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2002 Annual Status Report: A Summary of Fish Data in Six Reaches of the Upper Mississippi River System

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fish_2002.pdf (9,425 KB)

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Last updated on September 4, 2004
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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 Upper Midwest Environmental Sciences 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 Upper Midwest Environmental Sciences 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 containing a synthesis of data from fish populations and communities in the Upper Mississippi River System. This report satisfies, Task 2.2.8.4, *Evaluate and Summarize Annual Results* under Goal 2, *Monitor Resource Change* as specified in the Operating Plan for the Long Term Resource Monitoring Program (U.S. Fish and Wildlife Service 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 Upper Midwest Environmental Sciences Center.

Suggested citation:

Bartels, A., M. C. Bowler, S. DeLain, D. P. Herzog, K. S. Irons, K. Mauel, T. M. O'Hara, and E. Ratcliff. 2004. 2002 Annual Status Report: A summary of fish data in six reaches of the Upper Mississippi River System. U.S. Geological Survey, Upper Midwest Environmental Sciences Center, La Crosse, Wisconsin. Web-based report LTRMP 2004-W001 available online at http://www.umesc.usgs.gov/reports_publications/ltrmp/fish/2002/fish-srs.html. (Accessed October 2004.)

Content manager: Jennie Sauer

Last updated on September 23, 2004
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Abstract

The Long Term Resource Monitoring Program (LTRMP) completed collections of fish from stratified random sampling and permanently fixed-site sampling in six study areas of the Upper Mississippi River System. Collection methods included day electrofishing, hoop netting, fyke netting (two net sizes), and bottom trawling in selected aquatic area classes. The six LTRMP study areas are Pools 4 (excluding Lake Pepin), 8, 13, and 26 of the Upper Mississippi River, an Open River (unimpounded) reach of the Mississippi River near Cape Girardeau, Missouri, and La Grange Pool of the Illinois River.

For each of the six LTRMP study areas, this report contains summaries by year of (1) sampling efforts for 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 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.

Key words: annual report, fish, LTRMP, Mississippi River

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Introduction

This report summarizes 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 (U.S. Fish and Wildlife Service 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 (Upper Mississippi River Conservation Committee 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.

Content manager: Jennie Sauer

Last updated on March 6, 2003
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Study areas for Long Term Resource Monitoring fish sampling.

- Pool 4
- Pool 8
- Pool 13
- Pool 26
- Open River Reach
- La Grange Pool

Navigation Pool 4 is 73.3 km (44 river miles) long and includes 14,700 ha (36,300 acres) of aquatic habitat. It is located between Lock and Dam 3 (above Red Wing, Minnesota) and Lock and Dam 4 (Alma, Wisconsin). Major tributaries include the Cannon and Vermillion Rivers on the Minnesota side and the much larger Chippewa River on the Wisconsin side. Lake Pepin, a riverine lake created by the Chippewa River delta, is located in the middle of Pool 4. The location of Lake Pepin divides the rest of the pool into upper Pool 4 and lower Pool 4. The smaller backwaters of upper Pool 4 have been degraded by sedimentation, whereas the larger backwaters of lower Pool 4 are much better habitat for vegetation.

Navigation Pool 8 is 38.8 km (23.3 river miles) long and is bounded by Lock and Dam 7 (Dresbach, Minnesota) to the north and Lock and Dam 8 (Genoa, Wisconsin) to the south. It encompasses 9,000 ha (22,100 acres) of aquatic habitat. Major tributaries include the Black, Root, and La Crosse Rivers. The upper section of Pool 8 has high bank islands adjacent to the main channel, deep secondary channels, and backwater sloughs. The middle section contains low islands, braided channels, and small backwater sloughs. The lower section is a large open expanse of water.

Navigation Pool 13 is 52.1 km (34.2 river miles) in length and is bounded by Lock and Dam 12 (Bellevue, Iowa) to the north and Lock and Dam 13 (Fulton, Illinois) to the south. It encompasses 11,400 ha (28,100 acres) of aquatic habitat. Similar to pools upstream, Pool 13 contains many high bank islands adjacent to the main channel in the upper section, braided backwater channels and sloughs in the middle section, and a large open lake-like area in the lower section of the pool. Major tributaries include the Apple and Plum Rivers on the Illinois side and Maquoketa and Elk Rivers on the Iowa side.

Navigation Pool 26 study area includes water bodies along the Upper Mississippi River from Lock and Dam 25 (Winfield, Missouri) to Lock and Dam 26 (Alton, Illinois) and the lower Illinois River from its confluence with the Mississippi River north to Illinois River mile 12. This reach of the two rivers is bordered by high bluffs on the Illinois side and low elevation floodplain on the Missouri side. The reach encompasses 9,500 ha (23,700 acres) of aquatic habitat. Presently, most of the backwaters of the lower Illinois River are isolated from the river by low levees so as to decrease sedimentation and allow management for waterfowl. Likewise, many of the secondary channels of the Mississippi River are isolated from the river on the upstream side to create backwaters and to reduce sedimentation.

The **Open River Reach** is 84 km (52 river miles) long. The study reach has approximately 7,241 ha (17,893 acres) of aquatic habitat in the form of open water, sand and mud flats, and swamps and marsh. The floodplain is extensively disconnected from the mainstem river by levees. Many of the islands are now joined to the mainland and most side channels contain closing structures and become disconnected from the mainstem at moderately low flows. This river reach is characterized by turbid water, high water velocities, and sand substrate; thus, the aquatic communities are dominated by more obligate riverine species than the pooled portion of the Upper Mississippi River. Major tributaries to the Open River Reach are the Little River Diversion Channel in Missouri and the Big Muddy Rivers and Cache River Diversion Channel in Illinois.

La Grange Pool on the Illinois River is about 130 km (80 river miles) long and encompasses 10,750 ha (26,500 acres) of aquatic habitat. It is bounded by Peoria Lock and Dam to the north and La Grange Lock and Dam to the south. This reach has the highest proportion of backwaters, except for Pool 4, but these backwaters are highly degraded by excessive sedimentation over the last 150 years. Many backwaters are isolated by low levees to enhance waterfowl habitat management. Major tributaries include the Sangmon, Mackinaw, and LaMoine Rivers.

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Last updated on September 22, 2004

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Methods

Sampling Methods

The Long Term Resource Monitoring Program's (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 1. As water levels are often suspected of affecting fish populations and community stratum, hydrographs are provided for each study area and each year sampled.

We summarize the annual increment of fish data obtained by the LTRMP from stratified random and fixed-site sampling by year. 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. 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 a 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.

From 1990 to 2001, the LTRMP used day and night electrofishing, fyke nets, mini fyke nets, small and large hoop nets, seines, gill nets, anchored trammel nets, and bottom trawls to sample fish in various strata. After an evaluation of the fish sampling gear deployment scheme (Ickes and Burkhardt 2002), the LTRMP eliminated the use of night electrofishing, seining in all strata, and offshore netting in impounded and backwater strata. The following is a summary of the 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 analysis. The unit of effort is a 15-min run.

Fyke Net

The LTRMP uses Wisconsin-type fyke nets (trap nets) that contain three sections: the lead, frame, and cab. All netting is 1.8-cm mesh (bar measure). 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 and tandem fyke netting data were combined for length distribution analysis.

Mini Fyke Net

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.

Hoop Net

The LTRMP uses two sizes of hoop nets. The large nets are composed of seven fiberglass hoops with diameters of 1.1–1.2 m. These nets are 4.8 m long, contain two finger-style throats, and are constructed of 3.7-cm nylon mesh (bar measure). 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 nylon mesh (bar measure). Hoop nets are deployed separately but in pairs within sampling sites. Both nets are baited with 3 kg of soybean cake. Because of gear inefficiency, hoop net sets in BWCO areas were optional during 1999. 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.

Seine

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.

Gill Net

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-lb] test) transparent nylon monofilament. The 25.4-cm mesh is woven from No. 12 (13.61-kg [30-lb] test) transparent nylon monofilament. The top line is floating foam-core rope and the bottom line is 29.5-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.

Anchored Trammel Net

In 1994, anchored 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 × 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. The net wall size is 35.56-cm bar of No. 9 multifilament twine hung 61 m per 30.48 yards of finished net. The net float line is 1.27-cm foam-core (two strands on the floating nets, one strand on the bottom set nets), and the lead line is lead-core (No. 20 on the floating net, No. 65 on the sinking net).

Bottom Trawl

Bottom trawl is conducted only at permanently fixed-site sampling locations 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 trawling effort is a haul. A minimum of six hauls are collected in main or side channel sites and four hauls at tailwater sites.

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 netting 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 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

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

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

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

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 *C/f* 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; small and large hoop netting), channel catfish (electrofishing; small and large 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 (fyke and tandem fyke netting), black crappie (fyke and tandem fyke netting), sauger (electrofishing), walleye (electrofishing), and freshwater drum (electrofishing; fyke and tandem fyke netting). Night electrofishing was eliminated in 2002 and, therefore, total catch may be lower for length distributions in years after 2001. The length data are illustrated in the form of histograms. 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. 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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Last updated on August 19, 2004

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Table 1. 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*
Silver lamprey		*I. unicuspis*
American brook lamprey		*Lampetra appendix*
	Acipenseridae	
Lake sturgeon		*Acipenser fulvescens*
Pallid sturgeon		*Scaphirhynchus albus*
Shovelnose sturgeon		*S. platorynchus*
Pallid sturgeon × Shovelnose sturgeon		*S. albus* × *S. platorynchus*
	Polyodontidae	
Paddlefish		*Polyodon spathula*
	Lepisosteidae	
Spotted gar		*Lepisosteus oculatus*
Longnose gar		*L. osseus*
Shortnose gar		*L. platostomus*
	Amiidae	
Bowfin		*Amia calva*
	Hiodontidae	
Goldeye		*Hiodon alosoides*
Mooneye		*H. tergisus*
	Anguillidae	
American eel		*Anguilla rostrata*
	Clupeidae	
Skipjack herring		*Alosa chrysochloris*

Gizzard shad		*Dorosoma cepedianum*
Threadfin shad		*D. petenense*
	Cyprinidae	
Central stoneroller		*Campostoma anomalum*
Goldfish		*Carassius auratus*
Grass carp		*Ctenopharyngodon idella*
Red shiner		*Cyprinella lutrensis*
Spotfin shiner		*C. spiloptera*
Blacktail shiner		*C. venusta*
Common carp		*Cyprinus carpio*
Goldfish × common carp		*Carassius auratus × Cyprinus carpio*
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*
Bleeding shiner		*Luxilus zonatus*
Speckled chub		*Macrhybopsis aestivalis*
Sturgeon chub		*M. gelida*
Sicklefin chub		*M. meeki*
Silver chub		*M. storeriana*
Hornyhead chub		*Nocomis biguttatus*
Golden shiner		*Notemigonus crysoleucas*
Bigeye chub		*Notropis amblops*
Pallid shiner		*N. amnis*
Emerald shiner		*N. atherinoides*
River shiner		*N. blennius*
Bigeye shiner		*N. boops*
Ghost shiner		*N. buchanani*
Spottail shiner		*N. hudsonius*
Ozark minnow		*N. nubilus*
Silverband shiner		*N. shumardi*
Sand shiner		*N. stramineus*
Weed shiner		*N. texanus*

Mimic shiner		*N. volucellus*
Channel shiner		*N. wickliffi*
Pugnose minnow		*Opsopoeodus emiliae*
Suckermouth minnow		*Phenacobius mirabilis*
Southern redbelly dace		*P. erythrogaster*
Bluntnose minnow		*Pimephales notatus*
Fathead minnow		*P. promelas*
Bullhead minnow		*P. vigilax*
Blacknose dace		*Rhinichthys atratulus*
Creek chub		*Semotilus atromaculatus*
	Catostomidae	
River carpsucker		*Carpiodes carpio*
Quillback		*C. cyprinus*
Highfin carpsucker		*C. velifer*
White sucker		*C. commersoni*
Blue sucker		*Cycleptus elongatus*
Creek chubsucker		*Erimyzon oblongus*
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*
Golden redhorse		*M. erythrurum*
Shorthead redhorse		*M. macrolepidotum*
	Ictaluridae	
Black bullhead		*Ameiurus melas*
Yellow bullhead		*A. natalis*
Brown bullhead		*A. nebulosus*
Blue catfish		*Ictalurus furcatus*
Channel catfish		*I. punctatus*
Slender madtom		*Noturus exilis*
Stonecat		*N. flavus*
Tadpole madtom		*N. gyrinus*
Freckled madtom		*N. nocturnus*

Flathead catfish		*Pylodictis olivaris*
	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	
Brown trout		*Salmo trutta*
	Percopsidae	
Trout-perch		*Percopsis omiscomaycus*
	Aphredoderidae	
Pirate perch		*Aphredoderus sayanus*
	Gadidae	
Burbot		*Lota lota*
	Cyprinodontidae	
Northern studfish		*Fundulus catenatus*
Starhead topminnow		*F. dispar*
Blackstripe topminnow		*F. notatus*
Blackspotted topminnow		*F. olivaceus*
	Poeciliidae	
Western mosquitofish		*Gambusia affinis*
	Atherinidae	
Brook silverside		*Labidesthes sicculus*
Inland silverside		*Menidia beryllina*
	Gasterosteidae	
Brook stickleback		*Culaea inconstans*
	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*
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*
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*
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*
Bluegill × longear sunfish		*L. macrochirus* × *L. megalotis*
Bluegill × redear sunfish		*L. macrochirus* × *L. microlophus*
Smallmouth bass		*Micropterus dolomieu*
Smallmouth 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		*Crystallaria asprella*
Western sand darter		*A. clara*
Mud darter		*Etheostoma asprigene*
Greenside darter		*E. blennioides*
Bluntnose darter		*E. chlorosomum*

Iowa darter		*E. exile*
Fantail darter		*E. flabellare*
Slough darter		*E. gracile*
Johnny darter		*E. nigrum*
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*

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Pool 4, Upper Mississippi River
2002 Fish Collection Summary

This report is a bullet summary of the Long Term Resource Monitoring Program's fish collection efforts conducted by the Lake City Field Station on Pool 4, Upper Mississippi River during 2002. Information on changes in fish catch over all years can be obtained from the Graphical Fish Database Browser.

- 236 fish collections were conducted using six gear types (Table 2.1).
- Gear allocations among strata remained consistent for all three sampling periods except for two fewer day electrofishing runs during period 2 and four fewer trawl runs during periods 2 and 3.
- Water levels were below the long-term mean from mid-January to early April (Figure 1.1). From April to May, water levels fluctuated above and below the long-term mean. Sampling started on June 17 when water levels were receding and stayed below the long-term mean until late June. Water levels rose significantly above the long-term mean for periods 2 and 3. During periods 2 and 3, a total of two elecrofishing runs and eight trawls were not completed because of high water conditions in the main channel border and tailwater areas of Pool 4.
- Of the 236 fish collections, 202 were from randomly selected sites, and 34 were from fixed sites. The reduction in fish collections and gear types from the previous year were because of the elimination of sampling allocations in seining, tandem fyke netting, tandem mini fyke netting, and night electrofishing.
- Side channel borders, backwaters, and main channel borders received the most sampling effort (Table 2.1).
- 36,945 fish, representing 58 species and 2 hybrids, were collected (Table 3.1).
- Historical fish distribution records for the Upper Mississippi River (Pitlo et al. 1995)

document 99 fish species from Pool 4. To date the Lake City Field Station has collected a total of 89 species and 5 hybrids.

- During the 2002 fish sampling season the three species with the highest total catch were as follows: 29,147 emerald shiners, 1,483 gizzard shad and 1,296 bluegill.
- One paddlefish, a Minnesota threatened species, was collected. Five black buffalo and one blue sucker, Minnesota special concern species, were also collected. (Table 3.1).
- Mean catch-per-unit-effort and standard effort for fish collected by gears using stratified random (Tables 4.1-11.1) and fixed-site sampling (Tables 14.1-21.1) for each stratum are shown.
- Length distributions for selected species of fish are shown in Figures 2.1 to 19.1.

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Table 2.1 Allocation of fish sampling effort among strata in Pool 4 of the Upper Mississippi River during 2002. 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		8	8	4					28
Fyke net	6								2	8
Large hoop net			6	4					2	12
Small hoop net			6	4					2	12
Mini fyke net	6		6	4					2	18
Trawling									4	4
Subtotal	**20**	**0**	**26**	**20**	**4**	**0**	**0**	**0**	**12**	**82**

Sampling period = 2: August 1–September 14

Sampling gear	BWCS	BWCO	SCB	MCBU	MCBW	IMPS	IMPO	TRI	TWZ	TOTAL
Day electrofishing	8		8	8	2					26
Fyke net	6								2	8
Large hoop net			6	4					2	12
Small hoop net			6	4					2	12
Mini fyke net	6		6	4					2	18
Subtotal	**20**	**0**	**26**	**20**	**2**	**0**	**0**	**0**	**8**	**76**

Sampling period = 3: September 15–October 31

Sampling gear	BWCS	BWCO	SCB	MCBU	MCBW	IMPS	IMPO	TRI	TWZ	TOTAL
Day electrofishing	8		8	8	4					28
Fyke net	6								2	8
Large hoop net			6	4					2	12
Small hoop net			6	4					2	12
Mini fyke net	6		6	4					2	18
Subtotal	**20**	**0**	**26**	**20**	**4**	**0**	**0**	**0**	**8**	**78**
Total	**60**	**0**	**78**	**60**	**10**	**0**	**0**	**0**	**28**	**236**

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

Last updated on August 19, 2004

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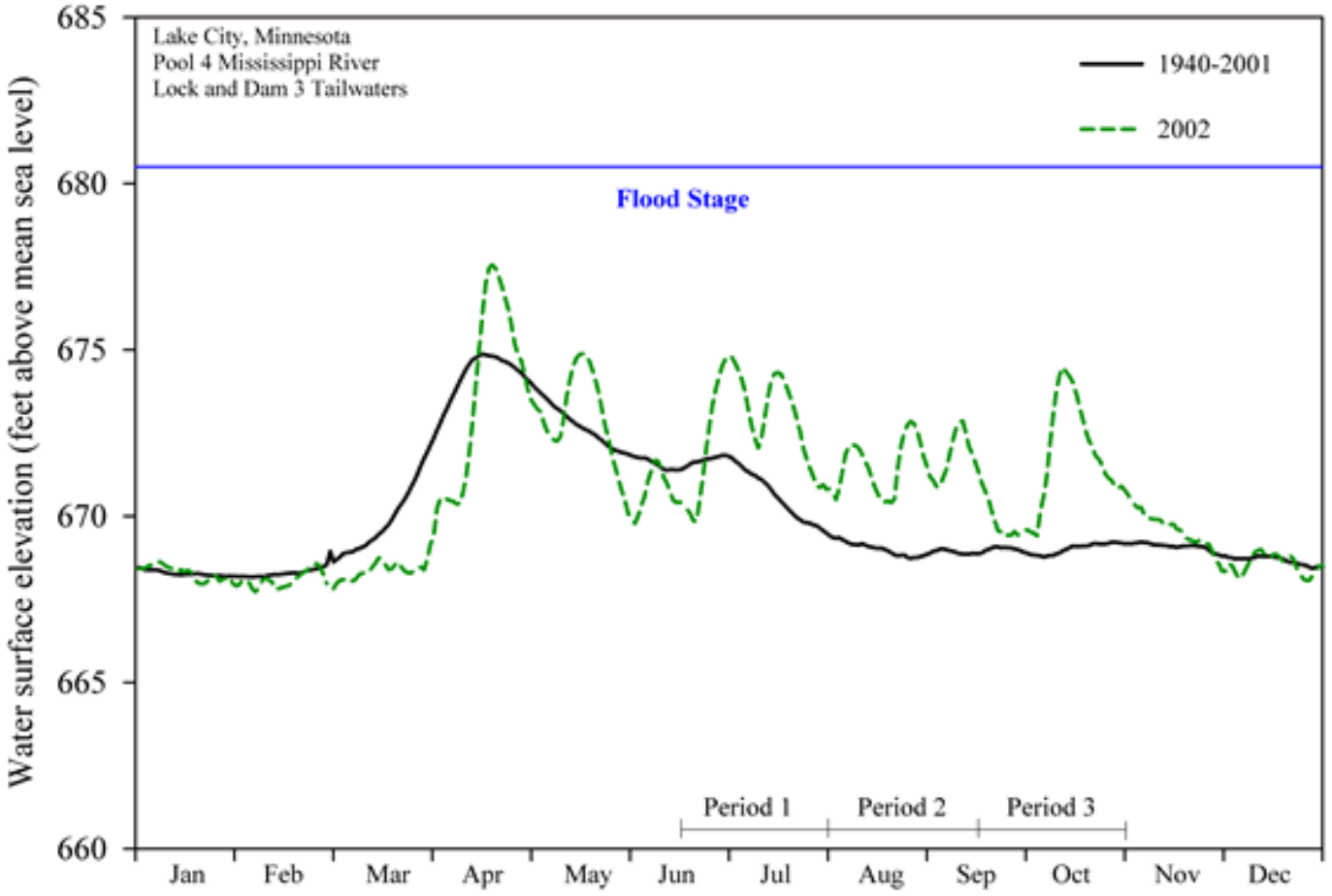

Figure 1.1. Daily water surface elevation from Lock and Dam 3 for Pool 4, Upper Mississippi River, during 2002 and mean elevation since 1940. The U.S. Army Corps of Engineers discharge data were obtained in accordance with Upper Midwest Environmental Sciences Center established procedures (Wlosinski et al. 1995).

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Last updated on March 27, 2003

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Table 3.1 Total catches, by gear type, of fish collected in Pool 4 of the Upper Mississippi River during 2002. See Table 2.1 for the list of sampling gears actually deployed in this study reach.

Species	Common name	Scientific name	D	F	M	HS	HL	T	TOTAL
1	Chestnut lamprey	*Ichthyomyzon castaneus*	1	-	-	-	-	-	1
2	Silver lamprey	*I. unicuspis*	3	-	-	-	2	-	5
3	Shovelnose sturgeon	*Scaphirhynchus platorynchus*	1	-	-	-	1	1	3
4	Paddlefish	*Polyodon spathula*	1	-	-	-	-	-	1
5	Longnose gar	*Lepisosteus osseus*	1	6	-	-	1	-	8
6	Shortnose gar	*L. platostomus*	-	33	3	-	-	-	36
7	Bowfin	*Amia calva*	7	14	6	-	-	-	27
8	Mooneye	*Hiodon tergisus*	-	-	-	-	1	-	1
9	American eel	*Anguilla rostrata*	-	1	-	-	-	-	1
10	Gizzard shad	*Dorosoma cepedianum*	561	8	914	-	-	-	1483
11	Spotfin shiner	*Cyprinella spiloptera*	131	-	55	-	-	-	186

12	Common carp	*Cyprinus carpio*	280	92	16	53	98	-	539
13	Speckled chub	*Macrhybopsis aestivalis*	-	-	-	-	-	16	16
14	Silver chub	*M. storeriana*	2	1	1	4	-	-	8
15	Golden shiner	*Notemigonus crysoleucas*	2	2	5	-	-	-	9
16	Emerald shiner	*Notropis atherinoides*	1831	-	27316	-	-	-	29147
17	River shiner	*N. blennius*	75	-	-	-	-	-	75
18	Spottail shiner	*N. hudsonius*	25	-	5	-	-	-	30
19	Mimic shiner	*N. volucellus*	86	-	40	-	-	-	126
20	Pugnose minnow	*Opsopoeodus emiliae*	3	-	336	-	-	-	339
21	Bluntnose minnow	*Pimephales notatus*	1	-	17	-	-	-	18
22	Bullhead minnow	*P. vigilax*	31	-	93	-	-	-	124
23	River carpsucker	*Carpiodes carpio*	5	7	-	-	-	-	12
24	Quillback	*C. cyprinus*	24	6	-	-	1	-	31
25	White sucker	*Catostomus commersoni*	7	-	1	-	-	-	8
26	Blue sucker	*Cycleptus elongatus*	-	-	-	-	1	-	1
27	Smallmouth buffalo	*Ictiobus bubalus*	37	5	-	2	124	-	168
28	Bigmouth buffalo	*I. cyprinellus*	2	1	-	-	1	-	4
29	Black buffalo	*I. niger*	-	-	-	-	5	-	5

30	Spotted sucker	*Minytrema melanops*	40	11	1	-	-	-	52
31	Silver redhorse	*Moxostoma anisurum*	109	74	11	4	8	-	206
32	River redhorse	*M. carinatum*	31	-	-	-	-	-	31
33	Golden redhorse	*M. erythrurum*	33	3	1	-	-	-	37
34	Shorthead redhorse	*M. macrolepidotum*	200	28	4	23	13	3	271
35	Unidentified redhorse	*Moxostoma* sp.	2	-	2	-	-	-	4
36	Black bullhead	*Ameiurus melas*	-	-	1	-	-	-	1
37	Yellow bullhead	*A. natalis*	1	2	-	-	-	-	3
38	Channel catfish	*Ictalurus punctatus*	11	3	1	68	81	72	236
39	Unidentified catfish	*Ictalurus* sp.	-	-	-	-	-	1	1
40	Tadpole madtom	*Noturus gyrinus*	1	-	18	-	-	-	19
41	Flathead catfish	*Pylodictis olivaris*	11	6	3	-	11	-	31
42	Northern pike	*Esox lucius*	36	14	2	-	4	-	56
43	Trout perch	*Percopsis omiscomaycus*	1	-	-	-	-	-	1
44	Brook silverside	*Labidesthes sicculus*	16	-	6	-	-	-	22
45	White bass	*Morone chrysops*	124	184	288	3	16	-	615

46	Rock bass	*Ambloplites rupestris*	54	31	34	6	2	-	127
47	Green sunfish	*Lepomis cyanellus*	7	-	5	-	-	-	12
48	Pumpkinseed	*L. gibbosus*	3	8	-	-	-	-	11
49	Bluegill	*L. macrochirus*	254	377	658	3	4	-	1296
50	Green x pumpkinseed sunfish	*L. cyanellus x gibbosus*	-	1	-	-	-	-	1
51	Green x bluegill sunfish	*L. cyanellus x macrochirus*	1	4	-	1	-	-	6
52	Smallmouth bass	*Micropterus dolomieu*	188	4	4	1	-	-	197
53	Largemouth bass	*M. salmoides*	248	6	3	-	-	-	257
54	White crappie	*Pomoxis annularis*	8	5	7	1	-	-	21
55	Black crappie	*P. nigromaculatus*	53	146	37	-	10	-	246
56	Unidentified sunfish	Unidentified Centrarchidae	-	-	1	-	-	-	1
57	Johnny darter	*Etheostoma nigrum*	2	-	7	-	-	-	9
58	Yellow perch	*Perca flavescens*	131	33	7	3	-	-	174
59	Logperch	*Percina caprodes*	33	-	23	-	-	-	56
60	River darter	*P. shumardi*	-	-	7	-	-	2	9
61	Sauger	*Stizostedion canadense*	45	6	-	-	-	-	51

62	Walleye	*S. vitreum*	30	2	-	-	-	-	32
63	Freshwater drum	*Aplodinotus grunniens*	64	156	17	10	38	12	297
64	Unidentified	Unidentified	-	-	1	-	-	-	1
			4854	**1280**	**29957**	**182**	**422**	**107**	**36802**

Sampling gears:
D - Day electrofishing
F - Fyke netting
M - Mini fyke netting
HS - Small hoop netting
HL - Large hoop netting
T- Trawling

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Pool 4 Tables

Table*	Stratified Random Sampling
4.1	Mean catch-per-unit-effort for fish collected by day electrofishing
6.1	Mean catch-per-unit-effort for fish collected by fyke netting
8.1	Mean catch-per-unit-effort for fish collected by mini fyke netting
10.1	Mean catch-per-unit-effort for fish collected by small hoop netting
11.1	Mean catch-per-unit-effort for fish collected by large hoop netting
	Fixed-site Sampling
14.1	Mean catch-per-unit-effort for fish collected by day electrofishing
16.1	Mean catch-per-unit-effort for fish collected by fyke netting
17.1	Mean catch-per-unit-effort for fish collected by mini fyke netting
18.1	Mean catch-per-unit-effort for fish collected by small hoop netting
19.1	Mean catch-per-unit-effort for fish collected by large hoop netting
21.1	Mean catch-per-unit-effort for fish collected by bottom trawling

*Table numbers are not always in sequence because some gears were not fished in some study areas. Table numbers for each gear type are consistent among study areas.

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Last updated on August 16, 2004

Table 4.1. Mean catch-per-unit-effort and (standard error) for fish collected by day electrofishing in Pool 4 of the Upper Mississippi River using stratified random sampling during 2002. The statistics under ALL pertain to unbiased means over all strata sampled by this gear (as indicated by nonmissing entries below and by Table 2.1). See Methods for definitions of catch-per-unit-effort and standard error. Scientific names for the species listed can be found in Table 1.

Common name	ALL	BWCS	MCBU	MCBW	SCB
Chestnut lamprey	0.01		0.04		
	(0.01)		(0.04)		
Silver lamprey	0.03		0.08		0.04
	(0.02)		(0.06)		(0.04)
Shovelnose sturgeon	0.01		0.04		
	(0.01)		(0.04)		
Longnose gar	0.01		0.04		
	(0.01)		(0.04)		
Bowfin	0.11	0.21	0.04		0.04
	(0.05)	(0.12)	(0.04)		(0.04)
Gizzard shad	7.23	4.21	7.92		10.79

	(2.24)	(1.26)	(3.40)		(6.30)
Spotfin shiner	1.69	0.54	1.67		3.25
	(0.51)	(0.29)	(0.62)		(1.47)
Common carp	3.81	3.96	4.00	0.37	3.50
	(0.57)	(0.97)	(1.30)	(0.37)	(0.70)
Silver chub	0.02		0.08		
	(0.02)		(0.08)		
Golden shiner	0.03	0.04			0.04
	(0.02)	(0.04)			(0.04)
Emerald shiner	22.34	8.25	38.92		28.46
	(6.27)	(4.79)	(14.53)		(14.78)
River shiner	0.80	0.08	2.92		0.13
	(0.37)	(0.08)	(1.48)		(0.09)
Spottail shiner	0.35	0.21	0.04		0.79
	(0.22)	(0.10)	(0.04)		(0.67)
Mimic shiner	1.02	0.25	2.17		1.17
	(0.36)	(0.17)	(0.98)		(0.78)
Pugnose minnow	0.05	0.08			0.04
	(0.04)	(0.08)			(0.04)
Bluntnose minnow	0.01				0.04
	(0.01)				(0.04)

Bullhead minnow	0.41	0.08	0.21		1.00
	(0.18)	(0.08)	(0.13)		(0.55)
River carpsucker	0.06	0.08			0.08
	(0.04)	(0.06)			(0.08)
Quillback	0.28	0.08	0.67		0.25
	(0.09)	(0.06)	(0.33)		(0.11)
White sucker	0.12	0.21			0.08
	(0.04)	(0.08)			(0.06)
Smallmouth buffalo	0.50	0.75	0.42		0.25
	(0.14)	(0.29)	(0.26)		(0.11)
Bigmouth buffalo	0.03	0.04	0.04		
	(0.02)	(0.04)	(0.04)		
Spotted sucker	0.70	1.54			0.13
	(0.16)	(0.38)			(0.09)
Silver redhorse	1.50	1.38	0.67	0.75	2.33
	(0.30)	(0.49)	(0.22)	(0.48)	(0.67)
River redhorse	0.34	0.04	0.25	1.00	0.79
	(0.15)	(0.04)	(0.12)	(0.70)	(0.44)
Golden redhorse	0.48	0.50	0.17		0.71
	(0.16)	(0.31)	(0.12)		(0.24)

Shorthead redhorse	2.43	2.08	1.54	2.62	3.58
	(0.47)	(0.72)	(0.50)	(0.90)	(1.06)
Unidentified redhorse	0.03	0.04			0.04
	(0.02)	(0.04)			(0.04)
Yellow bullhead	0.01		0.04		
	(0.01)		(0.04)		
Channel catfish	0.11	0.04	0.21		0.13
	(0.04)	(0.04)	(0.08)		(0.09)
Tadpole madtom	0.02	0.04			
	(0.02)	(0.04)			
Flathead catfish	0.11		0.29		0.13
	(0.05)		(0.16)		(0.07)
Northern pike	0.54	0.79	0.29		0.42
	(0.09)	(0.17)	(0.09)		(0.12)
Trout perch	0.02	0.04			
	(0.02)	(0.04)			
Brook silverside	0.26	0.46			0.21
	(0.13)	(0.28)			(0.13)
White bass	1.48	1.21	2.04	0.75	1.42
	(0.33)	(0.60)	(0.56)	(0.75)	(0.47)

Rock bass	0.76	0.79	0.63		0.83
	(0.18)	(0.28)	(0.29)		(0.36)
Green sunfish	0.11	0.17	0.04		0.08
	(0.06)	(0.13)	(0.04)		(0.08)
Pumpkinseed	0.05	0.13			
	(0.03)	(0.07)			
Bluegill	4.16	7.83	0.96		1.79
	(0.87)	(1.97)	(0.48)		(0.56)
Green x bluegill sunfish	0.02	0.04			
	(0.02)	(0.04)			
Smallmouth bass	2.18	0.58	5.00		2.13
	(0.37)	(0.31)	(1.11)		(0.66)
Largemouth bass	3.82	5.58	1.25		3.50
	(0.65)	(1.26)	(0.57)		(1.06)
White crappie	0.14	0.33			
	(0.09)	(0.22)			
Black crappie	0.80	1.13	0.46		0.63
	(0.18)	(0.35)	(0.23)		(0.28)
Johnny darter	0.03	0.04	0.04		
	(0.02)	(0.04)	(0.04)		
Yellow perch	2.12	3.79	0.54		1.13

	(0.38)	(0.83)	(0.23)		(0.39)
Logperch	0.41	0.29	0.46		0.54
	(0.16)	(0.25)	(0.30)		(0.27)
Sauger	0.63	0.71	0.42		0.71
	(0.17)	(0.29)	(0.15)		(0.37)
Walleye	0.34	0.25	0.29		0.50
	(0.09)	(0.12)	(0.13)		(0.23)
Freshwater drum	0.85	1.04	0.50	0.50	0.88
	(0.25)	(0.56)	(0.17)	(0.50)	(0.22)

Sampling strata:
BWCS - Backwater, contiguous, shoreline
MCBU - Main channel border, unstructured
MCBW - Main channel border, wing dam
SCB - Side channel border

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Table 6.1 Mean catch-per-unit-effort and (standard error) for fish collected by fyke netting in Pool 4 of the Upper Mississippi River using stratified random sampling during 2002. The statistics under ALL pertain to unbiased means over all strata sampled by this gear (as indicated by nonmissing entries below and by Table 2.1). See Methods for definitions of catch-per-unit-effort and standard error. Scientific names for the species listed can be found in Table 1.

