions of catch-per-unit-effort and standard error.



| Common name | ALL | BWCO | BWCS | IMPO | IMPS | MCBU | MCBW | SCB | TRI | TWZ |
|---|---|---|---|---|---|---|---|---|---|---|
| Goldeye | 0.09 | | | | | 0.10 | | | | |
| | (0.06) | | | | | (0.07) | | | | |
| Skipjack herring | 0.04 | | | | | | | 0.33 | | |
| | (0.03) | | | | | | | (0.22) | | |
| Gizzard shad | 9.81 | | | | | 4.35 | | 50.00 | | |
| | (3.27) | | | | | (1.31) | | (25.61) | | |
| Threadfin shad | 0.09 | | | | | 0.10 | | | | |
| | (0.06) | | | | | (0.07) | | | | |
| Red shiner | 2.47 | | | | | 2.80 | | 0.08 | | |
| | (1.69) | | | | | (1.92) | | (0.08) | | |
| Mississippi silvery minnow | 0.78 | | | | | 0.65 | | 1.75 | | |
| | (0.40) | | | | | (0.42) | | (1.40) | | |
| Silver chub | 0.02 | | | | | | | 0.17 | | |
| | (0.02) | | | | | | | (0.17) | | |
| Emerald shiner | 1.23 | | | | | 1.40 | | | | |
| | (0.60) | | | | | (0.68) | | | | |
| River shiner | 4.94 | | | | | 5.55 | | 0.42 | | |
| | (1.50) | | | | | (1.71) | | (0.15) | | |
| Silverband shiner | 0.41 | | | | | 0.45 | | 0.08 | | |
| | (0.35) | | | | | (0.40) | | (0.08) | | |
| Channel shiner | 0.13 | | | | | 0.15 | | | | |
| | (0.10) | | | | | (0.11) | | | | |
| River carpsucker | 0.01 | | | | | | | 0.08 | | |
| | (0.01) | | | | | | | (0.08) | | |
| Channel catfish | 0.22 | | | | | 0.20 | | 0.33 | | |
| | (0.14) | | | | | (0.16) | | (0.19) | | |
| White bass | 0.49 | | | | | 0.30 | | 1.92 | | |
| | (0.23) | | | | | (0.16) | | (1.50) | | |
| Western sand darter | 0.01 | | | | | | | 0.08 | | |
| | (0.01) | | | | | | | (0.08) | | |
| Sauger | 0.09 | | | | | | | 0.75 | | |
| | (0.08) | | | | | | | (0.66) | | |
| Freshwater drum | 0.04 | | | | | 0.05 | | | | |
| | (0.04) | | | | | (0.05) | | | | |

Strata: BWCS - Backwater, contiguous, shoreline.
BWCO - Backwater, contiguous, offshore.
IMPS - Impounded, shoreline.
IMPO - Impounded, offshore.
MCBU - Main channel border, unstructured.
MCBW - Main channel border, wing dam.
SCB - Side channel border.
TRI - Tributary mouth.
TWZ - Tailwater.

Table 5.3.7. Mean catch-per-unit-effort and (standard error) for fishes collected by bottom trawling in the open Mississippi River using stratified random sampling during 1996. The statistcs under ALL pertain to unbiased means over all strata sampled using this gear (as indicated by nonmissing entries below and by Table 5.1). See text for definitions of catch-per-unit-effort and standard error.



| Common name | ALL | BWCO | BWCS | IMPO | IMPS | MCBU | MCBW | SCB | TRI | TWZ |
|---|---|---|---|---|---|---|---|---|---|---|
| Channel catfish | 0.50 | | | | | 0.50 | | | | |
| | (0.50) | | | | | (0.50) | | | | |
| Freshwater drum | 0.50 | | | | | 0.50 | | | | |
| | (0.50) | | | | | (0.50) | | | | |

Strata: BWCS - Backwater, contiguous, shoreline.
BWCO - Backwater, contiguous, offshore.
IMPS - Impounded, shoreline.
IMPO - Impounded, offshore.
MCBU - Main channel border, unstructured.
MCBW - Main channel border, wing dam.
SCB - Side channel border.
TRI - Tributary mouth.
TWZ - Tailwater.

Table 5.4.1. Mean catch-per-unit-effort and (standard error) for fishes collected by day electrofishing in the open Mississippi River using fixed-site sampling during 1996. See text for definitions of catch-per-unit-effort and standard error.



| Common name | BWCO | BWCS | IMPO | IMPS | MCBU | MCBW | SCB | TRI | TWZ |
|---|---|---|---|---|---|---|---|---|---|
| Spotted gar | | | | | | | | 0.50 (0.50) | |
| Longnose gar | | | | | 0.33 (0.33) | | | | |
| Shortnose gar | | | | | 0.33 (0.33) | | | 2.00 (1.61) | |
| Bowfin | | | | | | | | 1.00 (0.52) | |
| Goldeye | | | | | 2.00 (1.53) | | | 0.17 (0.17) | |
| Gizzard shad | | | | | 32.00 (23.03) | | | 348.33 (302.90) | |
| Red shiner | | | | | 0.67 (0.67) | | | 0.17 (0.17) | |
| Common carp | | | | | 3.33 (2.33) | | | 13.50 (3.59) | |
| Silver chub | | | | | 0.67 (0.67) | | | | |
| Emerald shiner | | | | | 0.33 (0.33) | | | 0.67 (0.49) | |
| River shiner | | | | | 0.33 (0.33) | | | | |
| Silverband shiner | | | | | | | | 0.67 (0.67) | |
| Channel shiner | | | | | | | | 0.67 (0.49) | |
| River carpsucker | | | | | 0.33 (0.33) | | | 0.50 (0.22) | |
| Smallmouth buffalo | | | | | 1.00 (1.00) | | | 3.17 (0.91) | |
| Bigmouth buffalo | | | | | | | | 0.17 (0.17) | |
| Channel catfish | | | | | 0.67 (0.67) | | | 1.83 (0.54) | |
| Flathead catfish | | | | | | | | 0.83 (0.83) | |
| Blackstripe topminnow | | | | | | | | 0.83 (0.65) | |
| Brook silverside | | | | | | | | 4.67 (1.99) | |
| White bass | | | | | 1.00 (1.00) | | | 2.33 (0.80) | |
| Warmouth | | | | | | | | 0.17 (0.17) | |
| Orangespotted sunfish | | | | | | | | 1.00 (0.63) | |
| Bluegill | | | | | | | | 11.33 (2.56) | |
| Longear sunfish | | | | | | | | 0.50 (0.50) | |
| Spotted bass | | | | | | | | 9.00 (5.07) | |
| Largemouth bass | | | | | | | | 0.83 (0.83) | |
| White crappie | | | | | | | | 4.50 (1.15) | |
| Black crappie | | | | | | | | 2.67 (0.84) | |
| Dusky darter | | | | | | | | 0.17 (0.17) | |

Strata: BWCS - Backwater, contiguous, shoreline.
BWCO - Backwater, contiguous, offshore.
IMPS - Impounded, shoreline.
IMPO - Impounded, offshore.
MCBU - Main channel border, unstructured.
MCBW - Main channel border, wing dam.
SCB - Side channel border.
TRI - Tributary mouth.
TWZ - Tailwater.

Table 5.4.1. Mean catch-per-unit-effort and (standard error) for fishes collected by day electrofishing in the open Mississippi River using fixed-site sampling during 1996. See text for definitions of catch-per-unit-effort and standard error.



| Common name | BWCO | BWCS | IMPO | IMPS | MCBU | MCBW | SCB | TRI | TWZ |
|---|---|---|---|---|---|---|---|---|---|
| Sauger | | | | | | | | 0.50 (0.34) | |
| Freshwater drum | | | | | | | | 5.67 (2.32) | |

Strata: BWCS - Backwater, contiguous, shoreline.
BWCO - Backwater, contiguous, offshore.
IMPS - Impounded, shoreline.
IMPO - Impounded, offshore.
MCBU - Main channel border, unstructured.
MCBW - Main channel border, wing dam.
SCB - Side channel border.
TRI - Tributary mouth.
TWZ - Tailwater.

Table 5.4.2. Mean catch-per-unit-effort and (standard error) for fishes collected by fyke netting in the open Mississippi River using fixed-site sampling during 1996. See text for definitions of catch-per-unit-effort and standard error.



| Common name | BWCO | BWCS | IMPO | IMPS | MCBU | MCBW | SCB | TRI | TWZ |
|---|---|---|---|---|---|---|---|---|---|
| Shortnose gar | | | | | 1.40 | | | 4.07 | |
| | | | | | (1.40) | | | (3.01) | |
| Bowfin | | | | | | | | 1.32 | |
| | | | | | | | | (1.12) | |
| Goldeye | | | | | 0.32 | | | | |
| | | | | | (0.32) | | | | |
| Gizzard shad | | | | | 2.07 | | | 4.98 | |
| | | | | | (1.62) | | | (3.98) | |
| Common carp | | | | | 2.20 | | | 3.73 | |
| | | | | | (2.20) | | | (1.18) | |
| Bighead carp | | | | | | | | 0.17 | |
| | | | | | | | | (0.17) | |
| River carpsucker | | | | | | | | 1.99 | |
| | | | | | | | | (0.84) | |
| Smallmouth buffalo | | | | | | | | 0.65 | |
| | | | | | | | | (0.48) | |
| Bigmouth buffalo | | | | | | | | 0.32 | |
| | | | | | | | | (0.20) | |
| Black buffalo | | | | | 0.37 | | | 0.32 | |
| | | | | | (0.37) | | | (0.20) | |
| Shorthead redhorse | | | | | | | | 0.16 | |
| | | | | | | | | (0.16) | |
| Flathead catfish | | | | | 0.35 | | | 0.82 | |
| | | | | | (0.35) | | | (0.39) | |
| White bass | | | | | 4.93 | | | 1.16 | |
| | | | | | (4.39) | | | (0.63) | |
| Yellow bass | | | | | | | | 0.65 | |
| | | | | | | | | (0.32) | |
| Striped bass | | | | | | | | 0.16 | |
| | | | | | | | | (0.16) | |
| Warmouth | | | | | | | | 0.18 | |
| | | | | | | | | (0.18) | |
| Bluegill | | | | | | | | 1.14 | |
| | | | | | | | | (1.14) | |
| White crappie | | | | | | | | 3.84 | |
| | | | | | | | | (1.15) | |
| Black crappie | | | | | | | | 6.09 | |
| | | | | | | | | (2.72) | |
| Sauger | | | | | | | | 0.33 | |
| | | | | | | | | (0.33) | |
| Freshwater drum | | | | | 4.73 | | | 4.83 | |
| | | | | | (3.73) | | | (1.68) | |

Strata: BWCS - Backwater, contiguous, shoreline.
BWCO - Backwater, contiguous, offshore.
IMPS - Impounded, shoreline.
IMPO - Impounded, offshore.
MCBU - Main channel border, unstructured.
MCBW - Main channel border, wing dam.
SCB - Side channel border.
TRI - Tributary mouth.
TWZ - Tailwater.

Table 5.4.3. Mean catch-per-unit-effort and (standard error) for fishes collected by mini fyke netting in the open Mississippi River using fixed-site sampling during 1996. See text for definitions of catch-per-unit-effort and standard error.



| Common name | BWCO | BWCS | IMPO | IMPS | MCBU | MCBW | SCB | TRI | TWZ |
|---|---|---|---|---|---|---|---|---|---|
| Shortnose gar | | | | | 0.68 | | | 1.27 | |
| | | | | | (0.34) | | | (0.94) | |
| Bowfin | | | | | | | | 0.19 | |
| | | | | | | | | (0.19) | |
| Gizzard shad | | | | | 9.22 | | | 8.41 | |
| | | | | | (5.25) | | | (6.99) | |
| Red shiner | | | | | 3.13 | | | 0.17 | |
| | | | | | (3.13) | | | (0.17) | |
| Common carp | | | | | 0.67 | | | 0.19 | |
| | | | | | (0.34) | | | (0.19) | |
| Mississippi silvery minow | | | | | 0.65 | | | | |
| | | | | | (0.65) | | | | |
| Silver chub | | | | | 1.37 | | | 0.65 | |
| | | | | | (0.92) | | | (0.65) | |
| Emerald shiner | | | | | 2.07 | | | | |
| | | | | | (1.60) | | | | |
| River shiner | | | | | 0.68 | | | | |
| | | | | | (0.34) | | | | |
| Silverband shiner | | | | | | | | 0.38 | |
| | | | | | | | | (0.38) | |
| Channel shiner | | | | | 3.39 | | | 3.26 | |
| | | | | | (1.43) | | | (2.43) | |
| Creek chub | | | | | 0.33 | | | | |
| | | | | | (0.33) | | | | |
| River carpsucker | | | | | | | | 0.19 | |
| | | | | | | | | (0.19) | |
| Channel catfish | | | | | 3.67 | | | 0.17 | |
| | | | | | (0.87) | | | (0.17) | |
| Freckled madtom | | | | | | | | 0.17 | |
| | | | | | | | | (0.17) | |
| Flathead catfish | | | | | 0.32 | | | 0.17 | |
| | | | | | (0.32) | | | (0.17) | |
| Blackstripe topminnow | | | | | | | | 0.51 | |
| | | | | | | | | (0.34) | |
| Western mosquitofish | | | | | | | | 0.99 | |
| | | | | | | | | (0.67) | |
| White bass | | | | | 6.25 | | | 0.50 | |
| | | | | | (3.78) | | | (0.34) | |
| Green sunfish | | | | | | | | 1.34 | |
| | | | | | | | | (1.00) | |
| Warmouth | | | | | 0.33 | | | 0.34 | |
| | | | | | (0.33) | | | (0.21) | |
| Orangespotted sunfish | | | | | | | | 0.87 | |
| | | | | | | | | (0.57) | |
| Bluegill | | | | | 6.18 | | | 21.09 | |
| | | | | | (5.16) | | | (8.82) | |
| Spotted bass | | | | | 1.00 | | | 0.33 | |
| | | | | | (0.02) | | | (0.33) | |
| White crappie | | | | | 6.53 | | | 9.30 | |
| | | | | | (3.71) | | | (2.84) | |
| Black crappie | | | | | 2.62 | | | 3.15 | |
| | | | | | (1.60) | | | (2.71) | |
| Mud darter | | | | | | | | 0.71 | |
| | | | | | | | | (0.53) | |
| Bluntnose darter | | | | | | | | 0.89 | |
| | | | | | | | | (0.70) | |
| Logperch | | | | | | | | 0.33 | |
| | | | | | | | | (0.21) | |
| River darter | | | | | 0.35 | | | 0.16 | |
| | | | | | (0.35) | | | (0.16) | |

Strata: BWCS - Backwater, contiguous, shoreline.
BWCO - Backwater, contiguous, offshore.
IMPS - Impounded, shoreline.
IMPO - Impounded, offshore.
MCBU - Main channel border, unstructured.
MCBW - Main channel border, wing dam.
SCB - Side channel border.
TRI - Tributary mouth.
TWZ - Tailwater.

Table 5.4.3. Mean catch-per-unit-effort and (standard error) for fishes collected by mini fyke netting in the open Mississippi River using fixed-site sampling during 1996. See text for definitions of catch-per-unit-effort and standard error.



| Common name | BWCO | BWCS | IMPO | IMPS | MCBU | MCBW | SCB | TRI | TWZ |
|---|---|---|---|---|---|---|---|---|---|
| Sauger | | | | | 0.65 | | | 0.18 | |
| | | | | | (0.65) | | | (0.18) | |
| Freshwater drum | | | | | 25.38 | | | 9.72 | |
| | | | | | (21.30) | | | (6.21) | |

Strata: BWCS - Backwater, contiguous, shoreline.
BWCO - Backwater, contiguous, offshore.
IMPS - Impounded, shoreline.
IMPO - Impounded, offshore.
MCBU - Main channel border, unstructured.
MCBW - Main channel border, wing dam.
SCB - Side channel border.
TRI - Tributary mouth.
TWZ - Tailwater.

Table 5.4.4. Mean catch-per-unit-effort and (standard error) for fishes collected by small hoop netting in the open Mississippi River using fixed-site sampling during 1996. See text for definitions of catch-per-unit-effort and standard error.



| Common name | BWCO | BWCS | IMPO | IMPS | MCBU | MCBW | SCB | TRI | TWZ |
|---|---|---|---|---|---|---|---|---|---|
| Shortnose gar | | | | | | | | 0.09 (0.09) | |
| Common carp | | | | | 1.15 (0.69) | | | 3.89 (1.21) | |
| Smallmouth buffalo | | | | | | | | 0.09 (0.09) | |
| Black buffalo | | | | | | | | 0.09 (0.09) | |
| Channel catfish | | | | | 4.47 (2.96) | | | 0.26 (0.12) | |
| Flathead catfish | | | | | 0.18 (0.18) | | | | |
| Bluegill | | | | | | | | 0.17 (0.17) | |
| White crappie | | | | | | | | 0.17 (0.11) | |
| Freshwater drum | | | | | | | | 0.17 (0.11) | |

Strata: BWCS - Backwater, contiguous, shoreline.
BWCO - Backwater, contiguous, offshore.
IMPS - Impounded, shoreline.
IMPO - Impounded, offshore.
MCBU - Main channel border, unstructured.
MCBW - Main channel border, wing dam.
SCB - Side channel border.
TRI - Tributay mouth.
TWZ - Tailwater.

Table 5.4.5. Mean catch-per-unit-effort and (standard error) for fishes collected by large hoop netting in the open Mississippi River using fixed-site sampling during 1996. See text for definitions of catch-per-unit-effort and standard error.



| Common name | BWCO | BWCS | IMPO | IMPS | MCBU | MCBW | SCB | TRI | TWZ |
|---|---|---|---|---|---|---|---|---|---|
| Paddlefish | | | | | | | | 0.10 (0.10) | |
| Shortnose gar | | | | | | | | 0.25 (0.17) | |
| Bowfin | | | | | | | | 0.25 (0.17) | |
| Gizzard shad | | | | | | | | 0.42 (0.21) | |
| Grass carp | | | | | | | | 0.08 (0.08) | |
| Common carp | | | | | 6.69 (4.00) | | | 5.50 (3.27) | |
| Bighead carp | | | | | | | | 0.10 (0.10) | |
| River carpsucker | | | | | | | | 2.61 (0.95) | |
| Smallmouth buffalo | | | | | 0.88 (0.88) | | | 2.67 (1.63) | |
| Black uffalo | | | | | 0.68 (0.68) | | | 3.31 (0.94) | |
| Blue catfish | | | | | 0.17 (0.17) | | | | |
| Channel catfish | | | | | 0.68 (0.68) | | | 0.46 (0.38) | |
| Flathead catfish | | | | | 0.16 (0.16) | | | 0.96 (0.74) | |
| Muskellunge | | | | | | | | 0.09 (0.09) | |
| White bass | | | | | | | | 0.09 (0.09) | |
| White crappie | | | | | | | | 0.17 (0.11) | |
| Freshwater drum | | | | | | | | 0.36 (0.26) | |

Strata: BWCS - Backwater, contiguous, shoreline.
BWCO - Backwater, contiguous, offshore.
IMPS - Impounded, shoreline.
IMPO - Impounded, offshore.
MCBU - Main channel border, unstructured.
MCBW - Main channel border, wing dam.
SCB - Side channel border.
TRI - Tributary mouth.
TWZ - Tailwater.

Table 5.4.6. Mean catch-per-unit-effort and (standard error) for fishes collected by bottom trawling in the open Mississippi River using fixed-site sampling during 1996. See text for definitions of catch-per-unit-effort and standard error.



| Common name | BWCO | BWCS | IMPO | IMPS | MCBU | MCBW | CB | TRI | TWZ |
|---|---|---|---|---|---|---|---|---|---|
| Shovelnose sturgeon | | | | | 0.43 | | 0.50 | | |
| | | | | | (0.12) | | (0.50) | | |
| Goldeye | | | | | 0.07 | | | | |
| | | | | | (0.07) | | | | |
| Gizzard shad | | | | | 0.10 | | | | |
| | | | | | (0.10) | | | | |
| Speckled chub | | | | | | | 2.50 | | |
| | | | | | | | (2.50) | | |
| Silver chub | | | | | 0.07 | | | | |
| | | | | | (0.05) | | | | |
| Black bullhead | | | | | 0.03 | | | | |
| | | | | | (0.03) | | | | |
| Blue catfish | | | | | 0.83 | | 1.50 | | |
| | | | | | (0.23) | | (1.50) | | |
| Channel catfish | | | | | 1.10 | | 10.00 | | |
| | | | | | (0.46) | | (6.00) | | |
| Flathead catfish | | | | | 0.10 | | | | |
| | | | | | (0.06) | | | | |
| White bass | | | | | 0.03 | | 0.50 | | |
| | | | | | (0.03) | | (0.50) | | |
| Freshwater drum | | | | | 1.23 | | 21.00 | | |
| | | | | | (0.48) | | (3.00) | | |

Strata: BWCS - Backwater, contiguous, shoreline.
BWCO - Backwater, contiguous, offshore.
IMPS - Impounded, shoreline.
IMPO - Impounded, offshore.
MCBU - Main channel border, unstructured.
MCBW - Main channel border, wing dam.
SCB - Side channel border.
TRI - Tributary mouth.
TWZ - Tailwater.

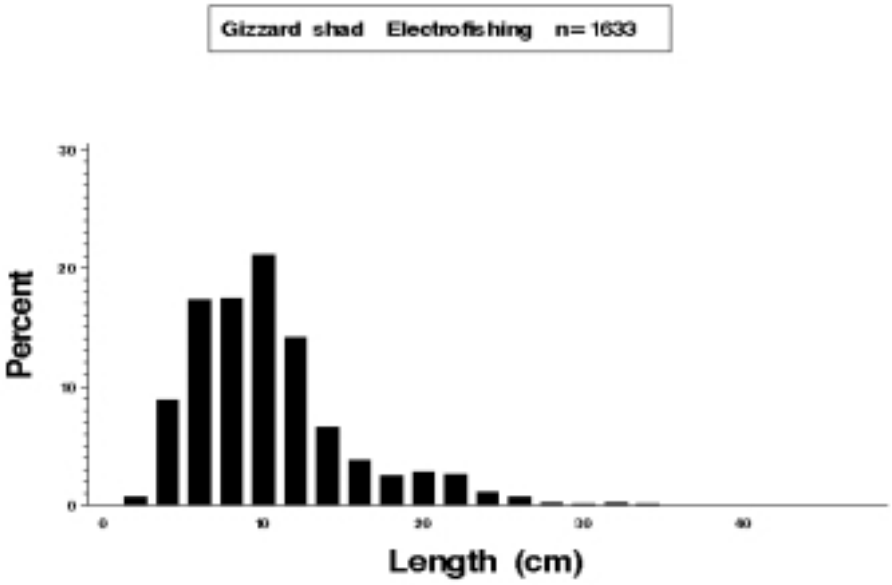


**Figure 5.2.** Length distributions (*length*) as a percentage of catch (*percent*) for gizzard shad (*Dorosoma cepedianum*) collected by electrofishing in the Upper Mississippi River Open Reach during 1996.