Common name	ALL	BWCS
Longnose gar	0.11	0.11
	(0.08)	(0.08)
Shortnose gar	1.37	1.37
	(1.01)	(1.01)
Bowfin	0.64	0.64
	(0.34)	(0.34)
American eel	0.06	0.06
	(0.06)	(0.06)
Gizzard shad	0.35	0.35
	(0.20)	(0.20)
Common carp	4.20	4.20
	(1.25)	(1.25)

Golden shiner	0.13	0.13
	(0.09)	(0.09)
River carpsucker	0.37	0.37
	(0.22)	(0.22)
Quillback	0.36	0.36
	(0.19)	(0.19)
Smallmouth buffalo	0.27	0.27
	(0.11)	(0.11)
Bigmouth buffalo	0.05	0.05
	(0.05)	(0.05)
Spotted sucker	0.69	0.69
	(0.36)	(0.36)
Silver redhorse	4.14	4.14
	(1.05)	(1.05)
Golden redhorse	0.17	0.17
	(0.09)	(0.09)
Shorthead redhorse	1.16	1.16
	(0.39)	(0.40)
Yellow bullhead	0.06	0.06
	(0.05)	(0.06)
Channel catfish	0.06	0.06
	(0.05)	(0.06)
Flathead catfish	0.23	0.23

	(0.13)	(0.13)
Northern pike	0.81	0.81
	(0.29)	(0.30)
White bass	0.65	0.65
	(0.53)	(0.53)
Rock bass	1.58	1.58
	(0.53)	(0.53)
Pumpkinseed	0.43	0.43
	(0.26)	(0.26)
Bluegill	15.23	15.23
	(3.99)	(4.00)
Green x bluegill sunfish	0.06	0.06
	(0.05)	(0.06)
Smallmouth bass	0.11	0.11
	(0.11)	(0.11)
Largemouth bass	0.17	0.17
	(0.09)	(0.09)
Black crappie	4.90	4.90
	(1.25)	(1.25)
Yellow perch	1.86	1.86
	(0.64)	(0.64)
Sauger	0.06	0.06

	(0.06)	(0.06)
Walleye	0.05	0.05
	(0.05)	(0.05)
Freshwater drum	4.51	4.51
	(2.87)	(2.87)

Sampling stratum:
BWCS - Backwater, contiguous, shoreline

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Table 8.1 Mean catch-per-unit-effort and (standard error) for fish collected by mini fyke netting in Pool 4 of the Upper Mississippi River using stratified random sampling during 2002. The statistics under ALL pertain to unbiased means over all strata sampled by this gear (as indicated by nonmissing entries below and by Table 2.1). See Methods for definitions of catch-per-unit-effort and standard error. Scientific names for the species listed can be found in Table 1.

Common name	ALL	BWCS	MCBU	SCB
Shortnose gar	0.07	0.16		
	(0.05)	(0.12)		
Bowfin	0.13	0.21	0.16	
	(0.08)	(0.16)	(0.16)	
Gizzard shad	0.53	0.17	1.75	0.07
	(0.28)	(0.12)	(1.10)	(0.07)
Spotfin shiner	0.88	0.47	1.39	1.02
	(0.48)	(0.47)	(1.29)	(0.91)
Common carp	0.39	0.83		0.10
	(0.16)	(0.37)		(0.07)

Golden shiner	0.12	0.29		
	(0.12)	(0.29)		
Emerald shiner	241.76	0.38	960.82	3.59
	(239.37)	(0.38)	(959.06)	(2.70)
Spottail shiner	0.08			0.26
	(0.06)			(0.20)
Mimic shiner	0.58	0.29	1.44	0.30
	(0.31)	(0.18)	(1.19)	(0.18)
Pugnose minnow	7.98	17.81		1.06
	(7.06)	(16.50)		(0.71)
Bluntnose minnow	0.28	0.06		0.79
	(0.19)	(0.06)		(0.58)
Bullhead minnow	1.80	2.40	1.20	1.49
	(0.85)	(1.81)	(1.04)	(0.73)
White sucker	0.02		0.08	
	(0.02)		(0.08)	
Spotted sucker	0.02	0.06		
	(0.02)	(0.06)		
Silver redhorse	0.27	0.46	0.09	0.17

	(0.09)	(0.20)	(0.09)	(0.10)
Golden redhorse	0.03	0.07		
	(0.03)	(0.07)		
Shorthead redhorse	0.07	0.17		
	(0.04)	(0.09)		
Unidentified redhorse	0.04	0.06	0.08	
	(0.03)	(0.06)	(0.08)	
Black bullhead	0.03	0.06		
	(0.03)	(0.06)		
Tadpole madtom	0.39	0.74	0.07	0.16
	(0.27)	(0.62)	(0.07)	(0.16)
Flathead catfish	0.02		0.08	
	(0.02)		(0.08)	
Northern pike	0.03		0.07	0.05
	(0.02)		(0.07)	(0.05)
Brook silverside	0.09	0.06	0.20	0.07
	(0.06)	(0.06)	(0.20)	(0.07)
White bass	3.29	0.17	12.87	
	(3.04)	(0.09)	(12.17)	

Rock bass	0.71	0.42	1.11	0.79
	(0.18)	(0.25)	(0.45)	(0.28)
Green sunfish	0.10		0.16	0.19
	(0.05)		(0.11)	(0.15)
Bluegill	14.42	21.14	1.16	15.79
	(5.21)	(10.52)	(0.66)	(8.18)
Smallmouth bass	0.08		0.24	0.06
	(0.04)		(0.13)	(0.06)
Largemouth bass	0.05		0.08	0.10
	(0.03)		(0.08)	(0.07)
White crappie	0.17	0.35	0.08	
	(0.09)	(0.21)	(0.08)	
Black crappie	0.84	1.24	0.67	0.44
	(0.23)	(0.48)	(0.33)	(0.24)
Unidentified sunfish	0.02	0.05		
	(0.02)	(0.05)		
Johnny darter	0.12	0.11	0.08	0.17
	(0.05)	(0.07)	(0.08)	(0.12)
Yellow perch	0.14	0.16		0.21
	(0.08)	(0.11)		(0.21)

Logperch	0.40	0.37	0.17	0.63
	(0.22)	(0.32)	(0.11)	(0.53)
Freshwater drum	0.27	0.39	0.34	0.06
	(0.11)	(0.20)	(0.27)	(0.06)
Unidentified	0.03	0.06		
	(0.03)	(0.06)		

Sampling strata:
BWCS - Backwater, contiguous, shoreline
MCBU - Main channel border, unstructured
SCB - Side channel border

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Table 10.1 Mean catch-per-unit-effort and (standard error) for fish collected by small hoop netting in Pool 4 of the Upper Mississippi River using stratified random sampling during 2002. The statistics under ALL pertain to unbiased means over all strata sampled by this gear (as indicated by nonmissing entries below and by Table 2.1). See Methods for definitions of catch-per-unit-effort and standard error. Scientific names for the species listed can be found in Table 1.

Common name	ALL	MCBU	SCB
Common carp	0.47		0.84
	(0.37)		(0.66)
Silver chub	0.07	0.04	0.09
	(0.03)	(0.04)	(0.05)
Smallmouth buffalo	0.03	0.04	0.03
	(0.02)	(0.04)	(0.03)
Silver redhorse	0.07	0.08	0.06
	(0.04)	(0.08)	(0.04)
Shorthead redhorse	0.39	0.25	0.51
	(0.15)	(0.13)	(0.24)
Channel catfish	1.03	1.14	0.93

	(0.32)	(0.42)	(0.46)
White bass	0.03	0.04	0.03
	(0.02)	(0.04)	(0.03)
Rock bass	0.10	0.04	0.15
	(0.04)	(0.04)	(0.07)
Bluegill	0.05		0.09
	(0.04)		(0.07)
Smallmouth bass	0.02	0.04	
	(0.02)	(0.04)	
Yellow perch	0.05		0.09
	(0.04)		(0.07)
Freshwater drum	0.06	0.04	0.08
	(0.04)	(0.04)	(0.06)

Sampling strata:
MCBU - Main channel border, unstructured
SCB - Side channel border

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Table 11.1 Mean catch-per-unit-effort and (standard error) for fish collected by large hoop netting in Pool 4 of the Upper Mississippi River using stratified random sampling during 2002. The statistics under ALL pertain to unbiased means over all strata sampled by this gear (as indicated by nonmissing entries below and by Table 2.1). See Methods for definitions of catch-per-unit-effort and standard error. Scientific names for the species listed can be found in Table 1.

Common name	ALL	MCBU	SCB
Silver lamprey	0.03		0.06
	(0.02)		(0.04)
Longnose gar	0.02		0.03
	(0.02)		(0.03)
Mooneye	0.01		0.03
	(0.01)		(0.03)
Common carp	0.77		1.38
	(0.47)		(0.83)
Quillback	0.02	0.04	
	(0.02)	(0.04)	
Blue sucker	0.02		0.03

	(0.02)		(0.03)
Smallmouth buffalo	1.39	1.76	1.10
	(0.40)	(0.78)	(0.35)
Bigmouth buffalo	0.02		0.03
	(0.02)		(0.03)
Black buffalo	0.02		0.03
	(0.02)		(0.03)
Silver redhorse	0.14	0.09	0.18
	(0.06)	(0.06)	(0.09)
Shorthead redhorse	0.22	0.16	0.26
	(0.05)	(0.09)	(0.06)
Channel catfish	1.13	0.46	1.65
	(0.45)	(0.26)	(0.78)
Flathead catfish	0.05		0.09
	(0.04)		(0.06)
Northern pike	0.07	0.08	0.06
	(0.03)	(0.06)	(0.04)
White bass	0.09	0.17	0.03
	(0.06)	(0.13)	(0.03)
Rock bass	0.04	0.09	

	(0.04)	(0.09)	
Bluegill	0.07	0.16	
	(0.05)	(0.12)	
Black crappie	0.17	0.17	0.17
	(0.09)	(0.10)	(0.14)
Freshwater drum	0.21	0.26	0.17
	(0.08)	(0.17)	(0.07)

Sampling strata:
MCBU - Main channel border, unstructured
SCB - Side channel border

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Table 14.1 Mean catch-per-unit-effort and (standard error) for fish collected by day electrofishing in Pool 4 of the Upper Mississippi River using fixed-site sampling during 2002. See Methods for definitions of catch-per-unit-effort and standard error. Scientific names for the species listed can be found in Table 1.

Common name	MCBW
Paddlefish	0.17
	(0.17)
Gizzard shad	2.08
	(1.03)
Common carp	0.67
	(0.42)
Emerald shiner	2.67
	(1.61)
River carpsucker	0.17
	(0.17)
Smallmouth buffalo	0.50
	(0.34)
Silver redhorse	0.17

	(0.17)
River redhorse	0.42
	(0.27)
Shorthead redhorse	3.00
	(1.53)
Channel catfish	0.33
	(0.21)
Flathead catfish	0.17
	(0.17)
White bass	1.50
	(0.85)
Smallmouth bass	0.50
	(0.34)
Logperch	0.33
	(0.33)
Sauger	0.17
	(0.17)
Walleye	1.08
	(0.52)
Freshwater drum	0.75
	(0.36)

Sampling stratum:
MCBW - Main channel border, wing dam

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Table 16.1 Mean catch-per-unit-effort and (standard error) for fish collected by fyke netting in Pool 4 of the Upper Mississippi River using fixed-site sampling during 2002. See Methods for definitions of catch-per-unit-effort and standard error. Scientific names for the species listed can be found in Table 1.

Common name	TWZ
Longnose gar	0.77
	(0.77)
Shortnose gar	1.29
	(0.91)
Bowfin	0.31
	(0.31)
Gizzard shad	0.28
	(0.28)
Common carp	2.50
	(1.09)
Silver chub	0.18
	(0.18)
Silver redhorse	0.18

	(0.18)
Shorthead redhorse	1.19
	(0.60)
Yellow bullhead	0.19
	(0.19)
Channel catfish	0.34
	(0.22)
Flathead catfish	0.30
	(0.19)
White bass	27.80
	(9.72)
Rock bass	0.31
	(0.31)
Bluegill	17.09
	(9.34)
Green x pumpkinseed sunfish	0.15
	(0.15)
Green x bluegill sunfish	0.45
	(0.31)
Smallmouth bass	0.30
	(0.19)
Largemouth bass	0.45
	(0.31)

White crappie	0.78
	(0.62)
Black crappie	9.05
	(3.38)
Sauger	0.83
	(0.53)
Walleye	0.15
	(0.15)
Freshwater drum	11.85
	(4.82)

Sampling stratum:
TWZ - Tailwater

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Table 17.1 Mean catch-per-unit-effort and (standard error) for fish collected by mini fyke netting in Pool 4 of the Upper Mississippi River using fixed-site sampling during 2002. See Methods for definitions of catch-per-unit-effort and standard error. Scientific names for the species listed can be found in Table 1.

Common name	TWZ
Gizzard shad	135.23
	(89.49)
Spotfin shiner	1.21
	(0.58)
Silver chub	0.18
	(0.18)
Emerald shiner	2042.87
	(930.56)
Mimic shiner	1.70
	(1.14)
Bullhead minnow	1.54
	(1.20)
Shorthead redhorse	0.19

	(0.19)
Channel catfish	0.14
	(0.14)
Flathead catfish	0.29
	(0.29)
Brook silverside	0.29
	(0.29)
White bass	19.27
	(12.95)
Bluegill	2.14
	(1.05)
Johnny darter	0.16
	(0.16)
Logperch	0.31
	(0.31)
River darter	1.09
	(1.09)
Freshwater drum	0.77
	(0.61)

Sampling stratum:
TWZ - Tailwater

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Table 18.1 Mean catch-per-unit-effort and (standard error) for fish collected by small hoop netting in Pool 4 of the Upper Mississippi River using fixed-site sampling during 2002. See Methods for definitions of catch-per-unit-effort and standard error. Scientific names for the species listed can be found in Table 1.

Common name	TWZ
Common carp	2.03
	(0.51)
Channel catfish	0.64
	(0.55)
White bass	0.08
	(0.08)
Green x bluegill sunfish	0.08
	(0.08)
White crappie	0.08
	(0.08)
Freshwater drum	0.49
	(0.25)

Sampling stratum:
TWZ - Tailwater

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Table 19.1 Mean catch-per-unit-effort and (standard error) for fish collected by large hoop netting in Pool 4 of the Upper Mississippi River using fixed-site sampling during 2002. See Methods for definitions of catch-per-unit-effort and standard error. Scientific names for the species listed can be found in Table 1.

Common name	TWZ
Shovelnose sturgeon	0.08
	(0.08)
Common carp	4.10
	(1.29)
Smallmouth buffalo	3.67
	(2.99)
Black buffalo	0.34
	(0.34)
Channel catfish	0.81
	(0.64)
Flathead catfish	0.65
	(0.39)
White bass	0.92

	(0.92)
Freshwater drum	2.11
	(1.08)

Sampling stratum:
TWZ - Tailwater

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Table 21.1 Mean catch-per-unit-effort and (standard error) for fish collected by bottom trawling in Pool 4 of the Upper Mississippi River using fixed-site sampling during 2002. See Methods for definitions of catch-per-unit-effort and standard error. Scientific names for the species listed can be found in Table 1.

Common name	TWZ
Shovelnose sturgeon	0.25
	(0.25)
Speckled chub	4.00
	(2.35)
Shorthead redhorse	0.75
	(0.75)
Channel catfish	18.00
	(9.86)
River darter	0.50
	(0.29)
Freshwater drum	3.00
	(3.00)

Sampling stratum:
TWZ - Tailwater

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Pool 4 Length Distributions

Length distributions (length) as a percentage of catch (percent) for selected species of interest collected by the Long Term Resource Monitoring Program. Fish species are listed in phylogenetical order following Robins et al. (1991) nomenclature. 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 because of local interest, while others were omitted (reach dependent). Scientific names for the species listed can be found in Table 1.

Figure*	Species	Method
2.1	Gizzard shad	Electrofishing
3.1	Common carp	Electrofishing
4.1	Smallmouth buffalo	Electrofishing
5.1	Smallmouth buffalo	Hoop netting
6.1	Channel catfish	Electrofishing
7.1	Channel catfish	Hoop netting
8.1	Northern pike	Electrofishing
9.1	Northern pike	Fyke netting
10.1	White bass	Electrofishing
11.1	Bluegill	Electrofishing
12.1	Bluegill	Fyke netting
13.1	Largemouth bass	Electrofishing
14.1	White crappie	Fyke netting
15.1	Black crappie	Fyke netting

16.1	Sauger	Electrofishing
17.1	Walleye	Electrofishing
18.1	Freshwater drum	Electrofishing
19.1	Freshwater drum	Fyke netting

*Figure numbers are not always in sequence because some species were not caught in some study areas. Figure numbers for each species and gear type are consistent among study areas.

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Figure 2.1 Length distributions (*length*) as a percentage of catch (*percent*) for gizzard shad (*Dorosoma cepedianum)* collected by electrofishing in Pool 4 of the Upper Mississippi River during 2002. Click here to view this species' length distributions in all study reaches.

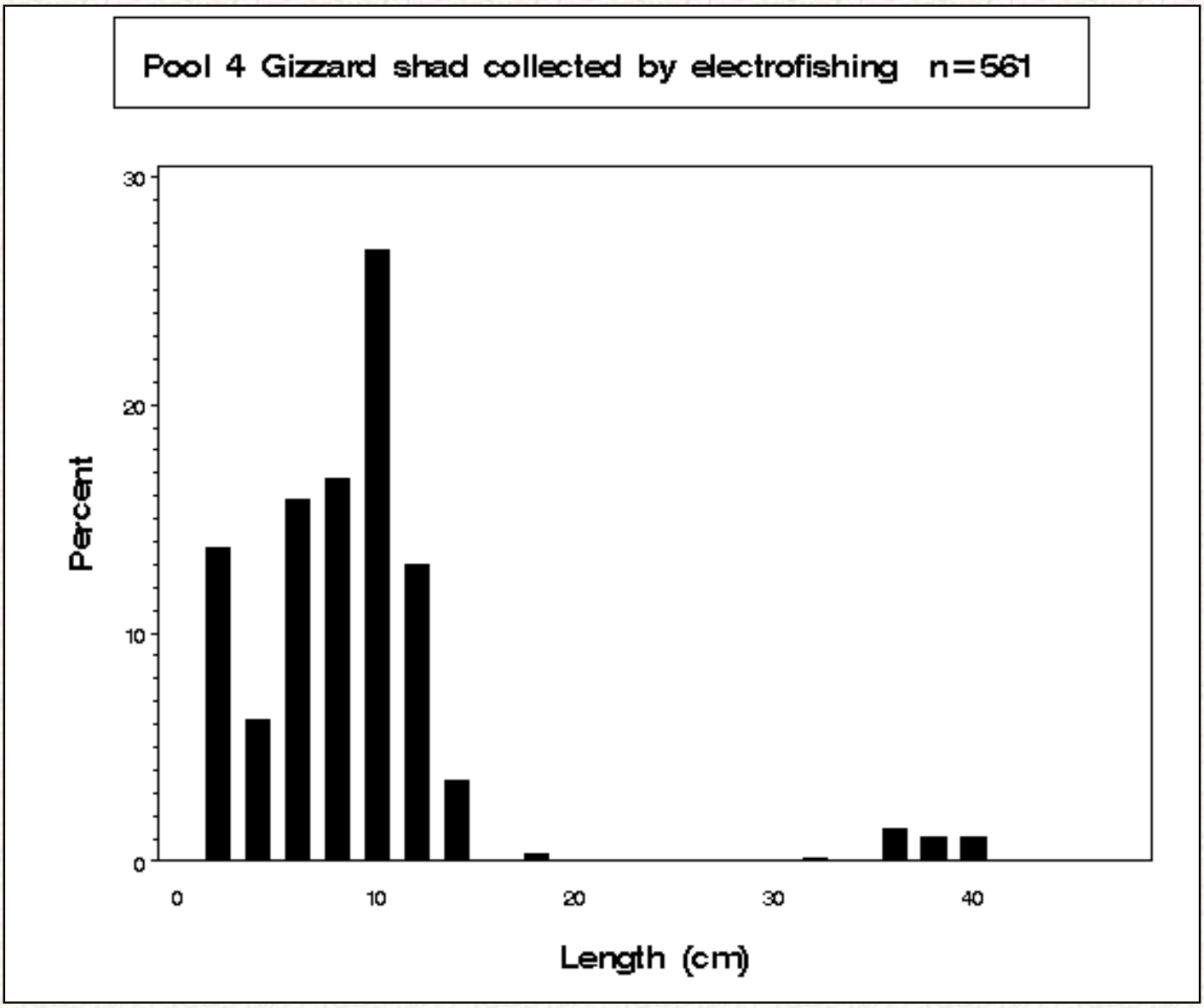

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Figure 3.1 Length distributions (*length*) as a percentage of catch (*percent*) for common carp (*Cyprinus carpio)* collected by electrofishing in Pool 4 of the Upper Mississippi River during 2002. Click here to view this species' length distributions in all study reaches.

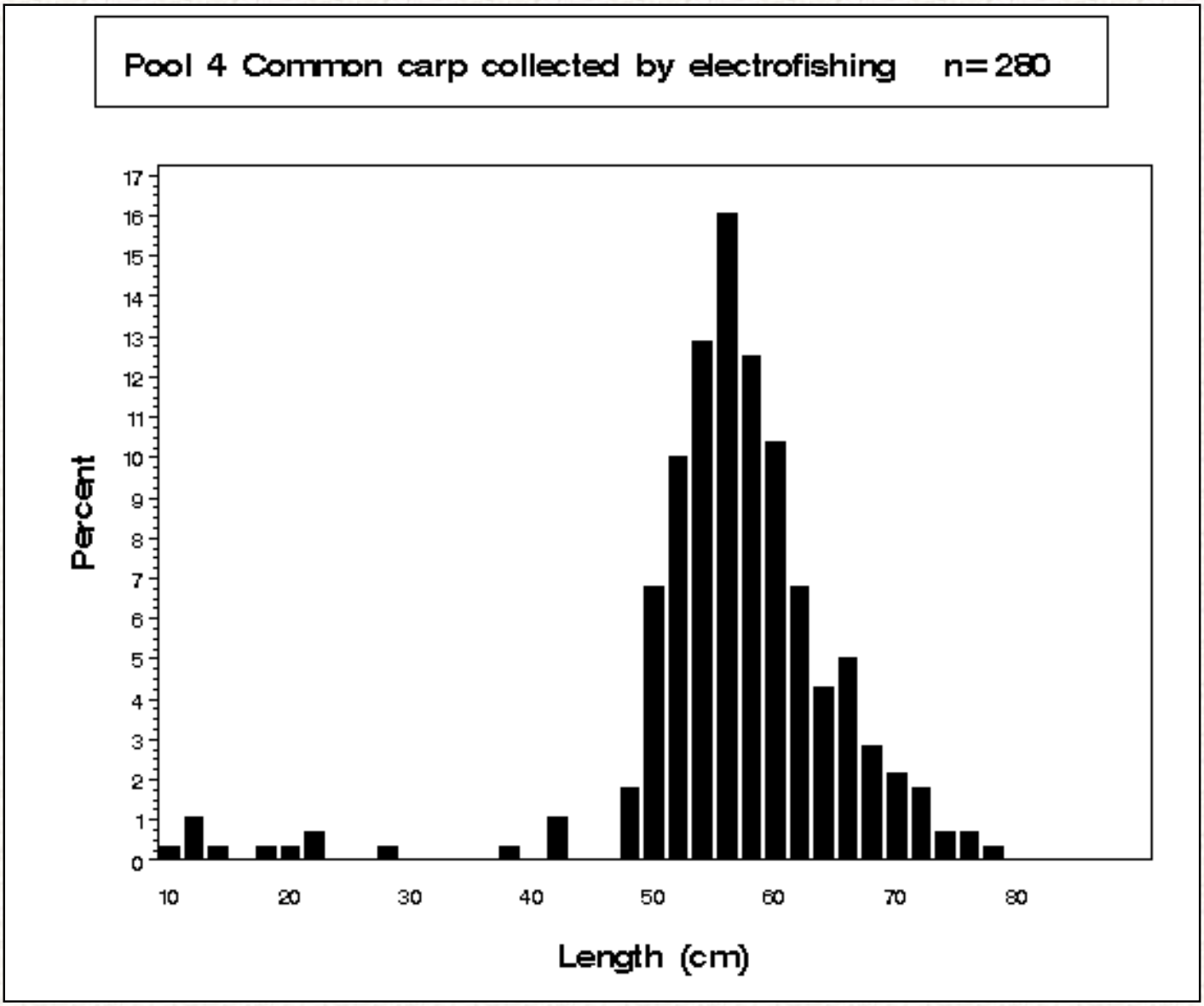

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Figure 4.1 Length distributions (*length*) as a percentage of catch (*percent*) for smallmouth buffalo (*Ictiobus bubalus)* collected by electrofishing in Pool 4 of the Upper Mississippi River during 2002. Click here to view this species' length distributions in all study reaches.

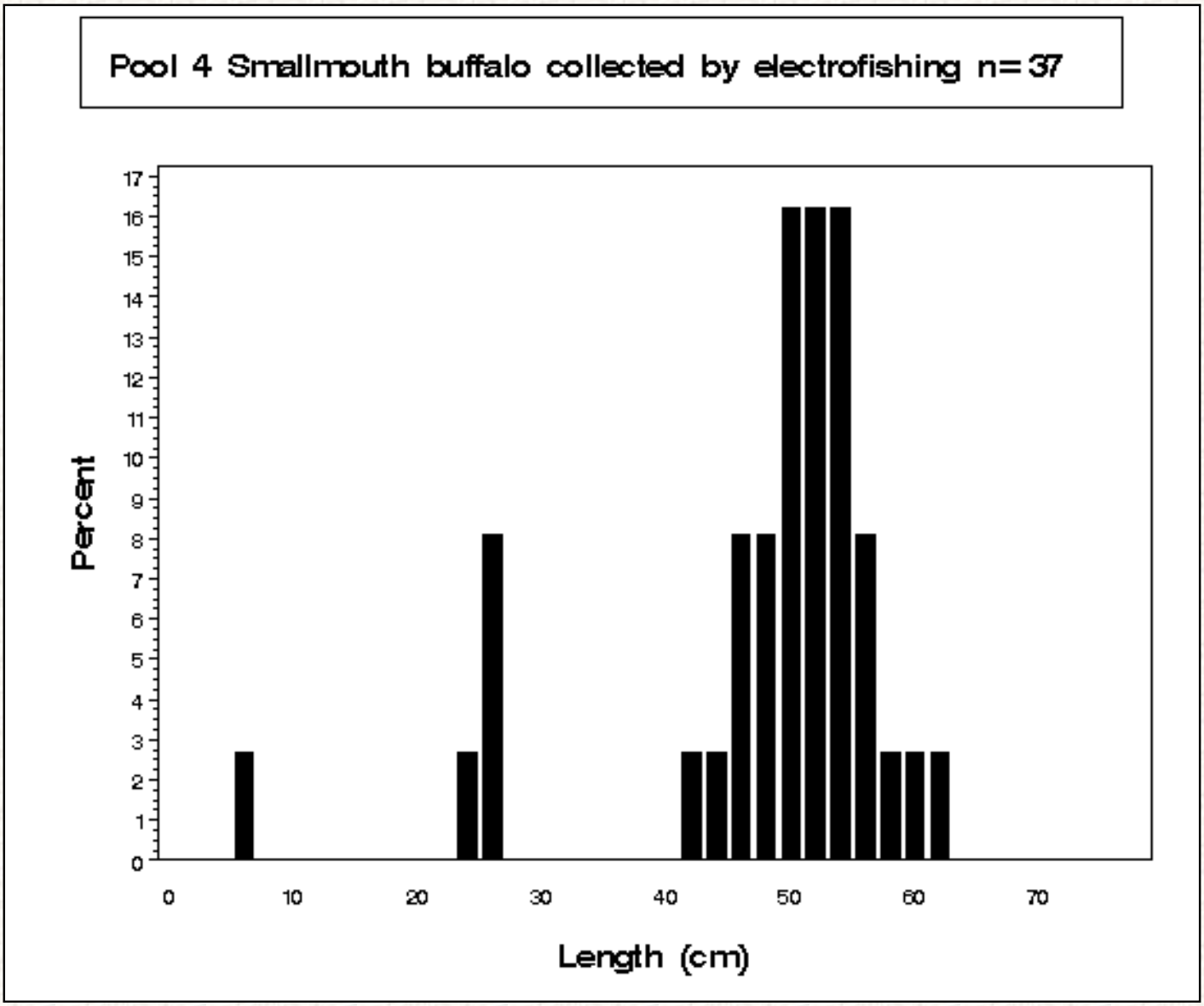

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Figure 5.1 Length distributions (*length*) as a percentage of catch (*percent*) for smallmouth buffalo (*Ictiobus bubalus)* collected by hoop netting in Pool 4 of the Upper Mississippi River during 2002. Click here to view this species' length distributions in all study reaches.

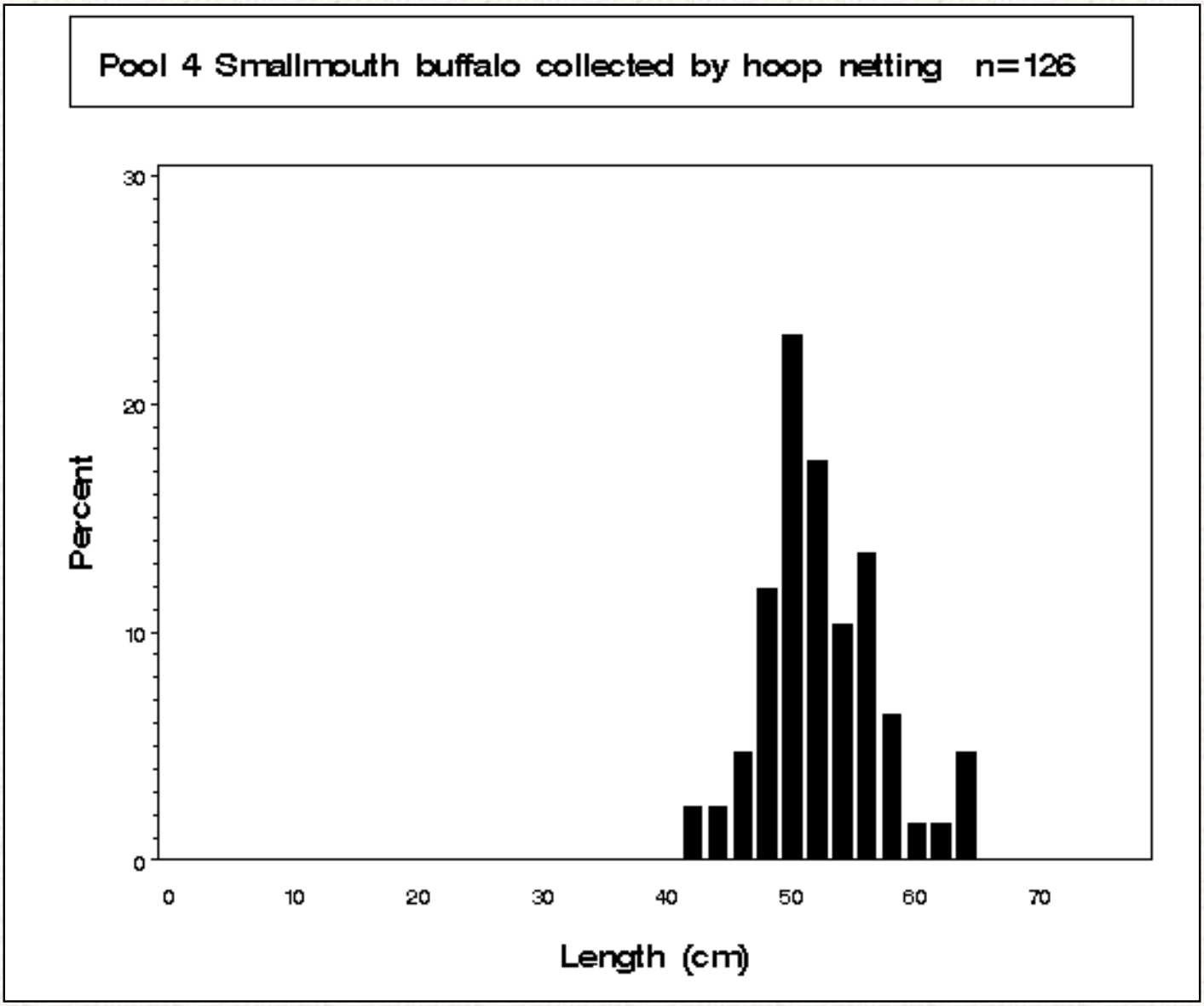

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Figure 6.1 Length distributions (*length*) as a percentage of catch (*percent*) for channel catfish (*Ictalurus punctatus)* collected by electrofishing in Pool 4 of the Upper Mississippi River during 2002. Click here to view this species' length distributions in all study reaches.