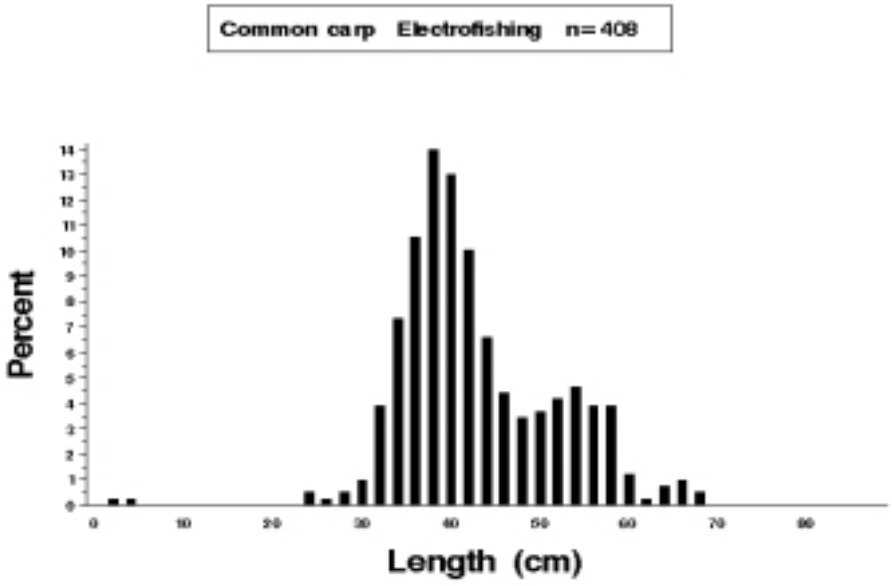


**Figure 5.3.** Length distributions (*length*) as a percentage of catch (*percent*) for common carp (*Cyprinus carpio*) collected by electrofishing in the Upper Mississippi River Open Reach during 1996.

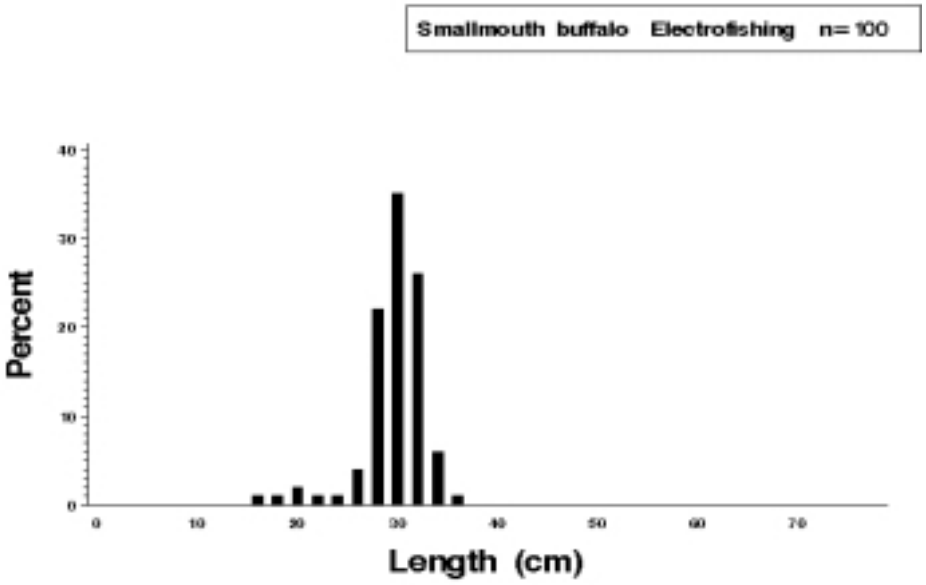


**Figure 5.4.** Length distributions (*length*) as a percentage of catch (*percent*) for smallmouth buffalo (*Ictiobus bubalus*) collected by electrofishing in the Upper Mississippi River Open Reach during 1996.

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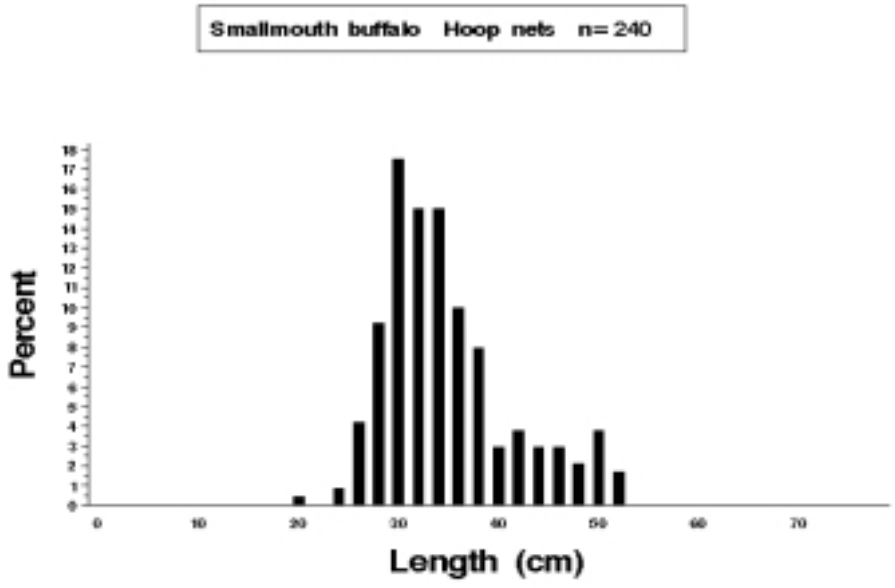


**Figure 5.5.** Length distributions (*length*) as a percentage of catch (*percent*) for smallmouth buffalo (*Ictiobus bubalus*) collected by large and small hoop netting in the Upper Mississippi River Open Reach during 1996.

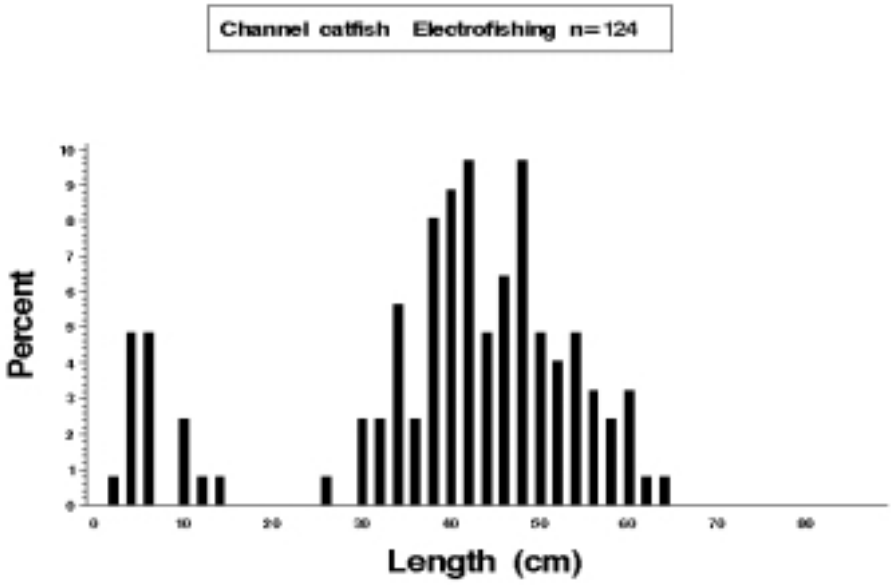


**Figure 5.6.** Length distributions (*length*) as a percentage of catch (*percent*) for channel catfish (*Ictalurus punctatus*) collected by electrofishing in the Upper Mississippi River Open Reach during 1996.

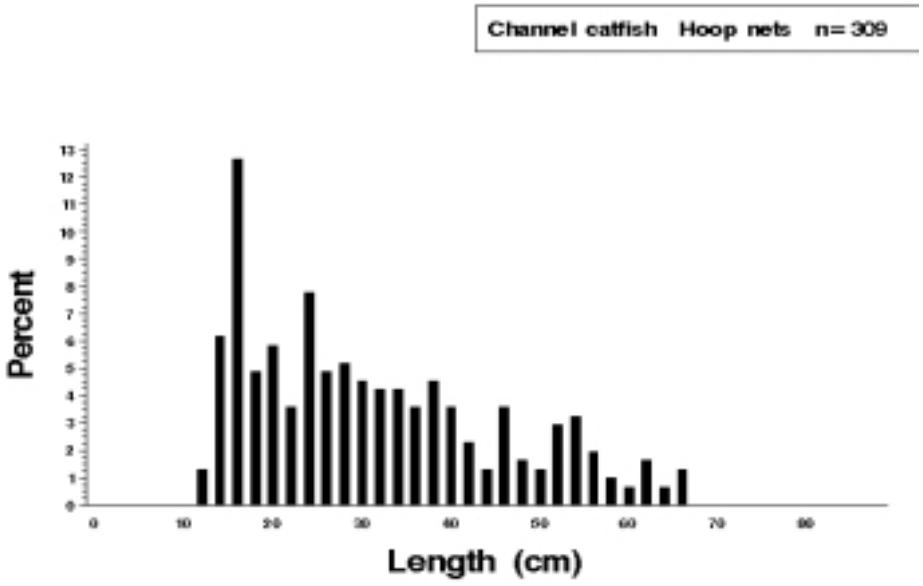


**Figure 5.7.** Length distributions (*length*) as a percentage of catch (*percent*) for channel catfish (*Ictalurus punctatus*) collected by large and small hoop netting in the Upper Mississippi River Open Reach during 1996.

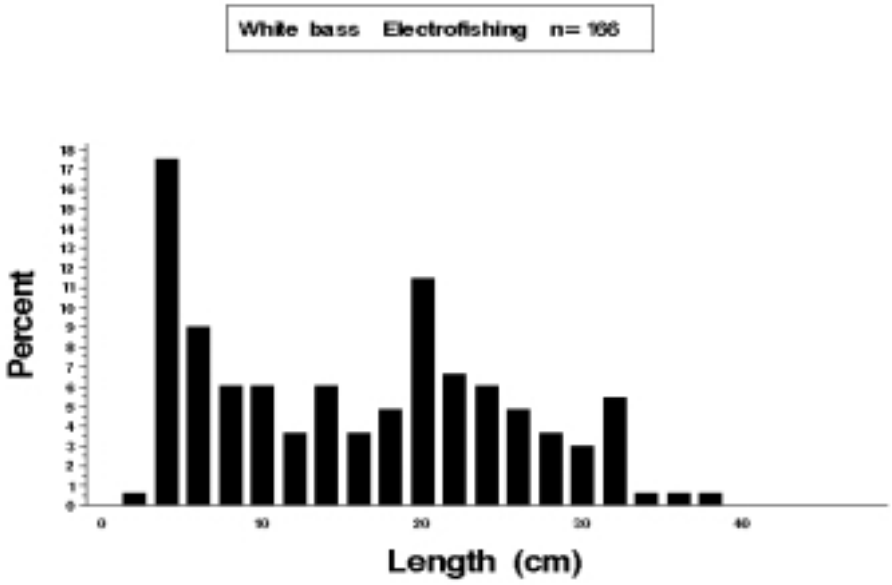


**Figure 5.8.** Length distributions (*length*) as a percentage of catch (*percent*) for white bass (*Morone chryops*) collected by electrofishing in the Upper Mississippi River Open Reach during 1996.

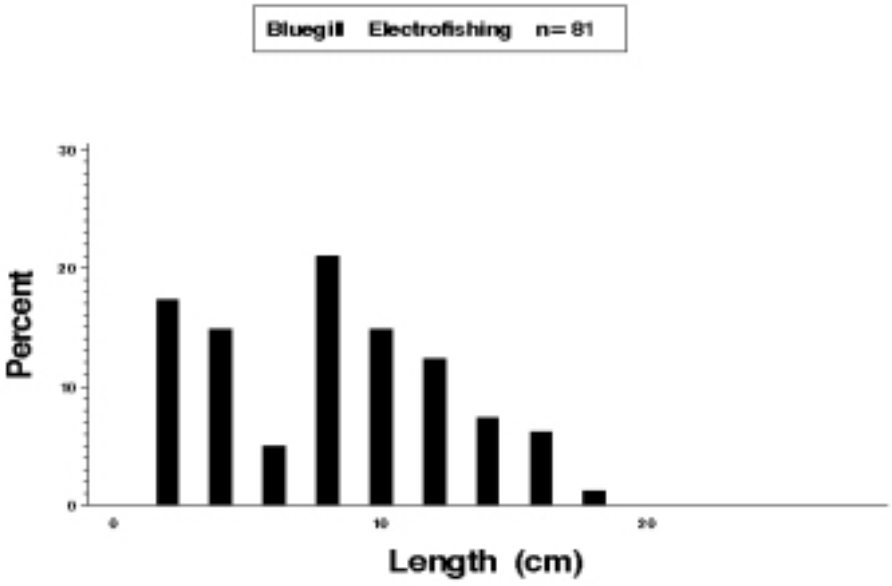


**Figure 5.9.** Length distributions (*length*) as a percentage of catch (*percent*) for bluegill (*Lepomis macrochirus*) collected by electrofishing in the Upper Mississippi River Open Reach during 1996.

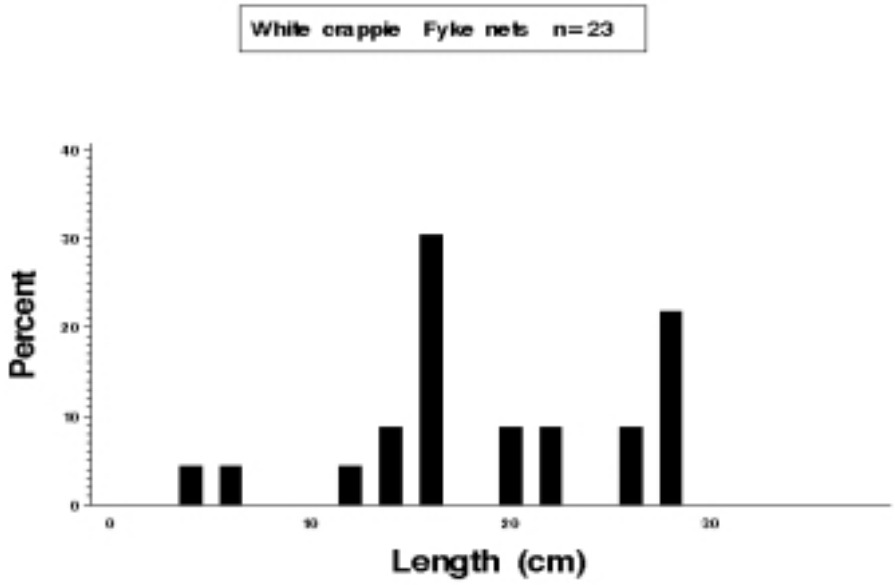


**Figure 5.10.** Length distributions (*length*) as a percentage of catch (*percent*) for white crappie (*Pomoxis annualrus)* collected by fyke netting in the Upper Mississippi River Open Reach during 1996.

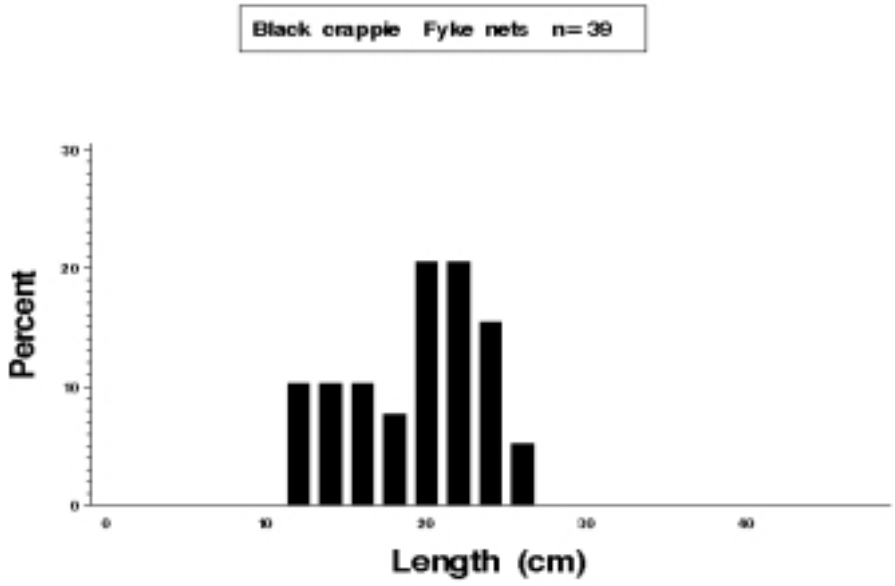


**Figure 5.11.** Length distributions (*length*) as a percentage of catch (*percent*) for black crappie (*Pomoxis nigromaculatus*)) collected by fyke netting in the Upper Mississippi River Open Reach during 1996.

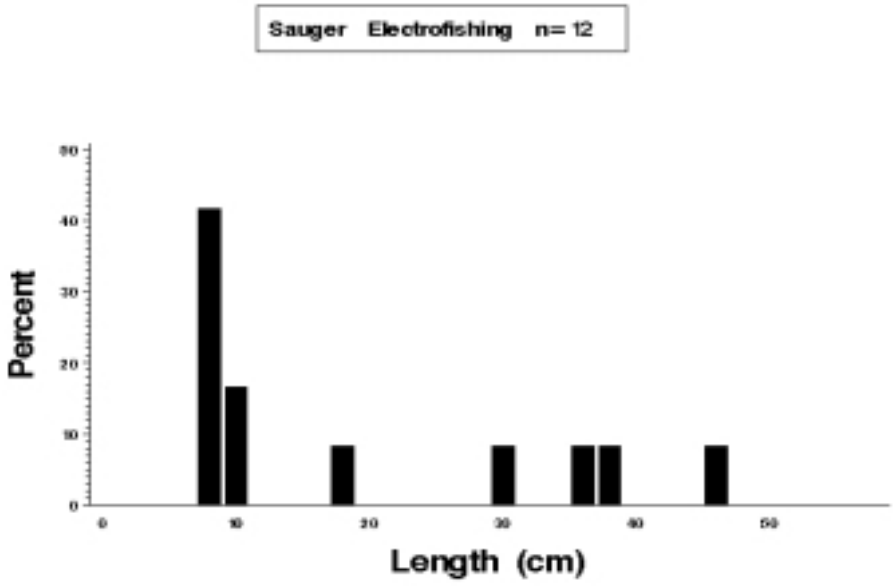


**Figure 5.12.** Length distributions (*length*) as a percentage of catch (*percent*) for sauger (*Stizostedion canadense*) collected by electrofishing in the Upper Mississippi River Open Reach during 1996.

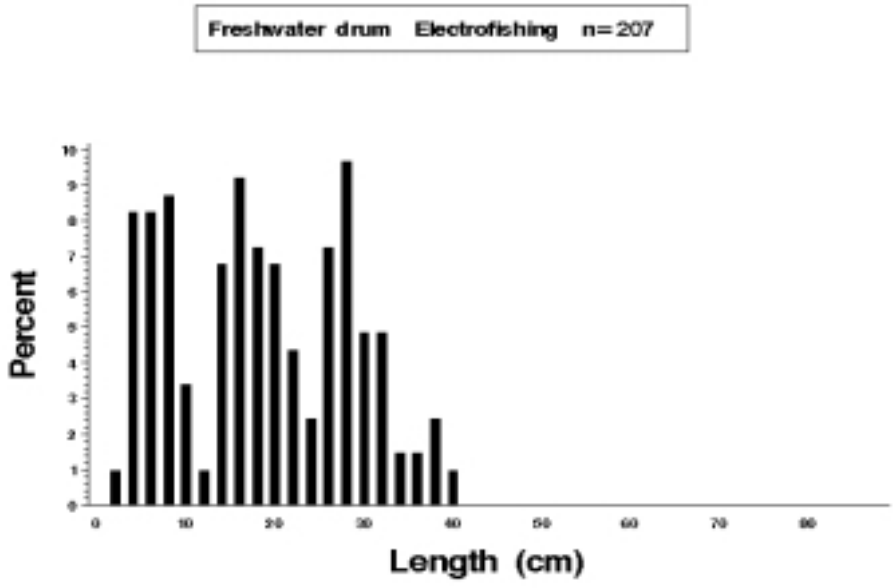


**Figure 5.13.** Length distributions (*length*) as a percentage of catch (*percent*) for freshwater drum (*Aplodinotus grunniens*) collected by electrofishing in the Upper Mississippi River Open Reach during 1996.

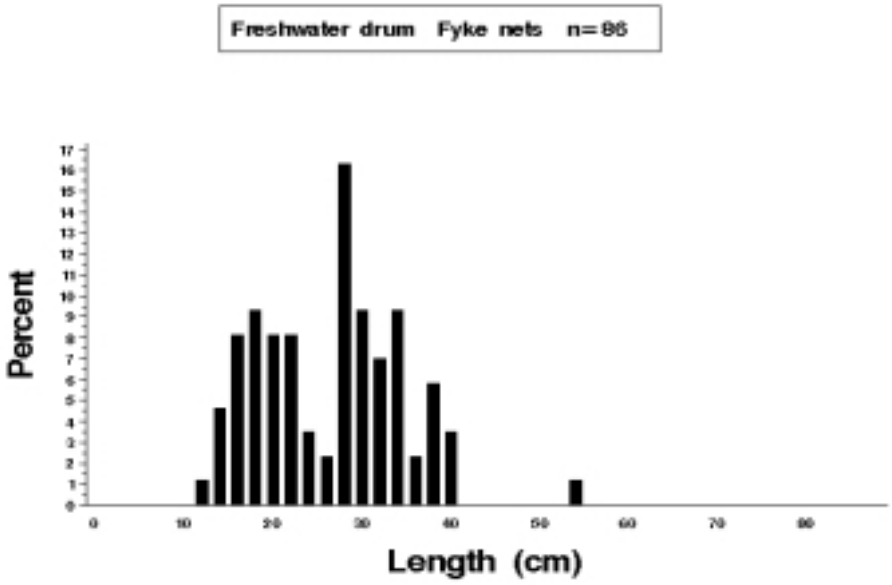


**Figure 5.14.** Length distributions (*length*) as a percentage of catch (*percent*) for freshwater drum (*Aplodinotus grunniens*) collected by fyke netting in the Upper Mississippi River Open Reach during 1996.

# Chapter 6. La Grange Pool, Illinois River

by

Kevin S. Irons, Timothy M. O'Hara, K. Douglas Blodgett, and Paul T. Raibley

Illinois Natural History Survey
Havana Field Station
704 N. Schrader Avenue
Havana, Illinois 62644

## Hydrograph

River levels were above flood stage from the beginning of May through the end of June and the middle of July through the beginning of August in 1996 (Figure 6.1). After declining in late June, river levels only remained below flood stage for 17 days in period 1. River levels dropped below flood stage again on August 11 and stayed below flood stage for the remainder of periods 2 and 3. The U.S. Army Corps of Engineers discharge data were obtained from the Environmental Management Technical Center (Wlosinski et al. 1995).

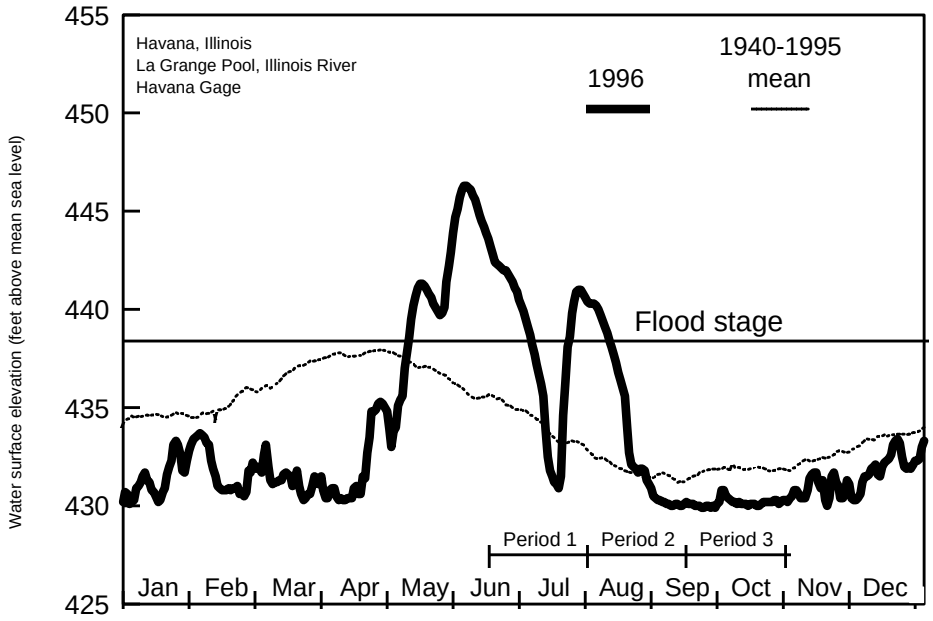


**Figure 6.1.** Daily water surface elevation from Havana Gage for La Grange Pool, Illinois River, during 1996 and mean elevation since 1940. The U.S. Army Corps of Engineers discharge data were obtained from the Environmental Management Technical Center (Wlosinski et al. 1995).

## Summary of Sampling Effort

We made 558 collections in 1996—185 in period 1, 187 in period 2, and 186 in period 3 (Table 6.1). Of those, 429 were from randomly selected sites in BWCS, BWCO, SCB, and MCBU strata. Of the 129 collections from fixed sites, 95 were from two TWZ fixed sites (one below Peoria Lock and Dam and the second below La Grange) and 34 were from one SCB fixed site.

## Total Catch by Gear

Historical records indicate 115 fish species and 3 hybrid crosses have been collected from La Grange Pool since the late 1800s (Smith 1979). In 1996, we collected 98,612 fish representing 69 species and 4 hybrid

crosses (Table 6.2). Two species and one hybrid cross were new records for LTRMP sampling in La Grange Pool (river shiner, freckled madtom, and bluegill × redear sunfish). The five most abundant species numerically were gizzard shad (64,884), white bass (9,287), common carp (4,408), emerald shiner (3,685), and bluegill (2,987). Total species collected, excluding hybrids, by gear type were 59 by day and night electrofishing combined, 39 by fyke netting, 30 by tandem fyke netting, 47 by mini fyke netting, 21 by tandem mini fyke netting, 38 by seining, 17 by small hoop netting, 24 by large hoop netting, and 10 by trawling. Our combined catch for 1990 through 1996 consisted of 370,305 fish representing 80 species and 6 hybrid crosses.

## Random Sampling, Mean *C/f* by Gear and Stratum

### *Day Electrofishing*

For day electrofishing (Table 6.3.1), gizzard shad had the highest poolwide mean catch-per-unit-effort (*C/f*) of 212.63, followed by white bass (13.03) and common carp (11.57). Gizzard shad also had the highest *C/f* in BWCS (164.38), MCBU (241.22), and SCB (48.34) strata. Species with second and third highest *C/f* by stratum were bluegill (22.21) and common carp (16.13) in the BWCS, white bass (12.78) and common carp (9.24) in the MCBU, and common carp (21.44) and white bass (7.78) in the SCB. Night electrofishing was not conducted at random sites in 1996.

### *Fyke Net*

Poolwide mean *C/f* for fyke netting (Table 6.3.2), based solely on BWCS collections, was highest for white bass (48.89), followed by black crappie (25.35) and bluegill (22.57).

### *Tandem Fyke Net*

Poolwide mean *C/f* for tandem fyke netting (Table 6.3.3), based solely on BWCO collections, was highest for gizzard shad (42.97), followed by white bass (12.41) and bluegill (12.08).

### *Mini Fyke Net*

For mini fyke nets (Table 6.3.4), gizzard shad had the highest poolwide mean *C/f* (912.72), followed by emerald shiner (61.84) and white bass (37.53). Gizzard shad also had the highest *C/f* in BWCS (74.18), MCBU (1275.50), and SCB (109.86) strata. The second and third highest *C/f* by stratum were white bass (11.37) and bluegill (8.10) in the BWCS, emerald shiner (86.31) and white bass (48.49) in the MCBU, and emerald shiner (23.60) and white bass (18.03) in the SCB.

### *Tandem Mini Fyke Net*

Poolwide mean *C/f* for tandem mini fyke netting (Table 6.3.5), based solely on BWCO collections, was highest for freshwater drum (26.62), followed by gizzard shad (12.16) and bluegill (3.98).

### *Small Hoop Net*

For small hoop nets (Table 6.3.6), common carp had the highest poolwide mean *C/f* (2.42), followed by channel catfish (1.33) and bluegill (0.15). In the BWCO stratum, common carp had the highest *C/f* (1.58), followed by channel catfish (1.05) and bluegill (0.38). Common carp had the highest *C/f* in both MCBU (2.97) and SCB (3.34) strata, followed by channel catfish (MCBU, 1.51; SCB, 1.68), freshwater drum (MCBU, 0.17), and white bass (SCB, 0.17).

### *Large Hoop Net*

For large hoop nets (Table 6.3.7), common carp had the highest poolwide mean *C/f* (3.12), followed by smallmouth buffalo (1.64) and gizzard shad (0.70). In the BWCO stratum, common carp had the highest *C/f* (3.21), followed gizzard shad (1.49) and smallmouth buffalo (1.30). Common carp had the highest *C/f* in both MCBU (2.78) and SCB (7.50) strata, followed by smallmouth buffalo (MCBU, 1.71; SCB, 4.40). Freshwater drum had the third highest *C/f* (0.97) in the MCBU stratum, whereas channel catfish was third highest (1.07) in the SCB stratum.

### *Seine*

Gizzard shad had the highest poolwide mean *C/f* (46.24) for seining (Table 6.3.8), followed by emerald shiners (6.02) and white bass (2.55). The *C/f* in all strata was highest for gizzard shad (BWCS 41.79, MCBU, 48.17; and SCB 42.04), followed by emerald shiner (BWCS, 7.42; MCBU, 5.28; and SCB, 9.50). Bluegill (4.96) was third highest in the BWCS stratum, whereas white bass had the third highest *C/f* in MCBU (3.08) and SCB (3.08) strata.

## Fixed Sampling, Mean *C/f* by Gear and Stratum

### *Day Electrofishing*

Gizzard shad had the highest mean *C/f* (45.83) for day electrofishing (Table 6.4.1) at the SCB fixed site, followed by white bass (32.33) and common carp (19.83). At the two TWZ fixed sites, gizzard shad had the highest *C/f* (227.00), followed by white bass (52.75) and common carp (16.33).

### *Night Electrofishing*

For night electrofishing at the SCB fixed site (Table 6.4.2), gizzard shad had the highest *C/f* (541.20), followed by common carp (30.20) and emerald shiner (24.40). White bass had the highest *C/f* (62.25) at the two TWZ fixed sites, followed by gizzard shad (42.67) and common carp (26.58).

### *Fyke Net*

White bass had the highest *C/f* (148.96) in TWZ fyke nets (Table 6.4.3), followed by freshwater drum (6.31) and gizzard shad (6.05).

### *Mini Fyke Net*

For mini fyke netting at the SCB fixed site (Table 6.4.4), white bass had the highest *C/f* (3.76), followed by freshwater drum (3.64) and gizzard shad (3.08). At the two TWZ fixed sites, gizzard shad had the highest *C/f* (71.03), followed by white bass (65.32) and freshwater drum (6.50).

### *Small Hoop Net*

Common carp had the highest *C/f* (5.41) for small hoop nets at the SCB fixed site (Table 6.4.5), followed by channel catfish (0.85). At the two TWZ fixed sites, channel catfish had the highest *C/f* (23.32), followed by common carp (4.05) and freshwater drum (0.08).

### *Large Hoop Net*

Common carp had the highest *C/f* (4.65) for large hoop nets at the SCB stratum (Table 6.4.6), followed by smallmouth buffalo (1.44) and freshwater drum (0.42). At the TWZ stratum, common carp had the highest *C/f* (5.33), followed by white bass (3.16) and smallmouth buffalo (2.77).

### *Seine*

For SCB seining (Table 6.4.7), gizzard shad had the highest *C/f* (123.40), followed by threadfin shad (3.80) and emerald shiner (2.70).

### *Trawl*

Freshwater drum had the highest *C/f* (5.21) in TWZ trawls (Table 6.4.8), followed by channel catfish (1.92) and sauger (0.67).

## Length Distributions of Selected Species

### *Gizzard Shad*

Gizzard shad production was exceptionally high in 1996 as illustrated by the relative abundance of small fish (less than 12 cm) from day and night electrofishing (Figure 6.2). Gizzard shad lengths ranged from 2 to 38 cm with 96% of the catch between 2 and 14 cm. Because of high numbers of small fish, in some collections they were grouped into variable length intervals 2 to 6 cm wide (e.g., one 5-cm-wide group of fish from 2.00 to 6.99 cm long) instead of the standard 1-cm-group widths (e.g., fish from 2.00 to 2.99 cm in one group, fish from 3.00 to 3.99 cm in the next, and so forth) normally used for LTRMP sampling (Gutreuter et al. 1995). Of 23,100 gizzard shad collected by electrofishing, only 883 were measured per standard LTRMP methods (Gutreuter et al. 1995). Deleting these numerically dominant, small-sized, grouped fish from length–frequency distributions grossly underrepresented the relative abundance of small-sized fish in our collections. Therefore, for length–frequency distributions, individuals in these groups with widths greater than 1 cm were distributed evenly among the standard 1-cm-wide length intervals they included.

### *Common Carp*

The electrofishing length distribution from 2,452 common carp (Figure 6.3) indicated abundant fish from 34 to 52 cm with relatively few fish outside this range. Two fish were not measured individually and were not included in the length distribution.

### *Smallmouth Buffalo*

We collected 1,142 smallmouth buffalo by electrofishing (Figure 6.4); 959 individuals were grouped into length intervals greater than 1 cm and later evenly distributed among the 1-cm length intervals they included, similar to gizzard shad mentioned previously. Three peaks were evident, centering around 9, 20, and 30 cm.

Hoop net collections of 339 smallmouth buffalo illustrated a bimodal length distribution with peaks at 30 and 42 cm (Figure 6.5). Smaller smallmouth buffalo were not collected by hoop netting in 1996.

### *Channel Catfish*

The length distribution of 188 channel catfish collected by electrofishing illustrates four peaks at 10, 28, 44, and 58 cm (Figure 6.6). A wide range of sizes and many cohorts of channel catfish were represented.

Of the 789 channel catfish collected by hoop netting (Table 6.2), 361 fish were measured (Figure 6.7) by standard LTRMP methods (Gutreuter et al. 1995). Four hundred twenty-eight unmeasured catfish were not individually measured and were not included in the length distribution. Almost 80% of the hoop net catch of channel catfish consisted of lengths ranging from 13 to 20 cm.

### *Northern Pike*

No northern pike were collected from La Grange Pool by LTRMP in 1996 (Table 6.2).

### *White Bass*

Of the 2,933 white bass collected by electrofishing (Figure 6.8), 1,211 fish were measured by standard LTRMP methods (Gutreuter et al. 1995). One thousand seven hundred twenty-two unmeasured white bass were grouped into length intervals greater than 1 cm and later evenly distributed among the 1-cm length intervals they included, similar to gizzard shad. More than 67% of 2,933 white bass collected were from 6 to 14 cm long. The primary peak was at 8 cm, with other peaks at 18 and 30 cm.

### *Bluegill*

Of the 1,276 bluegill collected by electrofishing (Figure 6.9), two fish from 7 to 9 cm were not individually measured and were not included in the length distribution. Fish were almost normally distributed from 2 to 20 cm with the peak at 10 cm.

We combined catches from fyke and tandem fyke net sets for the length distribution of 939 bluegill (Figure 6.10). The distribution was similar to that for electrofishing (Figure 6.9) with even distribution of fish from 6 to 20 cm and one fish at 3 cm. An additional 45 fish from 8 to 17 cm were collected but not individually measured and were not included in the length distribution.

### *Largemouth Bass*

The electrofishing length distribution for 398 largemouth bass (Figure 6.11) indicated fish were distributed from 3 to 48 cm. Peaks were evident at 8, 24, and 32 cm.

### *White Crappie*

We collected 176 white crappie from fyke and tandem fyke nets (Figure 6.12). Twenty-three percent were from 14 to 16 cm. Two other peaks were present, one at 8 cm and the other between 20 and 24 cm.

### *Black Crappie*

We collected 947 black crappie in fyke and tandem fyke nets in 1996 (Figure 6.13). Primary peaks were at 14 and 26 cm, with a small peak at 8 cm.

### *Sauger*

We collected 239 sauger during electrofishing in 1996 (Figure 6.14). Fish lengths ranged from 6 to 46 cm with a major peak at 14 cm. Of the 239 fish, 5 were not individually measured and were not included in the length distribution.

### *Walleye*

Seven walleye were collected during electrofishing in 1996 (Table 6.2). Five others were collected with other gears. Because of small sample sizes, length distributions were not constructed for this report.

### *Freshwater Drum*

More than 48% of the 603 freshwater drum in the electrofishing length distribution (Figure 6.15) were less than 13 cm long, with a relatively even percentage of fish from 13 to 36 cm. One hundred forty-eight fish ranging from 2 to 16 cm were not individually measured and were not included in the length distribution.

We collected 233 freshwater drum in fyke and tandem fyke nets. These fish were distributed from about 8 to 50 cm, with peaks at 10, 16, 26, and 30 cm (Figure 6.16). Twenty-eight additional fish ranging from 9 to 14 cm were not individually measured and were not included in the length distribution.

Table 6.1. Allocation of fish sampling effort among strata by the Long Term Resource Monitoring Program in the La Grange Pool of the Illinois River during 1996. Table entries are numbers of successfully completed standardized monitoring collections. 

Sampling period=1: June 15 - July 31

| Sampling gear | BWCS | BWCO | SCB | MCBU | MCBW | IMPS | IMPO | TRI | TWZ | TOTAL |
|---|---|---|---|---|---|---|---|---|---|---|
| Day electrofishing | 12 | | 13 | 13 | | | | | 4 | 42 |
| Fyke net | 10 | | | | | | | | 4 | 14 |
| Large hoop net | | 5 | 8 | 6 | | | | | 4 | 23 |
| Small hoop net | | 4 | 8 | 8 | | | | | 4 | 24 |
| Mini fyke net | 10 | | 8 | 8 | | | | | 4 | 30 |
| Night electrofishing | | | 2 | | | | | | 4 | 6 |
| Seine | 8 | | 10 | 12 | | | | | | 30 |
| Trawling | | | | | | | | | 8 | 8 |
| Tandem fyke net | | 4 | | | | | | | | 4 |
| Tandem mini fyke net | | 4 | | | | | | | | 4 |
| SUBTOTAL | 40 | 17 | 49 | 47 | 0 | 0 | 0 | 0 | 32 | 185 |

Sampling period=2: August 1 - September 14

| Sampling gear | BWCS | BWCO | SCB | MCBU | MCBW | IMPS | IMPO | TRI | TWZ | TOTAL |
|---|---|---|---|---|---|---|---|---|---|---|
| Day electrofishing | 12 | | 14 | 12 | | | | | 4 | 42 |
| Fyke net | 10 | | | | | | | | 4 | 14 |
| Large hoop net | | 3 | 8 | 8 | | | | | 4 | 23 |
| Small hoop net | | 4 | 8 | 8 | | | | | 4 | 24 |
| Mini fyke net | 10 | | 8 | 8 | | | | | 4 | 30 |
| Night electrofishing | | | 2 | | | | | | 4 | 6 |
| Seine | 8 | | 12 | 12 | | | | | | 32 |
| Trawling | | | | | | | | | 8 | 8 |
| Tandem fyke net | | 4 | | | | | | | | 4 |
| Tandem mini fyke net | | 4 | | | | | | | | 4 |
| SUBTOTAL | 40 | 15 | 52 | 48 | 0 | 0 | 0 | 0 | 32 | 187 |

Sampling period=3: September 15 - October 31

| Sampling gear | BWCS | BWCO | SCB | MCBU | MCBW | IMPS | IMPO | TRI | TWZ | TOTAL |
|---|---|---|---|---|---|---|---|---|---|---|
| Day electrofishing | 15 | | 11 | 12 | | | | | 4 | 42 |
| Fyke net | 10 | | | | | | | | 3 | 13 |
| Large hoop net | | 4 | 8 | 7 | | | | | 4 | 23 |
| Small hoop net | | 4 | 8 | 8 | | | | | 4 | 24 |
| Mini fyke net | 10 | | 8 | 8 | | | | | 4 | 30 |
| Night electrofishing | | | 2 | | | | | | 4 | 6 |
| Seine | 8 | | 12 | 12 | | | | | | 32 |
| Trawling | | | | | | | | | 8 | 8 |
| Tandem fyke net | | 4 | | | | | | | | 4 |
| Tandem mini fyke net | | 4 | | | | | | | | 4 |
| SUBTOTAL | 43 | 16 | 49 | 47 | 0 | 0 | 0 | 0 | 31 | 186 |
| | 123 | 48 | 150 | 142 | 0 | 0 | 0 | 0 | 95 | 558 |

Strata: BWCS - Backwater, contiguous, shoreline. MCBW - Main channel border, wing dam.
BWCO - Backwater, contiguous, offshore. SCB - Side channel border.
IMPS - Impounded, shoreline. TRI - Tributary mouth.
IMPO - Impounded, offshore. TWZ - Tailwater.
MCBU - Main channel border, unstructured.

Table 6.2. Total catches, by gear type, of fishes collected by the Long Term Resource Program during 1996 in the La Grange Pool of the Illinois River. See Table 6.1 for the list of sampling gears actually deployed in this study reach.



| Species | Common name | Scientific name | D | N | F | X | M | Y | S | HS | HL | G | TA | T | TOTAL |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | Chestnut lamprey | Ichthyomyzon castaneus | 1 | - | - | - | - | - | - | - | - | - | - | - | 1 |
| 2 | Spotted gar | Lepisosteus oculatus | 3 | - | 2 | 2 | 6 | - | - | - | - | - | - | - | 13 |
| 3 | Longnose gar | Lepisosteus osseus | 11 | 3 | 3 | 1 | - | - | - | - | - | - | - | - | 18 |
| 4 | Shortnose gar | Lepisosteus platostomus | 33 | 8 | 108 | 19 | 58 | 4 | 1 | 1 | 3 | - | - | - | 235 |
| 5 | Bowfin | Amia calva | 2 | - | 7 | 2 | 3 | - | - | - | 1 | - | - | - | 15 |
| 6 | Goldeye | Hiodon alosoides | 12 | 6 | 2 | - | - | - | 1 | - | 1 | - | - | - | 22 |
| 7 | Mooneye | Hiodon tergisus | 2 | 2 | - | - | - | - | - | - | - | - | - | - | 4 |
| 8 | Skipjack herring | Alosa chrysochloris | 112 | 3 | 63 | 1 | 17 | 1 | 7 | - | - | - | - | - | 204 |
| 9 | Gizzard shad | Dorosoma cepedianum | 19882 | 3218 | 528 | 1009 | 34918 | 284 | 4980 | 7 | 57 | - | - | 1 | 64884 |
| 10 | Threadfin shad | Dorosoma petenense | 640 | 24 | 32 | 6 | 284 | - | 118 | - | - | - | - | 2 | 1106 |
| 11 | Central stoneroller | Campostoma anomalum | - | - | - | - | 11 | - | 4 | - | - | - | - | - | 15 |
| 12 | Goldfish | Carassius auratus | 43 | 15 | 2 | 1 | - | - | 2 | 7 | 1 | - | - | - | 71 |
| 13 | Grass carp | Ctenopharyngodon idella | 1 | - | - | - | 1 | - | - | - | - | - | - | - | 2 |
| 14 | Red shiner | Cyprinella lutrensis | 21 | 6 | - | - | 92 | - | 38 | - | - | - | - | - | 157 |
| 15 | Common carp | Cyprinus carpio | 1972 | 482 | 136 | 20 | 703 | 3 | 3 | 456 | 632 | - | - | 1 | 4408 |
| 16 | Goldfish x carp | Carassius auratus x C. carpio | 11 | 11 | 1 | - | 1 | - | - | 1 | - | - | - | - | 25 |
| 17 | Silver chub | Macrhybopsis storeriana | 7 | 1 | - | - | 10 | 1 | 13 | - | - | - | - | - | 32 |
| 18 | Golden shiner | Notemigonus crysoleucas | 24 | 4 | 4 | 1 | 12 | - | 5 | - | - | - | - | - | 50 |
| 19 | Emerald shiner | Notropis atherinoides | 304 | 146 | - | - | 2558 | 40 | 623 | - | - | - | - | - | 3671 |
| 20 | River shiner | Notropis blennius | - | - | - | - | 2 | - | 47 | - | - | - | - | - | 49 |
| 21 | Spottail shiner | Notropis hudsonius | 5 | - | - | - | 27 | - | 30 | - | - | - | - | - | 62 |
| 22 | Silverband shiner | Notropis shumardi | - | - | - | - | 1 | - | 2 | - | - | - | - | - | 3 |
| 23 | Suckermouth minnow | Phenacobius mirabilis | 1 | - | - | - | - | - | - | - | - | - | - | - | 1 |
| 24 | Bluntnose minnow | Pimephales notatus | - | - | - | - | 5 | - | 2 | - | - | - | - | - | 7 |
| 25 | Fathead minnow | Pimephales promelas | 1 | - | - | - | 3 | - | - | - | - | - | - | - | 4 |
| 26 | Bullhead minnow | Pimephales vigilax | 15 | - | - | - | 57 | 2 | 154 | - | - | - | - | - | 228 |
| 27 | Blacknose dace | Rhinichthys atratulus | - | - | - | - | - | - | 1 | - | - | - | - | - | 1 |
| 28 | Unidentified minnow | Cyprinid sp. | - | - | - | - | 1 | - | - | - | - | - | - | - | 1 |
| 29 | River carpsucker | Carpiodes carpio | 90 | 11 | 73 | 20 | 11 | - | 25 | - | 12 | - | - | - | 242 |
| 30 | Quillback | Carpiodes cyprinus | 1 | - | 3 | - | - | - | - | - | - | - | - | - | 4 |
| 31 | Highfin carpsucker | Carpiodes velifer | 2 | - | - | - | 1 | - | - | - | - | - | - | - | 3 |
| 32 | White sucker | Catostomus commersoni | - | - | 2 | - | - | - | 1 | - | - | - | - | - | 3 |
| 33 | Northern hog sucker | Hypentelium nigricans | - | - | - | - | - | - | 1 | - | - | - | - | - | 1 |
| 34 | Smallmouth buffalo | Ictiobus bubalus | 917 | 225 | 133 | 77 | 27 | 1 | 19 | 3 | 336 | - | - | - | 1738 |
| 35 | Bigmouth buffalo | Ictiobus cyprinellus | 629 | 48 | 6 | 2 | 1 | 5 | 4 | 1 | 5 | - | - | - | 701 |
| 36 | Black buffalo | Ictiobus niger | 53 | 12 | 1 | - | - | - | - | - | 1 | - | - | - | 67 |
| 37 | Unidentified buffalo | Ictiobus sp. | 34 | - | - | - | 748 | 2 | 137 | - | - | - | - | - | 921 |
| 38 | Silver redhorse | Moxostoma anisurum | 2 | - | 17 | 1 | - | - | - | - | 1 | - | - | - | 21 |
| 39 | Golden redhorse | Moxostoma erythrurum | 12 | 2 | 4 | - | - | - | - | - | - | - | - | - | 18 |