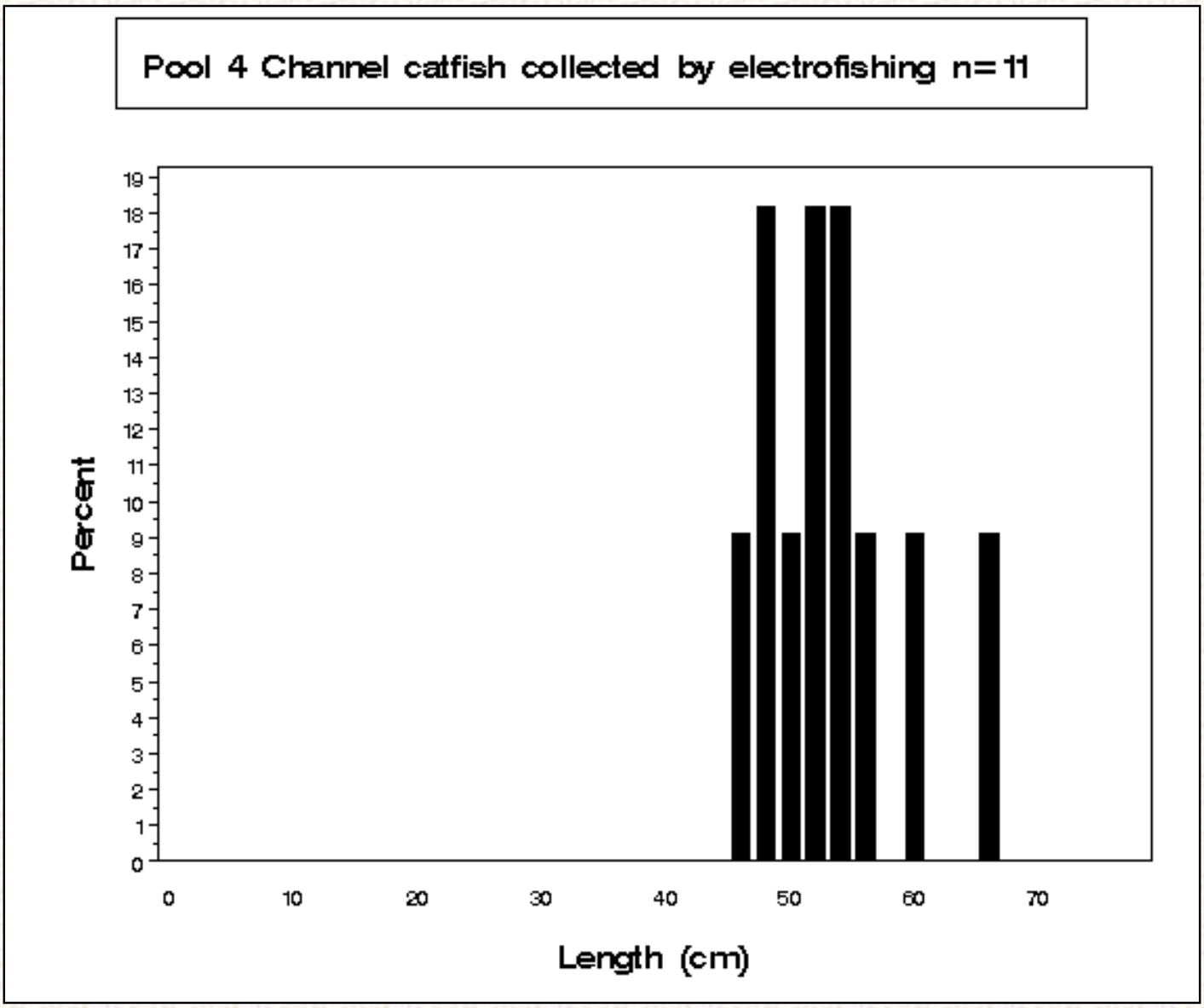

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Figure 7.1 Length distributions (*length*) as a percentage of catch (*percent*) for channel catfish (*Ictalurus punctatus)* collected by hoop netting in Pool 4 of the Upper Mississippi River during 2002. Click here to view this species' length distributions in all study reaches.

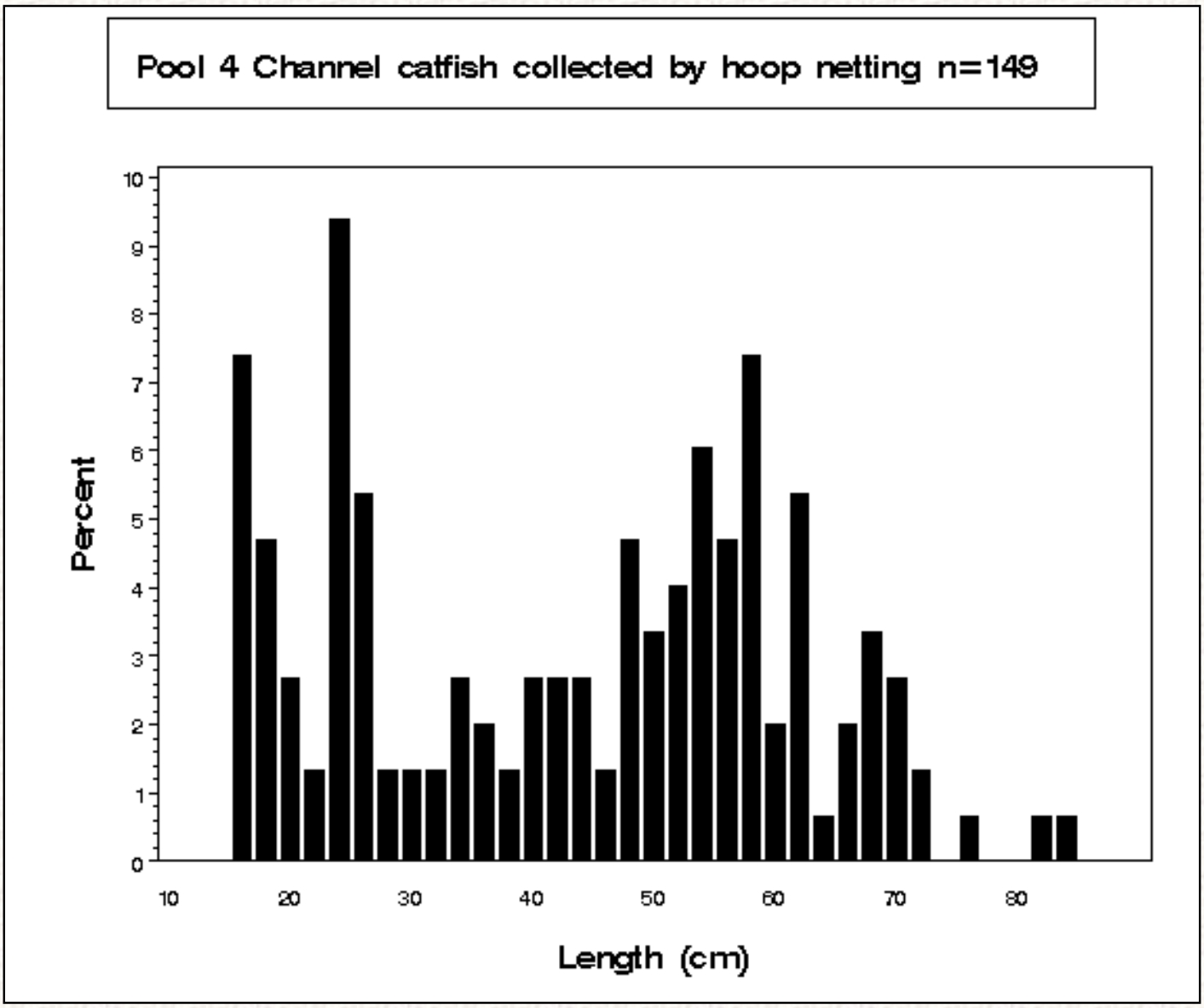

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Figure 8.1 Length distributions (*length*) as a percentage of catch (*percent*) for northern pike (*Esox lucius)* collected by electrofishing in Pool 4 of the Upper Mississippi River during 2002. Click here to view this species' length distributions in all study reaches.

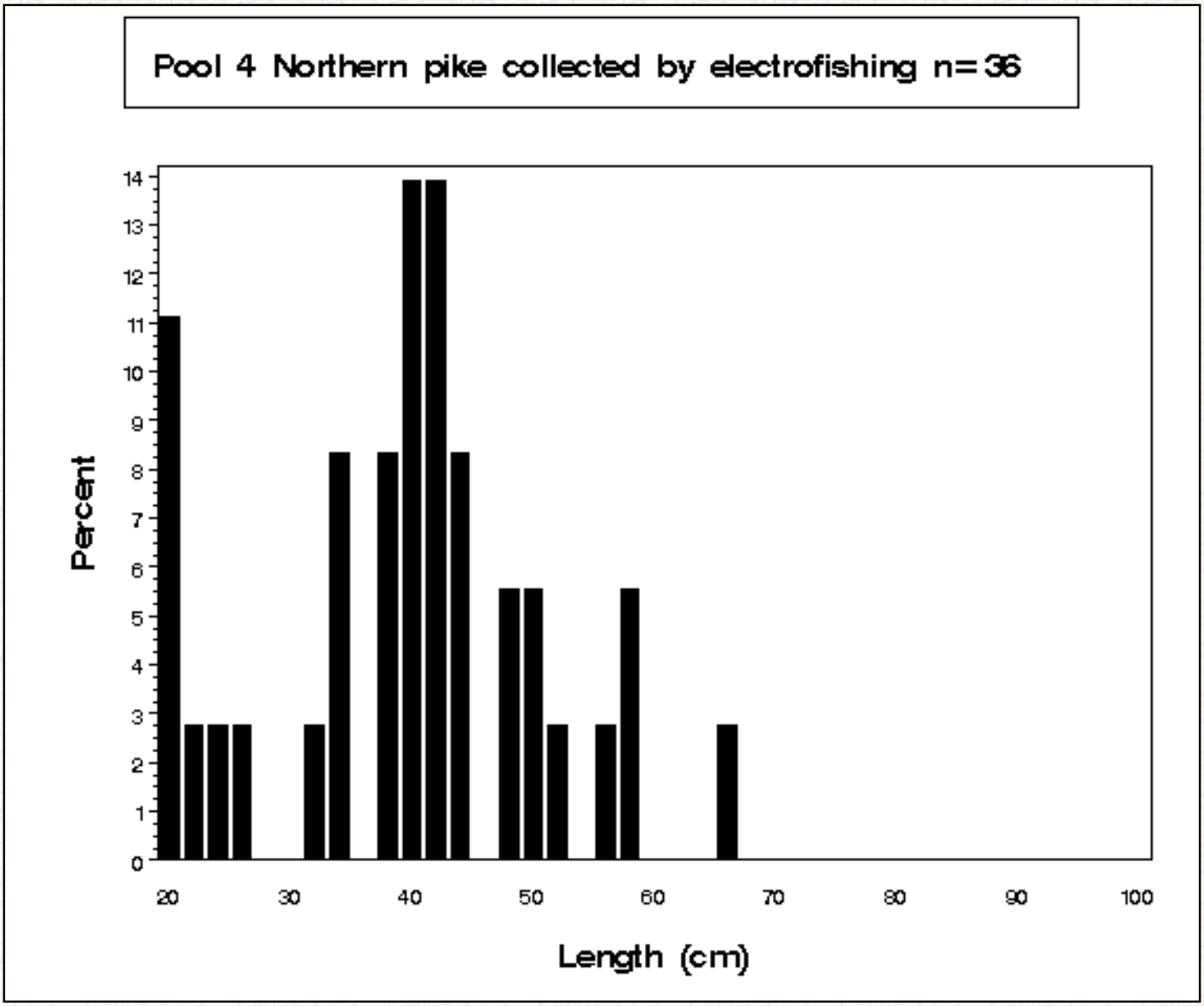

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Figure 9.1 Length distributions (*length*) as a percentage of catch (*percent*) for northern pike (*Esox lucius)* collected by fyke netting in Pool 4 of the Upper Mississippi River during 2002. Click here to view this species' length distributions in all study reaches.

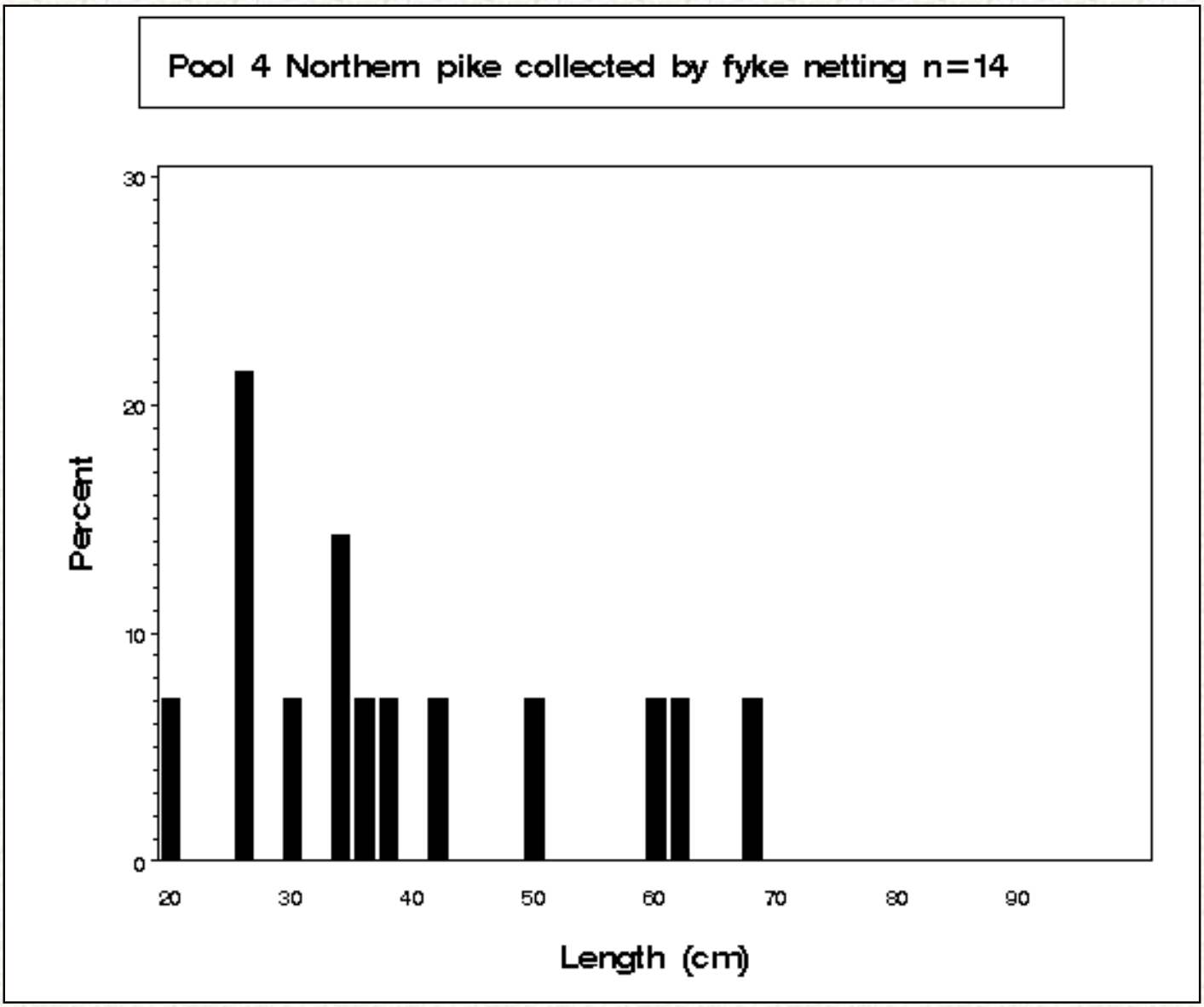

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Figure 10.1 Length distributions (*length*) as a percentage of catch (*percent*) for white bass (*Morone chrysops)* collected by electrofishing in Pool 4 of the Upper Mississippi River during 2002. Click here to view this species' length distributions in all study reaches.

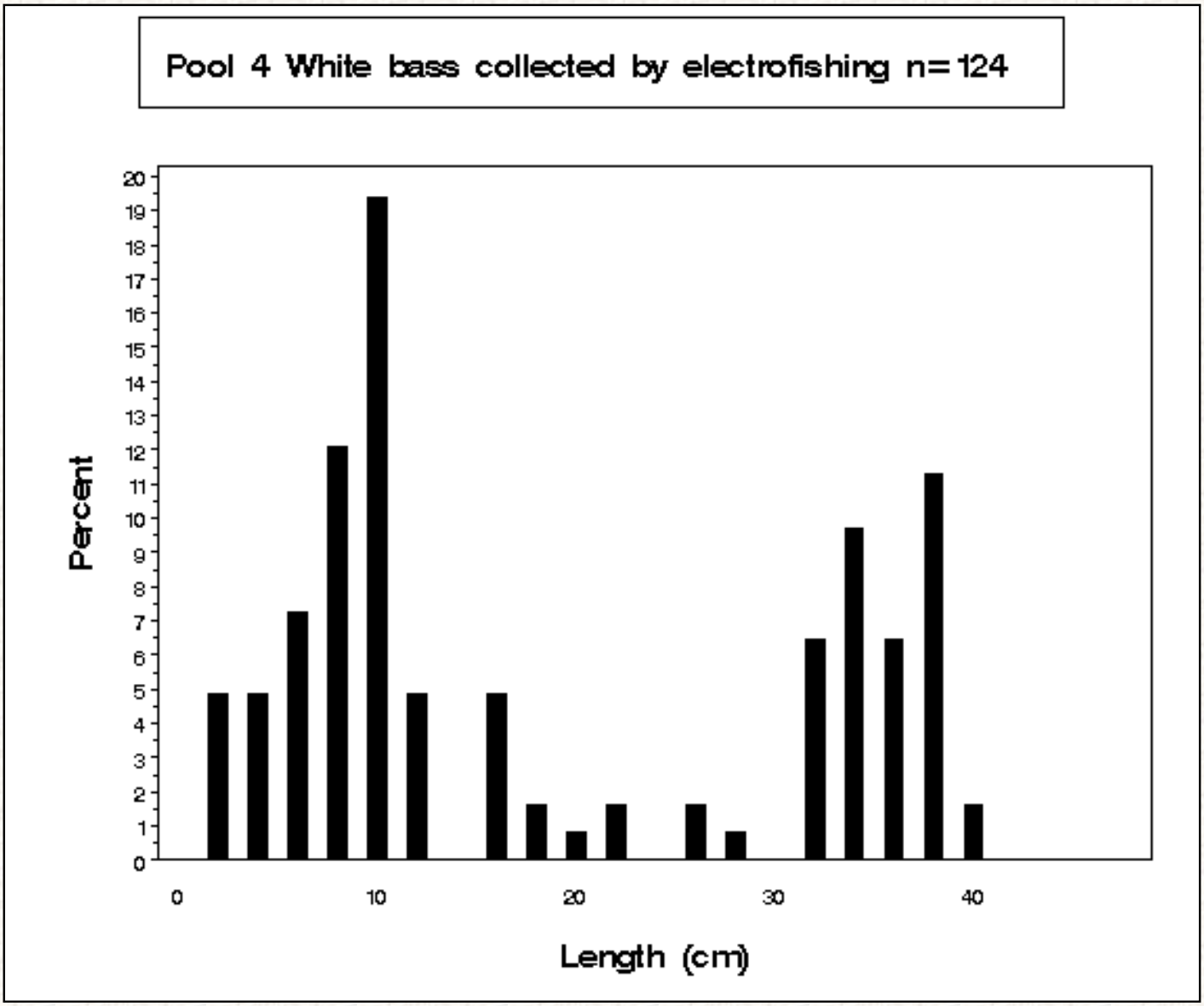

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Figure 11.1 Length distributions (*length*) as a percentage of catch (*percent*) for bluegill (*Lepomis macrochirus*) collected by electrofishing in Pool 4 of the Upper Mississippi River during 2002. Click here to view this species' length distributions in all study reaches.

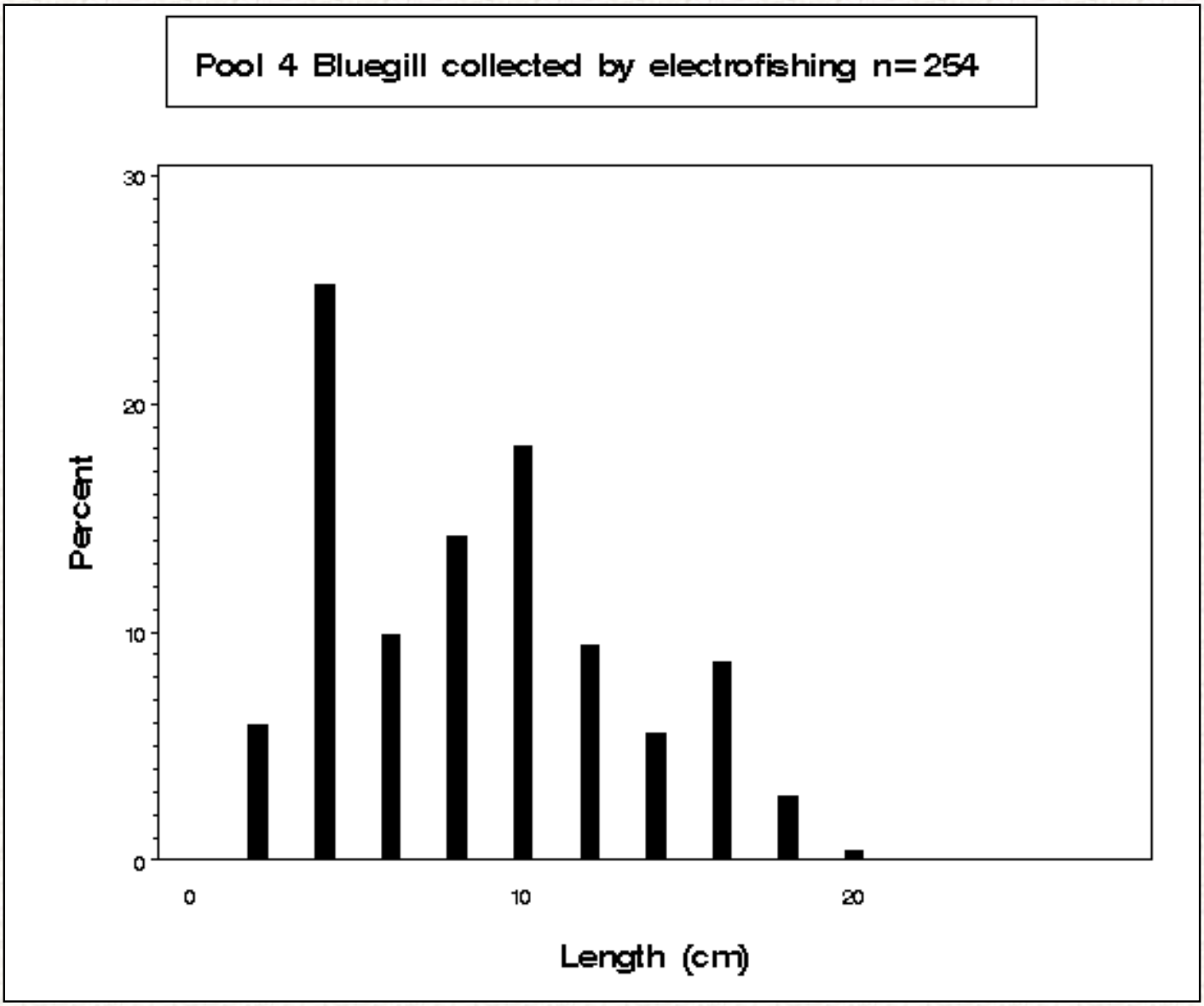

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Figure 12.1 Length distributions (*length*) as a percentage of catch (*percent*) for bluegill (*Lepomis macrochirus*) collected by fyke netting in Pool 4 of the Upper Mississippi River during 2002. Click here to view this species' length distributions in all study reaches.

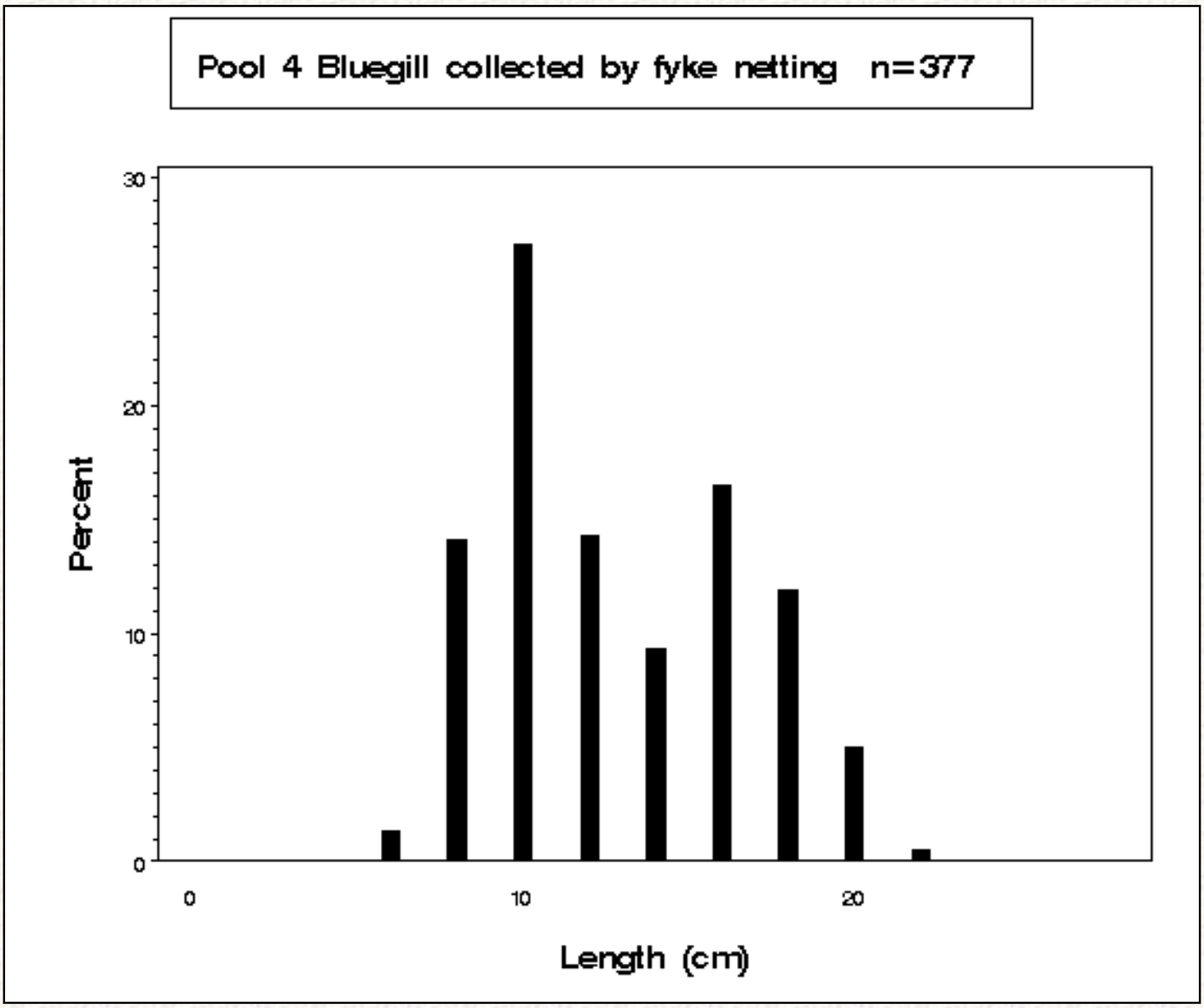

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Figure 13.1 Length distributions (*length*) as a percentage of catch (*percent*) for largemouth bass (*Micropterus salmoides)* collected by electrofishing in Pool 4 of the Upper Mississippi River during 2002. Click here to view this species' length distributions in all study reaches.

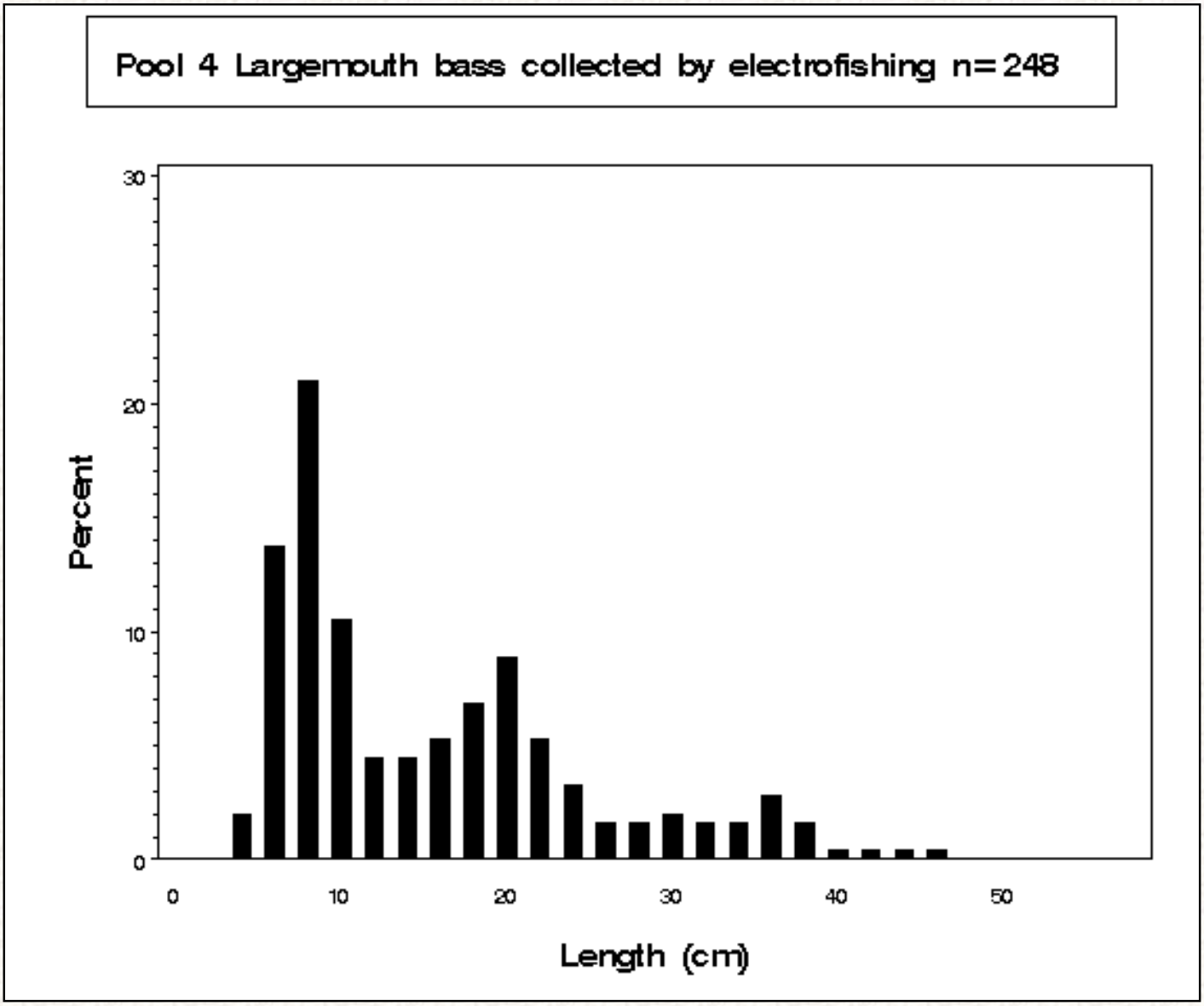

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Figure 14.1 Length distributions (*length*) as a percentage of catch (*percent*) for white crappie (*Pomoxis annularius)* collected by fyke netting in Pool 4 of the Upper Mississippi River during 2002. Click here to view this species' length distributions in all study reaches.

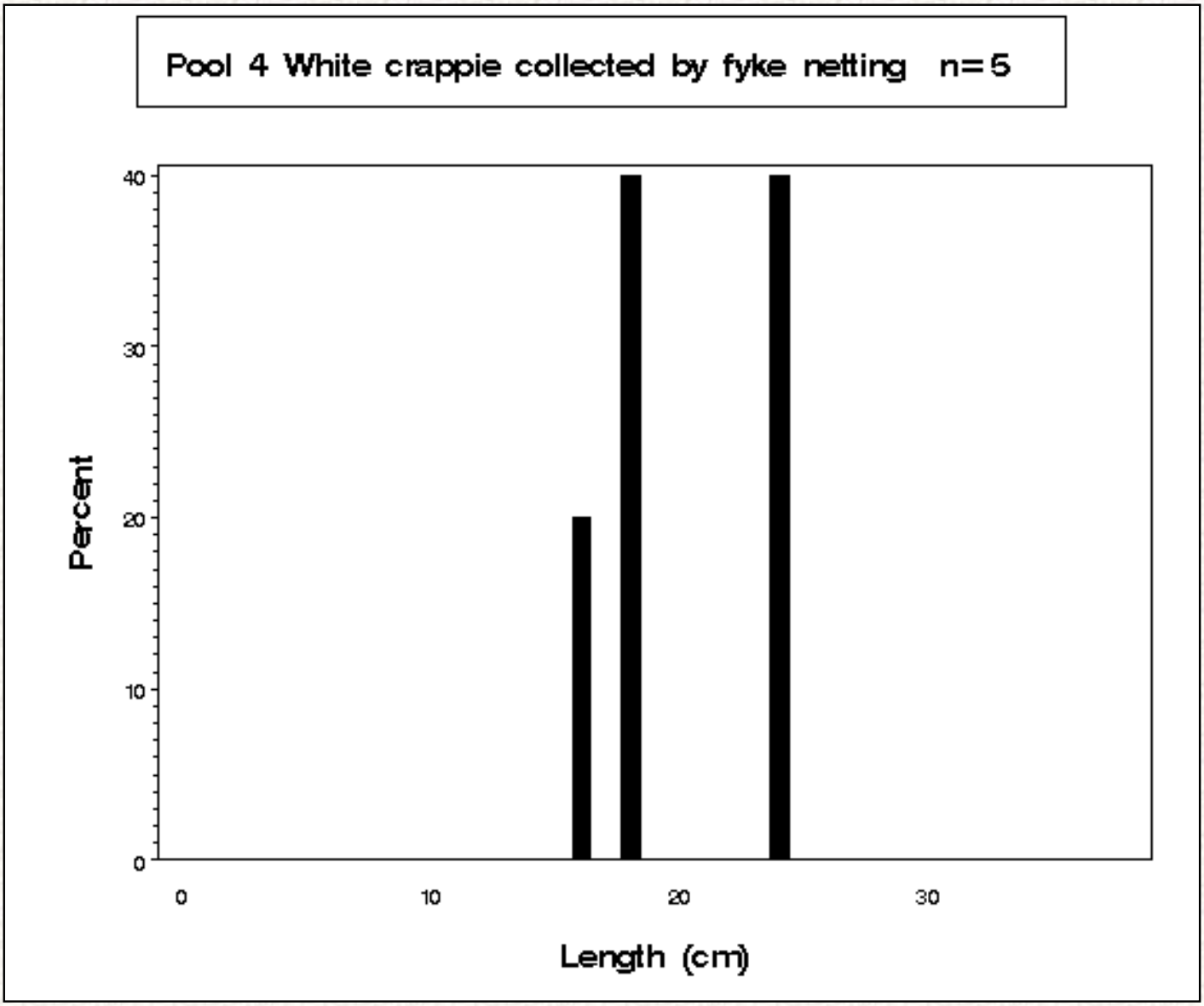

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Figure 15.1 Length distributions (*length*) as a percentage of catch (*percent*) for black crappie (*Pomoxis nigromaculatus*) collected by fyke netting in Pool 4 of the Upper Mississippi River during 2002. Click here to view this species' length distributions in all study reaches.