Gears:
D - Day electrofishing
N - Night electrofishing
F - Fyke netting
X - Tandem fyke netting
M - Mini fyke netting
Y - Tandem mini fyke netting
S - Seining
HS - Small hoop netting
HL - Large hoop netting
G - Gill netting
TA - Trammel netting, anchored sets
T - Trawling (4.8-m bottom trawl)

Table 6.2. Total catches, by gear type of fishes collected by the Long Term Resource Program during 1996 in the La Grange Pool of the Illinois River. See Table 6.1 for the list of sampling gears actually deployed in this study reach.



| Species | Common name | Scientific name | D | N | F | X | M | Y | S | HS | HL | G | TA | T | TOTAL |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 40 | Shorthead redhorse | Moxostoma macrolepidotum | 30 | 8 | 81 | 26 | 2 | - | - | 2 | 2 | - | - | 1 | 152 |
| 41 | Unidentified sucker | Catostomid sp. | - | - | - | - | - | - | 2 | - | - | - | - | - | 2 |
| 42 | Black bullhead | Ameiurus melas | 3 | - | 26 | 14 | 26 | 3 | - | 3 | - | - | - | - | 75 |
| 43 | Yellow bullhead | Ameiurus natalis | 4 | - | 18 | 8 | 9 | 8 | - | 1 | 1 | - | - | - | 49 |
| 44 | Brown bullhead | Ameiurus nebulosus | 2 | - | 28 | 14 | 4 | - | - | 4 | 25 | - | - | - | 77 |
| 45 | Channel catfish | Ictalurus punctatus | 166 | 22 | 29 | 13 | 158 | 8 | 37 | 730 | 59 | - | - | 46 | 1268 |
| 46 | Stonecat | Noturus flavus | 1 | - | - | - | - | - | - | - | - | - | - | - | 1 |
| 47 | Tadpole madtom | Noturus gyrinus | - | - | - | - | - | 1 | - | - | - | - | - | 1 | 2 |
| 48 | Freckled madtom | Noturus nocturnus | - | 1 | - | - | - | - | - | - | - | - | - | - | 1 |
| 49 | Flathead catfish | Pylodictis olivaris | 35 | 8 | 1 | 1 | 3 | - | - | 5 | 11 | - | - | 2 | 66 |
| 50 | Grass pickerel | Esox americanus vermiculatus | 2 | - | - | - | - | - | - | - | - | - | - | - | 2 |
| 51 | Pirate perch | Aphredoderus sayanus | - | - | - | - | 2 | 1 | - | - | - | - | - | - | 3 |
| 52 | Blackstripe topminnow | Fundulus noatus | 4 | - | - | - | 33 | - | 6 | - | - | - | - | - | 43 |
| 53 | Western mosquitofish | Gambusia affinis | 2 | - | - | - | 56 | - | 69 | - | - | - | - | - | 127 |
| 54 | Brook silverside | Labidesthes sicculus | 23 | 8 | - | - | 99 | - | 24 | - | - | - | - | - | 154 |
| 55 | White perch | Morone americana | 9 | 13 | 3 | - | - | - | - | - | - | - | - | - | 25 |
| 56 | White bass | Morone chrysops | 2120 | 813 | 3056 | 289 | 2613 | 37 | 228 | 47 | 82 | - | - | 2 | 9287 |
| 57 | Yellow bass | Morone mississippiensis | 20 | 18 | 8 | 5 | 17 | - | - | - | - | - | - | - | 68 |
| 58 | Striped bass | Morone saxatilis | 1 | 1 | - | - | - | - | - | - | 1 | - | - | - | 3 |
| 59 | White x striped bass | M. chrysops x saxatilis | 24 | 23 | 10 | 2 | 6 | - | - | - | 10 | - | - | - | 75 |
| 60 | Green sunfish | Lepomis cyanellus | 39 | 2 | 4 | 1 | 18 | - | 2 | - | - | - | - | - | 66 |
| 61 | Warmouth | Lepomis gulosus | 19 | 2 | 3 | 2 | 2 | - | - | - | - | - | - | - | 28 |
| 62 | Orangespotted sunfish | Lepomis humilis | 12 | - | 1 | - | 9 | - | - | - | - | - | - | - | 22 |
| 63 | Bluegill | Lepomis macrochirus | 1159 | 117 | 705 | 279 | 492 | 92 | 132 | 9 | 2 | - | - | - | 2987 |
| 64 | Redear sunfish | Lepomis microlophus | 1 | - | 2 | - | - | - | - | - | - | - | - | - | 3 |
| 65 | Green sunfish x bluegill | L. cyanellus x L. macrochirus | 5 | - | 2 | - | - | - | - | - | - | - | - | - | 7 |
| 66 | Bluegill x redear sunfish | L. macrochirus x L. microlophus | - | - | - | - | 1 | - | - | - | - | - | - | - | 1 |
| 67 | Smallmouth bass | Micropterus dolomieu | 1 | 11 | - | - | - | - | 1 | - | - | - | - | - | 25 |
| 68 | Largemouth bass | Micropterus salmoides | 362 | 36 | 16 | 2 | 79 | 1 | 8 | - | 2 | - | - | - | 506 |
| 69 | White crappie | Pomoxis annularis | 217 | 24 | 121 | 55 | 223 | 43 | 3 | 2 | 5 | - | - | - | 693 |
| 70 | Black crappie | Pomoxis nigromaculatus | 538 | 19 | 771 | 176 | 242 | 10 | 8 | 2 | 11 | - | - | - | 1777 |
| 71 | Unidentified sunfish | Centrarchid sp. | - | - | - | - | 1 | - | - | - | - | - | - | - | 1 |
| 72 | Mud darter | Etheostoma asprigene | 3 | - | - | - | 3 | - | - | - | - | - | - | - | 6 |
| 73 | Johnny darter | Etheostoma nigrum | - | - | - | - | 3 | - | 2 | - | - | - | - | - | 5 |
| 74 | Logperch | Percina caprodes | 15 | 3 | - | - | 77 | - | 2 | - | - | - | - | - | 97 |
| 75 | Sauger | Stizostedion canadense | 184 | 55 | 23 | 6 | 104 | 3 | 17 | - | 2 | - | - | 16 | 410 |
| 76 | Walleye | Stizostedion vitreum | 5 | 2 | 4 | - | - | - | 1 | - | - | - | - | - | 12 |
| 77 | Freshwater drum | Aplodinotus grunniens | 532 | 219 | 186 | 65 | 552 | 614 | 18 | 14 | 78 | - | - | 125 | 2403 |
| 78 | Unidentified | Unidentified | - | - | - | - | - | - | 2 | - | - | - | - | - | 2 |
| | | | 30393 | 5632 | 6225 | 2120 | 44392 | 1164 | 6780 | 1295 | 1341 | 0 | 0 | 197 | 99539 |

Gears: D - Day electrofishing
N - Night electrofishing
F - Fyke netting
X - Tandem fyke netting
M - Mini fyke netting
Y - Tandem mini fyke netting
S - Seining
HS - Small hoop netting
HL - Large hoop netting
G - Gill neting
TA Trammel netting, anchored sets
T - Trawling (4.8-m bottom trawl)

Table 6.3.1. Mean catch-per-unit-effort and (standard error) for fishes collected by day electrofishing in the La Grange Pool of the Illinois River using stratified random sampling during 1996. The statistics under ALL pertain to unbiased means over all strata sampled using this gear (as indicated by nonmissing entries below and by Table 6.1). See text for definitions of catch-per-unit-effort and standard error.



| Common name | ALL | BWCO | BWCS | IMPO | IMPS | MCBU | MCBW | SCB | TRI | TWZ |
|---|---|---|---|---|---|---|---|---|---|---|
| Chestnut lamprey | 0.02 | | | | | 0.03 | | | | |
| | (0.02) | | | | | (0.03) | | | | |
| Spotted gar | 0.01 | | 0.05 | | | | | | | |
| | (0.01) | | (0.05) | | | | | | | |
| Longnose gar | 0.04 | | 0.05 | | | 0.03 | | 0.22 | | |
| | (0.02) | | (0.04) | | | (0.03) | | (0.12) | | |
| Shortnose gar | 0.16 | | 0.1 | | | 0.14 | | 0.38 | | |
| | (0.05) | | (0.08) | | | (0.06) | | (0.15) | | |
| Bowfin | 0.01 | | 0.05 | | | | | | | |
| | (0.01) | | (0.04) | | | | | | | |
| Goldeye | 0.12 | | 0.03 | | | 0.16 | | 0.09 | | |
| | (0.07) | | (0.03) | | | (0.10) | | (0.05) | | |
| Mooneye | | | | | | | | 0.06 | | |
| | | | | | | | | (0.06) | | |
| Skipjack herring | 1.36 | | 0.08 | | | 1.89 | | 0.41 | | |
| | (0.51) | | (0.04) | | | (0.73) | | (0.15) | | |
| Gizzard shad | 212.63 | | 164.38 | | | 241.22 | | 48.34 | | |
| | (44.04) | | (33.43) | | | (62.13) | | (10.59) | | |
| Threadfin shad | 6.77 | | 1.77 | | | 8.86 | | 3.13 | | |
| | (2.86) | | (0.65) | | | (4.11) | | (1.64) | | |
| Goldfish | 0.30 | | 0.21 | | | 0.35 | | 0.03 | | |
| | (0.25) | | (0.10) | | | (0.35) | | (0.03) | | |
| Grass carp | 0.01 | | 0.03 | | | | | | | |
| | (0.01) | | (0.03) | | | | | | | |
| Red shiner | 0.07 | | 0.15 | | | 0.03 | | 0.19 | | |
| | (0.03) | | (0.11) | | | (0.03) | | (0.10) | | |
| Common carp | 11.57 | | 16.13 | | | 9.24 | | 21.44 | | |
| | (1.37) | | (2.49) | | | (1.73) | | (3.78) | | |
| Goldfish x carp | 0.06 | | 0.15 | | | 0.03 | | 0.06 | | |
| | (0.03) | | (0.07) | | | (0.03) | | (0.04) | | |
| Silver chub | .13 | | | | | 0.19 | | | | |
| | (0.07) | | | | | (0.09) | | | | |
| Golden shiner | 0.10 | | 0.15 | | | 0.08 | | 0.16 | | |
| | (0.04) | | (0.07) | | | (0.05) | | (0.08) | | |
| Emerald shiner | 2.70 | | 1.46 | | | 3.16 | | 2.53 | | |
| | (0.75) | | (0.63) | | | (1.05) | | (0.89) | | |
| Spottail shiner | 0.03 | | 0.05 | | | 0.03 | | 0.06 | | |
| | (0.02) | | (0.04) | | | (0.03) | | (0.04) | | |
| Suckermouth minnow | 0.02 | | | | | 0.03 | | | | |
| | (0.02) | | | | | (0.03) | | | | |
| Fathead minnow | 0.01 | | 0.03 | | | | | | | |
| | (0.01) | | (0.03) | | | | | | | |
| Bullhead minnow | 0.10 | | 0.13 | | | 0.08 | | 0.22 | | |
| | (0.04) | | (0.08) | | | (0.05) | | (0.19) | | |
| River carpsucker | 0.77 | | 0.92 | | | 0.73 | | 0.50 | | |
| | (0.16) | | (0.25) | | | (0.22) | | (0.16) | | |
| Quillback | 0.02 | | | | | 0.03 | | | | |
| | (0.02) | | | | | (0.03) | | | | |
| Highfin carpsucker | 0.01 | | 0.03 | | | | | | | |
| | (0.01) | | (0.03) | | | | | | | |
| Smallmouth buffalo | 5.87 | | 12.69 | | | 3.49 | | 3.72 | | |
| | (1.19) | | (3.01) | | | (1.29) | | (0.72) | | |
| Bigmouth buffalo | 3.11 | | 8.82 | | | 0.78 | | 6.31 | | |
| | (0.59) | | (2.00) | | | (0.41) | | (2.06) | | |
| Black buffalo | 0.24 | | 0.67 | | | 0.05 | | 0.56 | | |
| | (0.06) | | (0.22) | | | (0.04) | | (0.21) | | |
| Silver redhorse | 0.02 | | | | | 0.03 | | 0.03 | | |
| | (0.02) | | | | | (0.03) | | (0.03) | | |

Strata: BWCS - Backwater, contiguous, shoreline. MCBW - Main channel border, wing dam.
BWCO - Backwater, contiguous, offshore. SCB - Side channel border.
IMPS - Impounded, shoreline. TRI - Tributary mouth.
IMPO - Impounded, offshore. TWZ - Tailwater.
MCBU - Main channel border, unstructured.

Table 6.3.1. Mean catch-per-unit-effort and (standard error) for fishes collected by day electrofishing in the La Grange Pool of the Illinois River using stratified random sampling during 1996. The statistics under ALL pertain to unbiased means over all strata sampled using this gear (as indicated by nonmissing entries below and by Table 6.1). See text for definitions of catch-per-unit-effort and standard error.



| Common name | ALL | BWCO | BWCS | IMPO | IMPS | MCBU | MCBW | SCB | TRI | TWZ |
|---|---|---|---|---|---|---|---|---|---|---|
| Golden redhorse | 0.05 | | 0.18 | | | | | 0.13 | | |
| | (0.02) | | (0.08) | | | | | (0.13) | | |
| Shorthead redhorse | 0.16 | | 0.15 | | | 0.16 | | 0.06 | | |
| | (0.10) | | (0.09) | | | (0.14) | | (0.04) | | |
| Black bullhead | 0.01 | | 0.03 | | | | | 0.06 | | |
| | (0.01) | | (0.03) | | | | | (0.04) | | |
| Yellow bullhead | 0.02 | | 0.08 | | | | | 0.03 | | |
| | (0.01) | | (0.06) | | | | | (0.03) | | |
| Brown bullhead | 0.01 | | 0.05 | | | | | | | |
| | (0.01) | | (0.05) | | | | | | | |
| Channel catfish | 1.19 | | 1.79 | | | 0.95 | | 1.41 | | |
| | (0.23) | | (0.57) | | | (0.26) | | (0.33) | | |
| Flathead catfish | 0.17 | | 0.15 | | | 0.16 | | 0.31 | | |
| | (0.05) | | (0.07) | | | (0.07) | | (0.11) | | |
| Grass pickerel | 0.01 | | 0.03 | | | | | 0.03 | | |
| | (0.01) | | (0.03) | | | | | (0.03) | | |
| Blackstripe topminnow | 0.03 | | 0.05 | | | 0.03 | | 0.03 | | |
| | (0.02) | | (0.04) | | | (0.03) | | (0.03) | | |
| Western mosquitofish | | | | | | | | 0.03 | | |
| | | | | | | | | (0.03) | | |
| Brook silverside | 0.11 | | 0.36 | | | | | 0.28 | | |
| | (0.05) | | (0.19) | | | | | (0.22) | | |
| White perch | 0.04 | | 0.03 | | | 0.05 | | | | |
| | (0.03) | | (0.03) | | | (0.04) | | | | |
| White bass | 13.03 | | 14.64 | | | 12.78 | | 7.78 | | |
| | (1.85) | | (3.89) | | | (2.23) | | (2.13) | | |
| Yellow bass | 0.08 | | 0.08 | | | 0.08 | | 0.03 | | |
| | (0.03) | | (0.04) | | | (0.05) | | (0.03) | | |
| Striped bass | | | | | | | | 0.03 | | |
| | | | | | | | | (0.03) | | |
| White x striped bass | 0.12 | | 0.38 | | | 0.03 | | | | |
| | (0.07) | | (0.25) | | | (0.03) | | | | |
| Green sunfish | 0.29 | | 0.82 | | | 0.11 | | 0.09 | | |
| | (0.08) | | (0.28) | | | (0.05) | | (0.07) | | |
| Warmouth | 0.10 | | 0.36 | | | | | 0.13 | | |
| | (0.04) | | (0.17) | | | | | (0.10) | | |
| Orangespotted sunfish | 0.07 | | 0.28 | | | | | 0.03 | | |
| | (0.04) | | (0.15) | | | | | (0.03) | | |
| Bluegill | 6.25 | | 22.21 | | | 0.57 | | 2.75 | | |
| | (1.41) | | (5.46) | | | (0.20) | | (1.37) | | |
| Redear sunfish | 0.01 | | 0.03 | | | | | | | |
| | (0.01) | | (0.03) | | | | | | | |
| Green sunfish x bluegill | 0.03 | | 0.10 | | | | | | | |
| | (0.01) | | (0.05) | | | | | | | |
| Smallmouth bass | 0.01 | | 0.03 | | | | | | | |
| | (0.01) | | (0.03) | | | | | | | |
| Largemouth bass | 2.00 | | 7.15 | | | 0.16 | | 1.00 | | |
| | (0.38) | | (1.45) | | | (0.08) | | (0.53) | | |
| White crappie | 1.25 | | 4.33 | | | 0.16 | | 0.47 | | |
| | (0.47) | | (1.82) | | | (0.08) | | (0.26) | | |
| Black crappie | 3.16 | | 11.64 | | | 0.14 | | 1.41 | | |
| | (1.12) | | (4.37) | | | (0.07) | | (0.65) | | |
| Mud darter | 0.01 | | 0.03 | | | | | 0.03 | | |
| | (0.01) | | (0.03) | | | | | (0.03) | | |
| Logperch | 0.14 | | 0.18 | | | 0.14 | | 0.06 | | |
| | (0.07) | | (0.13) | | | (0.09) | | (0.04) | | |
| Sauger | 1.52 | | 1.15 | | | 1.68 | | 1.22 | | |
| | (0.29) | | (0.27) | | | (0.40) | | (0.27) | | |

Strata: BWCS - Backwater, contiguous, shoreline. MCBW - Main channel border, wing dam.
BWCO - Backwater, contiguous, offshore. SCB - Side channel border.
IMPS - Impounded, shoreline. TRI - Tributary mouth.
IMPO - Impounded, offshore. TWZ - Tailwater.
MCBU - Main channel border, unstructured.

Table 6.3.1. Mean catch-per-unit-effort and (standard error) for fishes collected by day electrofishing in the La Grange Pool of the Illinois River using stratified random sampling during 1996. The statistics under ALL pertain to unbiased means over all strata sampled using this gear (as indicated by nonmissing entries below and by Table 6.1). See text for definitions of catch-per-unit-effort and standard error.



| Common name | ALL | BWCO | BWCS | IMPO | IMPS | MCBU | MCBW | SCB | TRI | TWZ |
|---|---|---|---|---|---|---|---|---|---|---|
| Walleye | 0.05 | | 0.05 | | | 0.05 | | | | |
| | (0.04) | | (0.04) | | | (0.05) | | | | |
| Freshwater drum | 4.09 | | 5.74 | | | 3.49 | | 3.91 | | |
| | (0.67) | | (1.43) | | | (0.81) | | (1.03) | | |

Strata: BWCS - Backwater, contiguous, shoreline.
BWCO - Backwater, contiguous, offshore.
IMPS - Impounded, shoreline.
IMPO - Impounded, offshore.
MCBU - Main channel border, unstructured.
MCBW - Main channel border, wing dam.
SCB - Side channel border.
TRI - Tributary mouth.
TWZ - Tailwater.

Table 6.3.2. Mean catch-per-unit-effort and (standard error) for fishes collected by fyke netting in the La Grange Pool of the Illinois River using stratified random sampling during 1996. The statistics under ALL pertain to unbiased means over all strata sampled using this gear (as indicated by nonmissing entries below an by Table 6.1). See text for definitions of catch-per-unit-effort and standard error.



| Common name | ALL | BWCO | BWCS | IMPO | IMPS | MCBU | MCBW | SCB | TRI | TWZ |
|---|---|---|---|---|---|---|---|---|---|---|
| Spotted gar | 0.07 | | 0.07 | | | | | | | |
| | (0.05) | | (0.05) | | | | | | | |
| Longnose gar | 0.10 | | 0.10 | | | | | | | |
| | (0.05) | | (0.05) | | | | | | | |
| Shortnose gar | 3.20 | | 3.20 | | | | | | | |
| | (0.99) | | (1.00) | | | | | | | |
| Bowfin | 0.20 | | 0.20 | | | | | | | |
| | (0.09) | | (0.09) | | | | | | | |
| Goldeye | 0.07 | | 0.07 | | | | | | | |
| | (0.07) | | (0.07) | | | | | | | |
| Skipjack herring | 0.07 | | 0.07 | | | | | | | |
| | (0.05) | | (0.05) | | | | | | | |
| Gizzard shad | 15.77 | | 15.77 | | | | | | | |
| | (10.71) | | (10.76) | | | | | | | |
| Threadfin shad | 0.42 | | 0.42 | | | | | | | |
| | (0.28) | | (0.28) | | | | | | | |
| Goldfish | 0.07 | | 0.07 | | | | | | | |
| | (0.07) | | (0.07) | | | | | | | |
| Common carp | 4.30 | | 4.30 | | | | | | | |
| | (2.79) | | (2.80) | | | | | | | |
| Goldfish x carp | 0.03 | | 0.03 | | | | | | | |
| | (0.03) | | (0.03) | | | | | | | |
| Golden shiner | 0.13 | | 0.13 | | | | | | | |
| | (0.06) | | (0.06) | | | | | | | |
| River carpsucker | 2.22 | | 2.22 | | | | | | | |
| | (0.64) | | (0.64) | | | | | | | |
| Quillback | 0.10 | | 0.10 | | | | | | | |
| | (0.07) | | (0.08) | | | | | | | |
| White sucker | 0.07 | | 0.07 | | | | | | | |
| | (0.07) | | (0.07) | | | | | | | |
| Smallmouth buffalo | 4.22 | | 4.22 | | | | | | | |
| | (0.96) | | (0.97) | | | | | | | |
| Bigmouth buffalo | 0.21 | | 0.21 | | | | | | | |
| | (0.1) | | (0.14) | | | | | | | |
| Black buffalo | 0.03 | | 0.03 | | | | | | | |
| | (0.03) | | (0.03) | | | | | | | |
| Silver redhorse | 0.58 | | 0.58 | | | | | | | |
| | (0.58) | | (0.58) | | | | | | | |
| Golden redhorse | 0.13 | | 0.13 | | | | | | | |
| | (0.09) | | (0.09) | | | | | | | |
| Shorthead redhorse | 2.69 | | 2.69 | | | | | | | |
| | (1.11) | | (1.11) | | | | | | | |
| Black bullhead | 0.89 | | 0.89 | | | | | | | |
| | (0.40) | | (0.40) | | | | | | | |
| Yellow bullhead | 0.55 | | 0.55 | | | | | | | |
| | (0.23) | | (0.23) | | | | | | | |
| Brown bullhead | 0.95 | | 0.95 | | | | | | | |
| | (0.47) | | (0.47) | | | | | | | |
| Channel catfish | 0.58 | | 0.58 | | | | | | | |
| | (0.20) | | (0.20) | | | | | | | |
| Flathead catfish | 0.03 | | 0.03 | | | | | | | |
| | (0.03) | | (0.03) | | | | | | | |
| White bass | 48.89 | | 48.89 | | | | | | | |
| | (25.03) | | (25.14) | | | | | | | |
| Yellow bass | 0.21 | | 0.21 | | | | | | | |
| | (0.13) | | (0.13) | | | | | | | |
| White x striped bass | 0.17 | | 0.17 | | | | | | | |
| | (0.11) | | (0.11) | | | | | | | |

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Table 6.3.2. Mean catch-per-unit-effort and (standard error) for fishes collected by fyke netting in the La Grange Pool of the Illinois River using stratified random sampling during 1996. The statistics under ALL pertain to unbiased means over all strata sampled using this gear (as indicated by nonmissing entries beow and by Table 6.1). See text for definitions of catch-per-unit-effort and standard error.



| Common name | ALL | BWCO | BWCS | IMPO | IMPS | MCBU | MCBW | SCB | TRI | TWZ |
|---|---|---|---|---|---|---|---|---|---|---|
| Green sunfish | 0.14 | | 0.14 | | | | | | | |
| | (0.10) | | (0.10) | | | | | | | |
| Warmouth | 0.10 | | 0.10 | | | | | | | |
| | (0.10) | | (0.10) | | | | | | | |
| Orangespotted sunfish | 0.03 | | 0.03 | | | | | | | |
| | (0.03) | | (0.03) | | | | | | | |
| Bluegill | 22.57 | | 22.57 | | | | | | | |
| | (6.54) | | (6.57) | | | | | | | |
| Redear sunfish | 0.03 | | 0.03 | | | | | | | |
| | (0.03) | | (0.03) | | | | | | | |
| Green sunfish x bluegill | 0.07 | | 0.07 | | | | | | | |
| | (0.05) | | (0.05) | | | | | | | |
| Largemouth bass | 0.51 | | 0.51 | | | | | | | |
| | (0.34) | | (0.34) | | | | | | | |
| White crappie | 3.73 | | 3.73 | | | | | | | |
| | (1.00) | | (1.01) | | | | | | | |
| Black crappie | 25.35 | | 25.35 | | | | | | | |
| | (6.05) | | (6.08) | | | | | | | |
| Sauger | 0.63 | | 0.63 | | | | | | | |
| | (0.42) | | (0.42) | | | | | | | |
| Walleye | 0.10 | | 0.10 | | | | | | | |
| | (0.10) | | (0.10) | | | | | | | |
| Freshwater drum | 4.03 | | 4.03 | | | | | | | |
| | (1.35) | | (1.36) | | | | | | | |

Strata: BWCS - Backwater, contiguous, shoreline.
BWCO - Backwater, contiguous, offshore.
IMPS - Impounded, shoreline.
IMPO - Impounded, offshore.
MCBU - Main channel border, unstructured.
MCBW - Main channel border, wing dam.
SCB - Side channel border.
TRI - Tributary mouth.
TWZ - Tailwater.

Table 6.3.3. Mean catch-per-unit-effort and (standard error) for fishes collected by tandem fyke nettingin the La Grange Pool of the Illinois River using stratified random sampling during 1996. The statistics under ALL pertain to unbiased means over all strata sampled using this gear (as indicated by nonmissing entries below and by Table 6.1). See text for definitions of catch-per-unit-effort and standard error.



| Common name | ALL | BWCO | BWCS | IMPO | IMPS | MCBU | MCBW | SCB | TRI | TWZ |
|---|---|---|---|---|---|---|---|---|---|---|
| Spotted gar | 0.09 | 0.09 | | | | | | | | |
| | (0.06) | (0.06) | | | | | | | | |
| Longnose gar | 0.04 | 0.04 | | | | | | | | |
| | (0.04) | (0.04) | | | | | | | | |
| Shortnose gar | 0.79 | 0.79 | | | | | | | | |
| | (0.38) | (0.38) | | | | | | | | |
| Bowfin | 0.09 | 0.09 | | | | | | | | |
| | (0.06) | (0.06) | | | | | | | | |
| Skipjack herring | 0.04 | 0.04 | | | | | | | | |
| | (0.04) | (0.04) | | | | | | | | |
| Gizzard shad | 42.97 | 42.97 | | | | | | | | |
| | (19.74) | (19.76) | | | | | | | | |
| Threadfin shad | 0.25 | 0.25 | | | | | | | | |
| | (0.12) | (0.12) | | | | | | | | |
| Goldfish | 0.04 | 0.04 | | | | | | | | |
| | (0.04) | (0.04) | | | | | | | | |
| Common carp | 0.86 | 0.86 | | | | | | | | |
| | (0.28) | (0.28) | | | | | | | | |
| Golden shiner | 0.04 | 0.04 | | | | | | | | |
| | (0.04) | (0.04) | | | | | | | | |
| River carpsucker | 0.85 | 0.85 | | | | | | | | |
| | (0.62) | (0.62) | | | | | | | | |
| Smallmouth buffalo | 3.43 | 3.43 | | | | | | | | |
| | (2.70) | (2.70) | | | | | | | | |
| Bigmouth buffalo | 0.08 | 0.08 | | | | | | | | |
| | (0.08) | (0.08) | | | | | | | | |
| Silver redhorse | 0.04 | 0.04 | | | | | | | | |
| | (0.04) | (0.04) | | | | | | | | |
| Shorthead redhorse | 1.12 | 1.12 | | | | | | | | |
| | (0.68) | (0.68) | | | | | | | | |
| Black bullhead | 0.60 | 0.60 | | | | | | | | |
| | (0.18) | (0.18) | | | | | | | | |
| Yellow bullhead | 0.35 | 0.35 | | | | | | | | |
| | (0.19) | (0.19) | | | | | | | | |
| Brown bullhead | 0.58 | 0.58 | | | | | | | | |
| | (0.18) | (0.18) | | | | | | | | |
| Channel catfish | 0.57 | 0.57 | | | | | | | | |
| | (0.27 | (0.27) | | | | | | | | |
| Flathead catfish | 0.05 | 0.05 | | | | | | | | |
| | (0.05) | (0.05) | | | | | | | | |
| White bass | 12.41 | 12.41 | | | | | | | | |
| | (4.98) | (4.98) | | | | | | | | |
| Yellow bass | 0.21 | 0.21 | | | | | | | | |
| | (0.13) | (0.13) | | | | | | | | |
| White x striped bass | 0.08 | 0.08 | | | | | | | | |
| | (0.08) | (0.08) | | | | | | | | |
| Green sunfish | 0.04 | 0.04 | | | | | | | | |
| | (0.04) | (0.04) | | | | | | | | |
| Warmouth | 0.09 | 0.09 | | | | | | | | |
| | (0.06) | (0.06) | | | | | | | | |
| Bluegill | 12.08 | 12.08 | | | | | | | | |
| | (3.98) | (3.98) | | | | | | | | |
| Largemouth bass | 0.09 | 0.09 | | | | | | | | |
| | (0.06) | (0.06) | | | | | | | | |
| White crappie | 2.41 | 2.41 | | | | | | | | |
| | (1.44) | (1.44) | | | | | | | | |
| Black crappie | 7.75 | 7.75 | | | | | | | | |
| | (4.78) | (4.78) | | | | | | | | |

Strata: BWCS - Backwater, contiguous, shoreline.
BWCO - Backwater, contiguous, offshore.
IMPS - Impounded, shoreline.
IMPO - Impounded, offshore.
MCBU - Main channel border, unstructured.
MCBW - Main channel border, wing dam.
SCB - Side channel border.
TRI - Tributary mouth.
TWZ - Tailwater.

Table 6.3.3. Mean catch-per-unit-effort and (standard error) for fishes collected by tandem fyke netting in the La Grange Pool of the Illinois River using stratified random sampling during 1996. The statistics under ALL pertain to unbiased means over all strata sampled using this gear (as indicated by nonmissing entries below and by Table 6.1). See text for definitions of catch-per-unit-effort and standard error.



| Common name | ALL | BWCO | BWCS | IMPO | IMPS | MCBU | MCBW | SCB | TRI | TWZ |
|---|---|---|---|---|---|---|---|---|---|---|
| Sauger | 0.25 | 0.25 | | | | | | | | |
| | (0.17) | (0.17) | | | | | | | | |
| Freshwater drum | 2.81 | 2.81 | | | | | | | | |
| | (0.78) | (0.78) | | | | | | | | |

Strata: BWCS - Backwater, contiguus, shoreline. MCBW - Main channel border, wing dam.
BWCO - Backwater, contiguous, offshore. SCB - Side channel border.
IMPS - Impounded, shoreline. TRI - Tributary mouth.
IMPO - Impounded, offshore. TWZ - Tailwater.
MCBU - Main channel border, unstructured.

Table 6.3.4. Mean catch-per-unit-effort and (standard error) for fishes collected by mini fyke netting in the La Grange Pool of the Illinois River using stratified random sampling during 1996. The statistics under ALL pertain to unbiased means over all strata sampled using this gear (as indicated by nonmissing entries below and by Table 6.1). See text for definitions of catch-per-unit-effort and standard error.



| Common name | ALL | BWCO | BWCS | IMPO | IMPS | MCBU | MCBW | SCB | TRI | TWZ |
|---|---|---|---|---|---|---|---|---|---|---|
| Spotted gar | 0.05 | | 0.20 | | | | | | | |
| | (0.03) | | (0.10) | | | | | | | |
| Shortnose gar | 0.84 | | 0.62 | | | 0.91 | | 0.96 | | |
| | (0.32) | | (0.26) | | | (0.44) | | (0.50) | | |
| Bowfin | 0.03 | | 0.10 | | | | | | | |
| | (0.01) | | (0.06) | | | | | | | |
| Skipjack herring | 0.19 | | 0.17 | | | 0.20 | | 0.05 | | |
| | (0.10) | | (0.14) | | | (0.13) | | (0.05) | | |
| Gizzard shad | 912.72 | | 74.18 | | | 1275.50 | | 109.86 | | |
| | (853.20) | | (42.15) | | | (1226.09) | | (78.43) | | |
| Threadfin shad | 2.60 | | 0.47 | | | 2.94 | | 9.36 | | |
| | (1.94) | | (0.21) | | | (2.77) | | (5.16) | | |
| Central stoneroller | 0.19 | | | | | 0.25 | | 0.28 | | |
| | (0.17) | | | | | (0.25) | | (0.28) | | |
| Grass carp | 0.01 | | 0.03 | | | | | | | |
| | 0.01) | | (0.03) | | | | | | | |
| Red shiner | 0.84 | | 0.79 | | | 0.73 | | 2.75 | | |
| | (0.37) | | (0.54) | | | (0.49) | | (1.52) | | |
| Common carp | 13.20 | | 7.33 | | | 15.87 | | 5.53 | | |
| | (10.89) | | (6.23) | | | (15.47) | | (4.06) | | |
| Goldfish x carp | 0.01 | | 0.03 | | | | | | | |
| | (0.01) | | (0.03) | | | | | | | |
| Silver chub | 0.13 | | | | | 0.17 | | 0.34 | | |
| | (0.06) | | | | | (0.08) | | (0.23) | | |
| Golden shiner | 0.24 | | 0.13 | | | 0.30 | | | | |
| | (0.13) | | (0.13) | | | (0.18) | | | | |
| Emerald shiner | 61.84 | | 2.47 | | | 86.31 | | 23.60 | | |
| | (43.40) | | (1.11) | | | (62.37) | | (10.81) | | |
| River shiner | 0.01 | | | | | | | 0.11 | | |
| | (0.00) | | | | | | | (0.08) | | |
| Spottail shiner | 0.39 | | | | | 0.51 | | 0.77 | | |
| | (0.24) | | | | | (0.34) | | (0.72) | | |
| Silverband shiner | | | | | | | | 0.06 | | |
| | | | | | | | | (0.06) | | |
| Bluntnose minnow | 0.14 | | | | | 0.21 | | | | |
| | (0.10) | | | | | (0.15) | | | | |
| Fathead minnow | 0.09 | | | | | 0.13 | | | | |
| | (0.09) | | | | | (0.13) | | | | |
| Bullhead minnow | 0.66 | | 1.08 | | | 0.51 | | 0.43 | | |
| | (0.30) | | (0.56) | | | (0.38) | | (0.30) | | |
| River carpsucker | 0.08 | | 0.17 | | | 0.04 | | 0.17 | | |
| | (0.04) | | (0.10) | | | (0.04) | | (0.09) | | |
| Highfin carpsucker | 0.01 | | 0.03 | | | | | | | |
| | (0.01) | | (0.03) | | | | | | | |
| Smallmouth buffalo | 0.25 | | 0.71 | | | 0.08 | | 0.11 | | |
| | (0.08) | | (0.27) | | | (0.06) | | (0.07) | | |
| Bigmouth buffalo | 0.01 | | 0.03 | | | | | | | |
| | (0.01) | | (0.03) | | | | | | | |
| Black bullhead | 0.30 | | 0.55 | | | 0.21 | | 0.11 | | |
| | (0.12) | | (0.29) | | | (0.14) | | (0.11) | | |
| Yellow bullhead | 0.13 | | 0.14 | | | 0.14 | | 0.05 | | |
| | (0.10) | | (0.11) | | | (0.14) | | (0.05) | | |
| Brown bullhead | 0.04 | | 0.14 | | | | | | | |
| | (0.02) | | (0.09) | | | | | | | |
| Channel catfish | 1.84 | | 0.48 | | | 2.18 | | 4.38 | | |
| | (0.51) | | (0.20) | | | (0.71) | | (2.51) | | |
| Flathead catfish | 0.03 | | | | | 0.04 | | 0.05 | | |
| | (0.03) | | | | | (0.04) | | (0.05) | | |

Strata: BWCS - Backwater, contiguous, shoreline. MCBW - Main channel border, wing dam.
BWCO - Backwater, contiguous, offshore. SCB - Side channel border.
IMPS - Impounded, shoreline. TRI - Tributary mouth.
IMPO - Impounded, offshore. TWZ - Tailwater.
MCBU - Main channel border, unstructured.

Table 6.3.4. Mean catch-per-unit-effort and (standard error) for fishes collected by mini fyke netting in the La Grange Pool of the Illinois River using stratified random sampling during 1996. The statistics under ALL pertain to unbiased means over all strata sampled using this gear (as indicated by nonmissing entries below and by Table .1). See text for definitions of catch-per-unit-effort and standard error.



| Common name | ALL | BWCO | BWCS | IMPO | IMPS | MCBU | MCBW | SCB | TRI | TWZ |
|---|---|---|---|---|---|---|---|---|---|---|
| Pirate perch | 0.02 | | 0.07 | | | | | | | |
| | (0.02) | | (0.07) | | | | | | | |
| Blackstripe topminnow | 0.30 | | 1.02 | | | 0.04 | | 0.17 | | |
| | (0.18) | | (0.68) | | | (0.04) | | (0.12) | | |
| Western mosquitofish | 0.55 | | 0.75 | | | 0.42 | | 1.39 | | |
| | (0.20) | | (0.40) | | | (0.23) | | (1.22) | | |
| Brook silverside | 0.56 | | 1.09 | | | 0.17 | | 3.57 | | |
| | (0.22) | | (0.67) | | | (0.13) | | (2.44) | | |
| White bass | 37.53 | | 11.37 | | | 48.49 | | 18.03 | | |
| | (12.17) | | (3.53) | | | (17.43) | | (5.57) | | |
| Yellow bass | 0.04 | | 0.03 | | | 0.04 | | | | |
| | (0.03) | | (0.03) | | | (0.04) | | | | |
| White x striped bass | 0.01 | | 0.03 | | | | | 0.05 | | |
| | (0.01) | | (0.03) | | | | | (0.05) | | |
| Green sunfish | 0.31 | | 0.14 | | | 0.38 | | 0.17 | | |
| | (0.13) | | (0.07) | | | (0.18) | | (0.12) | | |
| Warmouth | 0.02 | | 0.07 | | | | | | | |
| | (0.01) | | (0.05) | | | | | | | |
| Orangespotted sunfish | 0.07 | | 0.27 | | | | | 0.06 | | |
| | (0.04) | | (0.17) | | | | | (0.06) | | |
| Bluegill | 5.32 | | 8.10 | | | 4.16 | | 7.38 | | |
| | (1.77) | | (2.23) | | | (2.39) | | (5.10) | | |
| Bluegill x redear sunfish | 0.01 | | 0.03 | | | | | | | |
| | (0.01) | | (0.03) | | | | | | | |
| Largemouth bass | 1.00 | | 1.37 | | | 0.87 | | 0.90 | | |
| | (0.31) | | (0.69) | | | (0.37) | | (0.35) | | |
| White crappie | 2.43 | | 2.76 | | | 2.30 | | 2.59 | | |
| | (0.70) | | (0.87) | | | (0.95) | | (1.45) | | |
| Black crappie | 2.77 | | 3.22 | | | 2.50 | | 4.32 | | |
| | (0.97) | | (1.16) | | | (1.32) | | (2.36) | | |
| Mud darter | 0.04 | | 0.03 | | | 0.04 | | | | |
| | (0.03) | | (0.03) | | | (0.04) | | | | |
| Johnny darter | 0.04 | | 0.03 | | | 0.04 | | | | |
| | (0.03) | | (0.03) | | | (0.04) | | | | |
| Logperch | 0.97 | | 1.58 | | | 0.77 | | 0.56 | | |
| | (0.45) | | (1.28) | | | (0.44) | | (0.39) | | |
| Sauger | 1.40 | | 1.16 | | | 1.49 | | 1.38 | | |
| | (0.44) | | (0.47) | | | (0.61) | | (0.70) | | |
| Freshwater drum | 6.45 | | 4.85 | | | 6.93 | | 8.23 | | |
| | (1.57) | | (1.96) | | | (2.12) | | (3.76) | | |

Strata: BWCS - Backwater, contiguous, shoreline.
BWCO - Backwater, contiguous, offshore.
IMPS - Impounded, shoreline.
IMPO - Impounded, offshore.
MCBU - Main channel border, unstructured.
MCBW - Main channel border, wing dam.
SCB - Side channel border.
TRI - Tributary mouth.
TWZ - Tailwater.

Table 6.3.5. Mean catch-per-unit-effort and (standard error) for fishes collected by tandem mini fyke netting in the La Grange Pool of the Illinois River using stratified random sampling during 1996. The statistics under ALL pertain to unbiased means over all strata sapled using this gear (as indicated by nonmissing entries below and by Table 6.1). See text for definitions of catch-per-unit-effort and standard error.



| Common name | ALL | BWCO | BWCS | IMPO | IMPS | MCBU | MCBW | SCB | TRI | TWZ |
|---|---|---|---|---|---|---|---|---|---|---|
| Shortnose gar | 0.17 | 0.17 | | | | | | | | |
| | (0.10) | (0.10) | | | | | | | | |
| Skipjack herring | 0.04 | 0.04 | | | | | | | | |
| | (0.04) | (0.04) | | | | | | | | |
| Gizzard shad | 12.16 | 12.16 | | | | | | | | |
| | (6.29) | (6.30) | | | | | | | | |
| Common carp | 0.13 | 0.13 | | | | | | | | |
| | (0.07) | (0.07) | | | | | | | | |
| Silver chub | 0.04 | 0.04 | | | | | | | | |
| | (0.04) | (0.04) | | | | | | | | |
| Emerald shiner | 1.67 | 1.67 | | | | | | | | |
| | (1.49) | (1.49) | | | | | | | | |
| Bullhead minnow | 0.08 | 0.08 | | | | | | | | |
| | (0.08) | (0.08) | | | | | | | | |
| Smallmouth buffalo | 0.04 | 0.04 | | | | | | | | |
| | (0.04) | (0.04) | | | | | | | | |
| Bigmouth buffalo | 0.21 | 0.21 | | | | | | | | |
| | (0.13) | (0.13) | | | | | | | | |
| Black bullhead | 0.13 | 0.13 | | | | | | | | |
| | (0.07) | (0.07) | | | | | | | | |
| Yellow bullhead | 0.34 | 0.34 | | | | | | | | |
| | (0.18) | (0.18) | | | | | | | | |
| Channel catfish | 0.34 | 0.34 | | | | | | | | |
| | (0.22) | (0.22) | | | | | | | | |
| Tadpole madtom | 0.04 | 0.04 | | | | | | | | |
| | (0.04) | (0.04) | | | | | | | | |
| Pirate perch | 0.05 | 0.05 | | | | | | | | |
| | (0.05) | (0.05) | | | | | | | | |
| White bass | 1.58 | 1.58 | | | | | | | | |
| | (0.49) | (0.49) | | | | | | | | |
| Bluegill | 3.98 | 3.98 | | | | | | | | |
| | (1.71) | (1.72) | | | | | | | | |
| Largemouth bass | 0.05 | 0.05 | | | | | | | | |
| | (0.05) | (0.05) | | | | | | | | |
| White crappie | 1.80 | 1.80 | | | | | | | | |
| | (0.63) | (0.63) | | | | | | | | |
| Black crappie | 0.44 | 0.44 | | | | | | | | |
| | (0.29) | (0.29) | | | | | | | | |
| Sauger | 0.13 | 0.13 | | | | | | | | |
| | (0.07) | (0.07) | | | | | | | | |
| Freshwater drum | 26.62 | 26.62 | | | | | | | | |
| | (20.63) | (20.65) | | | | | | | | |

Strata: BWCS - Backwater, contiguous, shoreline. MCBW - Main channel border, wing dam.
BWCO - Backwater, contiguous, offshore. SCB - Side channel border.
IMPS - Impounded, shoreline. TRI - Tributary mouth.
IMPO - Impounded, offshore. TWZ - Tailwater.
MCBU - Main channel border, unstructured.