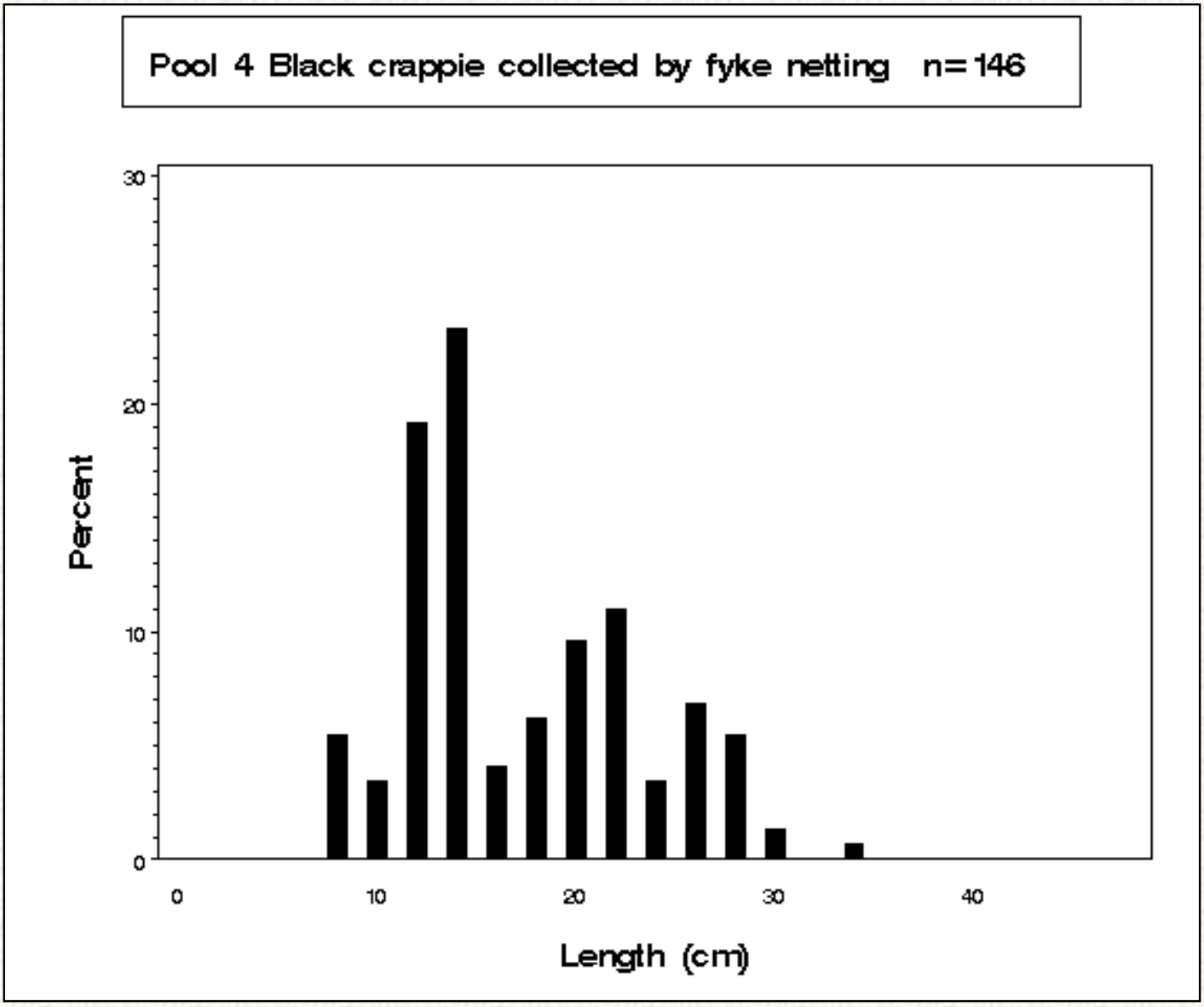

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Figure 16.1 Length distributions (*length*) as a percentage of catch (*percent*) for sauger (*Stizostedion canadense)* collected by electrofishing in Pool 4 of the Upper Mississippi River during 2002. Click here to view this species' length distributions in all study reaches.

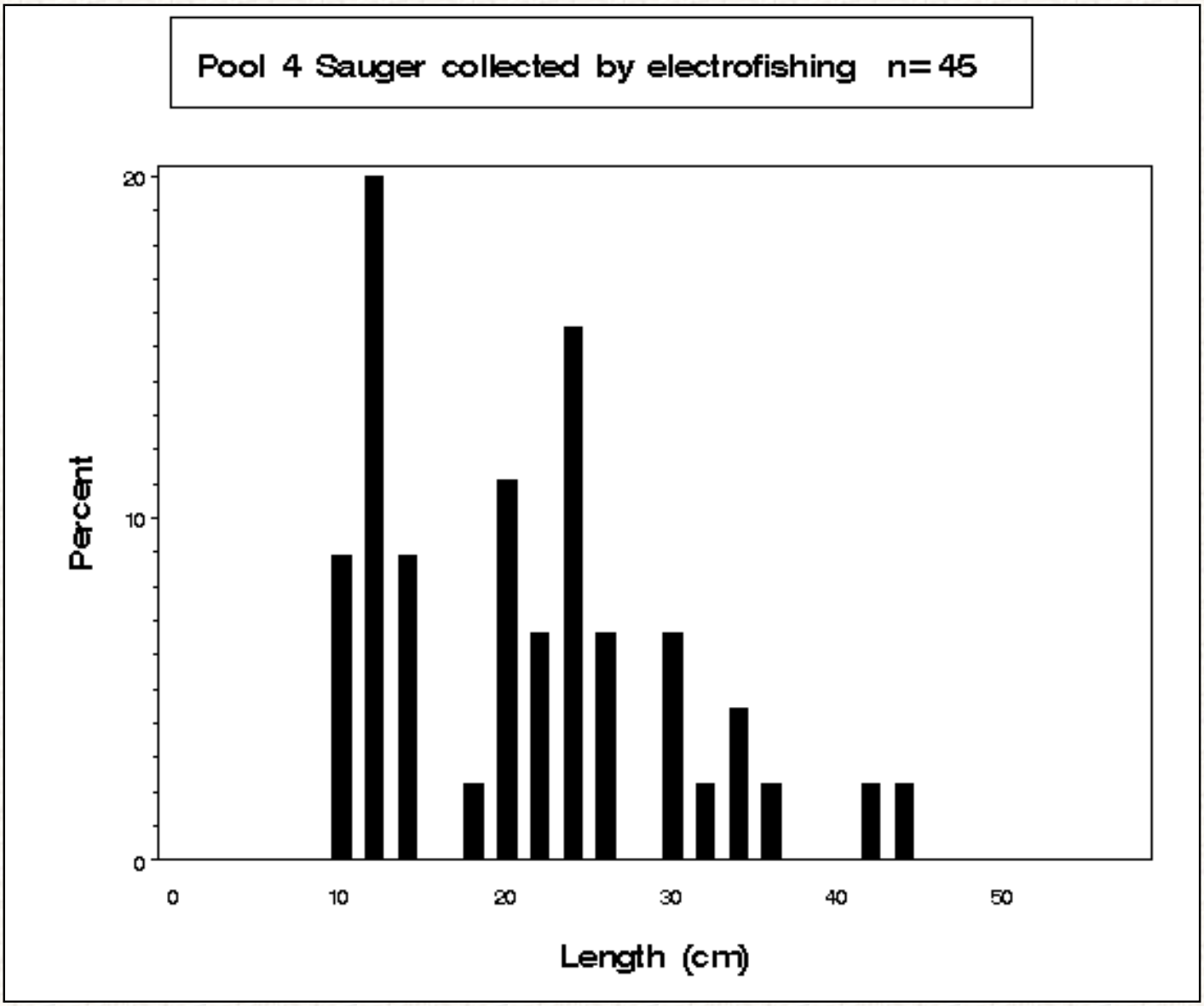

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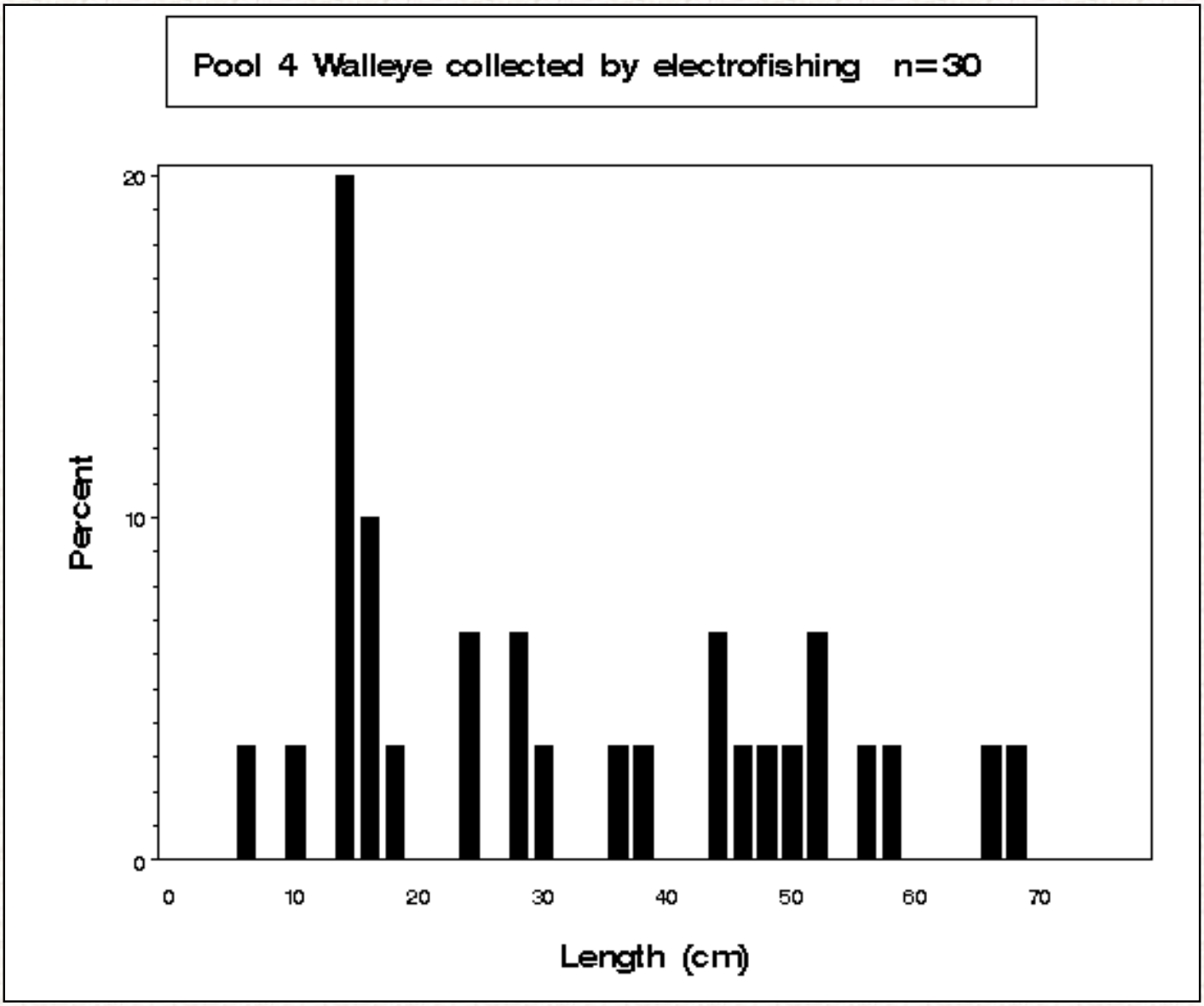
Figure 17.1 Length distributions (*length*) as a percentage of catch (*percent*) for walleye (*Stizostedion vitreum)* collected by electrofishing in Pool 4 of the Upper Mississippi River during 2002. Click here to view this species' length distributions in all study reaches.



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http://www.umesc.usgs.gov/reports_publications/ltrmp/fish/2002/figures/mn_walleye_electro.html

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Figure 18.1 Length distributions (*length*) as a percentage of catch (*percent*) for freshwater drum (*Aplodinotus grunniens*) collected by electrofishing in Pool 4 of the Upper Mississippi River during 2002. Click here to view this species' length distributions in all study reaches.

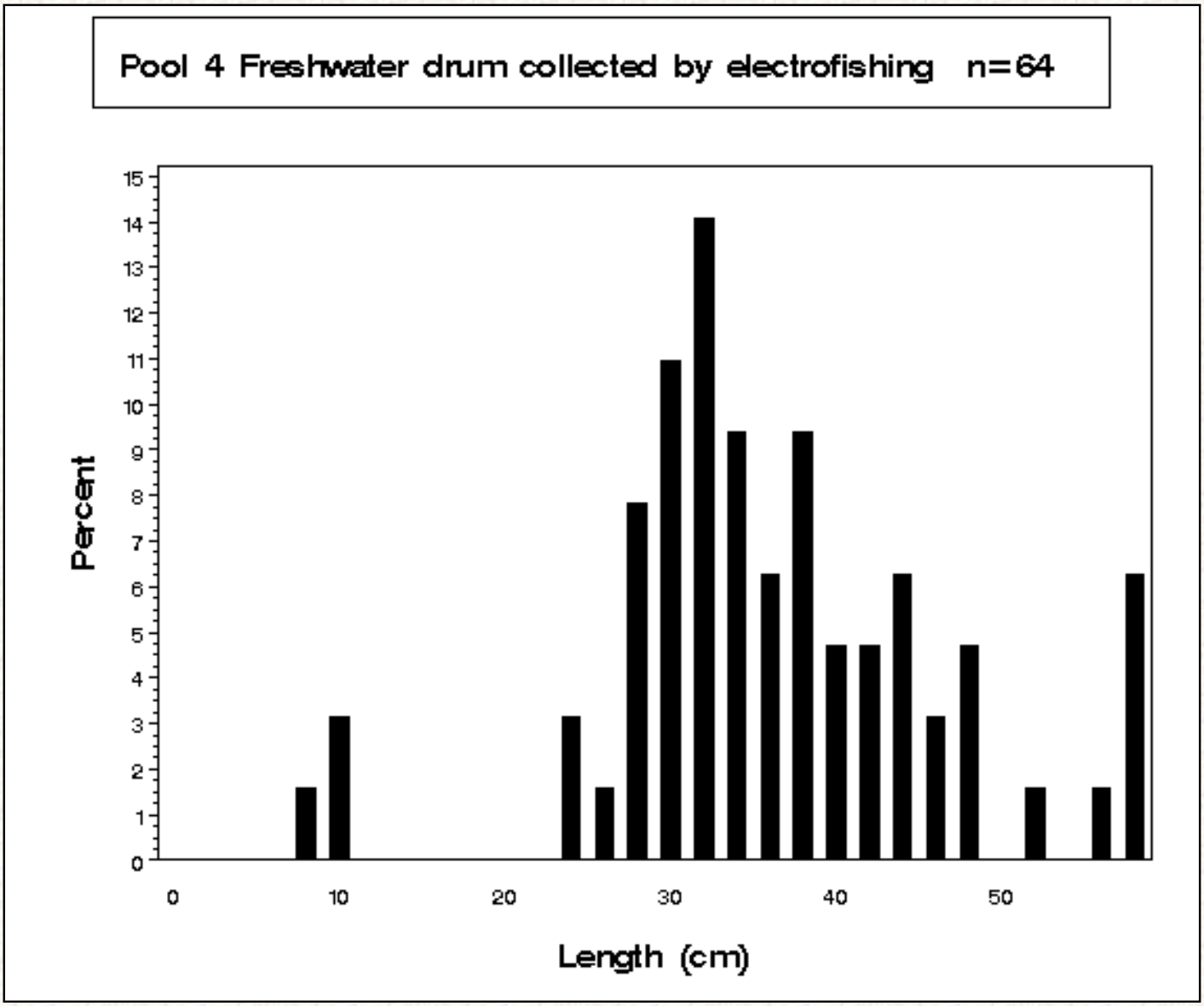

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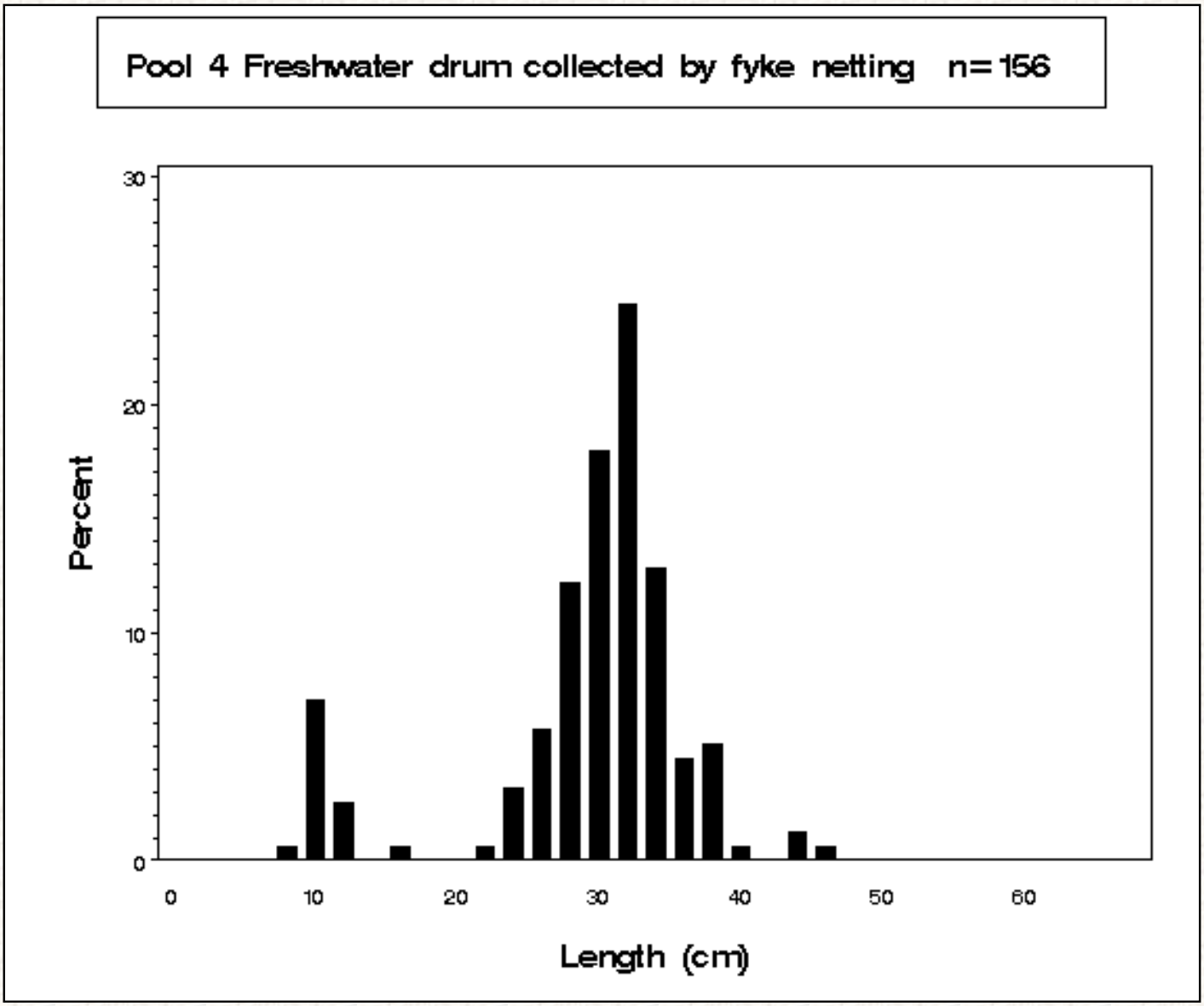
Figure 19.1 Length distributions (*length*) as a percentage of catch (*percent*) for freshwater drum (*Aplodinotus grunniens)* collected by fyke netting in Pool 4 of the Upper Mississippi River during 2002. Click here to view this species' length distributions in all study reaches.



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Pool 8, Upper Mississippi River
2002 Fish Collection Summary

This report is a summary of the Long Term Resource Monitoring Program's (LTRMP) fish collection efforts conducted by the Onalaska Field Station on Pool 8, Upper Mississippi River during 2002. Information on changes in fish catch over all years can be obtained from the Graphical Fish Database Browser.

- 270 fish collections were conducted using six gear types (Table 2.2).
- A 37% reduction in total effort (from 2001 levels) was implemented. The reduction included dropping all off-shore gear types in two strata (tandem fyke and tandem mini fyke nets) and two additional gear types in all strata (night electrofishing and seining) for a total of four gear types eliminated. Paired hoop net sets for the impounded offshore stratum were also eliminated (Table 2.2).
- Despite moderately high discharge and a pool-wide drawdown during much of the sampling season, water levels did not affect sampling activities (Table 2.2; Figure 1.2).
- Of the 270 fish collections, 240 were from randomly selected sites. Thirty collections were made at fixed sites.
- Backwater, side channel border, and main channel border strata received the most sampling effort (Table 2.2).
- 22,574 fish were collected representing 65 species and 3 hybrids (Table 3.2).
- Historical fish distribution records for the Upper Mississippi River (Pitlo et al. 1995) document 99 fish species from Pool 8.
- The LTRMP species total for Pool 8 before the 2000 season was 90; no new

species were added to this total since 1997.

- 11 river redhorse and 4 speckled chubs, both listed as threatened in Wisconsin, were collected (Table 3.2).
- Mean catch-per-unit-effort and standard effort for fish collected by gears using stratified random (Tables 4.2-11.2) and fixed-site sampling (Tables 17.2-21.2) for each stratum are shown.
- Length distributions for selected species of fish are shown in Figures 2.2 to 19.2.

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Table 2.2 Allocation of fish sampling effort among strata in Pool 8 of the Upper Mississippi River during 2002. 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		8	4	4	4				28
Fyke net	12					4				16
Large hoop net			4	4					2	10
Small hoop net			4	4					2	10
Mini fyke net	8		4	4		4			2	22
Trawling									4	4
Subtotal	**28**	**0**	**20**	**16**	**4**	**12**	**0**	**0**	**10**	**90**

Sampling period = 2: August 1–September 14

Sampling gear	BWCS	BWCO	SCB	MCBU	MCBW	IMPS	IMPO	TRI	TWZ	TOTAL
Day electrofishing	8		8	4	4	4				28
Fyke net	12					4				16
Large hoop net			4	4					2	10
Small hoop net			4	4					2	10
Mini fyke net	8		4	4		4			2	22
Trawling									4	4
Subtotal	**28**	**0**	**20**	**16**	**4**	**12**	**0**	**0**	**10**	**90**

Sampling period = 3: September 15–October 31

Sampling gear	BWCS	BWCO	SCB	MCBU	MCBW	IMPS	IMPO	TRI	TWZ	TOTAL
Day electrofishing	8		8	4	4	4				28
Fyke net	12					4				16
Large hoop net			4	4					2	10
Small hoop net			4	4					2	10
Mini fyke net	8		4	4		4			2	22
Trawling									4	4
Subtotal	**28**	**0**	**20**	**16**	**4**	**12**	**0**	**0**	**10**	**90**
Total	**84**	**0**	**60**	**48**	**12**	**36**	**0**	**0**	**30**	**270**

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

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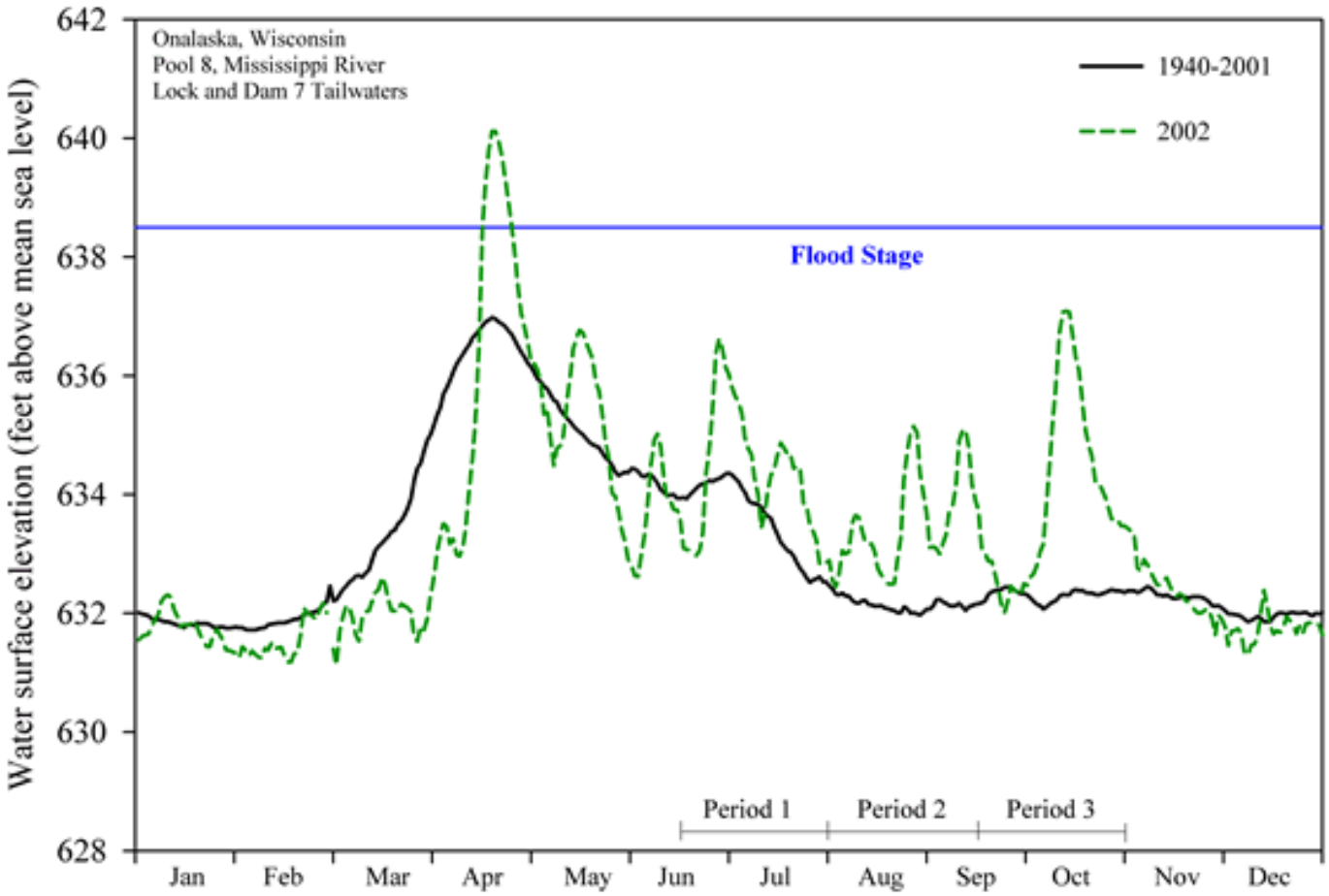

Figure 1.2. Daily water surface elevation from Lock and Dam 7 for Pool 8, Upper Mississippi River, during 2002 and mean elevation since 1940. The U.S. Army Corps of Engineers discharge data were obtained in accordance with Upper Midwest Environmental Sciences Center established procedures (Wlosinski et al. 1995).

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Table 3.2 Total catches, by gear type, of fish collected in Pool 8 of the Upper Mississippi River during 2002. See Table 2.2 for the list of sampling gears actually deployed in this study reach.

Species	Common name	Scientific name	D	F	M	HS	HL	T	TOTAL
1	Chestnut lamprey	*Ichthyomyzon castaneus*	2	-	-	-	-	-	2
2	Silver lamprey	*I. unicuspis*	2	-	-	-	-	-	2
3	American brook lamprey	*Lampetra appendix*	1	-	-	-	-	-	1
4	Shovelnose sturgeon	*Scaphirhynchus platorynchus*	-	-	-	-	-	10	10
5	Longnose gar	*Lepisosteus osseus*	8	45	12	-	1	-	66
6	Shortnose gar	*L. platostomus*	7	131	8	-	-	-	146
7	Bowfin	*Amia calva*	20	56	-	-	-	-	76
8	Mooneye	*Hiodon tergisus*	3	-	-	-	1	-	4
9	Gizzard shad	*Dorosoma cepedianum*	356	40	138	-	-	-	534
10	Spotfin shiner	*Cyprinella spiloptera*	1598	-	1104	-	-	-	2702
11	Common carp	*Cyprinus carpio*	166	40	7	16	68	-	297

12	Speckled chub	*Macrhybopsis aestivalis*	-	-	1	-	-	3	4
13	Silver chub	*Macrhybopsis storeriana*	-	-	1	17	-	-	18
14	Golden shiner	*Notemigonus crysoleucas*	41	3	11	-	-	-	55
15	Emerald shiner	*Notropis atherinoides*	2001	-	365	-	-	-	2366
16	River shiner	*N. blennius*	342	-	41	-	-	-	383
17	Spottail shiner	*N. hudsonius*	70	-	17	-	-	-	87
18	Weed shiner	*N. texanus*	56	-	90	-	-	-	146
19	Mimic shiner	*N. volucellus*	518	-	221	-	-	-	739
20	Pugnose minnow	*Opsopoeodus emiliae*	57	-	190	-	-	-	247
21	Fathead minnow	*Pimephales promelas*	1	-	3	-	-	-	4
22	Bullhead minnow	*P. vigilax*	804	-	626	-	-	-	1430
23	Quillback	*Carpiodes cyprinus*	8	-	-	-	-	-	8
24	Highfin carpsucker	*C. velifer*	9	-	-	-	-	-	9
25	White sucker	*Catostomus commersoni*	3	-	-	-	-	-	3
26	Smallmouth buffalo	*Ictiobus bubalus*	2	1	-	1	5	-	9
27	Bigmouth buffalo	*I. cyprinellus*	2	1	-	-	-	-	3
28	Spotted sucker	*Minytrema melanops*	144	25	1	-	-	-	170

29	Silver redhorse	*Moxostoma anisurum*	165	121	10	2	14	-	312
30	River redhorse	*M. carinatum*	9	1	-	-	1	-	11
31	Golden redhorse	*M. erythrurum*	69	7	-	1	-	-	77
32	Shorthead redhorse	*M. macrolepidotum*	526	53	1	35	37	10	662
33	Unidentified redhorse	*Moxostoma* sp.	-	-	1	-	-	-	1
34	Unidentified sucker	Unidentified Catostomidae	-	-	27	-	-	-	27
35	Black bullhead	*Ameiurus melas*	-	1	-	-	-	-	1
36	Yellow bullhead	*A. natalis*	-	1	-	-	-	-	1
37	Channel catfish	*Ictalurus punctatus*	10	10	4	338	145	497	1004
38	Stonecat	*Noturus flavus*	-	-	-	-	-	2	2
39	Tadpole madtom	*N. gyrinus*	3	-	56	-	-	-	59
40	Flathead catfish	*Pylodictis olivaris*	4	15	2	4	31	-	56
41	Northern pike	*Esox lucius*	35	76	3	-	-	-	114
42	Pirate perch	*Aphredoderus sayanus*	-	-	1	-	-	-	1
43	Brook silverside	*Labidesthes sicculus*	313	-	9	-	-	-	322
44	Brook stickleback	*Culaea inconstans*	-	-	1	-	-	-	1
45	White bass	*Morone chrysops*	91	55	309	-	6	-	461

46	Yellow bass	*M. mississippiensis*	1	-	-	-	-	-	1
47	Rock bass	*Ambloplites rupestris*	119	31	27	2	-	-	179
48	Green sunfish	*Lepomis cyanellus*	30	6	8	-	-	-	44
49	Pumpkinseed	*L. gibbosus*	15	25	7	-	-	-	47
50	Warmouth	*L. gulosus*	1	8	7	-	-	-	16
51	Orangespotted sunfish	*L. humilis*	11	3	12	-	-	-	26
52	Bluegill	*L. macrochirus*	3023	1722	1211	6	16	-	5978
53	Green x pumpkinseed sunfish	*L. cyanellus x gibbosus*	2	1	-	-	-	-	3
54	Green x bluegill sunfish	*L. cyanellus x macrochirus*	2	1	-	-	-	-	3
55	Pumpkinseed x bluegill	*L. gibbosus x macrochirus*	-	1	-	-	-	-	1
56	Unidentified Lepomis	*Lepomis* sp.	111	-	937	-	-	-	1048
57	Smallmouth bass	*Micropterus dolomieu*	211	2	3	-	2	-	218
58	Largemouth bass	*M. salmoides*	1041	32	143	-	-	-	1216
59	White crappie	*Pomoxis annularis*	-	7	1	-	-	-	8
60	Black crappie	*P. nigromaculatus*	76	448	23	-	7	-	554
61	Unidentified sunfish	Unidentified Centrarchidae	1	-	4	-	-	-	5

62	Western sand darter	*Ammocrypta clara*	4	-	-	-	-	-	4
63	Mud darter	*Etheostoma asprigene*	5	-	1	-	-	-	6
64	Johnny darter	*E. nigrum*	27	-	71	-	-	-	98
65	Yellow perch	*Perca flavescens*	27	53	3	-	-	-	83
66	Logperch	*Percina caprodes*	84	-	9	-	-	-	93
67	Blackside darter	*P. maculata*	-	-	1	-	-	-	1
68	Slenderhead darter	*P . phoxocephala*	3	-	-	-	-	-	3
69	River darter	*P. shumardi*	1	-	1	-	-	-	2
70	Sauger	*Stizostedion canadense*	30	4	8	1	-	4	47
71	Walleye	*S. vitreum*	23	12	1	-	1	-	37
72	Freshwater drum	*Aplodinotus grunniens*	111	68	6	8	21	6	220
			12405	**3106**	**5744**	**431**	**356**	**532**	**22574**

Sampling gears:
D - Day electrofishing
F - Fyke netting
M - Mini fyke netting
HS - Small hoop netting
HL - Large hoop netting
T- Trawling

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Pool 8 Tables

Table*	Stratified Random Sampling
4.2	Mean catch-per-unit-effort for fish collected by day electrofishing
6.2	Mean catch-per-unit-effort for fish collected by fyke netting
8.2	Mean catch-per-unit-effort for fish collected by mini fyke netting
10.2	Mean catch-per-unit-effort for fish collected by small hoop netting
11.2	Mean catch-per-unit-effort for fish collected by large hoop netting
	Fixed-site Sampling
17.2	Mean catch-per-unit-effort for fish collected by mini fyke netting
18.2	Mean catch-per-unit-effort for fish collected by small hoop netting
19.2	Mean catch-per-unit-effort for fish collected by large hoop netting
21.2	Mean catch-per-unit-effort for fish collected by bottom trawling

*Table numbers are not always in sequence because some gears were not fished in some study areas. Table numbers for each gear type are consistent among study areas.

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Table 4.2 Mean catch-per-unit-effort and (standard error) for fish collected by day electrofishing in Pool 8 of the Upper Mississippi River using stratified random sampling during 2002. The statistics under ALL pertain to unbiased means over all strata sampled by this gear (as indicated by nonmissing entries below and by Table 2.2). See Methods for definitions of catch-per-unit-effort and standard error. Scientific names for the species listed can be found in Table 1.

Common name	ALL	BWCS	IMPS	MCBU	MCBW	SCB
Chestnut lamprey	0.03					0.08
	(0.03)					(0.08)
Silver lamprey	0.02	0.04	0.08			
	(0.01)	(0.04)	(0.08)			
American brook lamprey	0.01	0.04				
	(0.01)	(0.04)				
Longnose gar	0.11		0.17	0.17		0.17
	(0.05)		(0.17)	(0.17)		(0.10)
Shortnose gar	0.08	0.13	0.08	0.08	0.03	0.04
	(0.03)	(0.07)	(0.08)	(0.08)	(0.03)	(0.04)
Bowfin	0.27	0.58	0.17			0.17

	(0.06)	(0.15)	(0.11)			(0.08)
Mooneye	0.03				0.04	0.08
	(0.02)				(0.04)	(0.06)
Gizzard shad	4.94	4.79	2.83	8.25	0.97	3.38
	(1.23)	(1.50)	(1.55)	(4.29)	(0.72)	(1.43)
Spotfin shiner	23.85	19.00	10.42	23.42	0.24	30.38
	(3.79)	(5.73)	(6.94)	(7.14)	(0.14)	(7.39)
Common carp	2.26	1.63	1.92	1.25	0.24	3.50
	(0.41)	(0.62)	(1.01)	(0.60)	(0.13)	(0.86)
Golden shiner	0.46	1.00	1.08	0.17		0.08
	(0.18)	(0.51)	(0.76)	(0.11)		(0.06)
Emerald shiner	27.85	15.13	28.50	46.83	2.30	27.88
	(6.12)	(6.38)	(14.49)	(20.38)	(1.41)	(8.63)
River shiner	5.97	2.04		17.25	0.06	3.50
	(1.51)	(1.37)		(5.82)	(0.06)	(1.44)
Spottail shiner	0.77	1.17	2.17	0.25		0.54
	(0.23)	(0.56)	(1.12)	(0.18)		(0.30)
Weed shiner	0.81	1.54	0.08			0.75
	(0.30)	(0.80)	(0.08)			(0.34)
Mimic shiner	7.81	2.38	2.67	13.92	1.01	9.71
	(2.63)	(1.32)	(2.49)	(9.72)	(0.58)	(3.52)
Pugnose minnow	0.78	0.96	0.58	0.08		1.08

	(0.18)	(0.31)	(0.26)	(0.08)		(0.37)
Fathead minnow	0.02					0.04
	(0.02)					(0.04)
Bullhead minnow	11.24	6.38	12.17	12.50		14.79
	(2.26)	(1.57)	(11.03)	(7.08)		(3.65)
Quillback	0.14	0.08		0.42		0.04
	(0.07)	(0.08)		(0.29)		(0.04)
Highfin carpsucker	0.15			0.17		0.29
	(0.10)			(0.11)		(0.25)
White sucker	0.04		0.08			0.08
	(0.02)		(0.08)			(0.06)
Smallmouth buffalo	0.01	0.04			0.06	
	(0.01)	(0.04)			(0.06)	
Bigmouth buffalo	0.03	0.08				
	(0.03)	(0.08)				
Spotted sucker	1.99	4.13	0.92			1.42
	(0.44)	(1.11)	(0.45)			(0.63)
Silver redhorse	1.81	1.38	0.08	2.25	2.61	2.17
	(0.31)	(0.49)	(0.08)	(0.75)	(0.79)	(0.52)
River redhorse	0.00				0.33	

	(0.00)				(0.12)	
Golden redhorse	0.72	0.50	0.25	0.33	1.02	1.21
	(0.17)	(0.16)	(0.13)	(0.22)	(0.29)	(0.39)
Shorthead redhorse	2.61	2.83	1.92	1.58	14.52	3.04
	(0.42)	(0.88)	(0.90)	(0.48)	(2.82)	(0.72)
Channel catfish	0.12	0.04	0.17	0.08	0.03	0.21
	(0.06)	(0.04)	(0.11)	(0.08)	(0.03)	(0.15)
Tadpole madtom	0.04	0.13				
	(0.02)	(0.07)				
Flathead catfish	0.06	0.04		0.08		0.08
	(0.03)	(0.04)		(0.08)		(0.06)
Northern pike	0.50	0.96	0.17	0.17		0.33
	(0.11)	(0.28)	(0.11)	(0.11)		(0.13)
Brook silverside	3.19	2.04	12.50	1.92		3.79
	(0.79)	(0.72)	(10.99)	(0.95)		(1.27)
White bass	1.41	0.88	0.33	2.67	0.18	1.29
	(0.37)	(0.33)	(0.19)	(0.76)	(0.11)	(0.82)
Yellow bass	0.01	0.04				
	(0.01)	(0.04)				
Rock bass	1.57	1.13	2.17	1.00		2.25
	(0.30)	(0.41)	(0.80)	(0.41)		(0.64)

Green sunfish	0.39	0.63	0.50	0.33		0.21
	(0.18)	(0.50)	(0.26)	(0.19)		(0.13)
Pumpkinseed	0.11	0.04	0.92			0.13
	(0.05)	(0.04)	(0.92)			(0.07)
Warmouth	0.00		0.08			
	(0.00)		(0.08)			
Orangespotted sunfish	0.18			0.08		0.42
	(0.16)			(0.08)		(0.42)
Bluegill	41.68	62.42	26.42	10.42	1.55	44.21
	(8.48)	(19.26)	(6.49)	(4.09)	(0.88)	(14.07)
Green x pumpkinseed sunfish	0.03					0.08
	(0.02)					(0.06)
Green x bluegill sunfish	0.03	0.08				
	(0.03)	(0.08)				
Unidentified Lepomis	1.38	2.42	2.00			1.21
	(0.51)	(1.41)	(0.88)			(0.48)
Smallmouth bass	2.13	1.04	1.08	4.08	3.87	2.04
	(0.33)	(0.42)	(0.31)	(0.90)	(1.19)	(0.56)
Largemouth bass	14.14	20.17	11.00	6.25	0.73	14.00
	(1.65)	(3.64)	(2.18)	(1.58)	(0.23)	(2.72)

Black crappie	1.08	1.46	0.50	0.25		1.33
	(0.21)	(0.51)	(0.23)	(0.13)		(0.30)
Unidentified sunfish	0.01	0.04				
	(0.01)	(0.04)				
Western sand darter	0.07	0.04		0.25		
	(0.06)	(0.04)		(0.25)		
Mud darter	0.08	0.08				0.13
	(0.03)	(0.06)				(0.07)
Johnny darter	0.40	0.29	0.17	0.33		0.58
	(0.12)	(0.15)	(0.11)	(0.22)		(0.25)
Yellow perch	0.32	0.71	0.58			0.13
	(0.09)	(0.27)	(0.29)			(0.07)
Logperch	0.78	0.42	2.67	0.33	0.37	1.13
	(0.22)	(0.26)	(1.73)	(0.14)	(0.20)	(0.47)
Slenderhead darter	0.02			0.08	0.08	
	(0.02)			(0.08)	(0.08)	
River darter	0.00		0.08			
	(0.00)		(0.08)			
Sauger	0.43	0.54		0.17	0.07	0.54
	(0.11)	(0.21)		(0.17)	(0.07)	(0.18)
Walleye	0.22	0.54	0.08		0.24	0.08
	(0.08)	(0.22)	(0.08)		(0.11)	(0.08)

Freshwater drum	1.43	0.58	0.92	3.58	1.09	0.96
	(0.80)	(0.28)	(0.53)	(3.41)	(0.36)	(0.44)

Sampling strata:
BWCS - Backwater, contiguous, shoreline
IMPS - Impounded, shoreline
MCBU - Main channel border, unstructured
MCBW - Main channel border, wing dam
SCB - Side channel border

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Table 6.2 Mean catch-per-unit-effort and (standard error) for fish collected by fyke netting in Pool 8 of the Upper Mississippi River using stratified random sampling during 2002. The statistics under ALL pertain to unbiased means over all strata sampled by this gear (as indicated by nonmissing entries below and by Table 2.2). See Methods for definitions of catch-per-unit-effort and standard error. Scientific names for the species listed can be found in Table 1.

Common name	ALL	BWCS	IMPS
Longnose gar	0.99	1.08	0.33
	(0.27)	(0.31)	(0.26)
Shortnose gar	2.85	3.10	1.17
	(0.64)	(0.74)	(0.54)
Bowfin	1.21	1.31	0.53
	(0.45)	(0.51)	(0.31)
Gizzard shad	0.61	0.43	1.84
	(0.16)	(0.14)	(0.76)
Common carp	0.81	0.82	0.73
	(0.21)	(0.24)	(0.27)
Golden shiner	0.07	0.08	
	(0.04)	(0.05)	

Smallmouth buffalo	0.02	0.03	
	(0.02)	(0.03)	
Bigmouth buffalo	0.01		0.08
	(0.01)		(0.08)
Spotted sucker	0.52	0.55	0.30
	(0.13)	(0.14)	(0.13)
Silver redhorse	2.55	2.66	1.77
	(0.56)	(0.64)	(0.55)
River redhorse	0.02	0.03	
	(0.02)	(0.03)	
Golden redhorse	0.16	0.18	
	(0.12)	(0.13)	
Shorthead redhorse	0.94	0.83	1.68
	(0.20)	(0.20)	(0.81)
Black bullhead	0.02	0.03	
	(0.02)	(0.03)	
Yellow bullhead	0.02	0.03	
	(0.02)	(0.03)	
Channel catfish	0.19	0.18	0.24
	(0.07)	(0.07)	(0.24)

Flathead catfish	0.32	0.34	0.17
	(0.12)	(0.14)	(0.11)
Northern pike	1.66	1.82	0.52
	(0.44)	(0.51)	(0.30)
White bass	0.76	0.42	3.07
	(0.19)	(0.13)	(1.16)
Rock bass	0.47	0.32	1.46
	(0.12)	(0.12)	(0.51)
Green sunfish	0.14	0.August 26, 2004E5E5E5">	
	(0.08)	(0.10)	
Pumpkinseed	0.52	0.56	0.29
	(0.23)	(0.26)	(0.16)
Warmouth	0.19	0.21	
	(0.11)	(0.13)	
Orangespotted sunfish	0.06	0.06	0.08
	(0.05)	(0.06)	(0.08)
Bluegill	36.85	39.95	15.60
	(7.20)	(8.26)	(4.34)
Green x pumpkinseed sunfish	0.02	0.03	
	(0.02)	(0.03)	

Green x bluegill sunfish	0.02	0.03	
	(0.02)	(0.03)	
Pumpkinseed x bluegill	0.02	0.03	
	(0.02)	(0.03)	
Smallmouth bass	0.02		0.15
	(0.02)		(0.15)
Largemouth bass	0.58	0.55	0.82
	(0.17)	(0.19)	(0.41)
White crappie	0.16	0.18	
	(0.10)	(0.11)	
Black crappie	9.66	10.52	3.75
	(1.70)	(1.94)	(1.41)
Yellow perch	1.07	1.10	0.80
	(0.38)	(0.44)	(0.38)
Sauger	0.08	0.08	0.07
	(0.04)	(0.04)	(0.07)
Walleye	0.17	0.10	0.63
	(0.07)	(0.05)	(0.47)
Freshwater drum	1.44	1.51	0.91
	(0.50)	(0.57)	(0.29)

Sampling strata:
BWCS - Backwater, contiguous, shoreline
IMPS - Impounded, shoreline

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Table 8.2 Mean catch-per-unit-effort and (standard error) for fish collected by mini fyke netting in Pool 8 of the Upper Mississippi River using stratified random sampling during 2002. The statistics under ALL pertain to unbiased means over all strata sampled by this gear (as indicated by nonmissing entries below and by Table 2.2). See Methods for definitions of catch-per-unit-effort and standard error. Scientific names for the species listed can be found in Table 1.

Common name	ALL	BWCS	IMPS	MCBU	SCB
Longnose gar	0.13	0.12	0.41	0.28	
	(0.06)	(0.07)	(0.34)	(0.22)	
Shortnose gar	0.07	0.12	0.31	0.08	
	(0.03)	(0.06)	(0.17)	(0.08)	
Gizzard shad	2.57	0.04	0.08	10.84	0.17
	(2.48)	(0.04)	(0.08)	(10.84)	(0.17)
Spotfin shiner	18.84	5.45	19.40	31.07	23.40
	(6.00)	(2.76)	(14.15)	(10.23)	(14.24)
Common carp	0.07	0.04	0.33	0.16	
	(0.04)	(0.04)	(0.26)	(0.16)	
Golden shiner	0.16	0.08	0.25	0.38	0.08
	(0.06)	(0.05)	(0.25)	(0.21)	(0.08)

Emerald shiner	6.98	1.69	6.13	8.67	10.82
	(3.02)	(0.53)	(3.82)	(3.76)	(7.62)
River shiner	0.78		0.16	2.72	0.40
	(0.45)		(0.11)	(1.91)	(0.28)
Spottail shiner	0.12	0.08	0.97	0.21	
	(0.07)	(0.08)	(0.74)	(0.21)	
Weed shiner	1.23	2.99	0.25	0.22	0.38
	(0.48)	(1.39)	(0.18)	(0.15)	(0.21)
Mimic shiner	4.28	0.55	0.76	11.24	3.89
	(2.30)	(0.23)	(0.37)	(9.05)	(2.60)
Pugnose minnow	2.54	5.15	2.44	1.31	0.95
	(0.98)	(2.77)	(1.73)	(0.84)	(0.40)
Fathead minnow	0.03	0.04	0.07	0.07	
	(0.02)	(0.04)	(0.07)	(0.07)	
Bullhead minnow	13.11	9.59	0.76	4.57	23.06
	(3.94)	(4.75)	(0.41)	(1.28)	(9.45)
Spotted sucker	0.01	0.04			
	(0.01)	(0.04)			
Silver redhorse	0.14	0.19	0.17	0.16	0.08
	(0.05)	(0.08)	(0.17)	(0.11)	(0.08)
Unidentified redhorse	0.01	0.04			

	(0.01)	(0.04)			
Unidentified sucker	0.50	0.12	0.17	1.45	0.32
	(0.34)	(0.09)	(0.17)	(1.37)	(0.32)
Channel catfish	0.03		0.25	0.08	
	(0.02)		(0.18)	(0.08)	
Tadpole madtom	0.33	0.16	2.77	0.07	0.31
	(0.13)	(0.10)	(2.21)	(0.07)	(0.17)
Flathead catfish	0.02		0.07	0.08	
	(0.02)		(0.07)	(0.08)	
Northern pike	0.03	0.04		0.07	
	(0.02)	(0.04)		(0.07)	
Pirate perch	0.01	0.04			
	(0.01)	(0.04)			
Brook silverside	0.22	0.04	0.07	0.08	0.48
	(0.18)	(0.04)	(0.07)	(0.08)	(0.48)
Brook stickleback	0.02			0.08	
	(0.02)			(0.08)	
White bass	5.52	0.08	0.57	22.30	0.91
	(5.00)	(0.08)	(0.50)	(21.80)	(0.67)
Rock bass	0.16	0.04	1.41	0.32	

	(0.05)	(0.04)	(0.63)	(0.14)	
Green sunfish	0.05	0.08	0.37		
	(0.02)	(0.05)	(0.29)		
Pumpkinseed	0.09	0.04	0.15	0.31	
	(0.04)	(0.04)	(0.15)	(0.18)	
Warmouth	0.07	0.19	0.15		
	(0.06)	(0.19)	(0.15)		
Orangespotted sunfish	0.16	0.42		0.08	
	(0.15)	(0.42)		(0.08)	
Bluegill	13.31	25.27	27.72	7.54	4.17
	(4.17)	(11.64)	(12.06)	(2.68)	(2.66)
Unidentified Lepomis	6.76	4.51	55.74	10.67	
	(3.74)	(2.79)	(54.75)	(10.59)	
Smallmouth bass	0.04		0.08	0.16	
	(0.03)		(0.08)	(0.11)	
Largemouth bass	1.91	4.03	0.85	1.61	0.33
	(1.27)	(3.70)	(0.43)	(0.60)	(0.19)
White crappie	0.00		0.08		
	(0.00)		(0.08)		
Black crappie	0.27	0.35	0.62	0.38	0.08
	(0.09)	(0.16)	(0.43)	(0.26)	(0.08)

Unidentified sunfish	0.05	0.16			
	(0.04)	(0.11)			
Mud darter	0.01	0.04			
	(0.01)	(0.04)			
Johnny darter	1.01	0.36	1.22	2.96	0.39
	(0.54)	(0.29)	(0.63)	(2.30)	(0.22)
Yellow perch	0.00		0.08		
	(0.00)		(0.08)		
Logperch	0.10	0.12	0.33	0.07	0.07
	(0.05)	(0.12)	(0.26)	(0.07)	(0.07)
Blackside darter	0.02			0.07	
	(0.02)			(0.07)	
River darter	0.03				0.08
	(0.03)				(0.08)
Sauger	0.02			0.08	
	(0.02)			(0.08)	
Walleye	0.01	0.04			
	(0.01)	(0.04)			
Freshwater drum	0.10	0.04	0.07	0.24	0.08
	(0.05)	(0.04)	(0.07)	(0.17)	(0.08)

Sampling strata:
BWCS - Backwater, contiguous, shoreline

IMPS - Impounded, shoreline
MCBU - Main channel border, unstructured
SCB - Side channel border

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Table 10.2 Mean catch-per-unit-effort and (standard error) for fish collected by small hoop netting in Pool 8 of the Upper Mississippi River using stratified random sampling during 2002. The statistics under ALL pertain to unbiased means over all strata sampled by this gear (as indicated by nonmissing entries below and by Table 2.2). See Methods for definitions of catch-per-unit-effort and standard error. Scientific names for the species listed can be found in Table 1.

Common name	ALL	MCBU	SCB
Common carp	0.03		0.04
	(0.03)		(0.04)
Silver chub	0.27	0.72	
	(0.25)	(0.67)	
Silver redhorse	0.03		0.04
	(0.03)		(0.04)
Golden redhorse	0.03		0.04
	(0.03)		(0.04)
Shorthead redhorse	0.41	0.54	0.33
	(0.15)	(0.34)	(0.14)

Channel catfish	4.94	3.15	6.02
	(1.82)	(1.22)	(2.83)
Flathead catfish	0.06	0.08	0.04
	(0.04)	(0.08)	(0.04)
Bluegill	0.08		0.13
	(0.06)		(0.09)
Freshwater drum	0.06	0.09	0.04
	(0.03)	(0.06)	(0.04)

Sampling strata:
MCBU - Main channel border, unstructured
SCB - Side channel border

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Table 11.2 Mean catch-per-unit-effort and (standard error) for fish collected by large hoop netting in Pool 8 of the Upper Mississippi River using stratified random sampling during 2002. The statistics under ALL pertain to unbiased means over all strata sampled by this gear (as indicated by nonmissing entries below and by Table 2.2). See Methods for definitions of catch-per-unit-effort and standard error. Scientific names for the species listed can be found in Table 1.

Common name	ALL	MCBU	SCB
Longnose gar	0.03		0.04
	(0.03)		(0.04)
Common carp	0.18		0.29
	(0.12)		(0.20)
Smallmouth buffalo	0.08	0.08	0.08
	(0.06)	(0.06)	(0.08)
Silver redhorse	0.32	0.08	0.47
	(0.24)	(0.06)	(0.38)
River redhorse	0.03		0.04
	(0.03)		(0.04)
Shorthead redhorse	0.68	0.38	0.86

	(0.19)	(0.15)	(0.29)
Channel catfish	3.15	1.10	4.40
	(0.67)	(0.75)	(0.97)
Flathead catfish	0.27	0.59	0.08
	(0.15)	(0.38)	(0.08)
White bass	0.02	0.04	
	(0.02)	(0.04)	
Bluegill	0.13		0.20
	(0.07)		(0.11)
Smallmouth bass	0.05		0.08
	(0.04)		(0.06)
Black crappie	0.02	0.04	
	(0.02)	(0.04)	
Walleye	0.02	0.04	
	(0.02)	(0.04)	
Freshwater drum	0.25	0.47	0.12
	(0.13)	(0.33)	(0.06)

Sampling strata:
MCBU - Main channel border, unstructured
SCB - Side channel border

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Table 17.2 Mean catch-per-unit-effort and (standard error) for fish collected by mini fyke netting in Pool 8 of the Upper Mississippi River using fixed-site sampling during 2002. See Methods for definitions of catch-per-unit-effort and standard error. Scientific names for the species listed can be found in Table 1.

Common name	TWZ
Spotfin shiner	6.14
	(3.99)
Speckled chub	0.17
	(0.17)
Silver chub	0.17
	(0.17)
Emerald shiner	0.34
	(0.34)
Weed shiner	0.17
	(0.17)
Mimic shiner	1.49
	(1.49)
Pugnose minnow	0.16

	(0.16)
Bullhead minnow	2.22
	(1.49)
Shorthead redhorse	0.17
	(0.17)
Tadpole madtom	2.04
	(2.04)
Northern pike	0.17
	(0.17)
White bass	2.15
	(1.95)
Rock bass	0.50
	(0.34)
Green sunfish	0.17
	(0.17)
Bluegill	9.15
	(6.77)
Largemouth bass	0.17
	(0.17)
Yellow perch	0.34
	(0.34)
Sauger	1.19
	(1.19)

Sampling stratum:
TWZ - Tailwater

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Table 18.2 Mean catch-per-unit-effort and (standard error) for fish collected by small hoop netting in Pool 8 of the Upper Mississippi River using fixed-site sampling during 2002. See Methods for definitions of catch-per-unit-effort and standard error. Scientific names for the species listed can be found in Table 1.

Common name	TWZ
Common carp	1.19
	(1.10)
Smallmouth buffalo	0.08
	(0.08)
Silver redhorse	0.08
	(0.08)
Shorthead redhorse	1.19
	(0.68)
Channel catfish	9.73
	(4.43)
Flathead catfish	0.08
	(0.08)
Rock bass	0.17

	(0.17)
Bluegill	0.25
	(0.25)
Sauger	0.08
	(0.08)
Freshwater drum	0.42
	(0.33)

Sampling stratum:
TWZ - Tailwater

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Table 19.2 Mean catch-per-unit-effort and (standard error) for fish collected by large hoop netting in Pool 8 of the Upper Mississippi River using fixed-site sampling during 2002. See Methods for definitions of catch-per-unit-effort and standard error. Scientific names for the species listed can be found in Table 1.

Common name	TWZ
Mooneye	0.08
	(0.08)
Common carp	4.98
	(3.87)
Smallmouth buffalo	0.09
	(0.09)
Silver redhorse	0.08
	(0.08)
Shorthead redhorse	0.59
	(0.24)
Channel catfish	1.05
	(1.05)
Flathead catfish	1.25

	(0.77)
White bass	0.42
	(0.42)
Bluegill	0.91
	(0.58)
Black crappie	0.49
	(0.40)
Freshwater drum	0.59
	(0.42)

Sampling stratum:
TWZ - Tailwater

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Table 21.2 Mean catch-per-unit-effort and (standard error) for fish collected by bottom trawling in Pool 8 of the Upper Mississippi River using fixed-site sampling during 2002. See Methods for definitions of catch-per-unit-effort and standard error. Scientific names for the species listed can be found in Table 1.

Common name	TWZ
Shovelnose sturgeon	0.83
	(0.41)
Speckled chub	0.25
	(0.25)
Shorthead redhorse	0.83
	(0.51)
Channel catfish	41.42
	(28.67)
Stonecat	0.17
	(0.17)
Sauger	0.33
	(0.19)
Freshwater drum	0.50

	(0.36)

Sampling stratum:
TWZ - Tailwater

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Pool 8 Length Distributions

Length distributions (length) as a percentage of catch (percent) for selected species of interest collected by the Long Term Resource Monitoring Program. Fish species are listed in phylogenetical order following Robins et al. (1991) nomenclature. 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 because of local interest, while others were omitted (reach dependent). Scientific names for the species listed can be found in Table 1.

Figure*	Species	Method
2.2	Gizzard shad	Electrofishing
3.2	Common carp	Electrofishing
4.2	Smallmouth buffalo	Electrofishing
5.2	Smallmouth buffalo	Hoop netting
6.2	Channel catfish	Electrofishing
7.2	Channel catfish	Hoop netting
8.2	Northern pike	Electrofishing
9.2	Northern pike	Fyke netting
10.2	White bass	Electrofishing
11.2	Bluegill	Electrofishing
12.2	Bluegill	Fyke netting
13.2	Largemouth bass	Electrofishing
14.2	White crappie	Fyke netting
15.2	Black crappie	Fyke netting

16.2	Sauger	Electrofishing
17.2	Walleye	Electrofishing
18.2	Freshwater drum	Electrofishing
19.2	Freshwater drum	Fyke netting
*Figure numbers are not always in sequence because some species were not caught in some study areas. Figure numbers for each species and gear type are consistent among study areas.		

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Figure 2.2 Length distributions (*length*) as a percentage of catch (*percent*) for gizzard shad (*Dorosoma cepedianum)* collected by electrofishing in Pool 8 of the Upper Mississippi River during 2002. Click here to view this species' length distributions in all study reaches.

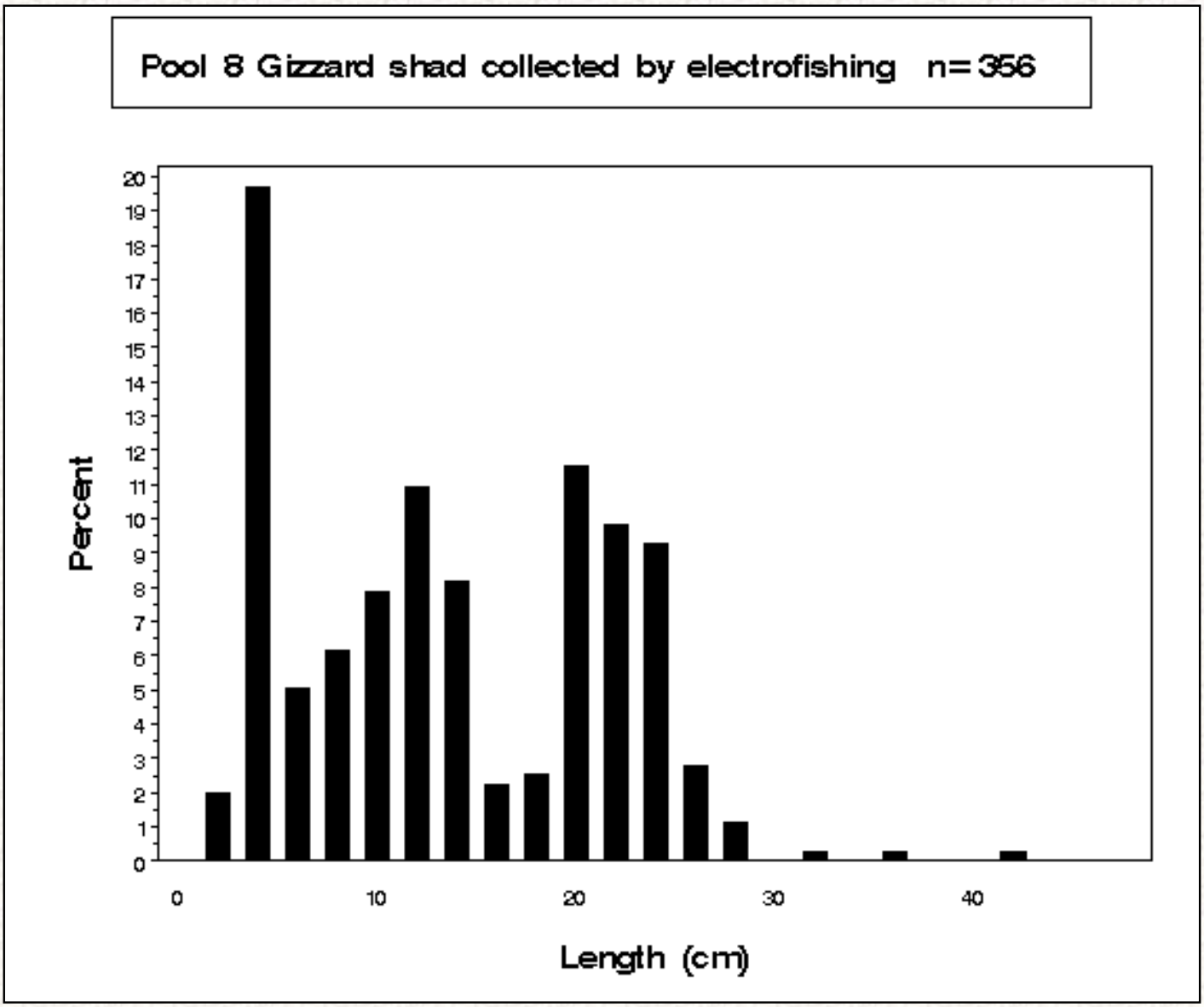

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Figure 3.2 Length distributions (*length*) as a percentage of catch (*percent*) for common carp (*Cyprinus carpio)* collected by electrofishing in Pool 8 of the Upper Mississippi River during 2002. Click here to view this species' length distributions in all study reaches.

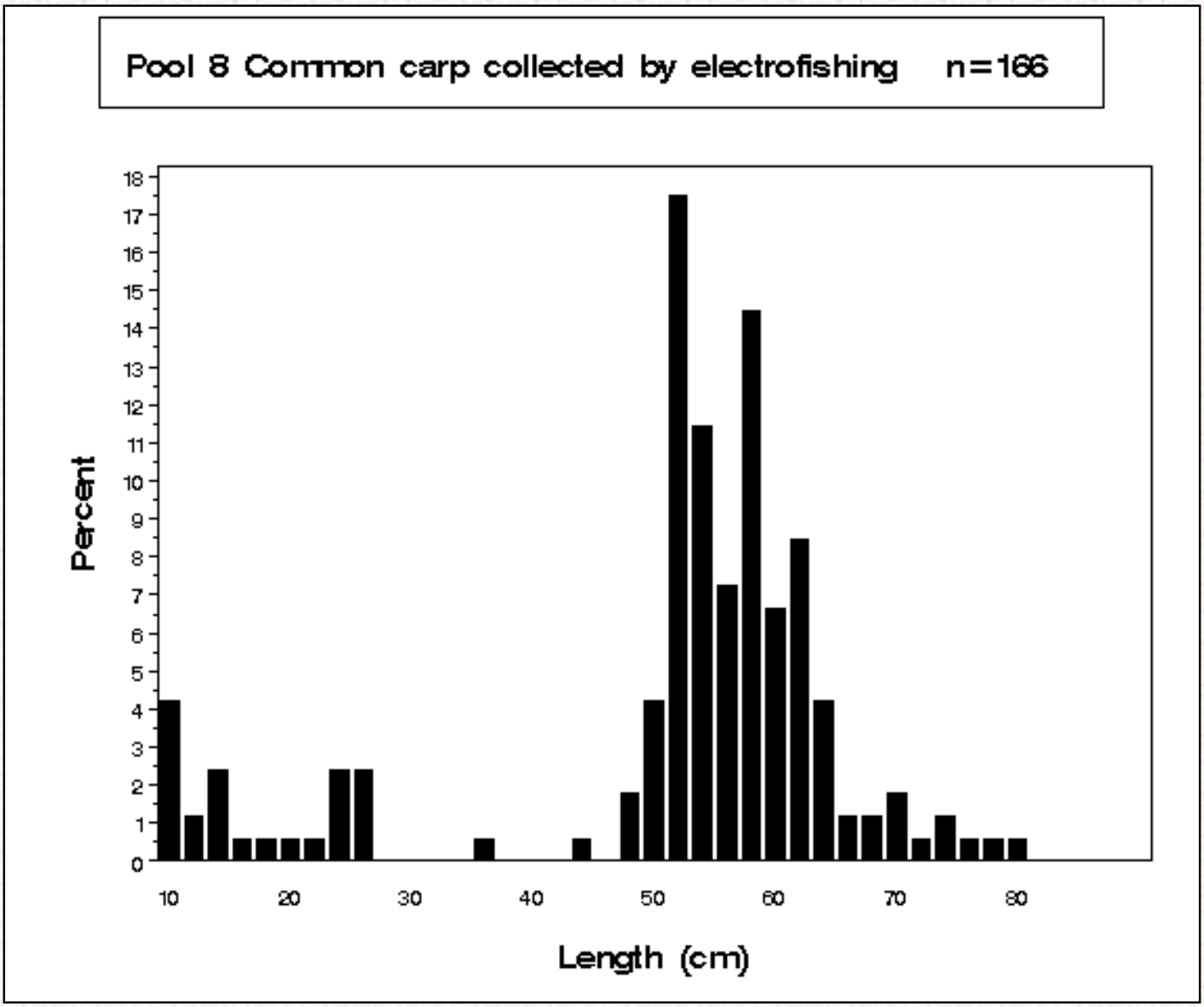

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Figure 4.2 Length distributions (*length*) as a percentage of catch (*percent*) for smallmouth buffalo (*Ictiobus bubalus)* collected by electrofishing in Pool 8 of the Upper Mississippi River during 2002. Click here to view this species' length distributions in all study reaches.