Table 6.3.6. Mean catch-per-unit-effort and (standard error) for fishes collected by small hoop netting in the La Grange Pool of the Illinois River using stratified random sampling during 1996. The statistics under ALL pertain to unbiased means over all strata sampled using this gear (as indicated by nonmissing entries below and by Table 6.1). See text for definitions of catch-per-unit-effort and standard error.



| Common name | ALL | BWCO | BWCS | IMPO | IMPS | MCBU | MCBW | SCB | TRI | TWZ |
|---|---|---|---|---|---|---|---|---|---|---|
| Shortnose gar | 0.02 | 0.04 | | | | | | | | |
| | (0.02) | (0.04) | | | | | | | | |
| Gizzard shad | 0.11 | 0.28 | | | | | | | | |
| | (0.08) | (0.21) | | | | | | | | |
| Common carp | 2.42 | 1.58 | | | | 2.97 | | 3.34 | | |
| | (0.49) | (0.59) | | | | (0.77) | | (0.94) | | |
| Smallmouth buffalo | 0.04 | | | | | 0.06 | | | | |
| | (0.04) | | | | | (0.06) | | | | |
| Bigmouth buffalo | 0.02 | 0.04 | | | | | | | | |
| | (0.02) | (0.04) | | | | | | | | |
| Black bullhead | 0.05 | 0.12 | | | | | | | | |
| | (0.03) | (0.06) | | | | | | | | |
| Yellow bullhead | 0.02 | 0.04 | | | | | | | | |
| | (0.02) | (0.04) | | | | | | | | |
| Brown bullhead | 0.05 | 0.13 | | | | | | 0.03 | | |
| | (0.03) | (0.07) | | | | | | (0.03) | | |
| Channel catfish | 1.33 | 1.05 | | | | 1.51 | | 1.68 | | |
| | (0.49) | (0.92) | | | | (0.58) | | (0.75) | | |
| Flathead catfish | 0.04 | | | | | 0.06 | | 0.03 | | |
| | (0.02) | | | | | (0.04) | | (0.03) | | |
| White bass | 0.12 | 0.17 | | | | 0.08 | | 0.17 | | |
| | (0.05) | (0.10) | | | | (0.06) | | (0.17) | | |
| Bluegill | 0.15 | 0.38 | | | | | | | | |
| | (0.08) | (0.19) | | | | | | | | |
| White crappie | 0.03 | 0.09 | | | | | | | | |
| | (0.02) | (0.06) | | | | | | | | |
| Black crappie | 0.03 | 0.09 | | | | | | | | |
| | (0.02) | (0.06) | | | | | | | | |
| Freshwater drum | 0.11 | 0.04 | | | | 0.17 | | 0.08 | | |
| | (0.04) | (0.04) | | | | (0.06) | | (0.06) | | |

Strata: BWCS - Backwater, contiguous, shoreline.
BWCO - Backwater, contiguous, offshore.
IMPS - Impounded, shoreline.
IMPO - Impounded, offshore.
MCBU - Main channel border, unstructured.
MCBW - Main channel border, wing dam.
SCB - Side channel border.
TRI - Tributary mouth.
TWZ - Tailwater.

Table 6.3.7. Mean catch-per-unit-effort and (standard error) for fishes collected by large hoop netting in the La Grange Pool of the Illinois River using stratified random sampling during 1996. The statistics under ALL pertain to unbiased means over all strata sampled using this gear (as indicated by nonmissing entries below and by Table 6.1). See text for definitions of catch-per-unit-effort and standard error.



| Common name | ALL | BWCO | BWCS | IMPO | IMPS | MCBU | MCBW | SCB | TRI | TWZ |
|---|---|---|---|---|---|---|---|---|---|---|
| Shortnose gar | 0.06 | 0.14 | | | | | | | | |
| | (0.04) | (0.10) | | | | | | | | |
| Bowfin | 0.02 | 0.04 | | | | | | | | |
| | (0.02) | (0.04) | | | | | | | | |
| Goldeye | | | | | | | | 0.03 | | |
| | | | | | | | | (0.03) | | |
| Gizzard shad | 0.70 | 1.49 | | | | 0.17 | | 0.5 | | |
| | (0.27) | (0.68) | | | | (0.07) | | (0.12) | | |
| Common carp | 3.12 | 3.21 | | | | 2.78 | | 7.50 | | |
| | (0.62) | (0.74) | | | | (0.95) | | (2.37) | | |
| River carpsucker | 0.14 | 0.28 | | | | 0.05 | | 0.09 | | |
| | (0.08) | (0.18) | | | | (0.03) | | (0.06) | | |
| Smallmouth buffalo | 1.64 | 1.30 | | | | 1.71 | | 4.40 | | |
| | (0.33) | (0.49) | | | | (0.47) | | (1.71) | | |
| Bigmouth buffalo | 0.08 | 0.19 | | | | | | 0.03 | | |
| | (0.04) | (0.10) | | | | | | (0.03) | | |
| Black buffalo | | | | | | | | 0.03 | | |
| | | | | | | | | (0.03) | | |
| Silver redhorse | 0.01 | | | | | 0.02 | | | | |
| | (0.01) | | | | | (0.02) | | | | |
| Shorthead redhorse | 0.01 | | | | | 0.02 | | | | |
| | (0.01) | | | | | (0.02) | | | | |
| Yellow bullhead | 0.02 | 0.05 | | | | | | | | |
| | (0.02) | (0.05) | | | | | | | | |
| Brown bullhead | 0.46 | 1.15 | | | | | | | | |
| | (0.30) | (0.76) | | | | | | | | |
| Channel catfish | 0.29 | 0.19 | | | | 0.31 | | 1.07 | | |
| | (0.09) | (0.12) | | | | (0.12) | | (0.44) | | |
| Flathead catfish | 0.04 | | | | | 0.07 | | 0.03 | | |
| | (0.03) | | | | | (0.05) | | (0.03) | | |
| White bass | 0.06 | 0.09 | | | | 0.02 | | 0.11 | | |
| | (0.03) | (0.06) | | | | (0.02) | | (0.07) | | |
| Striped bass | | | | | | | | 0.03 | | |
| | | | | | | | | (0.03) | | |
| Bluegill | 0.04 | 0.09 | | | | | | | | |
| | (0.03) | (0.06) | | | | | | | | |
| Largemouth bass | 0.04 | 0.09 | | | | | | | | |
| | (0.04) | (0.09) | | | | | | | | |
| White crappie | 0.07 | 0.18 | | | | | | | | |
| | (0.05) | (0.12) | | | | | | | | |
| Black crappie | 0.20 | 0.46 | | | | 0.02 | | | | |
| | (0.10) | (0.24) | | | | (0.02) | | | | |
| Sauger | | | | | | | | 0.03 | | |
| | | | | | | | | (0.03) | | |
| Freshwater drum | 0.64 | 0.18 | | | | 0.97 | | 0.54 | | |
| | (0.18) | (0.08) | | | | (0.31) | | (0.24) | | |

Strata: BWCS - Backwater, contiguous, shoreline. MCBW - Main channel border, wing dam.
BWCO - Backwater, contiguous, offshore. SCB - Side channel border.
IMPS - Impounded, shoreline. TRI - Tributary mouth.
IMPO - Impounded, offshore. TWZ - Tailwater.
MCBU - Main channel border, unstructured.

Table 6.3.8. Mean catch-per-unit-effort and (standard error) for fishes collected by seining in the La Grange Pool of the Illinois River using stratified random sampling during 1996. The statistics under ALL pertain to unbiased means over all strata sampled using this gear (as indicated by nonmissing entries below and by Table 6.1). See text for definitions of catch-per-unit-effort and standard error.



| Common name | ALL | BWCO | BWCS | IMPO | IMPS | MCBU | MCBW | SCB | TRI | TWZ |
|---|---|---|---|---|---|---|---|---|---|---|
| Shortnose gar | 0.02 | | | | | 0.03 | | | | |
| | (0.02) | | | | | (0.03) | | | | |
| Goldeye | 0.02 | | | | | 0.03 | | | | |
| | (0.02) | | | | | (0.03) | | | | |
| Skipjack herring | 0.05 | | | | | 0.06 | | 0.17 | | |
| | (0.03) | | | | | (0.04) | | (0.10) | | |
| Gizzard shad | 46.24 | | 41.79 | | | 48.17 | | 42.04 | | |
| | (18.02) | | (23.97) | | | (24.27) | | (30.36) | | |
| Threadfin shad | 0.48 | | 0.21 | | | 0.44 | | 2.46 | | |
| | (0.13) | | (0.13) | | | (0.17) | | (1.09) | | |
| Central stoneroller | 0.05 | | 0.13 | | | 0.03 | | | | |
| | (0.04) | | (0.13) | | | (0.03) | | | | |
| Goldfish | 0.04 | | | | | 0.06 | | | | |
| | (0.03) | | | | | (0.04) | | | | |
| Red shiner | 0.26 | | 0.54 | | | 0.11 | | 0.88 | | |
| | (0.08) | | (0.26) | | | (0.07) | | (0.45) | | |
| Common carp | 0.05 | | 0.04 | | | 0.06 | | | | |
| | (0.04) | | (0.04) | | | (0.06) | | | | |
| Silver chub | 0.20 | | 0.25 | | | 0.19 | | | | |
| | (0.09) | | (0.11) | | | (0.12) | | | | |
| Golden shiner | 0.07 | | 0.04 | | | 0.08 | | 0.04 | | |
| | (0.04) | | (0.04) | | | (0.06) | | (0.04) | | |
| Emerald shiner | 6.02 | | 7.42 | | | 5.28 | | 9.50 | | |
| | (1.31) | | (2.16) | | | (1.70) | | (3.46) | | |
| River shiner | 0.50 | | 1.96 | | | | | | | |
| | (0.50) | | (1.96) | | | | | | | |
| Spottail shiner | 0.55 | | 0.13 | | | 0.75 | | | | |
| | (0.44) | | (0.07) | | | (0.64) | | | | |
| Silverband shiner | 0.04 | | | | | 0.06 | | | | |
| | (0.03) | | | | | (0.04) | | | | |
| Bluntnose minnow | 0.02 | | | | | 0.03 | | 0.04 | | |
| | (0.02) | | | | | (0.03) | | (0.04) | | |
| Bullhead minnow | 1.41 | | 4.29 | | | 0.36 | | 1.25 | | |
| | (0.40) | | (1.51) | | | (0.14) | | (0.38) | | |
| Blacknose dace | 0.02 | | | | | 0.03 | | | | |
| | (0.02) | | | | | (0.03) | | | | |
| River carpsucker | 0.25 | | 0.88 | | | 0.03 | | 0.08 | | |
| | (0.09) | | (0.34) | | | (0.03) | | (0.08) | | |
| White sucker | 0.01 | | 0.04 | | | | | | | |
| | (0.01) | | (0.04) | | | | | | | |
| Smallmouth buffalo | 0.18 | | 0.46 | | | 0.08 | | 0.08 | | |
| | (0.06) | | (0.19) | | | (0.06) | | (0.06) | | |
| Bigmouth buffalo | 0.03 | | | | | 0.03 | | 0.13 | | |
| | (0.02) | | | | | (0.03) | | (0.09) | | |
| Channel catfish | 0.67 | | 0.13 | | | 0.92 | | 0.04 | | |
| | (0.25) | | (0.09) | | | (0.36) | | (0.04) | | |
| Blackstripe topminnow | 0.06 | | 0.21 | | | | | 0.04 | | |
| | (0.04) | | (0.15) | | | | | (0.04) | | |
| Western mosquitofish | 0.65 | | 1.88 | | | 0.22 | | 0.29 | | |
| | (0.30) | | (1.14) | | | (0.09) | | (0.11) | | |
| Brook silverside | 0.28 | | 0.63 | | | 0.17 | | 0.08 | | |
| | (0.10) | | (0.28) | | | (0.09) | | (0.06) | | |
| White bass | 2.55 | | 1.00 | | | 3.08 | | 3.08 | | |
| | (0.56) | | (0.28) | | | (0.79) | | (1.65) | | |
| Green sunfish | 0.02 | | 0.08 | | | | | | | |
| | (0.02) | | (0.08) | | | | | | | |
| Bluegill | 1.29 | | 4.96 | | | | | 0.29 | | |
| | (0.59) | | (2.29) | | | | | (0.11) | | |

Strata: BWCS - Backwater, contiguous, shoreline.
BWCO - Backwater, contiguous, offshore.
IMPS - Impounded, shoreline.
IMPO - Impounded, offshore.
MCBU - Main channel border, unstructured.
MCBW - Main channel border, wing dam.
SCB - Side channel border.
TRI - Tributary mouth.
TWZ - Tailwater.

Table 6.3.8. Mean catch-per-unit-effort and (standard error) for fishes collected by seining in the La Grange Pool of the Illinois River using stratified random sampling during 1996. The statistics under ALL pertain to unbiased means over all strata sampled using this gear (as indicated by nonmissing entries below and by Table 6.1). See text for definitions of catch-per-unit-effort and standard error.



| Common name | ALL | BWCO | BWCS | IMPO | IMPS | MCBU | MCBW | SCB | TRI | TWZ |
|---|---|---|---|---|---|---|---|---|---|---|
| Smallmouth bass | 0.02 | | | | | 0.03 | | | | |
| | (0.02) | | | | | (0.03) | | | | |
| Largemouth bass | 0.08 | | 0.29 | | | | | 0.04 | | |
| | (0.04) | | (0.14) | | | | | (0.04) | | |
| White crappie | 0.05 | | 0.04 | | | 0.06 | | | | |
| | (0.04) | | (0.04) | | | (0.06) | | | | |
| Black crappie | 0.10 | | 0.25 | | | 0.06 | | | | |
| | (0.05) | | (0.15) | | | (0.04) | | | | |
| Johnny darter | 0.02 | | | | | 0.03 | | | | |
| | (0.02) | | | | | (0.03) | | | | |
| Logperch | 0.01 | | 0.04 | | | | | 0.04 | | |
| | (0.01) | | (0.04) | | | | | (0.04) | | |
| Sauger | 0.17 | | 0.08 | | | 0.19 | | 0.33 | | |
| | (0.06) | | (0.06) | | | (0.08) | | (0.20) | | |
| Walleye | | | | | | | | 0.04 | | |
| | | | | | | | | (0.04) | | |
| Freshwater drum | 0.20 | | 0.25 | | | 0.19 | | 0.04 | | |
| | (0.07) | | (0.17) | | | (0.08) | | (0.04) | | |

Strata: BWCS - Backwater, contiguous, shoreline.
BWCO - Backwater, contiguous, offshore.
IMPS - Impounded, shoreline.
IMPO - Impounded, offshore.
MCBU - Main channel border, unstructured.
MCBW - Main channel border, wing dam.
SCB - Side channel border.
TRI - Tributary mouth.
TWZ - Tailwater.

Table 6.4.1. Mean catch-per-unit-effort and (stanard error) for fishes collected by day electrofishing in the La Grange Pool of the Illinois River using fixed-site sampling during 1996. See text for definitions of catch-per-unit-effort and standard error.



| Common name | BWCO | BWCS | IMPO | IMPS | MCBU | MCBW | SCB | TRI | TWZ |
|---|---|---|---|---|---|---|---|---|---|
| Spotted gar | | | | | | | | | 0.08 |
| | | | | | | | | | (0.08) |
| Longnose gar | | | | | | | | | 0.08 |
| | | | | | | | | | (0.08) |
| Shortnose gar | | | | | | | | | 0.75 |
| | | | | | | | | | (0.28) |
| Goldeye | | | | | | | | | 0.17 |
| | | | | | | | | | (0.11) |
| Skipjack herring | | | | | | | 0.17 | | 2.08 |
| | | | | | | | (0.17) | | (1.64) |
| Gizzard shad | | | | | | | 45.83 | | 227.00 |
| | | | | | | | (18.26) | | (110.94) |
| Threadfin shad | | | | | | | 3.17 | | 10.33 |
| | | | | | | | (1.87) | | (9.44) |
| Goldfish | | | | | | | | | 1.75 |
| | | | | | | | | | (1.19) |
| Red shiner | | | | | | | 1.33 | | |
| | | | | | | | (0.67) | | |
| Common carp | | | | | | | 19.83 | | 16.33 |
| | | | | | | | (6.61) | | (3.99) |
| Goldfish x carp | | | | | | | | | 0.17 |
| | | | | | | | | | (0.11) |
| Golden shiner | | | | | | | 1.50 | | 0.08 |
| | | | | | | | (0.67) | | (0.08) |
| Emerald shiner | | | | | | | 5.00 | | 1.58 |
| | | | | | | | (4.01) | | (0.92) |
| River carpsucker | | | | | | | 0.33 | | 0.75 |
| | | | | | | | (0.21) | | (0.25) |
| Highfin carpsucker | | | | | | | | | 0.08 |
| | | | | | | | | | (0.08) |
| Smallmouth buffalo | | | | | | | 6.83 | | 11.08 |
| | | | | | | | (2.33) | | (4.29) |
| Bigmouth buffalo | | | | | | | 8.17 | | 0.42 |
| | | | | | | | (3.74) | | (0.23) |
| Black buffalo | | | | | | | 0.50 | | 0.33 |
| | | | | | | | (0.34) | | (0.26) |
| Golden redhorse | | | | | | | | | 0.08 |
| | | | | | | | | | (0.08) |
| Shorthead redhorse | | | | | | | 0.50 | | 1.08 |
| | | | | | | | (0.50) | | (0.47) |
| Channel catfish | | | | | | | 0.67 | | 1.00 |
| | | | | | | | (0.33) | | (0.52) |
| Stonecat | | | | | | | 0.17 | | |
| | | | | | | | (0.17) | | |
| Flathead catfish | | | | | | | 1.17 | | 0.50 |
| | | | | | | | (0.40) | | (0.26) |
| Western mosquitofish | | | | | | | 0.17 | | |
| | | | | | | | (0.17) | | |
| White perch | | | | | | | 0.17 | | 0.42 |
| | | | | | | | (0.17) | | (0.29) |
| White bass | | | | | | | 32.33 | | 52.75 |
| | | | | | | | (13.08) | | (15.90) |
| Yellow bass | | | | | | | | | 1.08 |
| | | | | | | | | | (0.68) |
| White x striped bass | | | | | | | | | 0.67 |
| | | | | | | | | | (0.38) |
| Warmouth | | | | | | | | | 0.08 |
| | | | | | | | | | (0.08) |
| Bluegill | | | | | | | 15.33 | | 7.67 |
| | | | | | | | (5.69) | | (2.20) |

Strata: BWCS - Backwater, contiguous, shoreline. MCBW - Main channel border, wing dam.
BWCO - Backwater, contiguous, offshore. SCB - Side channel border.
IMPS - Impounded, shoreline. TRI - Tributary mouth.
IMPO - Impounded, offshore. TWZ - Tailwater.
MCBU - Main channel border, unstructured.

Table 6.4.1. Mean catch-per-unit-effort and (standard error) for fishes collected by day electrofishing in the La Grange Pool of the Illinois River using fixed-site sampling during 1996. See text for definitions of catch-per-unit-effort and standard error.



| Common name | BWCO | BWCS | IMPO | IMPS | MCBU | MCBW | SCB | TRI | TWZ |
|---|---|---|---|---|---|---|---|---|---|
| Green sunfish x bluegill | | | | | | | | | 0.08 |
| | | | | | | | | | (0.08) |
| Smallmouth bass | | | | | | | | | 1.00 |
| | | | | | | | | | (0.44) |
| Largemouth bass | | | | | | | 2.83 | | 2.33 |
| | | | | | | | (1.40) | | (0.98) |
| White crappie | | | | | | | 2.33 | | 1.08 |
| | | | | | | | (1.05) | | (0.47) |
| Black crappie | | | | | | | 3.00 | | 1.33 |
| | | | | | | | (1.00) | | (0.47) |
| Mud darter | | | | | | | | | 0.08 |
| | | | | | | | | | (0.08) |
| Logperch | | | | | | | | | 0.08 |
| | | | | | | | | | (0.08) |
| Sauger | | | | | | | 1.17 | | 2.58 |
| | | | | | | | (0.65) | | (0.84) |
| Walleye | | | | | | | | | 0.08 |
| | | | | | | | | | (0.08) |
| Freshwater drum | | | | | | | 2.83 | | 3.08 |
| | | | | | | | (1.51) | | (1.12) |

Strata: BWCS - Backwater, contiguous, shoreline.
BWCO - Backwater, contiguous, offshore.
IMPS - Impounded, shoreline.
IMPO - Impounded, offshore.
MCBU - Main channel border, unstructured.
MCBW - Main channel border, wing dam.
SCB - Side channel border.
TRI - Tributary mouth.
TWZ - Tailwater.

Table 6.4.2. Mean catch-per-unit-effort and (standard error) for fishes collected by night electrofishing in the La Grange Pool of the Illinois River using fixed-site sampling during 1996. See text for definitions of catch-per-unit-effort and standard error.



| Common name | BWCO | BWCS | IMPO | IMPS | MCBU | MCBW | SCB | TRI | TWZ |
|---|---|---|---|---|---|---|---|---|---|
| Longnose gar | | | | | | | 0.20 | | 0.17 |
| | | | | | | | (0.20) | | (0.17) |
| Shortnose gar | | | | | | | | | 0.67 |
| | | | | | | | | | (0.28) |
| Goldeye | | | | | | | 0.20 | | 0.33 |
| | | | | | | | (0.20) | | (0.19) |
| Skipjack herring | | | | | | | | | 0.25 |
| | | | | | | | | | (0.18) |
| Gizzard shad | | | | | | | 541.20 | | 42.67 |
| | | | | | | | (475.69) | | (10.99) |
| Threadfin shad | | | | | | | 1.20 | | 1.50 |
| | | | | | | | (0.73) | | (0.71) |
| Goldfish | | | | | | | | | 1.25 |
| | | | | | | | | | (0.82) |
| Red shiner | | | | | | | 0.80 | | 0.17 |
| | | | | | | | (0.37) | | (0.17) |
| Common carp | | | | | | | 30.20 | | 26.58 |
| | | | | | | | (10.26) | | (9.73) |
| Goldfish x carp | | | | | | | | | 0.92 |
| | | | | | | | | | (0.54) |
| Silver chub | | | | | | | | | 0.08 |
| | | | | | | | | | (0.08) |
| Golden shiner | | | | | | | 0.80 | | |
| | | | | | | | (0.80) | | |
| Emerald shiner | | | | | | | 24.40 | | 2.00 |
| | | | | | | | (21.41) | | (1.30) |
| River carpsucker | | | | | | | 0.40 | | 0.75 |
| | | | | | | | (0.24) | | (0.41) |
| Smallmouth buffalo | | | | | | | 9.60 | | 14.75 |
| | | | | | | | (3.19) | | (5.85) |
| Bigmouth buffalo | | | | | | | 7.20 | | 1.00 |
| | | | | | | | (4.60) | | (0.35) |
| Black buffalo | | | | | | | 1.20 | | 0.50 |
| | | | | | | | (0.49) | | (0.34) |
| Golden redhorse | | | | | | | | | 0.17 |
| | | | | | | | | | (0.11) |
| Shorthead redhorse | | | | | | | 1.00 | | 0.25 |
| | | | | | | | (1.00) | | (0.13) |
| Channel catfish | | | | | | | 0.60 | | 1.58 |
| | | | | | | | (0.40) | | (0.56) |
| Freckled madtom | | | | | | | 0.20 | | |
| | | | | | | | (0.20) | | |
| Flathead catfish | | | | | | | 0.40 | | 0.50 |
| | | | | | | | (0.24) | | (0.15) |
| Brook silverside | | | | | | | 0.80 | | 0.25 |
| | | | | | | | (0.58) | | (0.13) |
| White perch | | | | | | | | | 1.08 |
| | | | | | | | | | (0.60) |
| White bass | | | | | | | 13.20 | | 62.25 |
| | | | | | | | (6.06) | | (20.11) |
| Yellow bass | | | | | | | | | 1.50 |
| | | | | | | | | | (0.82) |
| Striped bass | | | | | | | | | 0.08 |
| | | | | | | | | | (0.08) |
| White x striped bass | | | | | | | 0.20 | | 1.83 |
| | | | | | | | (0.20) | | (1.06) |
| Green sunfish | | | | | | | | | 0.17 |
| | | | | | | | | | (0.11) |
| Warmouth | | | | | | | 0.20 | | 0.08 |
| | | | | | | | (0.20) | | (0.08) |

Strata: BWCS - Backwater, contiguous, shoreline.
BWCO - Backwater, contiguous, offshore.
IMPS - Impounded, shoreline.
IMPO - Impounded, offshore.
MCBU - Main channel border, unstructured.
MCBW - Main channel border, wing dam.
SCB - Side channel border.
TRI - Tributary mouth.
TWZ - Tailwater.