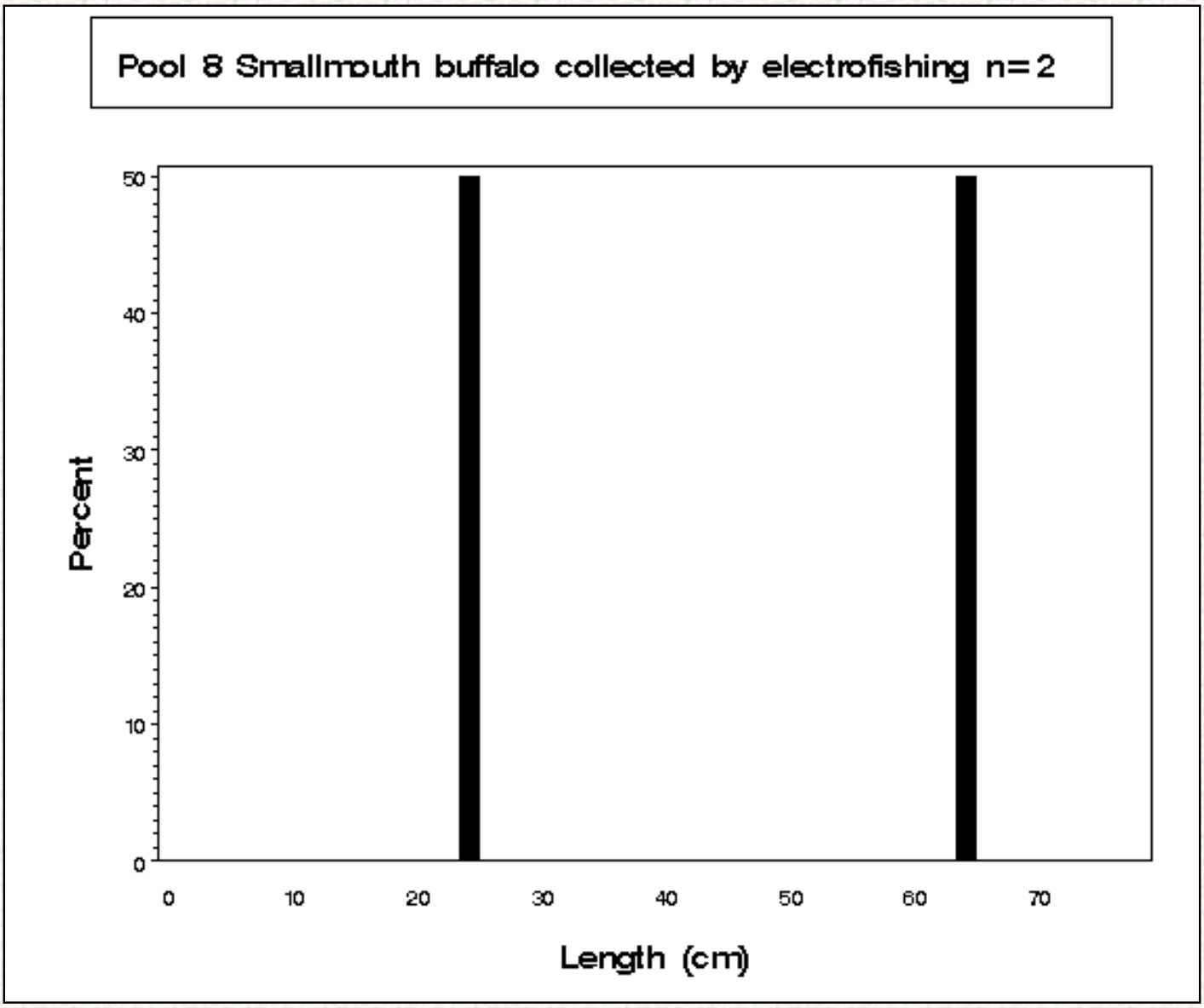

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Figure 5.2 Length distributions (*length*) as a percentage of catch (*percent*) for smallmouth buffalo (*Ictiobus bubalus)* collected by hoop netting in Pool 8 of the Upper Mississippi River during 2002. Click here to view this species' length distributions in all study reaches.

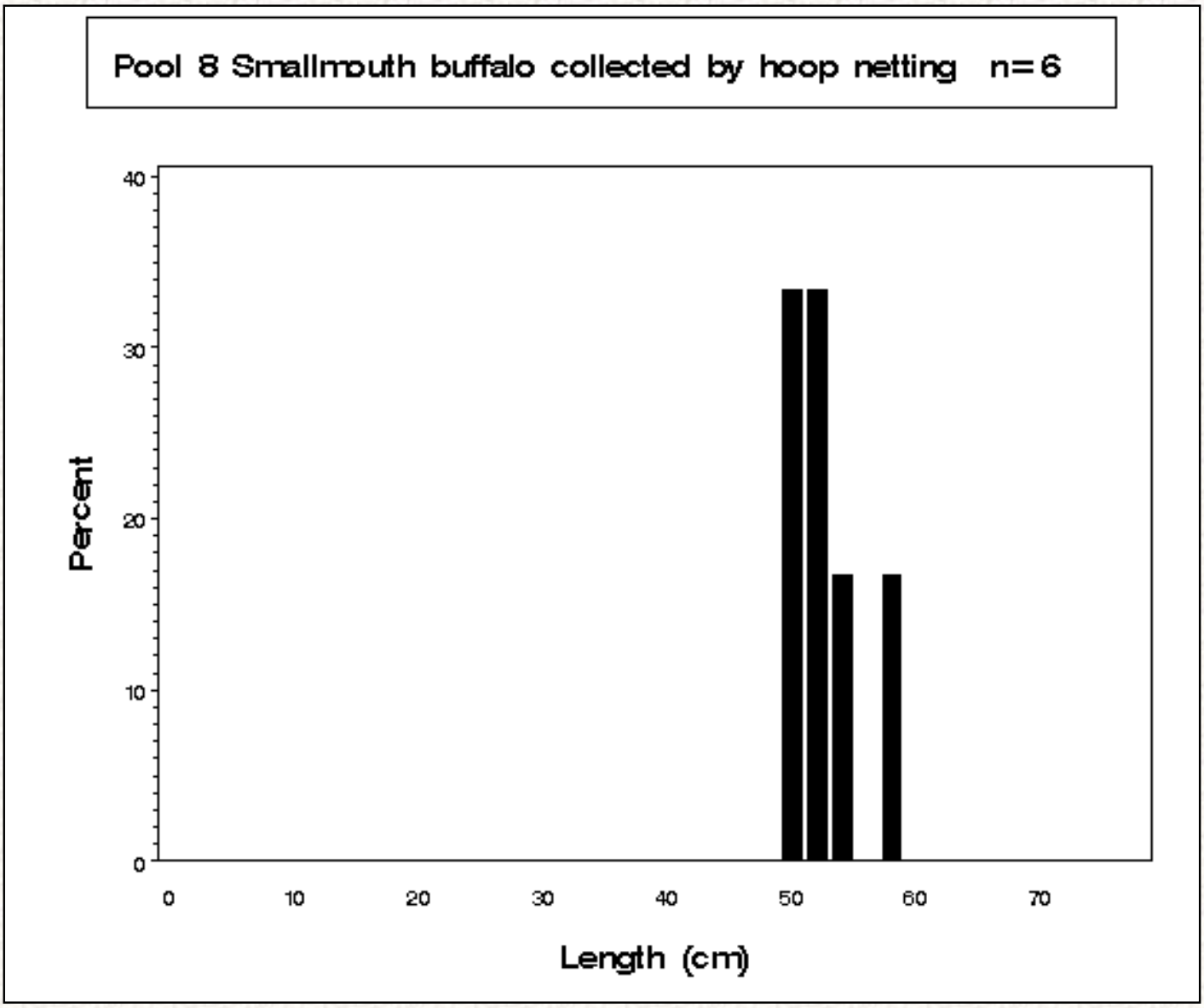

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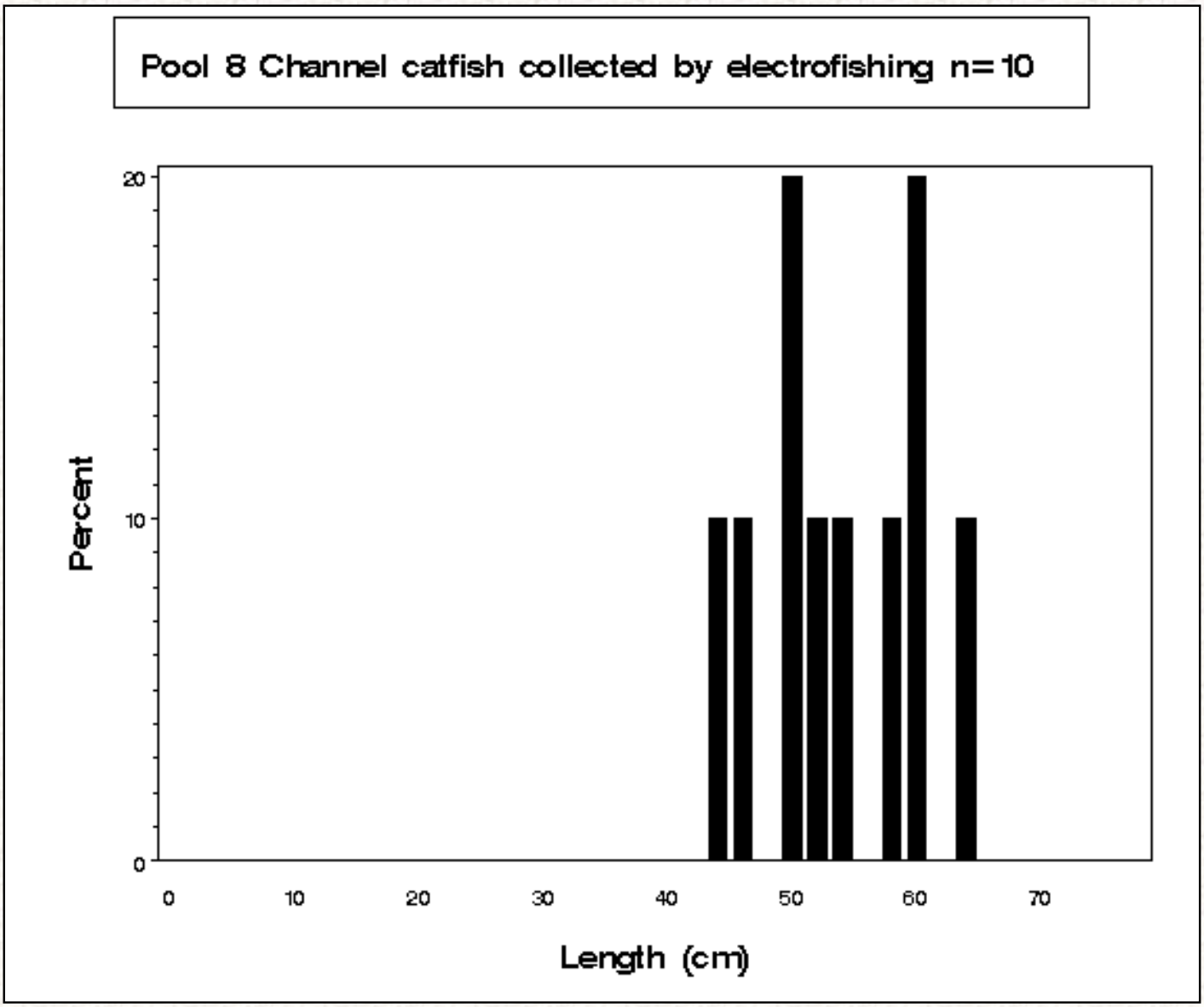
Figure 6.2 Length distributions (*length*) as a percentage of catch (*percent*) for channel catfish (*Ictalurus punctatus)* collected by electrofishing in Pool 8 of the Upper Mississippi River during 2002. Click here to view this species' length distributions in all study reaches.



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http://www.umesc.usgs.gov/reports_publications/ltrmp/fish/2002/figures/wi_cat_electro.html

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Figure 7.2 Length distributions (*length*) as a percentage of catch (*percent*) for channel catfish (*Ictalurus punctatus)* collected by hoop netting in Pool 8 of the Upper Mississippi River during 2002. Click here to view this species' length distributions in all study reaches.

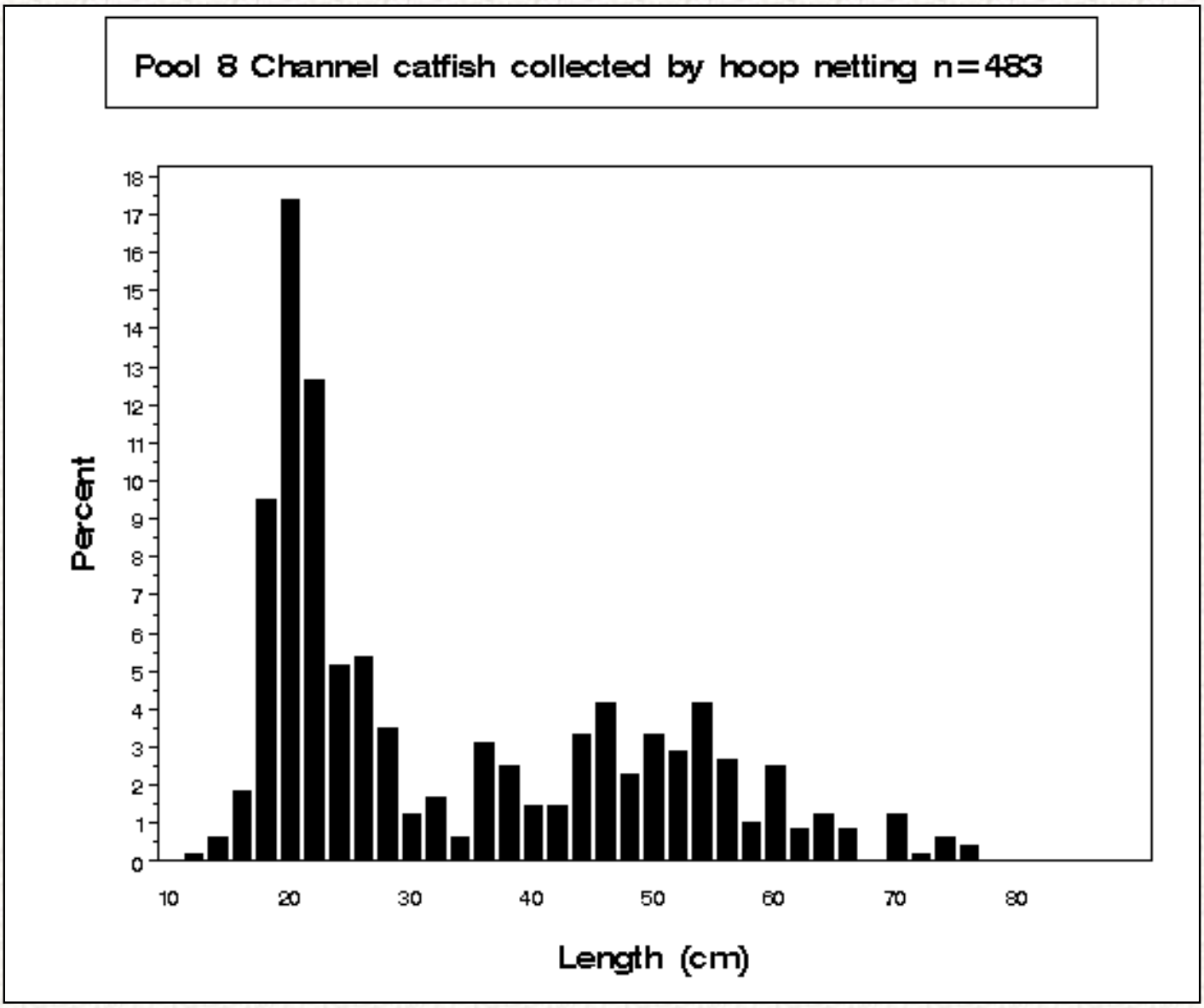

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Figure 8.2 Length distributions (*length*) as a percentage of catch (*percent*) for northern pike (*Esox lucius)* collected by electrofishing in Pool 8 of the Upper Mississippi River during 2002. Click here to view this species' length distributions in all study reaches.

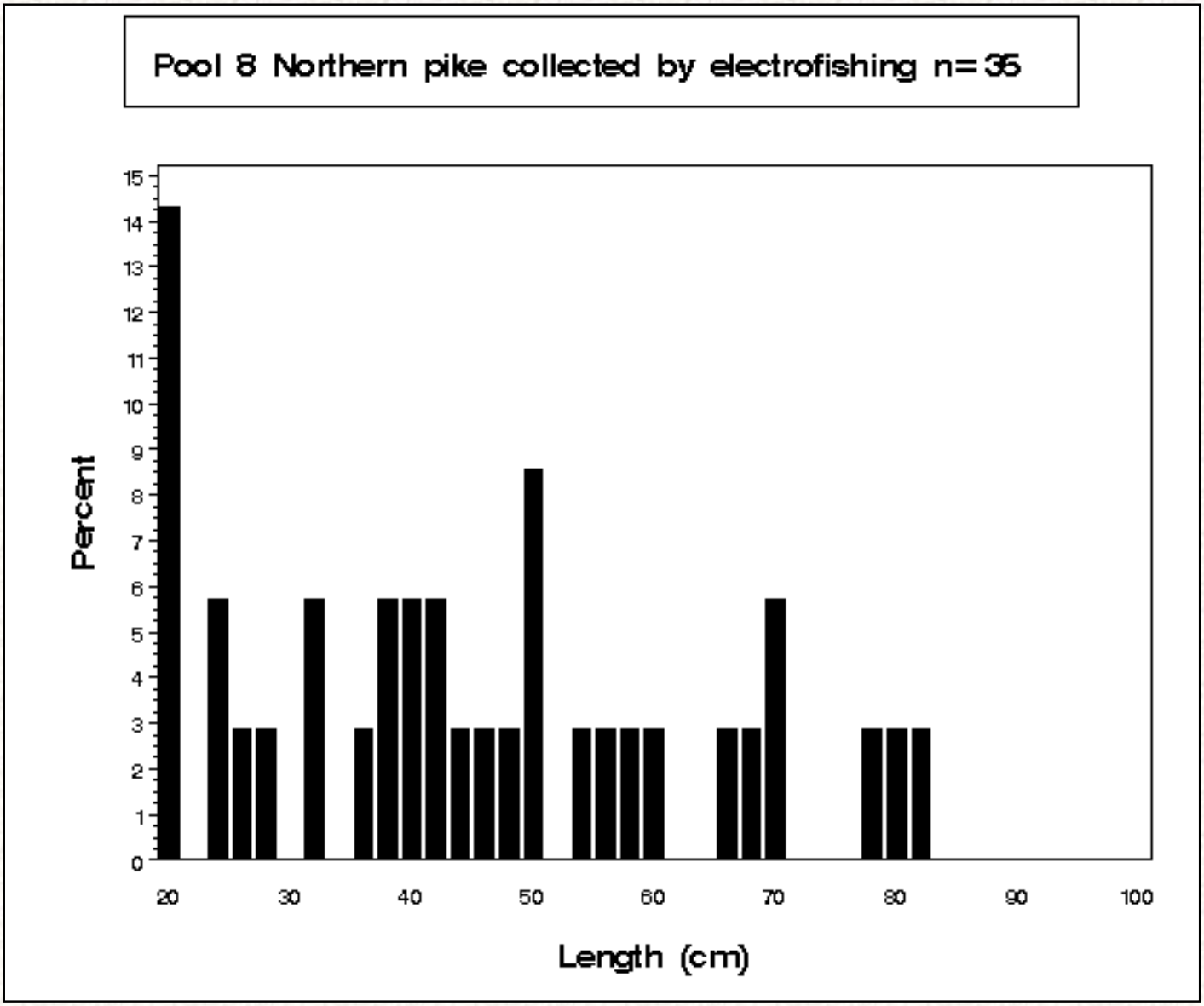

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Figure 9.2 Length distributions (*length*) as a percentage of catch (*percent*) for northern pike (*Esox lucius)* collected by fyke netting in Pool 8 of the Upper Mississippi River during 2002. Click here to view this species' length distributions in all study reaches.

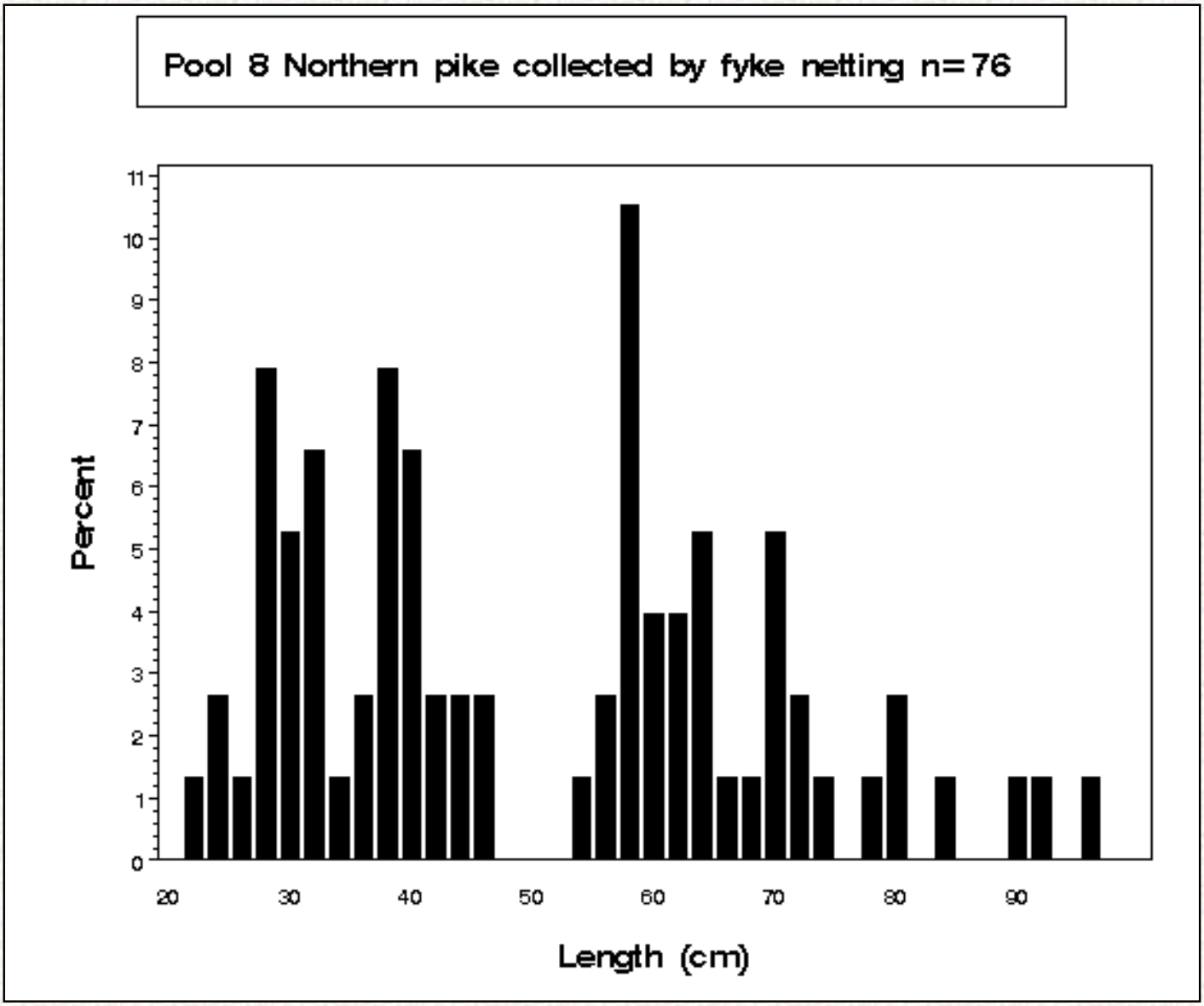

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Figure 10.2 Length distributions (*length*) as a percentage of catch (*percent*) for white bass (*Morone chrysops)* collected by electrofishing in Pool 8 of the Upper Mississippi River during 2002. Click here to view this species' length distributions in all study reaches.

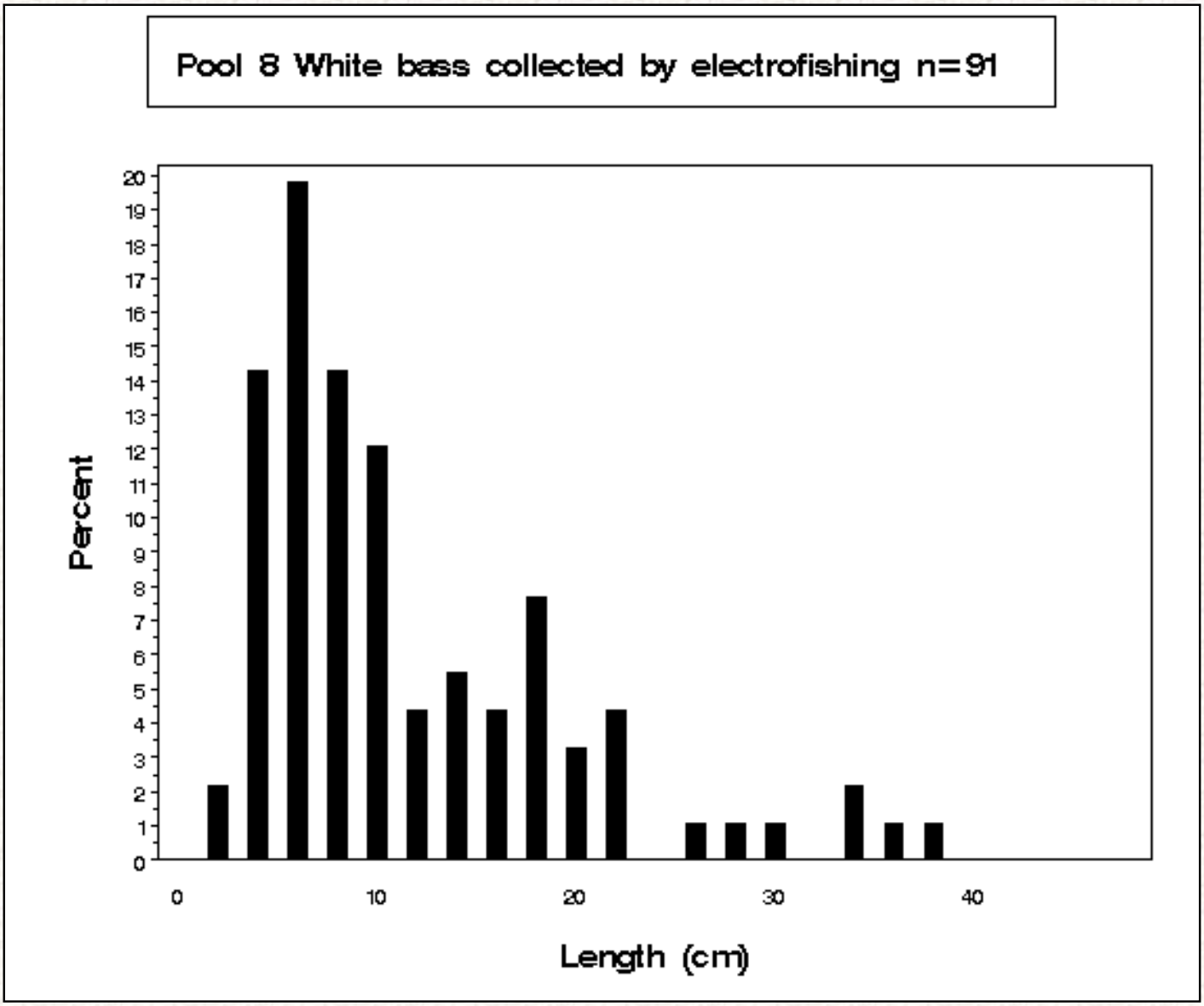

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Figure 11.2 Length distributions (*length*) as a percentage of catch (*percent*) for bluegill (*Lepomis macrochirus*) collected by electrofishing in Pool 8 of the Upper Mississippi River during 2002. Click here to view this species' length distributions in all study reaches.

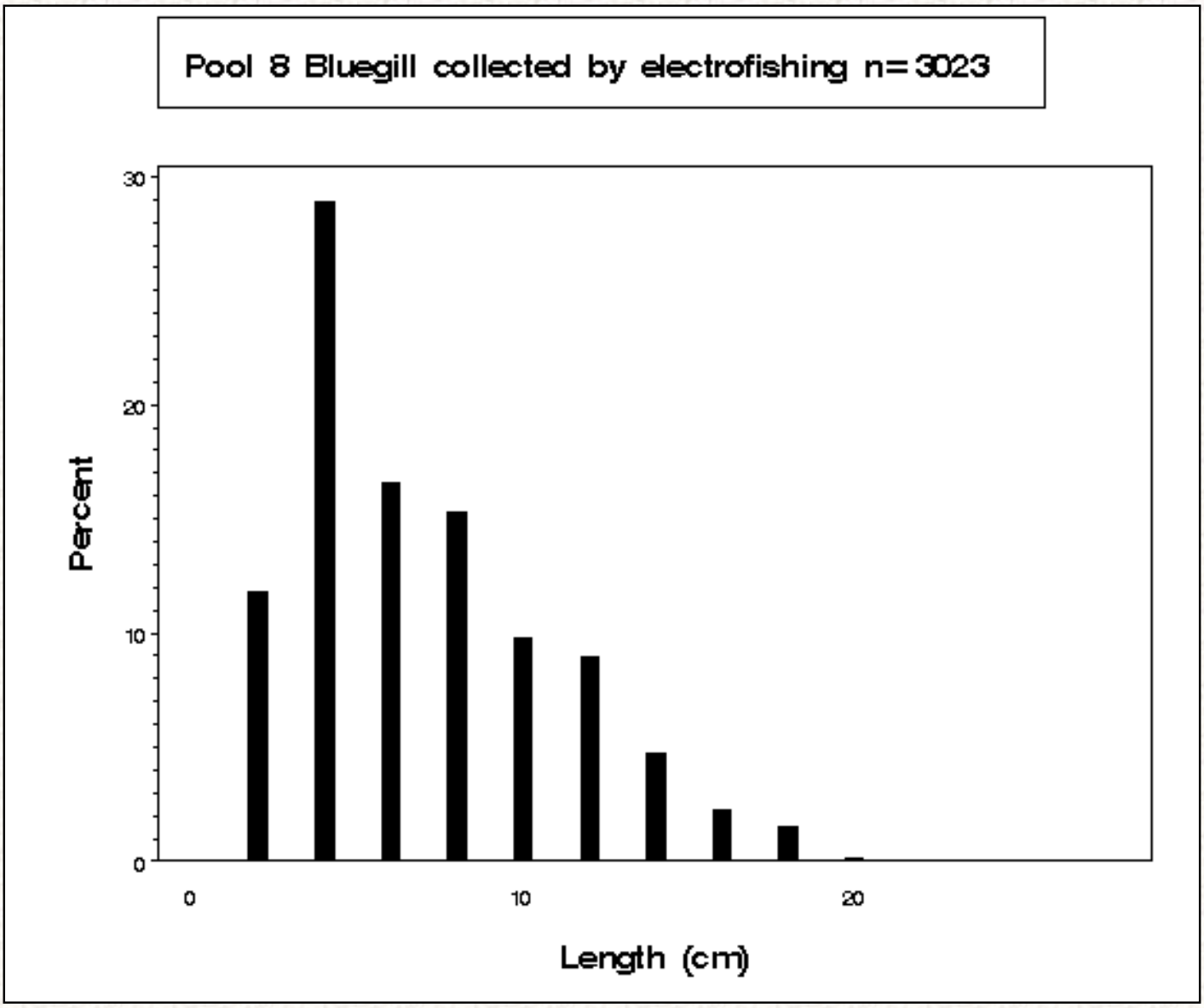

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Figure 12.2 Length distributions (*length*) as a percentage of catch (*percent*) for bluegill (*Lepomis macrochirus*) collected by fyke netting in Pool 8 of the Upper Mississippi River during 2002. Click here to view this species' length distributions in all study reaches.

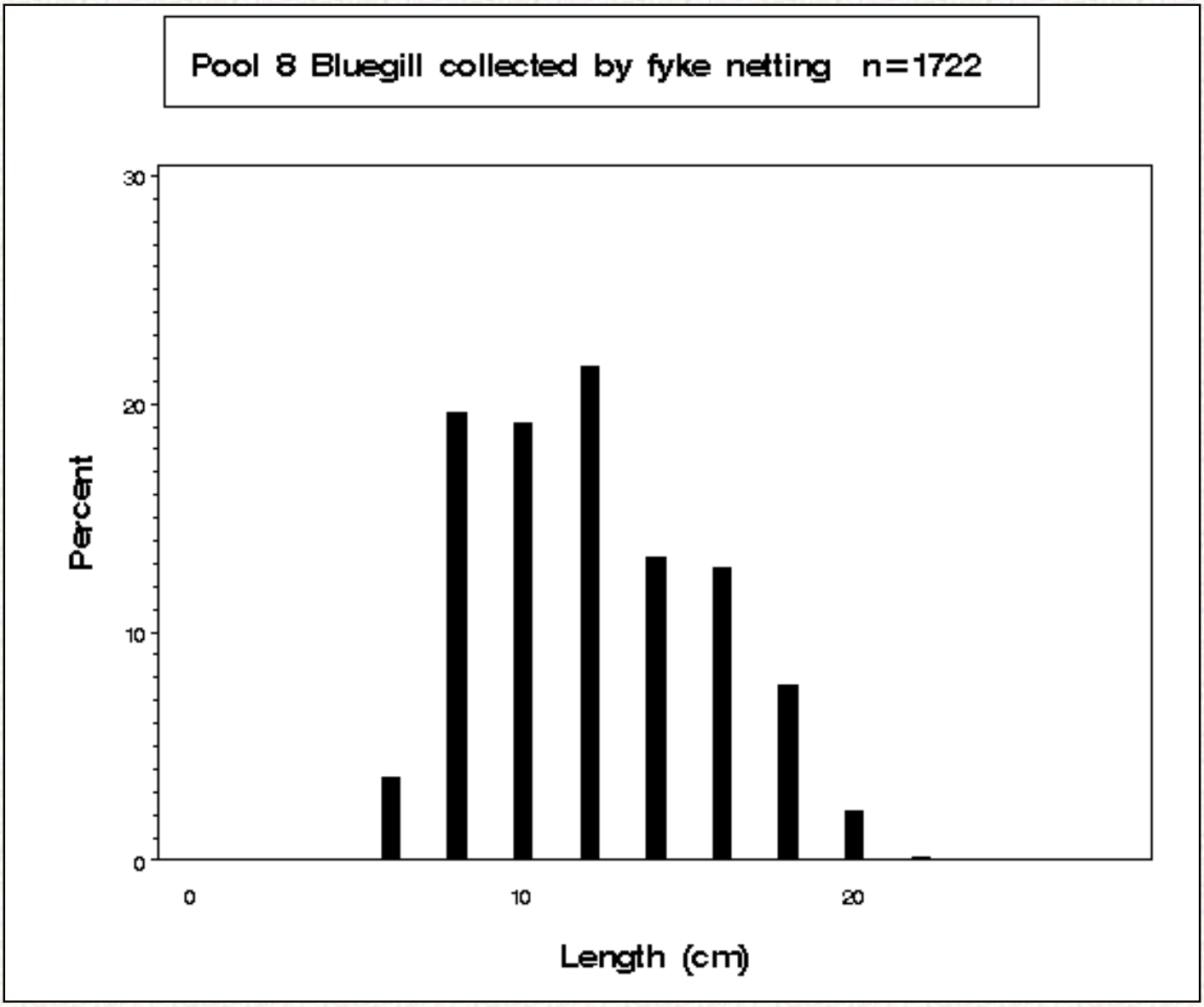

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Figure 13.2 Length distributions (*length*) as a percentage of catch (*percent*) for largemouth bass (*Micropterus salmoides)* collected by electrofishing in Pool 8 of the Upper Mississippi River during 2002. Click here to view this species' length distributions in all study reaches.

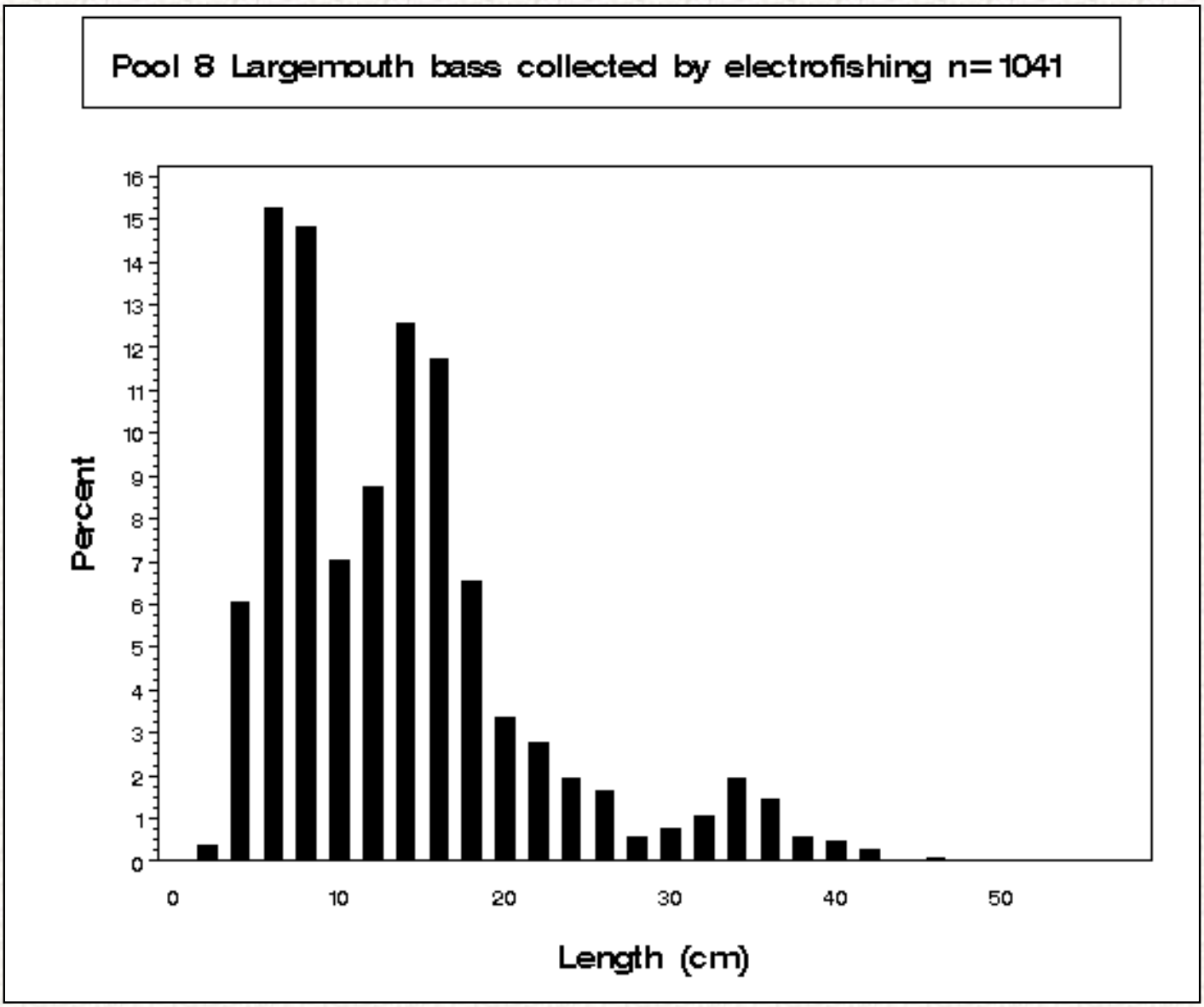

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Figure 14.2 Length distributions (*length*) as a percentage of catch (*percent*) for white crappie (*Pomoxis annularius)* collected by fyke netting in Pool 8 of the Upper Mississippi River during 2002. Click here to view this species' length distributions in all study reaches.

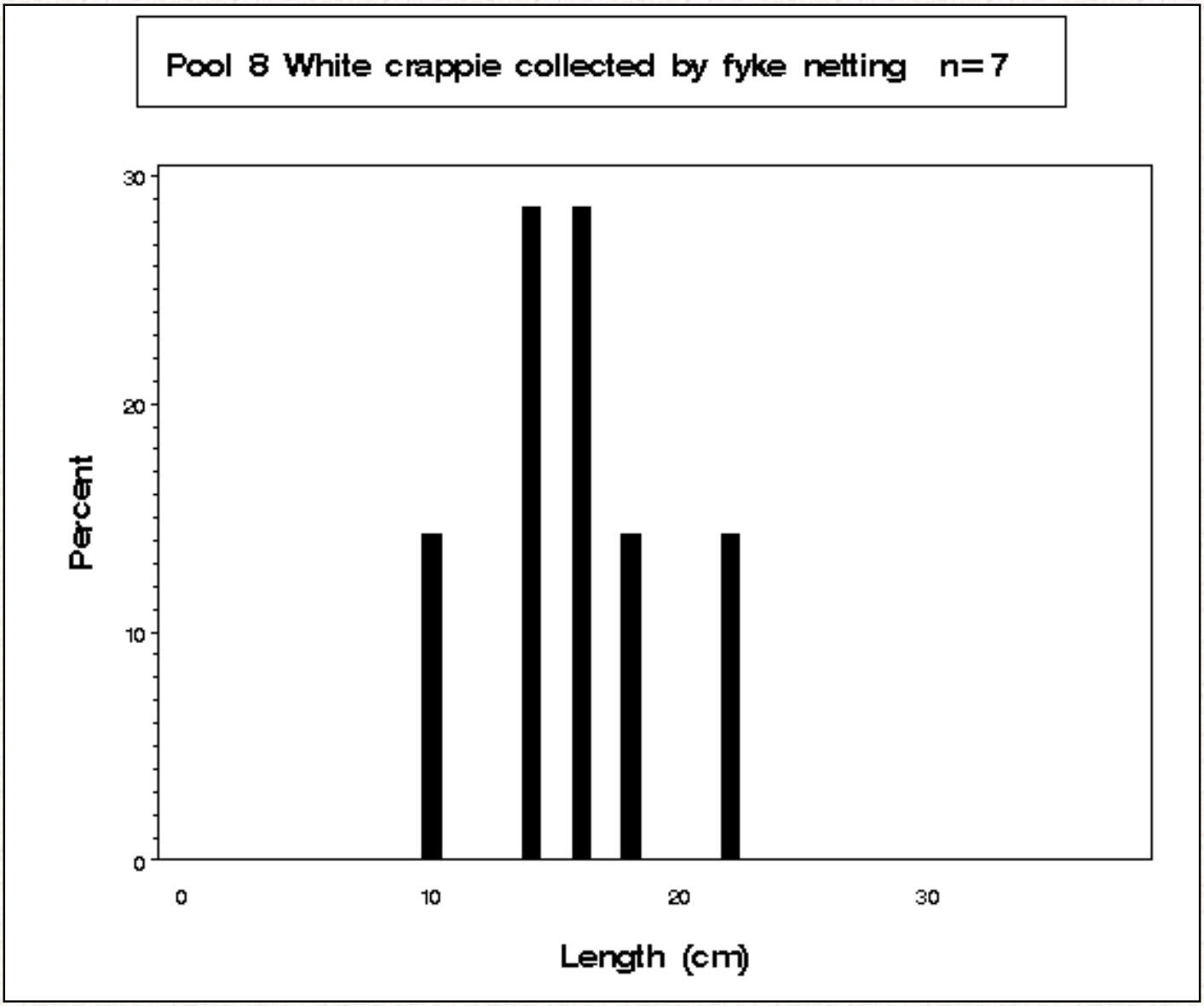

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Figure 15.2 Length distributions (*length*) as a percentage of catch (*percent*) for black crappie (*Pomoxis nigromaculatus*) collected by fyke netting in Pool 8 of the Upper Mississippi River during 2002. Click here to view this species' length distributions in all study reaches.

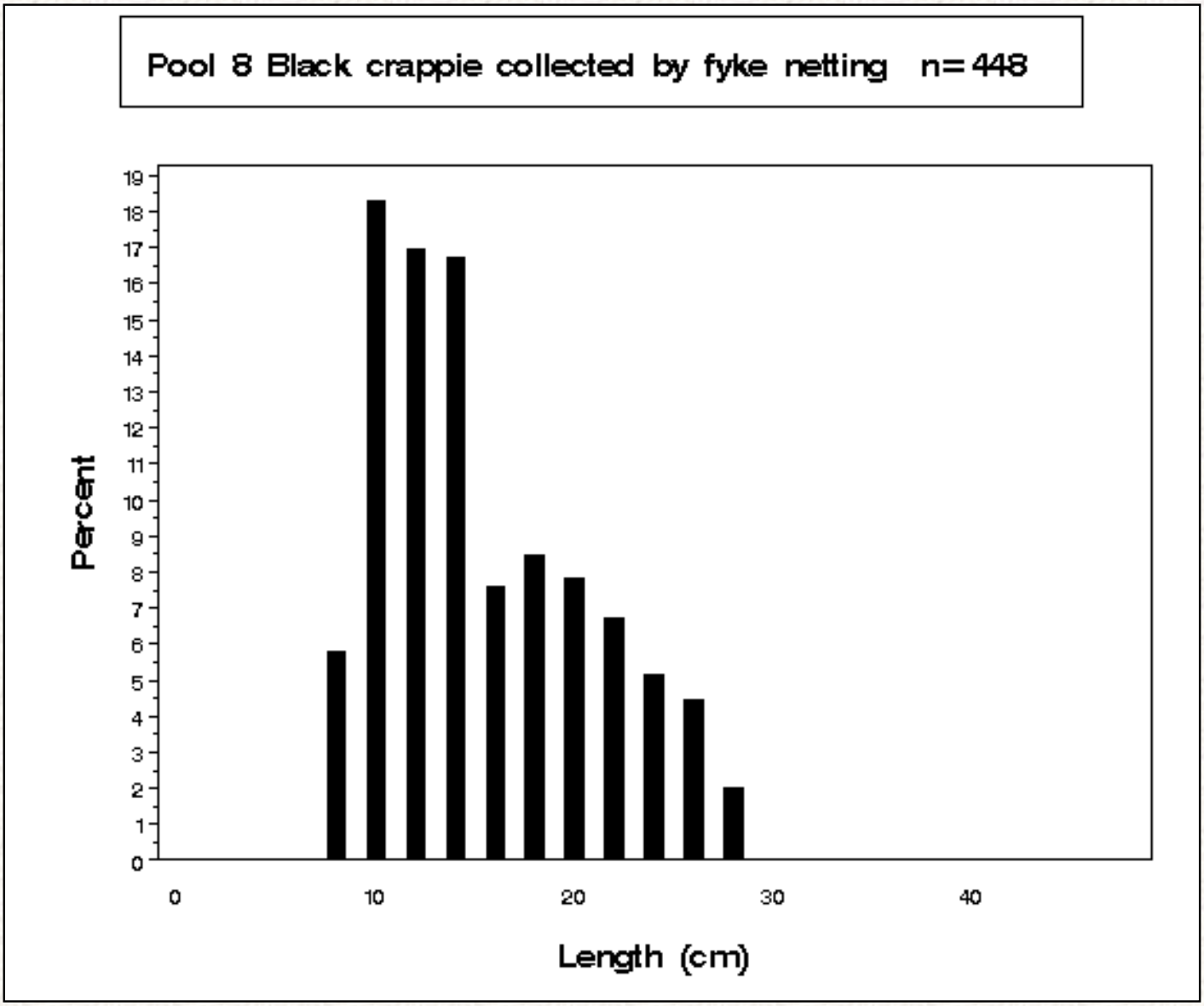

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Figure 16.2 Length distributions (*length*) as a percentage of catch (*percent*) for sauger (*Stizostedion canadense)* collected by electrofishing in Pool 8 of the Upper Mississippi River during 2002. Click here to view this species' length distributions in all study reaches.

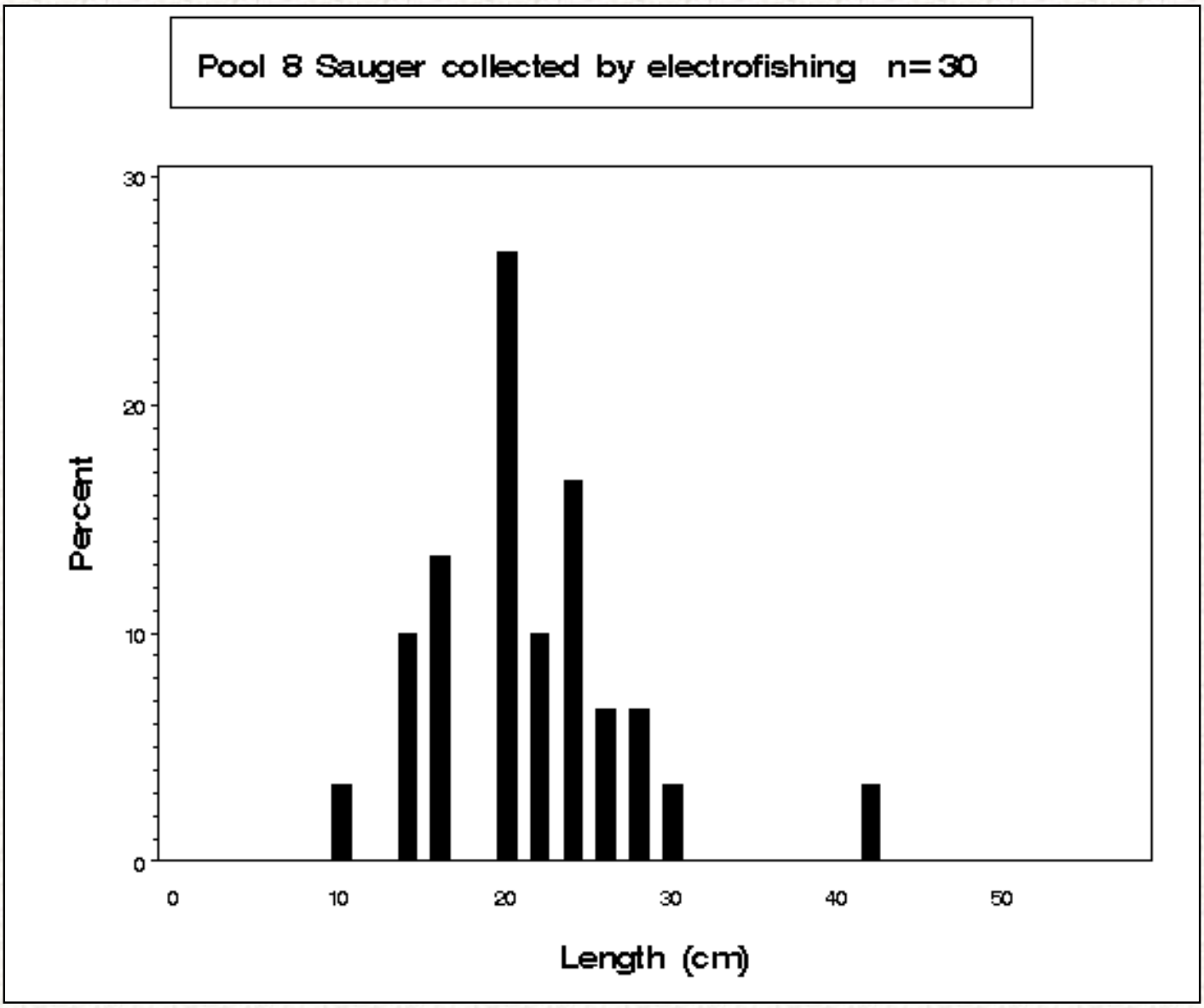

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Figure 17.2 Length distributions (*length*) as a percentage of catch (*percent*) for walleye (*Stizostedion vitreum)* collected by electrofishing in Pool 8 of the Upper Mississippi River during 2002. Click here to view this species' length distributions in all study reaches.

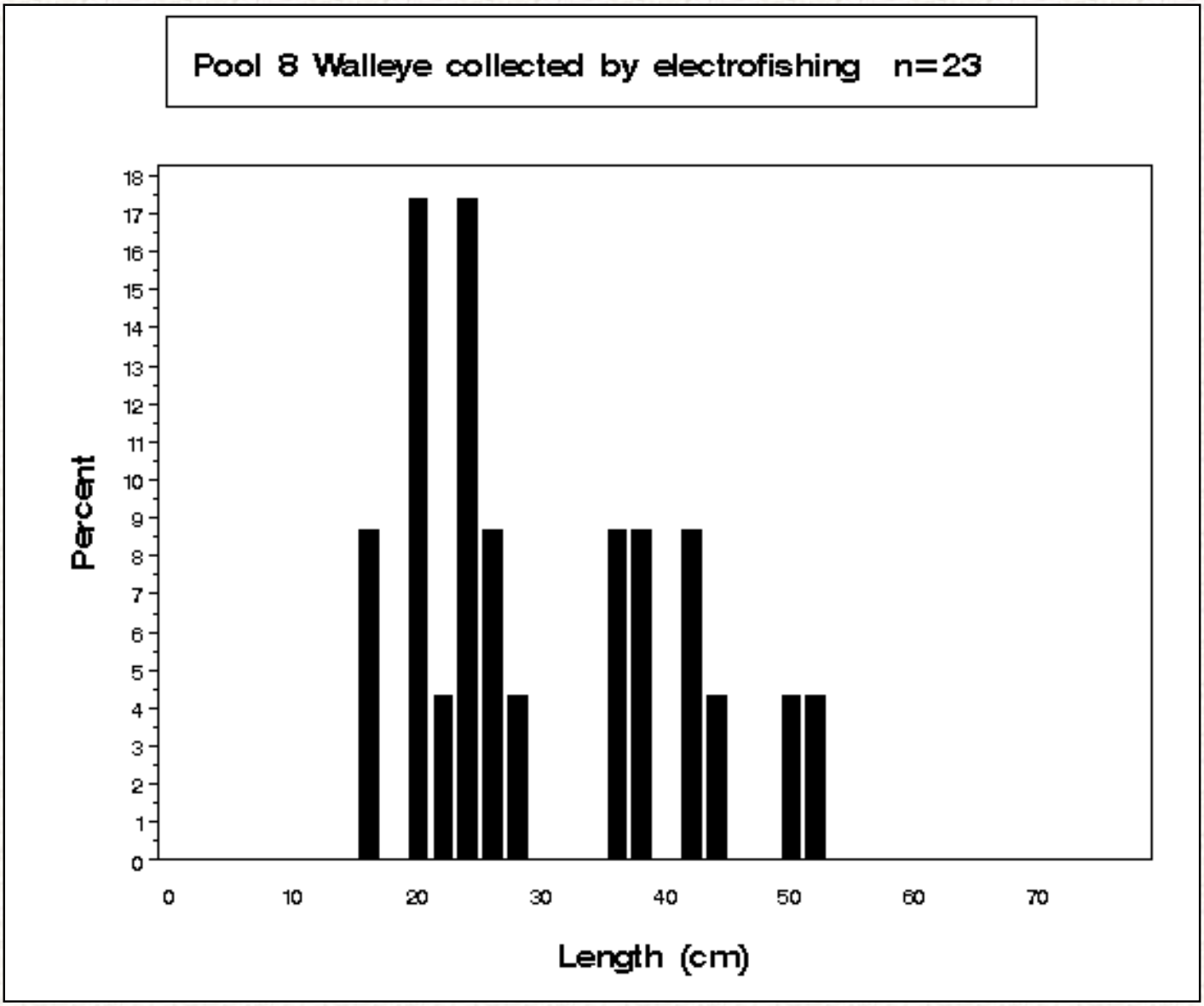

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Figure 18.2 Length distributions (*length*) as a percentage of catch (*percent*) for freshwater drum (*Aplodinotus grunniens*) collected by electrofishing in Pool 8 of the Upper Mississippi River during 2002. Click here to view this species' length distributions in all study reaches.

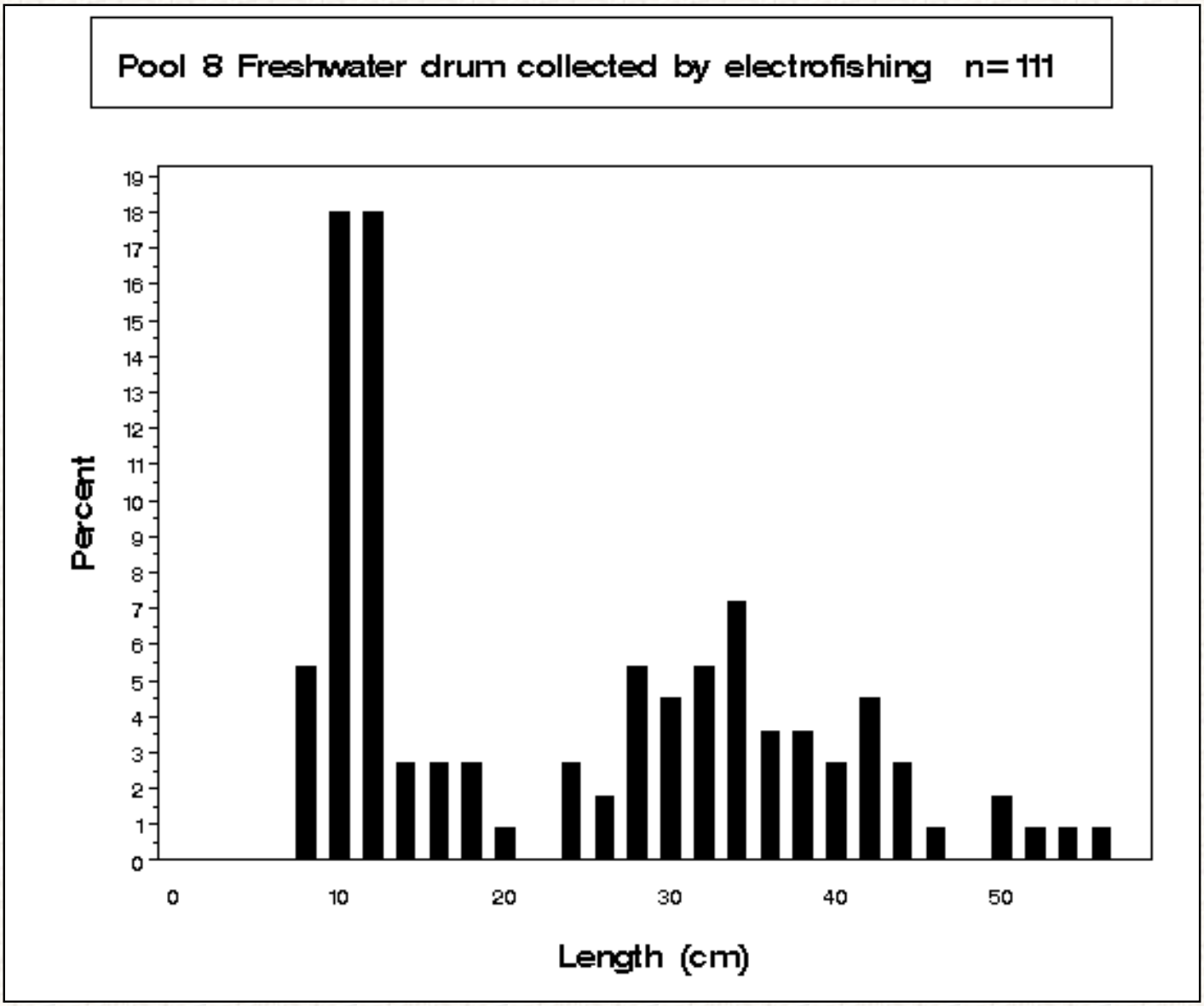

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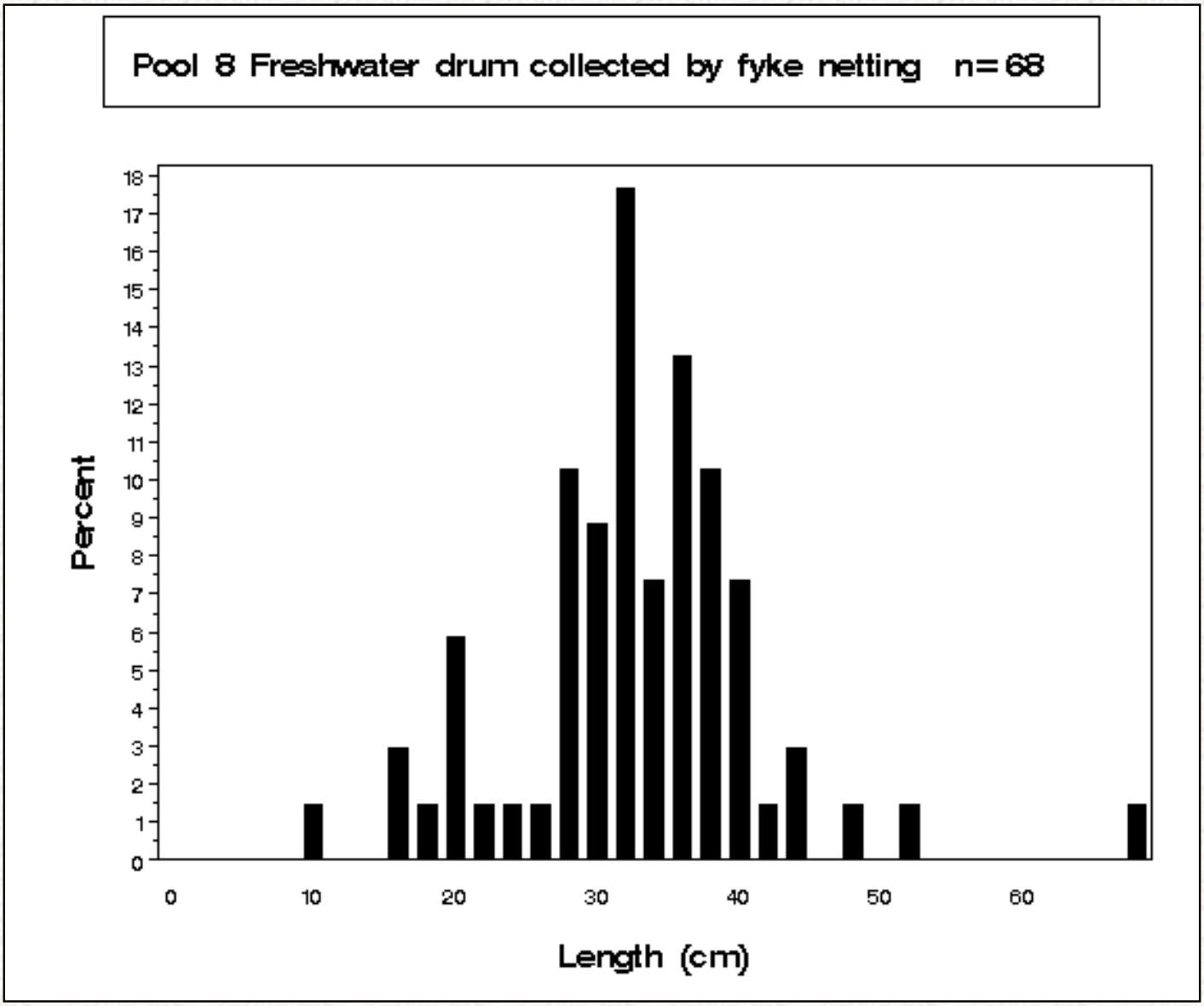
Figure 19.2 Length distributions (*length*) as a percentage of catch (*percent*) for freshwater drum (*Aplodinotus grunniens)* collected by fyke netting in Pool 8 of the Upper Mississippi River during 2002. Click here to view this species' length distributions in all study reaches.



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Pool 13, Upper Mississippi River
2002 Fish Collection Summary

This report is a bullet summary of the Long Term Resource Monitoring Program's (LTRMP) fish collection efforts conducted by the Bellevue Field Station on Pool 13, Upper Mississippi River during 2002. Information on changes in fish catch over all years can be obtained from the Graphical Fish Database Browser.

- 300 fish collections were conducted using six gear types (Table 2.3).
- Water levels did not affect sample allocations (Table 2.3; Figure 1.3).
- Of the 300 fish collections, 252 were from randomly selected sites. Forty-eight collections were made at fixed sites.
- Backwater; main channel border, unstructured; and side channel border strata received the most sampling effort (Table 2.3).
- 36,750 fish were collected representing 59 species and 1 hybrid (Table 3.3). This total includes 12 unidentified buffalo *(Ictiobus* sp.) less than 150 mm long and 6 unidentified redhorse (*Moxostoma* sp.)
- The LTRMP species total for Pool 13 before the 2002 season was 85; no new species were collected in the 2002 season (Table 3.3).
- No species were collected that are Iowa-listed endangered or threatened species (Table 3.3).
- 222 pugnose minnows were collected that are an Iowa-listed species of special concern (Table 3.3).
- Other species that were collected and are noted as uncommon, rare, or probably

strays from tributaries (Pitlo et al. 1995) in Pool 13 were black buffalo, blue sucker, bluntnose minnow, creek chub, green sunfish, quillback, slenderhead darter, silver redhorse, smallmouth bass, and white sucker (Table 3.3).

- Mean catch-per-unit-effort and standard effort for fish collected by gears using stratified random (Tables 4.3-11.3) and fixed-site sampling (Tables 17.3-21.3) for each stratum are shown.

- Length distributions for selected species of fish are shown in Figures 2.3 to19.3.

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Table 2.3 Allocation of fish sampling effort among strata in Pool 13 of the Upper Mississippi River during 2002. 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			7	4	3				2	16
Small hoop net			7	4	3				2	16
Mini fyke net	10		2	4	3	4			2	25
Trawling									8	8
Subtotal	**28**	**0**	**18**	**16**	**12**	**12**	**0**	**0**	**14**	**100**

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			7	4	3				2	16
Small hoop net			7	4	3				2	16
Mini fyke net	10		2	4	3	4			2	25
Trawling									8	8
Subtotal	**28**	**0**	**18**	**16**	**12**	**12**	**0**	**0**	**14**	**100**

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			7	4	3				2	16
Small hoop net			7	4	3				2	16
Mini fyke net	10		2	4	3	4			2	25
Trawling									8	8
Subtotal	**28**	**0**	**18**	**16**	**12**	**12**	**0**	**0**	**14**	**100**
Total	**84**	**0**	**54**	**48**	**36**	**36**	**0**	**0**	**42**	**300**

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

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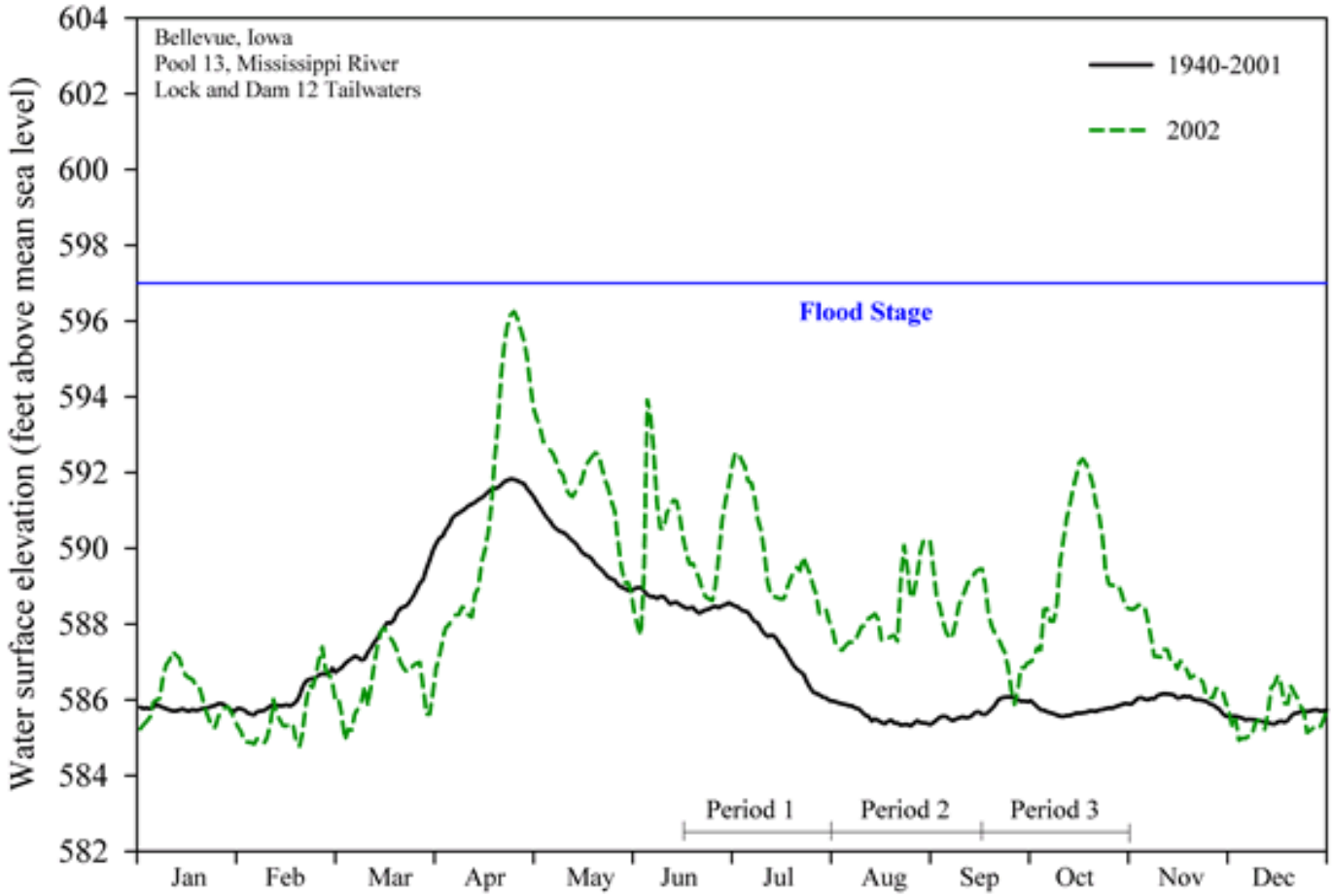

Figure1.3. Daily water surface elevation from Lock and Dam 12 for Pool 13, Upper Mississippi River, during 2002 and mean elevation since 1940. The U.S. Army Corps of Engineers discharge data were obtained in accordance with Upper Midwest Environmental Sciences Center established procedures (Wlosinski et al. 1995).