Table 6.4.2. Mean catch-per-unit-effort nd (standard error) for fishes collected by night electrofishing in the La Grange Pool of the Illinois River using fixed-site sampling during 1996. See text for definitions of catch-per-unit-effort and standard error.



| Common name | BWCO | BWCS | IMPO | IMPS | MCBU | MCBW | SCB | TRI | TWZ |
|---|---|---|---|---|---|---|---|---|---|
| Bluegill | | | | | | | 11.60 | | 4.92 |
| | | | | | | | (5.81) | | (1.61) |
| Smallmouth bass | | | | | | | | | 0.92 |
| | | | | | | | | | (0.47) |
| Largemouth bass | | | | | | | 2.40 | | 2.00 |
| | | | | | | | (0.81) | | (1.41) |
| White crappie | | | | | | | 1.40 | | 1.42 |
| | | | | | | | (0.87) | | (0.43) |
| Black crappie | | | | | | | 1.00 | | 1.17 |
| | | | | | | | (0.77) | | (0.39) |
| Logperch | | | | | | | | | 0.25 |
| | | | | | | | | | (0.18) |
| Sauger | | | | | | | 1.00 | | 4.08 |
| | | | | | | | (0.32) | | (1.24) |
| Walleye | | | | | | | | | 0.17 |
| | | | | | | | | | (0.11) |
| Freshwater drum | | | | | | | 11.00 | | 12.33 |
| | | | | | | | (4.09) | | (3.12) |

Strata: BWCS - Backwater, contiguous, shoreline. MCBW - Main channel border, wing dam.
BWCO - Backwater, contiguous, offshore. SCB - Side channel border.
IMPS - Impounded, shoreline. TRI - Tributary mouth.
IMPO - Impounded, offshore. TWZ - Tailwater.
MCBU - Main channel border, unstructured.

Table 6.4.3. Mean catch-per-unit-effort and (standard error) for fishes collected by fyke netting in the La Grange Pool of the Illinois River using fixed-site sampling during 1996. See text for definitions of catch-per-unit-effort and standard error.



| Common name | BWCO | BWCS | IMPO | IMPS | MCBU | MCBW | SCB | TRI | TWZ |
|---|---|---|---|---|---|---|---|---|---|
| Shortnose gar | | | | | | | | | 1.41 |
| | | | | | | | | | (0.58) |
| Bowfin | | | | | | | | | 0.09 |
| | | | | | | | | | (0.09) |
| Skipjack herring | | | | | | | | | 5.57 |
| | | | | | | | | | (4.69) |
| Gizzard shad | | | | | | | | | 6.05 |
| | | | | | | | | | (4.18) |
| Threadfin shad | | | | | | | | | 1.80 |
| | | | | | | | | | (1.02) |
| Common carp | | | | | | | | | 1.24 |
| | | | | | | | | | (0.72) |
| River carpsucker | | | | | | | | | 0.74 |
| | | | | | | | | | (0.39) |
| Smallmouth buffalo | | | | | | | | | 0.83 |
| | | | | | | | | | (0.50) |
| Shorthead redhorse | | | | | | | | | 0.18 |
| | | | | | | | | | (0.18) |
| Yellow bullhead | | | | | | | | | 0.19 |
| | | | | | | | | | (0.19) |
| Channel catfish | | | | | | | | | 1.16 |
| | | | | | | | | | (0.83) |
| White perch | | | | | | | | | 0.27 |
| | | | | | | | | | (0.27) |
| White bass | | | | | | | | | 148.96 |
| | | | | | | | | | (98.15) |
| Yellow bass | | | | | | | | | 0.18 |
| | | | | | | | | | (0.12) |
| White x striped bass | | | | | | | | | 0.46 |
| | | | | | | | | | (0.21) |
| Bluegill | | | | | | | | | 4.18 |
| | | | | | | | | | (1.66) |
| Redear sunfish | | | | | | | | | 0.08 |
| | | | | | | | | | (0.08) |
| Largemout bass | | | | | | | | | 0.09 |
| | | | | | | | | | (0.09) |
| White crappie | | | | | | | | | 1.12 |
| | | | | | | | | | (0.35) |
| Black crappie | | | | | | | | | 2.11 |
| | | | | | | | | | (0.71) |
| Sauger | | | | | | | | | 0.36 |
| | | | | | | | | | (0.28) |
| Walleye | | | | | | | | | 0.09 |
| | | | | | | | | | (0.09) |
| Freshwater drum | | | | | | | | | 6.31 |
| | | | | | | | | | (4.10) |

Strata: BWCS - Backwater, contiguous, shoreline. MCBW - Main channel border, wing dam.
BWCO - Backwater, contiguous, offshore. SCB - Side channel border.
IMPS - Impounded, shoreline. TRI - Tributary mouth.
IMPO - Impounded, offshore. TWZ - Tailwater.
MCBU - Main channel border, unstructured.

Table 6.4.4. Mean catch-per-unit-effort and (standard error) for fishes collected by mini fyke netting in the La Grange Pool of the Illinois River using fixed-site sampling during 1996. See text for definitions of catch-per-unit-effort and standard error.



| Common name | BWCO | BWCS | IMPO | IMPS | MCBU | MCBW | SCB | TRI | TWZ |
|---|---|---|---|---|---|---|---|---|---|
| Shortnose gar | | | | | | | | | 0.08 |
| | | | | | | | | | (0.08) |
| Skipjack herring | | | | | | | 0.17 | | 0.42 |
| | | | | | | | (0.17) | | (0.34) |
| Gizzard shad | | | | | | | 3.08 | | 71.03 |
| | | | | | | | (1.55) | | (60.25) |
| Threadfin shad | | | | | | | 0.51 | | 2.46 |
| | | | | | | | (0.35) | | (2.37) |
| Red shiner | | | | | | | 0.35 | | 0.08 |
| | | | | | | | (0.22) | | (0.08) |
| Common carp | | | | | | | 1.04 | | 0.34 |
| | | | | | | | (0.71) | | (0.19) |
| Golden shiner | | | | | | | | | 0.08 |
| | | | | | | | | | (0.08) |
| Emerald shiner | | | | | | | 1.70 | | 3.47 |
| | | | | | | | (0.81) | | (3.19) |
| Spottail shiner | | | | | | | | | 0.09 |
| | | | | | | | | | (0.09) |
| Bullhead minnow | | | | | | | 0.68 | | 0.08 |
| | | | | | | | (0.50) | | (0.08) |
| River carpsucker | | | | | | | | | 0.17 |
| | | | | | | | | | (0.12) |
| Smallmouth buffalo | | | | | | | | | 0.17 |
| | | | | | | | | | (0.11) |
| Shorthead redhorse | | | | | | | 0.34 | | |
| | | | | | | | (0.34) | | |
| Black bullhead | | | | | | | 0.35 | | 0.08 |
| | | | | | | | (0.35) | | (0.08) |
| Yellow bullhead | | | | | | | | | 0.09 |
| | | | | | | | | | (0.09) |
| Channel catfish | | | | | | | 1.55 | | 0.26 |
| | | | | | | | (0.75) | | (0.13) |
| Flathead catfish | | | | | | | | | 0.09 |
| | | | | | | | | | (0.09) |
| White bass | | | | | | | 3.76 | | 65.32 |
| | | | | | | | (1.96) | | (26.75) |
| Yellow bass | | | | | | | | | 1.24 |
| | | | | | | | | | (0.88) |
| White x striped bass | | | | | | | | | 0.35 |
| | | | | | | | | | (0.35) |
| Green sunfish | | | | | | | | | 0.18 |
| | | | | | | | | | (0.18) |
| Bluegill | | | | | | | 0.85 | | 1.63 |
| | | | | | | | (0.31) | | (0.70) |
| Largemouth bass | | | | | | | | | 0.17 |
| | | | | | | | | | (0.17) |
| White crappie | | | | | | | 0.68 | | 3.14 |
| | | | | | | | (0.34) | | (1.62) |
| Black crappie | | | | | | | 0.34 | | 0.75 |
| | | | | | | | (0.22) | | (0.36) |
| Mud darter | | | | | | | | | 0.09 |
| | | | | | | | | | (0.09) |
| Johnny darter | | | | | | | 0.17 | | |
| | | | | | | | (0.17) | | |
| Logperch | | | | | | | | | 0.26 |
| | | | | | | | | | (0.19) |
| Sauger | | | | | | | 0.68 | | 0.34 |
| | | | | | | | (0.34) | | (0.19) |
| Freshwater drum | | | | | | | 3.64 | | 6.50 |
| | | | | | | | (2.83) | | (2.31) |

Strata: BWCS - Backwater, contiguous, shoreline. MCBW - Main channel border, wing dam.
BWCO - Backwater, contiguous, offshore. SCB - Side channel border.
IMPS - Impounded, shoreline. TRI - Tributary mouth.
IMPO - Impounded, offshore. TWZ - Tailwater.
MCBU - Main channel border, unstructured.

Table 6.4.5. Mean catch-per-unit-effort and (standard error) for fishes collected by small hoop netting in the La Grange Pool of the Illinois River using fixed-site sampling during 1996 See text for definitions of catch-per-unit-effort and standard error.



| Common name | BWCO | BWCS | IMPO | IMPS | MCBU | MCBW | SCB | TRI | TWZ |
|---|---|---|---|---|---|---|---|---|---|
| Goldfish | | | | | | | | | 0.29 |
| | | | | | | | | | (0.29) |
| Common carp | | | | | | | 5.41 | | 4.05 |
| | | | | | | | (1.79) | | (1.57) |
| Goldfish x carp | | | | | | | | | 0.04 |
| | | | | | | | | | (0.04) |
| Shorthead redhorse | | | | | | | | | 0.08 |
| | | | | | | | | | (0.08) |
| Channel catfish | | | | | | | 0.85 | | 23.32 |
| | | | | | | | (0.85) | | (21.13) |
| Flathead catfish | | | | | | | | | 0.04 |
| | | | | | | | | | (0.04) |
| White bass | | | | | | | | | 1.37 |
| | | | | | | | | | (1.19) |
| Freshwater drum | | | | | | | | | 0.08 |
| | | | | | | | | | (0.06) |

Strata: BWCS - Backwater, contiguous, shoreline. MCBW - Main channel border, wing dam.
BWCO - Backwater, contiguous, offshore. SCB - Side channel border.
IMPS - Impounded, shoreline. TRI - Tributary mouth.
IMPO - Impounded, offshore. TWZ - Tailwater.
MCBU - Main channel border, unstructured.

Table 6.4.6. Mean catch-per-unit-effort and (standard error) for fishes collected by large hoop netting in the La Grange Pool of the Illinois River using fixed-site sampling during 1996. See text for definitions of catch-per-unit-effort and standard error.



| Common name | BWCO | BWCS | IMPO | IMPS | MCBU | MCBW | SCB | TRI | TWZ |
|---|---|---|---|---|---|---|---|---|---|
| Gizzard shad | | | | | | | | | 0.34 |
| | | | | | | | | | (0.23) |
| Goldfish | | | | | | | | | 0.04 |
| | | | | | | | | | (0.04) |
| Common carp | | | | | | | 4.65 | | 5.33 |
| | | | | | | | (1.26) | | (1.74) |
| River carpsucker | | | | | | | | | 0.04 |
| | | | | | | | | | (0.04) |
| Smallmouth buffalo | | | | | | | 1.44 | | 2.77 |
| | | | | | | | (1.16) | | (1.63) |
| Shorthead redhorse | | | | | | | | | 0.04 |
| | | | | | | | | | (0.04) |
| Channel catfish | | | | | | | | | 0.17 |
| | | | | | | | | | (0.10) |
| Flathead catfish | | | | | | | 0.09 | | 0.25 |
| | | | | | | | (0.09) | | (0.21) |
| White bass | | | | | | | | | 3.16 |
| | | | | | | | | | (2.75) |
| White x striped bass | | | | | | | | | 0.42 |
| | | | | | | | | | (0.33) |
| White crappie | | | | | | | | | 0.04 |
| | | | | | | | | | (0.04) |
| Sauger | | | | | | | | | 0.04 |
| | | | | | | | | | (0.04) |
| Freshwater drum | | | | | | | 0.42 | | 0.42 |
| | | | | | | | (0.24) | | (0.19) |

Strata: BWCS - Backwater, contiguous, shoreline. MCBW - Main channel border, wing dam.
BWCO - Backwater, contiguous, offshore. SCB - Side channel border.
IMPS - Impounded, shoreline. TRI - Tributary mouth.
IMPO - Impounded, offshore. TWZ - Tailwater.
MCBU - Main channel border, unstructured.

Table 6.4.7. Mean catch-per-unit-effort and (standard error) for fishes collected by seining in the La Grange Pool of the Illinois River using fixed-site sampling during 1996. See text for definitions of catch-per-unit-effort and standard error.



| Common name | BWCO | BWCS | IMPO | IMPS | MCBU | MCBW | SCB | TRI | TWZ |
|---|---|---|---|---|---|---|---|---|---|
| Skipjack herring | | | | | | | 0.10 | | |
| | | | | | | | (0.10) | | |
| Gizzard shad | | | | | | | 123.40 | | |
| | | | | | | | (110.02) | | |
| Threadfin shad | | | | | | | 3.80 | | |
| | | | | | | | (2.23) | | |
| Emerald shiner | | | | | | | 2.70 | | |
| | | | | | | | (0.91) | | |
| Bullhead minnow | | | | | | | 0.80 | | |
| | | | | | | | (0.42) | | |
| River carpsucker | | | | | | | 0.10 | | |
| | | | | | | | (0.10) | | |
| Northern hog sucker | | | | | | | 0.10 | | |
| | | | | | | | (0.10) | | |
| Smallmouth buffalo | | | | | | | 0.30 | | |
| | | | | | | | (0.15) | | |
| Western mosquitofish | | | | | | | 0.90 | | |
| | | | | | | | (0.31) | | |
| Brook silverside | | | | | | | 0.10 | | |
| | | | | | | | (0.10) | | |
| White bass | | | | | | | 1.90 | | |
| | | | | | | | (1.11) | | |
| Bluegill | | | | | | | 0.60 | | |
| | | | | | | | (0.34) | | |
| Johnny darter | | | | | | | 0.10 | | |
| | | | | | | | (0.10) | | |
| Freshwater drum | | | | | | | 0.40 | | |
| | | | | | | | (0.22) | | |

Strata: BWCS - Backwater, contiguous, shoreline. MCBW - Main channel border, wing dam.
BWCO - Backwater, contiguous, offshore. SCB - Side channel border.
IMPS - Impounded, shoreline. TRI - Tributary mouth.
IMPO - Impounded, offshore. TWZ - Tailwater.
MCBU - Main channel border, unstructured.

Table 6.4.8. Mean catch-per-unit-effort and (standard error) for fishes collected by bottom trawling in the La Grange Pool of the Illinois River using fixed-site sampling during 1996. See text for definitions of catch-per-unit-effort and standard error.



| Common name | BWCO | BWCS | IMPO | IMPS | MCBU | MCBW | SCB | TRI | TWZ |
|---|---|---|---|---|---|---|---|---|---|
| Gizzard shad | | | | | | | | | 0.04 |
| | | | | | | | | | (0.04) |
| Threadfin shad | | | | | | | | | 0.08 |
| | | | | | | | | | (0.08) |
| Common carp | | | | | | | | | 0.04 |
| | | | | | | | | | (0.04) |
| Shorthead redhorse | | | | | | | | | 0.04 |
| | | | | | | | | | (0.04) |
| Channel catfish | | | | | | | | | 1.92 |
| | | | | | | | | | (0.66) |
| Tadpole madtom | | | | | | | | | 0.04 |
| | | | | | | | | | (0.04) |
| Flathead catfish | | | | | | | | | 0.08 |
| | | | | | | | | | (0.06) |
| White bass | | | | | | | | | 0.08 |
| | | | | | | | | | (0.06) |
| Sauger | | | | | | | | | 0.67 |
| | | | | | | | | | (0.38) |
| Freshwater drum | | | | | | | | | 5.21 |
| | | | | | | | | | (2.37) |

Strata: BWCS - Backwater, contiguous, shoreline.
BWCO - Backwater, contiguous, offshore.
IMPS - Impounded, shoreline.
IMPO - Impounded, offshore.
MCBU - Main channel border, unstructured.
MCBW - Main channel border, wing dam.
SCB - Side channel border.
TRI - Tributary mouth.
TWZ - Tailwater.

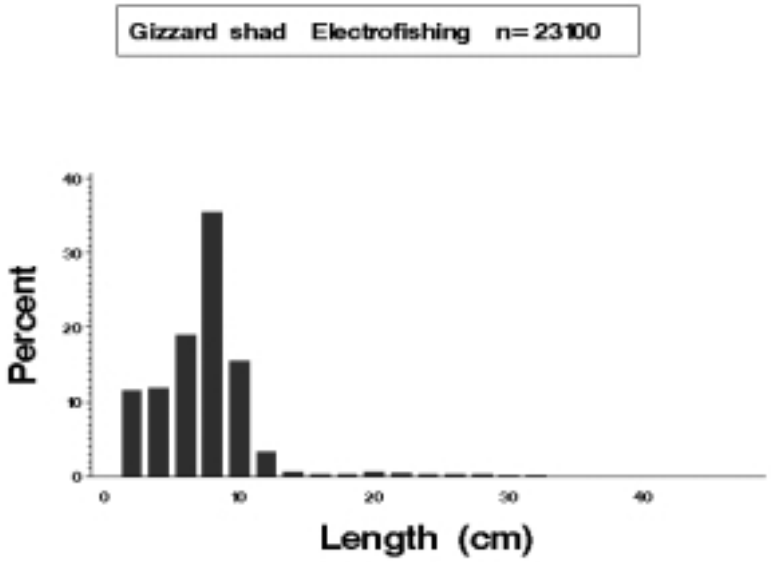


**Figure 6.2.** Length distributions (*length*) as a percentage of catch (*percent*) for gizzard shad (*Dorosoma cepedianum*) collected by electrofishing in the Illinois River, La Grange Pool during 1996.

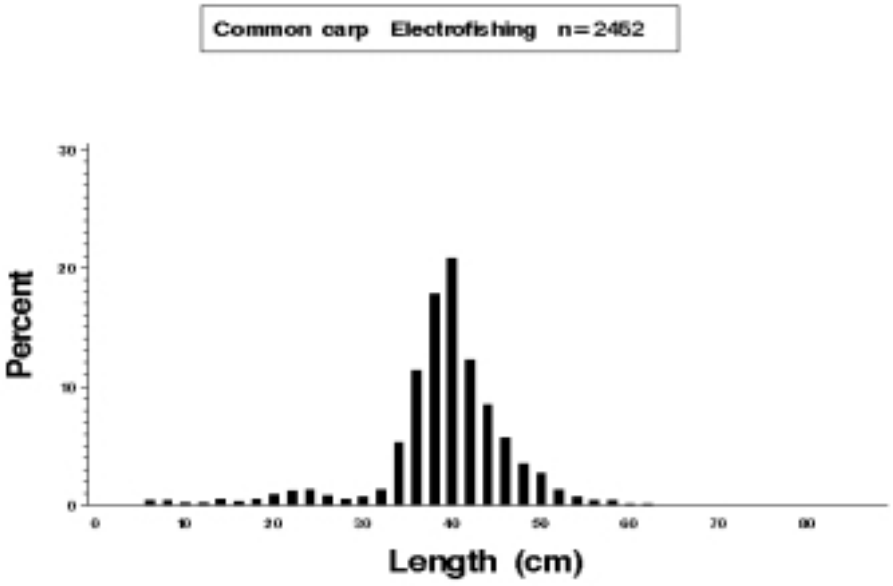


**Figure 6.3.** Length distributions (*length*) as a percentage of catch (*percent*) for common carp (*Cyprinus carpio*) collected by electrofishing in the Illinois River, La Grange Pool during 1996.

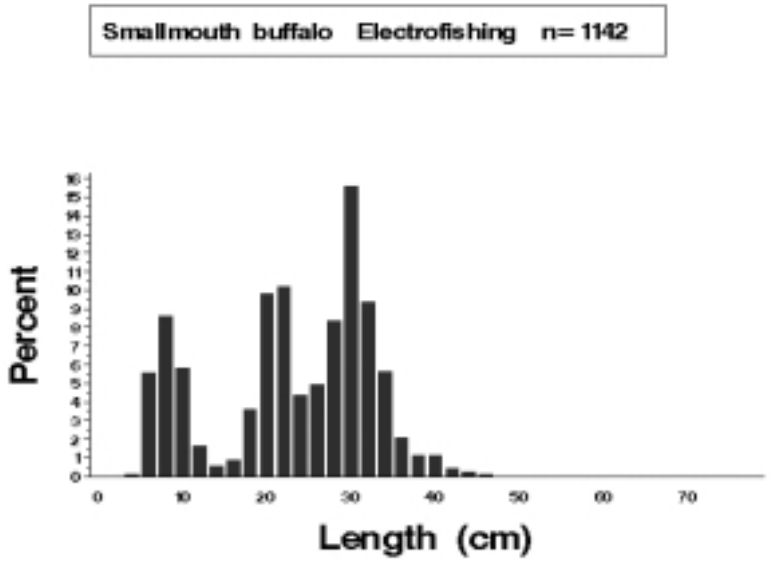


**Figure 6.4.** Length distributions (*length*) as a percentage of catch (*percent*) for smallmouth buffalo (*Ictiobus bubalus*) collected by electrofishing in the Illinois River, La Grange Pool during 1996.

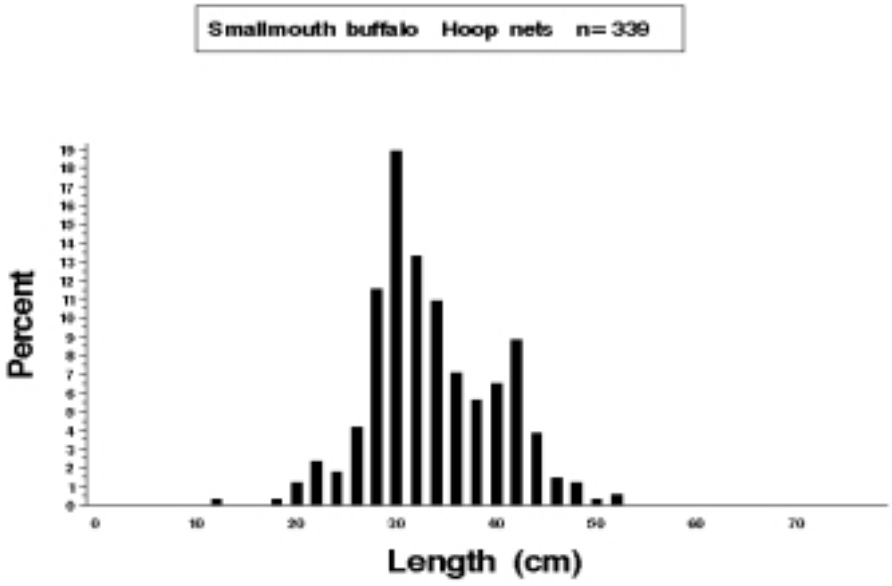


**Figure 6.5.** Length distributions (*length*) as a percentage of catch (*percent*) for smallmouth buffalo (*Ictiobus bubalus*) collected by large and small hoop netting in the Illinois River, La Grange Pool during 1996.

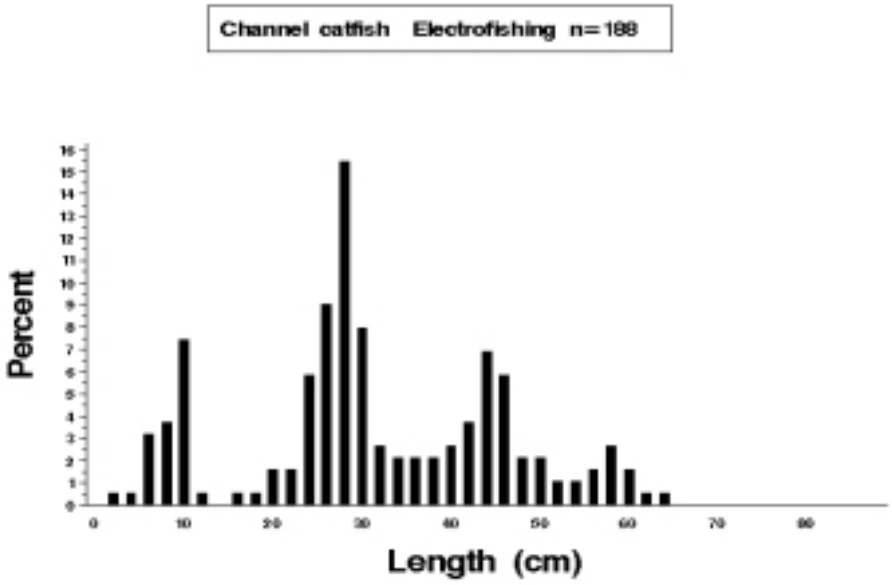


**Figure 6.6.** Length distributions (*length*) as a percentage of catch (*percent*) for channel catfish (*Ictalurus punctatus*) collected by electrofishing in the Illinois River, La Grange Pool during 1996.

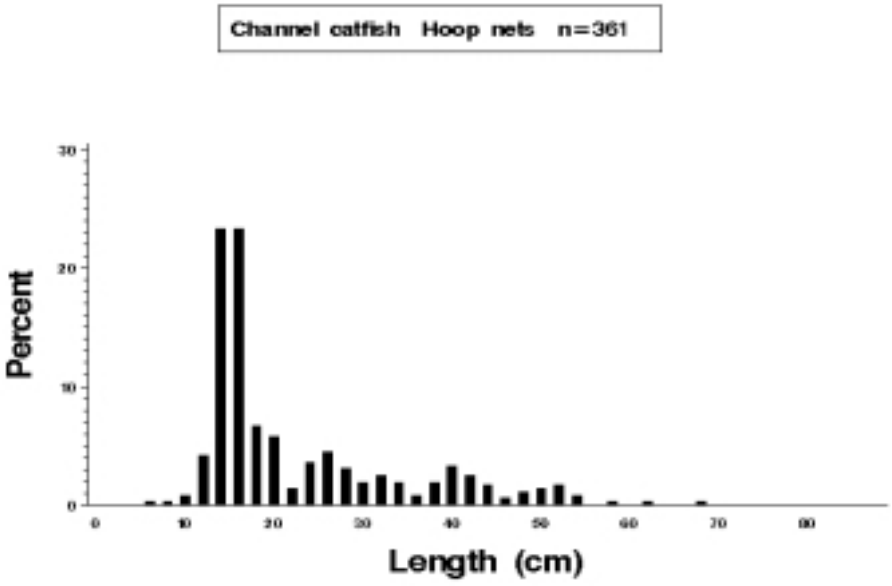


**Figure 6.7.** Length distributions (*length*) as a percentage of catch (*percent*) for channel catfish (*Ictalurus punctatus*) collected by large and small hoop netting in the Illinois River, La Grange Pool during 1996.

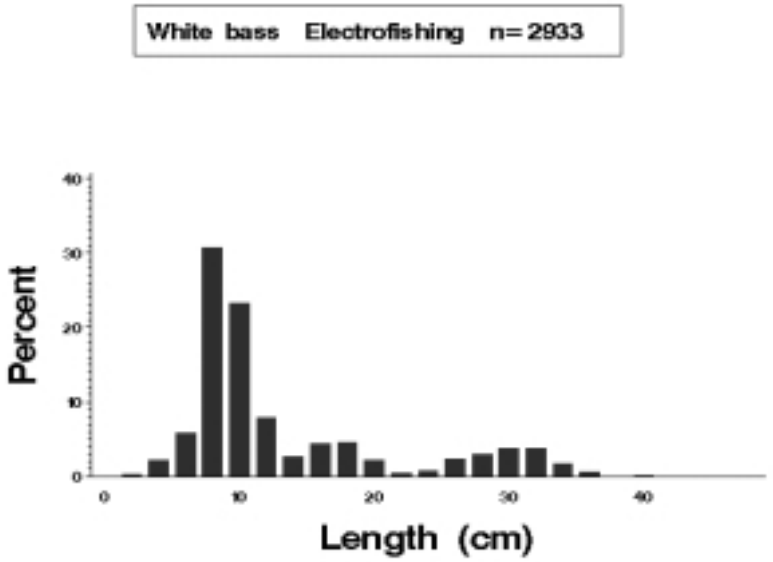


**Figure 6.8.** Length distributions (*length*) as a percentage of catch (*percent*) for white bass (*Morone chryops*) collected by electrofishing in the Illinois River, La Grange Pool during 1996.

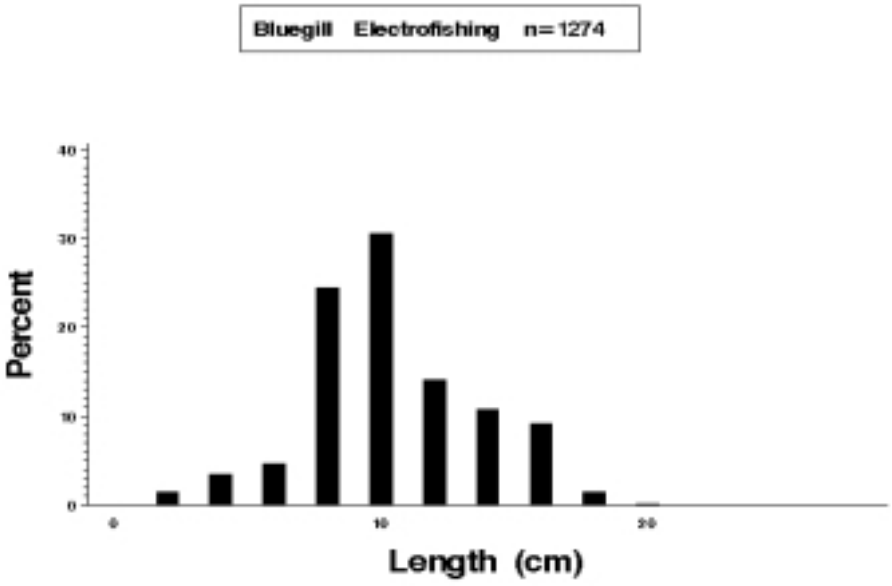


**Figure 6.9.** Length distributions (*length*) as a percentage of catch (*percent*) for bluegill (*Lepomis macrochirus*) collected by electrofishing in the Illinois River, La Grange Pool during 1996.

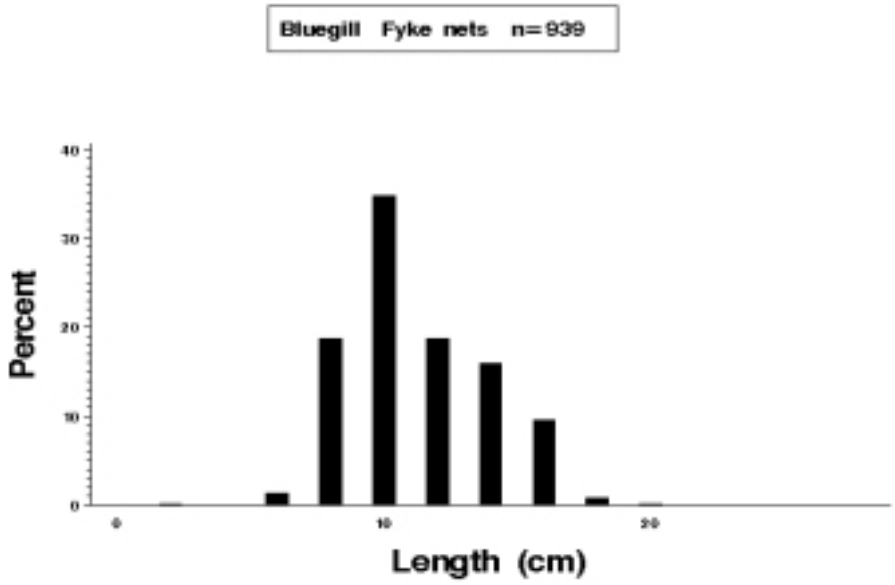


**Figure 6.10.** Length distributions (*length*) as a percentage of catch (*percent*) for bluegill (*Lepomis macrochirus*) collected by fyke netting in the Illinois River, La Grange Pool during 1996.

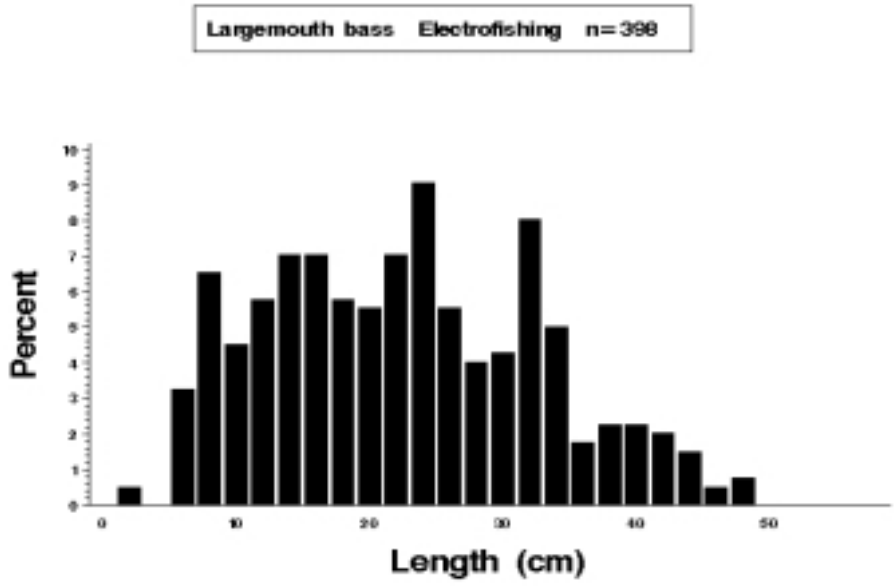


**Figure 6.11.** Length distributions (*length*) as a percentage of catch (*percent*) for largemouth bass (*Micropterus salmoides*) collected by electrofishing in the Illinois River, La Grange Pool during 1996.

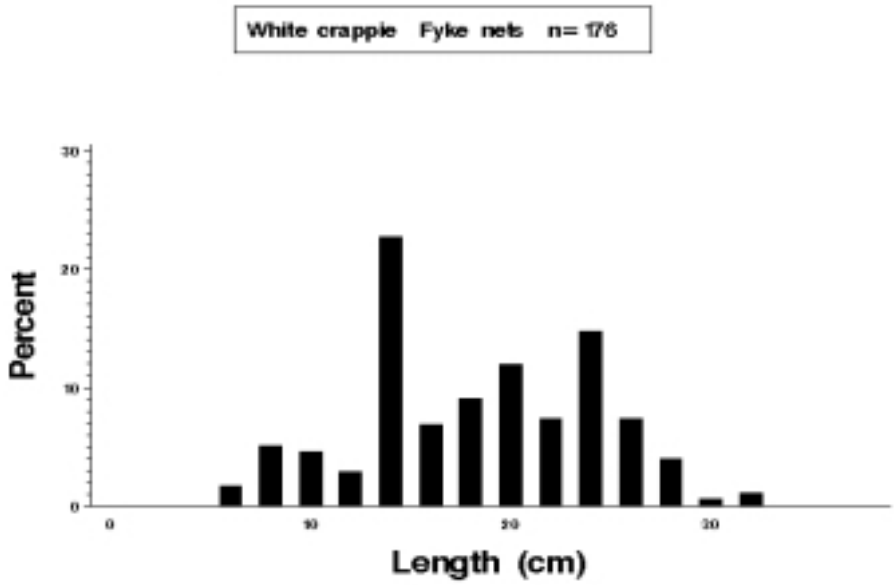


**Figure 6.12.** Length distributions (*length*) as a percentage of catch (*percent*) for white crappie (*Pomoxis annularus*) collected by fyke netting in the Illinois River, La Grange Pool during 1996.

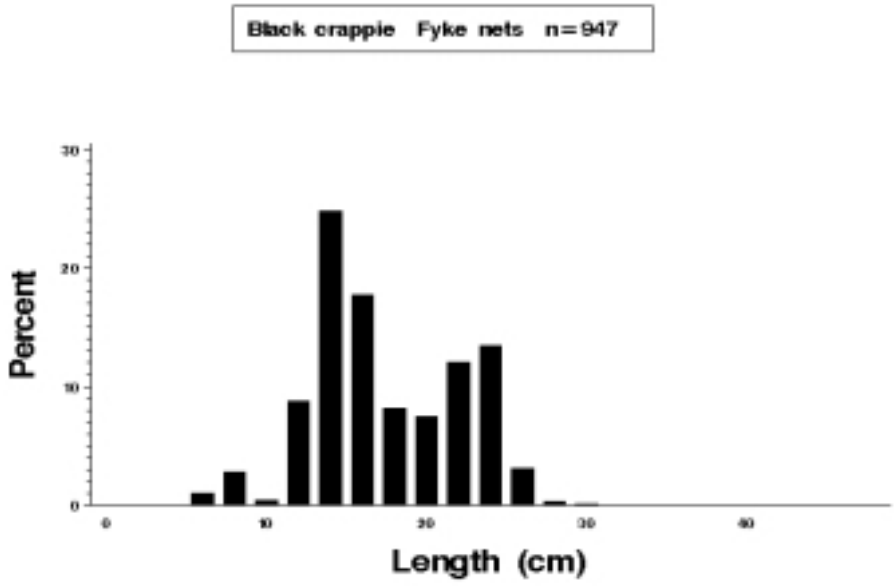


**Figure 6.13.** Length distributions (*length*) as a percentage of catch (*percent*) for black crappie (*Pomoxis nigromaculatus*) collected by fyke netting in the Illinois River, La Grange Pool during 1996.

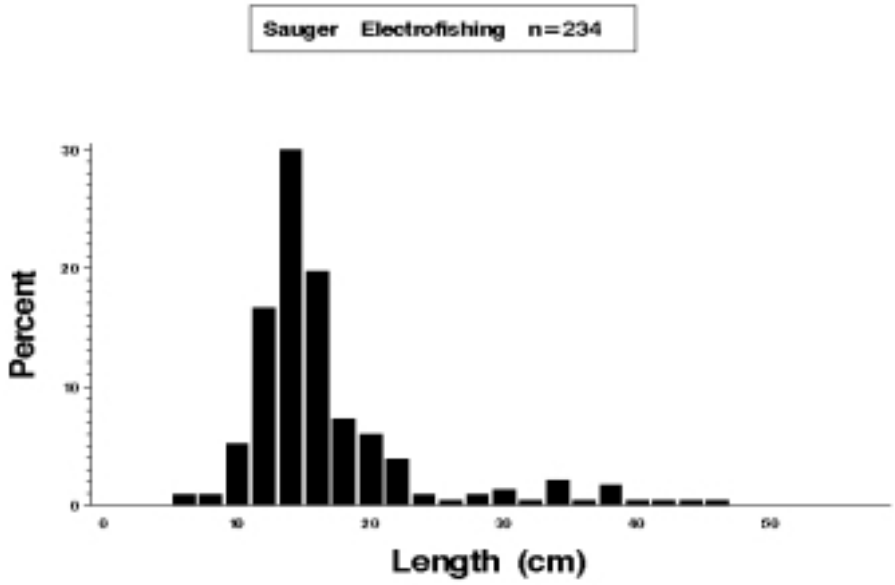


**Figure 6.14.** Length distributions (*length*) as a percentage of catch (*percent*) for sauger (*Stizostedion canadense*) collected by electrofishing in the Illinois River, La Grange Pool during 1996.

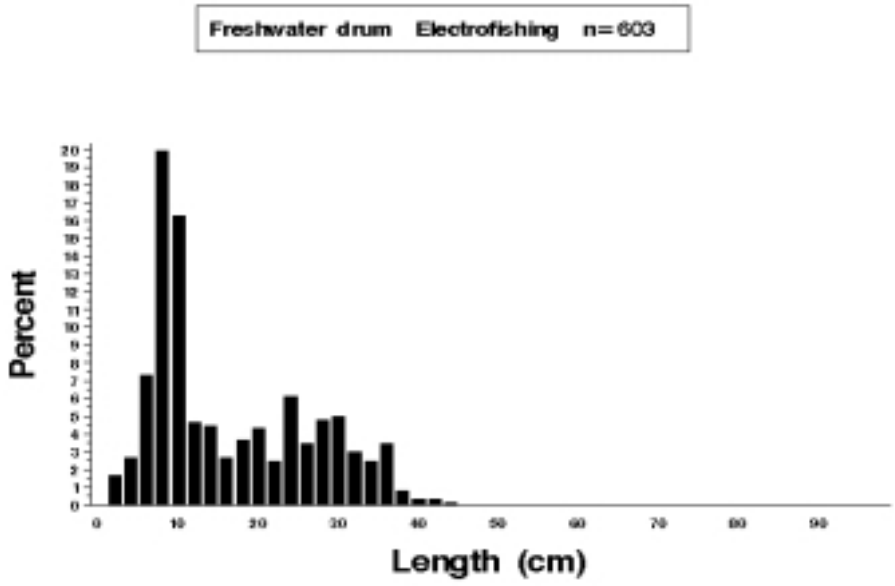


**Figure 6.15.** Length distributions (*length*) as a percentage of catch (*percent*) for freshwater drum (*Aplodinotus grunniens*) collected by electrofishing in the Illinois River, La Grange Pool during 1996.

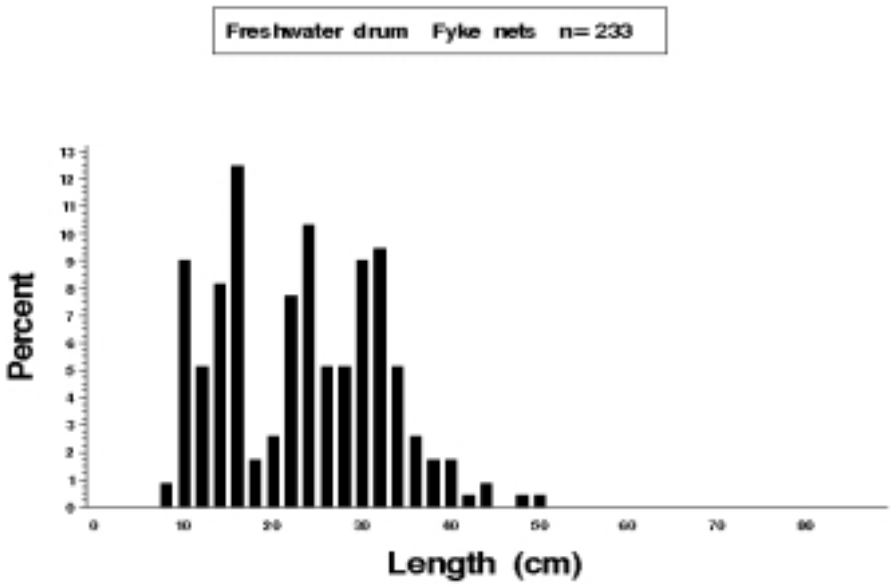


**Figure 6.16.** Length distributions (*length*) as a percentage of catch (*percent*) for freshwater drum (*Aplodinotus grunniens*) collected by fyke netting in the Illinois River, La Grange Pool during 1996.

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| 7. PERFORMING ORGANIZATION NAME AND ADDRESS<br><br>[1]U.S. Geological Survey, Environmental Management Technical Center, 575 Lester Avenue, Onalaska, Wisconsin 54650; [2]Minnesota Department of Natural Resources, 1801 S. Oak Street, Lake City, Minnesota 55041; [3]Wisconsin Department of Natural Resources, Onalaska Field Station, 575 Lester Avenue, Onalaska, Wisconsin 54650; [4]Iowa Department of Natural Resources, Mississippi River Monitoring Station, 206 Rose Street, Bellevue, Iowa 52031; [5]Illinois Natural History Survey, Alton Field Station, 4134 Alby Street, Alton, Illinois 62002; [6]Missouri Department of Conservation, 3815 E. Jackson Boulevard, Jackson, Missouri 63755; and [7]Illinois Natural History Survey, Havana Field Station, 704 N. Schrader Avenue, Havana, Illinois 62644 | | | 8. PERFORMING ORGANIZATION REPORT NUMBER |
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| 13. ABSTRACT (Maximum 200 words)<br><br>The Long Term Resource Monitoring Program (LTRMP) completed 2,378 collections of fishes from stratified random and permanently fixed sampling locations in six study reaches of the Upper Mississippi River System during 1996. Collection methods included day and night electrofishing, hoop netting, fyke netting (two net sizes), gill netting, seining, and trawling in select aquatic area classes. The six LTRMP study reaches are Pools 4 (excluding Lake Pepin), 8, 13, and 26 of the Upper Mississippi River, an unimpounded reach of the Mississippi River near Cape Girardeau, Missouri, and the La Grange Pool of the Illinois River. A total of 59–75 fish species were detected in each study reach. For each of the six LTRMP study reaches, this report contains summaries of: (1) sampling efforts in each combination of gear type and aquatic area class, (2) total catches of each species from each gear type, (3) mean catch-per-unit of gear effort statistics and standard errors for common species from each combination of aquatic area class and selected gear type, and (4) length distributions of common species from selected gear types. | | | |
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The Long Term Resource Monitoring Program (LTRMP) for the Upper Mississippi River System was authorized under the Water Resources Development Act of 1986 as an element of the Environmental Management Program. The mission of the LTRMP is to provide river managers with information for maintaining the Upper Mississippi River System as a sustainable large river ecosystem given its multiple-use character. The LTRMP is a cooperative effort by the U.S. Geological Survey, the U.S. Army Corps of Engineers, and the States of Illinois, Iowa, Minnesota, Missouri, and Wisconsin.