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Last updated on March 27, 2003

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Table 3.3 Total catches, by gear type, of fish collected in Pool 13 of the Upper Mississippi River during 2002. See Table 2.3 for the list of sampling gears actually deployed in this study reach.

Species	Common name	Scientific name	D	F	M	HS	HL	T	TOTAL
1	Silver lamprey	*Ichthyomyzon unicuspis*	2	1	-	-	-	-	3
2	Shovelnose sturgeon	*Scaphirhynchus platorynchus*	2	-	-	-	3	54	59
3	Longnose gar	*Lepisosteus osseus*	3	14	7	-	-	-	24
4	Shortnose gar	*L. platostomus*	28	193	51	-	-	-	272
5	Bowfin	*Amia calva*	10	28	14	-	-	-	52
6	Mooneye	*Hiodon tergisus*	2	-	-	-	-	-	2
7	Gizzard shad	*Dorosoma cepedianum*	603	113	65	-	4	4	789
8	Spotfin shiner	*Cyprinella spiloptera*	133	-	68	-	-	-	201
9	Common carp	*Cyprinus carpio*	307	38	24	8	54	-	431
10	Speckled chub	*Macrhybopsis aestivalis*	-	-	2	-	-	2	4
11	Silver chub	*M. storeriana*	11	-	1	1	-	10	23

12	Golden shiner	*Notemigonus crysoleucas*	37	24	292	-	-	-	353
13	Emerald shiner	*Notropis atherinoides*	848	-	11628	-	-	-	12476
14	River shiner	*N. blennius*	71	-	195	-	-	-	266
15	Spottail shiner	*N. hudsonius*	12	-	714	-	-	-	726
16	Mimic shiner	*N. volucellus*	227	-	5017	-	-	3	5247
17	Pugnose minnow	*Opsopoeodus emiliae*	2	-	220	-	-	-	222
18	Bluntnose minnow	*Pimephales notatus*	-	-	2	-	-	-	2
19	Bullhead minnow	*P. vigilax*	57	-	193	-	-	-	250
20	Creek chub	*Semotilus atromaculatus*	-	-	1	-	-	-	1
21	River carpsucker	*Carpiodes carpio*	14	23	1	-	1	-	39
22	Quillback	*C. cyprinus*	1	-	-	-	-	1	2
23	Highfin carpsucker	*C. velifer*	5	-	-	-	1	-	6
24	White sucker	*Catostomus commersoni*	-	1	1	-	-	-	2
25	Blue sucker	*Cycleptus elongatus*	1	-	-	-	-	-	1
26	Smallmouth buffalo	*Ictiobus bubalus*	34	11	-	16	67	1	129
27	Bigmouth buffalo	*I. cyprinellus*	19	4	1	-	1	-	25
28	Black buffalo	*I. niger*	6	7	-	-	1	-	14

29	Unidentified buffalo	*Ictiobus* sp.	-	-	12	-	-	-	12
30	Spotted sucker	*Minytrema melanops*	23	23	-	-	-	-	46
31	Silver redhorse	*Moxostoma anisurum*	2	-	-	-	-	-	2
32	Golden redhorse	*M. erythrurum*	2	-	-	-	-	-	2
33	Shorthead redhorse	*M. macrolepidotum*	91	6	1	-	10	5	113
34	Unidentified redhorse	*Moxostoma* sp.	1	-	5	-	-	-	6
35	Black bullhead	*Ameiurus melas*	-	4	5	-	-	-	9
36	Yellow bullhead	*A. natalis*	-	6	5	-	-	-	11
37	Channel catfish	*Ictalurus punctatus*	23	15	39	809	25	128	1039
38	Tadpole madtom	*Noturus gyrinus*	3	-	67	-	-	-	70
39	Flathead catfish	*Pylodictis olivaris*	13	2	2	17	19	-	53
40	Northern pike	*Esox lucius*	5	36	1	-	-	-	42
41	Brook silverside	*Labidesthes sicculus*	18	-	23	-	-	-	41
42	White bass	*Morone chrysops*	79	46	267	2	8	-	402
43	Yellow bass	*M. mississippiensis*	3	4	-	-	-	-	7
44	Striped x white bass	*M. saxatilis x chrysops*	1	-	-	-	-	-	1

45	Rock bass	*Ambloplites rupestris*	39	-	12	-	-	-	51
46	Green sunfish	*Lepomis cyanellus*	2	-	8	-	-	-	10
47	Pumpkinseed	*L. gibbosus*	71	127	546	3	-	-	747
48	Warmouth	*L. gulosus*	3	2	18	-	-	-	23
49	Orangespotted sunfish	*L. humilis*	316	17	1591	-	-	-	1924
50	Bluegill	*L. macrochirus*	875	408	6949	26	5	-	8263
51	Smallmouth bass	*Micropterus dolomieu*	18	-	2	1	-	-	21
52	Largemouth bass	*M. salmoides*	471	32	217	-	1	-	721
53	White crappie	*Pomoxis annularis*	88	250	159	4	5	-	506
54	Black crappie	*P. nigromaculatus*	32	301	217	4	17	-	571
55	Johnny darter	*Etheostoma nigrum*	-	-	48	-	-	-	48
56	Yellow perch	*Perca flavescens*	40	9	2	-	-	-	51
57	Logperch	*Percina caprodes*	1	-	14	-	-	-	15
58	Slenderhead darter	*P. phoxocephala*	1	-	-	-	-	-	1
59	River darter	*P. shumardi*	-	-	9	-	-	-	9
60	Sauger	*Stizostedion canadense*	33	12	7	1	-	17	70
61	Walleye	*S. vitreum*	8	4	-	1	2	2	17

62	Freshwater drum	*Aplodinotus grunniens*	48	32	11	45	77	12	225
			4745	**1793**	**28734**	**938**	**301**	**239**	**36750**

Sampling gears:
D - Day electrofishing
F - Fyke netting
M - Mini fyke netting
HS - Small hoop netting
HL - Large hoop netting
T- Trawling

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Pool 13 Tables

Table*	Stratified Random Sampling
4.3	Mean catch-per-unit-effort for fish collected by day electrofishing
6.3	Mean catch-per-unit-effort for fish collected by fyke netting
8.3	Mean catch-per-unit-effort for fish collected by mini fyke netting
10.3	Mean catch-per-unit-effort for fish collected by small hoop netting
11.3	Mean catch-per-unit-effort for fish collected by large hoop netting
	Fixed-site Sampling
17.3	Mean catch-per-unit-effort for fish collected by mini fyke netting
18.3	Mean catch-per-unit-effort for fish collected by small hoop netting
19.3	Mean catch-per-unit-effort for fish collected by large hoop netting
21.3	Mean catch-per-unit-effort for fish collected by bottom trawling

*Table numbers are not always in sequence because some gears were not fished in some study areas. Table numbers for each gear type are consistent among study areas.

Content manager: Jennie Sauer

Last updated on August 24, 2004

Table 4.3 Mean catch-per-unit-effort and (standard error) for fish collected by day electrofishing in Pool 13 of the Upper Mississippi River using stratified random sampling during 2002. The statistics under ALL pertain to unbiased means over all strata sampled by this gear (as indicated by nonmissing entries below and by Table 2.3). See Methods for definitions of catch-per-unit-effort and standard error. Scientific names for the species listed can be found in Table 1.

Common name	ALL	BWCS	IMPS	MCBU	MCBW	SCB
Silver lamprey	0.04	0.04		0.08		
	(0.03)	(0.04)		(0.08)		
Shovelnose sturgeon	0.00				0.22	
	(0.00)				(0.15)	
Longnose gar	0.03	0.08			0.11	
	(0.02)	(0.06)			(0.11)	
Shortnose gar	0.40	0.33	0.17	0.75	1.00	
	(0.28)	(0.17)	(0.11)	(0.75)	(0.88)	
Bowfin	0.17	0.33		0.17		
	(0.06)	(0.12)		(0.11)		
Mooneye	0.04				0.11	0.17
	(0.04)				(0.11)	(0.17)

Gizzard shad	10.22	14.00	9.67	1.58	2.56	18.17
	(3.37)	(3.95)	(7.52)	(0.67)	(1.32)	(12.17)
Spotfin shiner	3.24	2.21	0.83	3.58		4.50
	(1.19)	(0.97)	(0.44)	(2.71)		(2.14)
Common carp	7.83	4.67	1.92	6.00	0.67	15.67
	(1.23)	(1.75)	(0.66)	(1.38)	(0.44)	(3.79)
Silver chub	0.20	0.29	0.08	0.17		0.17
	(0.10)	(0.25)	(0.08)	(0.11)		(0.17)
Golden shiner	0.45	1.29	0.50			
	(0.18)	(0.53)	(0.42)			
Emerald shiner	18.89	9.63	12.17	32.58	0.67	12.33
	(4.27)	(4.88)	(6.39)	(10.03)	(0.37)	(5.13)
River shiner	1.88	0.63	0.67	2.50	0.11	2.83
	(0.87)	(0.36)	(0.47)	(1.29)	(0.11)	(2.83)
Spottail shiner	0.13	0.25	0.42	0.08		
	(0.09)	(0.25)	(0.19)	(0.08)		
Mimic shiner	3.96	7.33	0.17	3.83	0.11	0.33
	(2.27)	(6.36)	(0.11)	(2.25)	(0.11)	(0.21)
Pugnose minnow	0.03	0.08				
	(0.02)	(0.06)				
Bullhead minnow	0.89	2.17		0.33		0.17
	(0.33)	(0.93)		(0.26)		(0.17)
River carpsucker	0.19	0.58				

	(0.10)	(0.29)				
Quillback	0.04					0.17
	(0.04)					(0.17)
Highfin carpsucker	0.12	0.08		0.25		
	(0.07)	(0.08)		(0.18)		
Blue sucker	0.00				0.11	
	(0.00)				(0.11)	
Smallmouth buffalo	0.58	0.71	0.25	0.67	0.44	0.33
	(0.15)	(0.29)	(0.25)	(0.28)	(0.29)	(0.21)
Bigmouth buffalo	0.31	0.17	0.25	0.08	0.67	0.83
	(0.22)	(0.10)	(0.13)	(0.08)	(0.33)	(0.83)
Black buffalo	0.11	0.21				0.17
	(0.05)	(0.08)				(0.17)
Spotted sucker	0.28	0.79	0.33			
	(0.10)	(0.30)	(0.26)			
Silver redhorse	0.00				0.22	
	(0.00)				(0.15)	
Golden redhorse	0.03			0.08	0.11	
	(0.03)			(0.08)	(0.11)	
Shorthead redhorse	0.34		1.00	0.58	7.89	0.17
	(0.19)		(0.69)	(0.50)	(2.86)	(0.17)
Unidentified redhorse	0.00		0.08			
	(0.00)		(0.08)			

Channel catfish	0.47	0.17	0.58	0.83		0.33
	(0.13)	(0.08)	(0.29)	(0.24)		(0.33)
Tadpole madtom	0.09	0.04		0.08		0.17
	(0.05)	(0.04)		(0.08)		(0.17)
Flathead catfish	0.35	0.04	0.08	0.67	0.11	0.33
	(0.14)	(0.04)	(0.08)	(0.36)	(0.11)	(0.21)
Northern pike	0.06	0.08	0.17	0.08		
	(0.04)	(0.06)	(0.17)	(0.08)		
Brook silverside	0.21	0.17	0.83	0.33		
	(0.10)	(0.10)	(0.67)	(0.26)		
White bass	1.37	0.67	2.33	2.17	0.33	1.00
	(0.37)	(0.23)	(1.29)	(0.78)	(0.24)	(0.82)
Yellow bass	0.04	0.13				
	(0.04)	(0.13)				
Striped x white bass	0.00		0.08			
	(0.00)		(0.08)			
Rock bass	0.37	0.58	1.83	0.08		0.33
	(0.15)	(0.33)	(1.15)	(0.08)		(0.33)
Green sunfish	0.06			0.17		
	(0.04)			(0.11)		
Pumpkinseed	0.30	0.21	5.42			0.17
	(0.13)	(0.13)	(3.23)			(0.17)
Warmouth	0.03	0.08	0.08			

	(0.03)	(0.08)	(0.08)			
Orangespotted sunfish	4.47	13.00		0.25		0.17
	(2.83)	(8.51)		(0.18)		(0.17)
Bluegill	10.56	26.58	17.08	1.58	0.11	2.00
	(3.63)	(10.86)	(7.99)	(0.51)	(0.11)	(1.06)
Smallmouth bass	0.40		0.42	0.92	0.11	0.17
	(0.25)		(0.23)	(0.67)	(0.11)	(0.17)
Largemouth bass	5.95	9.25	14.83	4.25	0.22	3.00
	(1.05)	(2.39)	(5.55)	(1.54)	(0.15)	(1.34)
White crappie	1.31	3.54				0.50
	(0.46)	(1.33)				(0.50)
Black crappie	0.61	0.96	0.17	0.08		1.00
	(0.20)	(0.30)	(0.11)	(0.08)		(0.68)
Yellow perch	0.33	0.79	1.75			
	(0.14)	(0.41)	(1.03)			
Logperch	0.03			0.08		
	(0.03)			(0.08)		
Slenderhead darter	0.03			0.08		
	(0.03)			(0.08)		
Sauger	0.56	0.75	0.50	0.67		0.17
	(0.15)	(0.32)	(0.19)	(0.26)		(0.17)
Walleye	0.06	0.04	0.42	0.08	0.11	
	(0.04)	(0.04)	(0.26)	(0.08)	(0.11)	

Freshwater drum	1.15	0.46	0.42	1.17	0.56	2.17
	(0.40)	(0.12)	(0.19)	(0.55)	(0.24)	(1.33)

Sampling strata:
BWCS - Backwater, contiguous, shoreline
IMPS - Impounded, shoreline
MCBU - Main channel border, unstructured
MCBW - Main channel border, wing dam
SCB - Side channel border

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Table 6.3 Mean catch-per-unit-effort and (standard error) for fish collected by fyke netting in Pool 13 of the Upper Mississippi River using stratified random sampling during 2002. The statistics under ALL pertain to unbiased means over all strata sampled by this gear (as indicated by nonmissing entries below and by Table 2.3). See Methods for definitions of catch-per-unit-effort and standard error. Scientific names for the species listed can be found in Table 1.

Common name	ALL	BWCS	IMPS
Silver lamprey	0.03	0.04	
	(0.03)	(0.04)	
Longnose gar	0.42	0.45	0.10
	(0.20)	(0.22)	(0.10)
Shortnose gar	5.56	6.04	1.00
	(1.24)	(1.38)	(0.59)
Bowfin	0.79	0.84	0.26
	(0.19)	(0.21)	(0.18)
Gizzard shad	3.33	3.61	0.70
	(0.63)	(0.69)	(0.26)
Common carp	1.11	1.19	0.34
	(0.29)	(0.32)	(0.19)

Golden shiner	0.76	0.84	
	(0.29)	(0.32)	
River carpsucker	0.70	0.77	
	(0.29)	(0.32)	
White sucker	0.03	0.03	
	(0.03)	(0.03)	
Smallmouth buffalo	0.31	0.34	0.08
	(0.14)	(0.15)	(0.08)
Bigmouth buffalo	0.13	0.14	
	(0.07)	(0.08)	
Black buffalo	0.21	0.23	
	(0.08)	(0.09)	
Spotted sucker	0.72	0.79	
	(0.27)	(0.30)	
Shorthead redhorse	0.19	0.21	
	(0.11)	(0.12)	
Black bullhead	0.12	0.14	
	(0.06)	(0.06)	
Yellow bullhead	0.16	0.17	0.08
	(0.11)	(0.12)	(0.08)
Channel catfish	0.46	0.51	
	(0.17)	(0.19)	

Flathead catfish	0.06	0.06	
	(0.04)	(0.04)	
Northern pike	1.10	1.21	
	(0.34)	(0.38)	
White bass	1.28	1.36	0.45
	(0.34)	(0.37)	(0.26)
Yellow bass	0.13	0.14	
	(0.08)	(0.08)	
Pumpkinseed	1.29	0.40	9.69
	(0.91)	(0.21)	(9.50)
Warmouth	0.06	0.06	
	(0.04)	(0.04)	
Orangespotted sunfish	0.50	0.56	
	(0.17)	(0.19)	
Bluegill	11.62	12.49	3.35
	(2.70)	(2.99)	(1.61)
Largemouth bass	0.84	0.87	0.60
	(0.17)	(0.18)	(0.23)
White crappie	7.39	8.17	
	(2.49)	(2.77)	
Black crappie	9.11	10.06	0.16
	(1.84)	(2.04)	(0.11)

Yellow perch	0.27	0.30	
	(0.13)	(0.15)	
Sauger	0.33	0.34	0.18
	(0.13)	(0.14)	(0.12)
Walleye	0.12	0.13	
	(0.08)	(0.09)	
Freshwater drum	0.99	1.10	
	(0.31)	(0.34)	

Sampling strata:
BWCS - Backwater, contiguous, shoreline
IMPS - Impounded, shoreline

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Table 8.3 Mean catch-per-unit-effort and (standard error) for fish collected by mini fyke netting in Pool 13 of the Upper Mississippi River using stratified random sampling during 2002. The statistics under ALL pertain to unbiased means over all strata sampled by this gear (as indicated by nonmissing entries below and by Table 2.3). See Methods for definitions of catch-per-unit-effort and standard error. Scientific names for the species listed can be found in Table 1.

Common name	ALL	BWCS	IMPS	MCBU	MCBW	SCB
Longnose gar	0.07	0.11	0.08	0.08	0.11	
	(0.04)	(0.08)	(0.08)	(0.08)	(0.11)	
Shortnose gar	0.62	1.03	0.31	0.49	0.66	0.32
	(0.19)	(0.40)	(0.17)	(0.33)	(0.54)	(0.20)
Bowfin	0.16	0.38	0.09	0.08	0.11	
	(0.05)	(0.13)	(0.09)	(0.08)	(0.11)	
Gizzard shad	0.75	1.30	0.41	0.33	0.77	0.69
	(0.21)	(0.46)	(0.29)	(0.18)	(0.57)	(0.51)
Spotfin shiner	1.82	0.24	0.17	1.56	0.44	4.54
	(0.77)	(0.15)	(0.12)	(0.56)	(0.25)	(2.93)
Common carp	0.22	0.53	0.26	0.08	0.33	
	(0.16)	(0.46)	(0.18)	(0.08)	(0.33)	

Silver chub	0.01	0.04				
	(0.01)	(0.04)				
Golden shiner	3.36	9.98	0.77		0.12	
	(2.40)	(7.23)	(0.68)		(0.12)	
Emerald shiner	42.13	0.60	8.85	104.47	113.52	8.31
	(32.24)	(0.31)	(8.30)	(86.66)	(73.14)	(7.70)
River shiner	4.28	1.11	0.31	6.51	4.44	5.72
	(1.22)	(0.93)	(0.17)	(2.03)	(2.36)	(3.58)
Spottail shiner	7.96	23.36	0.17	0.42	1.33	
	(7.27)	(21.89)	(0.12)	(0.19)	(0.79)	
Mimic shiner	97.31	6.57	36.11	136.60	175.09	165.64
	(43.29)	(3.68)	(23.20)	(96.90)	(146.69)	(94.71)
Pugnose minnow	2.23	5.62	0.17	0.49	2.24	0.61
	(1.13)	(3.34)	(0.17)	(0.41)	(2.24)	(0.61)
Bluntnose minnow	0.04	0.03		0.08		
	(0.03)	(0.03)		(0.08)		
Bullhead minnow	2.80	2.97	2.16	2.05	1.81	3.77
	(0.96)	(1.70)	(1.64)	(0.99)	(0.85)	(2.68)
River carpsucker	0.00				0.11	
	(0.00)				(0.11)	
White sucker	0.01	0.03				

	(0.01)	(0.03)				
Bigmouth buffalo	0.01	0.03				
	(0.01)	(0.03)				
Unidentified buffalo	0.04		0.09	0.09	1.09	
	(0.03)		(0.09)	(0.09)	(1.09)	
Shorthead redhorse	0.01	0.03				
	(0.01)	(0.03)				
Unidentified redhorse	0.06	0.07			0.22	0.16
	(0.04)	(0.05)			(0.22)	(0.16)
Black bullhead	0.02	0.03	0.09		0.36	
	(0.01)	(0.03)	(0.09)		(0.36)	
Yellow bullhead	0.04	0.11	0.17			
	(0.04)	(0.11)	(0.17)			
Channel catfish	0.40	0.17	0.08	0.81	0.33	0.15
	(0.24)	(0.11)	(0.08)	(0.64)	(0.33)	(0.15)
Tadpole madtom	0.42	0.87	2.80	0.08		
	(0.14)	(0.40)	(1.52)	(0.08)		
Flathead catfish	0.03			0.08		
	(0.03)			(0.08)		

Northern pike	0.01	0.03				
	(0.01)	(0.03)				
Brook silverside	0.09	0.25	0.17		0.42	
	(0.06)	(0.19)	(0.17)		(0.28)	
White bass	2.81	5.24	0.17	2.45	3.73	0.50
	(1.53)	(3.69)	(0.17)	(2.45)	(2.04)	(0.22)
Rock bass	0.21	0.03	0.09	0.40	0.10	0.17
	(0.09)	(0.03)	(0.09)	(0.22)	(0.10)	(0.17)
Green sunfish	0.15		0.17	0.26	0.12	0.17
	(0.08)		(0.17)	(0.19)	(0.12)	(0.17)
Pumpkinseed	1.88	0.70	44.92	0.17		
	(1.05)	(0.38)	(30.01)	(0.12)		
Warmouth	0.19	0.54	0.17			
	(0.08)	(0.23)	(0.17)			
Orangespotted sunfish	19.05	54.07		0.92	0.22	2.69
	(8.46)	(25.46)		(0.34)	(0.22)	(1.51)
Bluegill	44.94	82.96	110.66	27.58	336.50	4.56
	(13.00)	(26.24)	(107.19)	(23.44)	(335.63)	(1.73)
Largemouth bass	2.27	6.46	0.60	0.25	1.45	
	(1.60)	(4.81)	(0.27)	(0.18)	(0.78)	
White crappie	1.84	5.51			0.32	

	(1.02)	(3.07)			(0.23)	
Black crappie	2.61	7.56		0.25	0.12	
	(1.28)	(3.86)		(0.13)	(0.12)	
Johnny darter	0.55	1.48		0.16	0.23	
	(0.22)	(0.64)		(0.16)	(0.15)	
Yellow perch	0.02	0.07				
	(0.02)	(0.07)				
Logperch	0.07	0.20			0.86	
	(0.04)	(0.13)			(0.76)	
River darter	0.24	0.03		0.51	0.11	0.16
	(0.16)	(0.03)		(0.42)	(0.11)	(0.16)
Sauger	0.06	0.07	0.09	0.08		
	(0.04)	(0.07)	(0.09)	(0.08)		
Freshwater drum	0.20	0.06		0.26	0.34	0.32
	(0.09)	(0.04)		(0.19)	(0.17)	(0.21)

Sampling strata:
BWCS - Backwater, contiguous, shoreline
IMPS - Impounded, shoreline
MCBU - Main channel border, unstructured
MCBW - Main channle border, wing dam
SCB - Side channel border

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Table 10.3 Mean catch-per-unit-effort and (standard error) for fish collected by small hoop netting in Pool 13 of the Upper Mississippi River using stratified random sampling during 2002. The statistics under ALL pertain to unbiased means over all strata sampled by this gear (as indicated by nonmissing entries below and by Table 2.3). See Methods for definitions of catch-per-unit-effort and standard error. Scientific names for the species listed can be found in Table 1.

Common name	ALL	MCBU	MCBW	SCB
Common carp	0.05		0.06	0.12
	(0.02)		(0.06)	(0.06)
Silver chub	0.01			0.02
	(0.01)			(0.02)
Smallmouth buffalo	0.01		0.11	0.02
	(0.01)		(0.07)	(0.02)
Channel catfish	15.66	25.49	7.13	1.45
	(14.44)	(24.55)	(3.43)	(0.59)
Flathead catfish	0.15	0.13	0.11	0.19
	(0.05)	(0.07)	(0.07)	(0.06)
White bass	0.02			0.05
	(0.01)			(0.03)

Pumpkinseed	0.06	0.08		0.02
	(0.05)	(0.08)		(0.02)
Bluegill	0.42	0.47		0.35
	(0.19)	(0.31)		(0.15)
Smallmouth bass	0.01			0.02
	(0.01)			(0.02)
White crappie	0.03	0.04		0.02
	(0.03)	(0.04)		(0.02)
Black crappie	0.03			0.07
	(0.02)			(0.05)
Sauger	0.02	0.04		
	(0.02)	(0.04)		
Walleye	0.01			0.03
	(0.01)			(0.03)
Freshwater drum	0.43	0.48	0.68	0.35
	(0.19)	(0.31)	(0.41)	(0.11)

Sampling strata:
MCBU - Main channel border, unstructured
MCBW - Main channel border, wing dam
SCB - Side channel border

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Table 11.3 Mean catch-per-unit-effort and (standard error) for fish collected by large hoop netting in Pool 13 of the Upper Mississippi River using stratified random sampling during 2002. The statistics under ALL pertain to unbiased means over all strata sampled by this gear (as indicated by nonmissing entries below and by Table 2.3). See Methods for definitions of catch-per-unit-effort and standard error. Scientific names for the species listed can be found in Table 1.

Common name	ALL	MCBU	MCBW	SCB
Shovelnose sturgeon	0.00		0.06	
	(0.00)		(0.06)	
Gizzard shad	0.07	0.08		0.05
	(0.05)	(0.08)		(0.05)
Common carp	0.29	0.04	0.66	0.65
	(0.17)	(0.04)	(0.34)	(0.42)
River carpsucker	0.02	0.04		
	(0.02)	(0.04)		
Highfin carpsucker	0.00		0.05	
	(0.00)		(0.05)	

Smallmouth buffalo	0.34	0.33	0.82	0.34
	(0.08)	(0.11)	(0.41)	(0.13)
Bigmouth buffalo	0.02	0.04		
	(0.02)	(0.04)		
Black buffalo	0.00		0.05	
	(0.00)		(0.05)	
Shorthead redhorse	0.17	0.21		0.12
	(0.07)	(0.11)		(0.05)
Channel catfish	0.28	0.25	0.11	0.34
	(0.11)	(0.17)	(0.07)	(0.14)
Flathead catfish	0.11	0.08	0.38	0.14
	(0.05)	(0.08)	(0.14)	(0.05)
White bass	0.12	0.13	0.05	0.10
	(0.08)	(0.13)	(0.05)	(0.08)
Bluegill	0.04		0.05	0.10
	(0.02)		(0.05)	(0.04)
Largemouth bass	0.01			0.02
	(0.01)			(0.02)
White crappie	0.01		0.11	0.02
	(0.01)		(0.11)	(0.02)
Black crappie	0.17	0.04		0.35

	(0.08)	(0.04)		(0.18)
Walleye	0.02			0.05
	(0.01)			(0.03)
Freshwater drum	0.63	0.62	1.15	0.65
	(0.20)	(0.33)	(0.52)	(0.14)

Sampling strata:
MCBU - Main channel border, unstructured
MCBW - Main channel border, wing dam
SCB - Side channel border

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Table 17.3 Mean catch-per-unit-effort and (standard error) for fish collected by mini fyke netting in Pool 13 of the Upper Mississippi River using fixed-site sampling during 2002. See Methods for definitions of catch-per-unit-effort and standard error. Scientific names for the species listed can be found in Table 1.

Common name	TWZ
Longnose gar	0.17
	(0.17)
Shortnose gar	0.52
	(0.52)
Gizzard shad	1.29
	(1.29)
Spotfin shiner	1.46
	(0.93)
Common carp	0.34
	(0.21)
Speckled chub	0.32
	(0.32)
Golden shiner	0.34

	(0.21)
Emerald shiner	1461.12
	(951.72)
River shiner	1.20
	(1.02)
Spottail shiner	2.44
	(1.85)
Mimic shiner	3.26
	(1.49)
Pugnose minnow	3.86
	(2.88)
Bullhead minnow	2.27
	(1.89)
Creek chub	0.17
	(0.17)
Channel catfish	3.03
	(1.92)
Tadpole madtom	1.37
	(1.37)
Flathead catfish	0.17
	(0.17)
Brook silverside	1.60
	(1.14)

White bass	6.47
	(2.66)
Rock bass	0.51
	(0.34)
Green sunfish	0.17
	(0.17)
Orangespotted sunfish	5.33
	(2.63)
Bluegill	15.09
	(8.20)
Smallmouth bass	0.34
	(0.21)
Largemouth bass	1.81
	(1.47)
Black crappie	0.33
	(0.21)
Johnny darter	0.16
	(0.16)
Sauger	0.50
	(0.34)
Freshwater drum	0.16
	(0.16)

Sampling stratum:

TWZ - Tailwater

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Table 18.3 Mean catch-per-unit-effort and (standard error) for fish collected by small hoop netting in Pool 13 of the Upper Mississippi River using fixed-site sampling during 2002. See Methods for definitions of catch-per-unit-effort and standard error. Scientific names for the species listed can be found in Table 1.

Common name	TWZ
Common carp	0.17
	(0.17)
Smallmouth buffalo	1.09
	(0.81)
Channel catfish	0.92
	(0.49)
Flathead catfish	0.33
	(0.25)
White crappie	0.17
	(0.17)
Black crappie	0.09
	(0.09)
Freshwater drum	0.50

	(0.31)

Sampling stratum:
TWZ - Tailwater

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Table 19.3 Mean catch-per-unit-effort and (standard error) for fish collected by large hoop netting in Pool 13 of the Upper Mississippi River using fixed-site sampling during 2002. See Methods for definitions of catch-per-unit-effort and standard error. Scientific names for the species listed can be found in Table 1.

Common name	TWZ
Shovelnose sturgeon	0.17
	(0.11)
Common carp	1.17
	(0.64)
Smallmouth buffalo	2.51
	(1.33)
Channel catfish	0.25
	(0.11)
Flathead catfish	0.34
	(0.17)
White crappie	0.17
	(0.11)
Black crappie	0.09

	(0.09)
Freshwater drum	1.18
	(0.40)

Sampling stratum:
TWZ - Tailwater

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Table 21.3 Mean catch-per-unit-effort and (standard error) for fish collected by bottom trawling in Pool 13 of the Upper Mississippi River using fixed-site sampling during 2002. See Methods for definitions of catch-per-unit-effort and standard error. Scientific names for the species listed can be found in Table 1.

Common name	TWZ
Shovelnose sturgeon	2.25
	(0.57)
Gizzard shad	0.17
	(0.10)
Speckled chub	0.08
	(0.06)
Silver chub	0.42
	(0.26)
Mimic shiner	0.13
	(0.07)
Quillback	0.04
	(0.04)
Smallmouth buffalo	0.04

	(0.04)
Shorthead redhorse	0.21
	(0.10)
Channel catfish	5.33
	(1.31)
Sauger	0.71
	(0.47)
Walleye	0.08
	(0.06)
Freshwater drum	0.50
	(0.17)

Sampling stratum:
TWZ - Tailwater

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Pool 13 Length Distributions

Length distributions (length) as a percentage of catch (percent) for selected species of interest collected by the Long Term Resource Monitoring Program. Fish species are listed in phylogenetical order following Robins et al. (1991) nomenclature. 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 because of local interest, while others were omitted (reach dependent). Scientific names for the species listed can be found in Table 1.

Figure*	Species	Method
2.3	Gizzard shad	Electrofishing
3.3	Common carp	Electrofishing
4.3	Smallmouth buffalo	Electrofishing
5.3	Smallmouth buffalo	Hoop netting
6.3	Channel catfish	Electrofishing
7.3	Channel catfish	Hoop netting
8.3	Northern pike	Electrofishing
9.3	Northern pike	Fyke netting
10.3	White bass	Electrofishing
11.3	Bluegill	Electrofishing
12.3	Bluegill	Fyke netting
13.3	Largemouth bass	Electrofishing
14.3	White crappie	Fyke netting
15.3	Black crappie	Fyke netting

16.3	Sauger	Electrofishing
17.3	Walleye	Electrofishing
18.3	Freshwater drum	Electrofishing
19.3	Freshwater drum	Fyke netting
*Figure numbers are not always in sequence because some species were not caught in some study areas. Figure numbers for each species and gear type are consistent among study areas.		

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Figure 2.3 Length distributions (*length*) as a percentage of catch (*percent*) for gizzard shad (*Dorosoma cepedianum)* collected by electrofishing in Pool 13 of the Upper Mississippi River during 2002. Click here to view this species' length distributions in all study reaches.

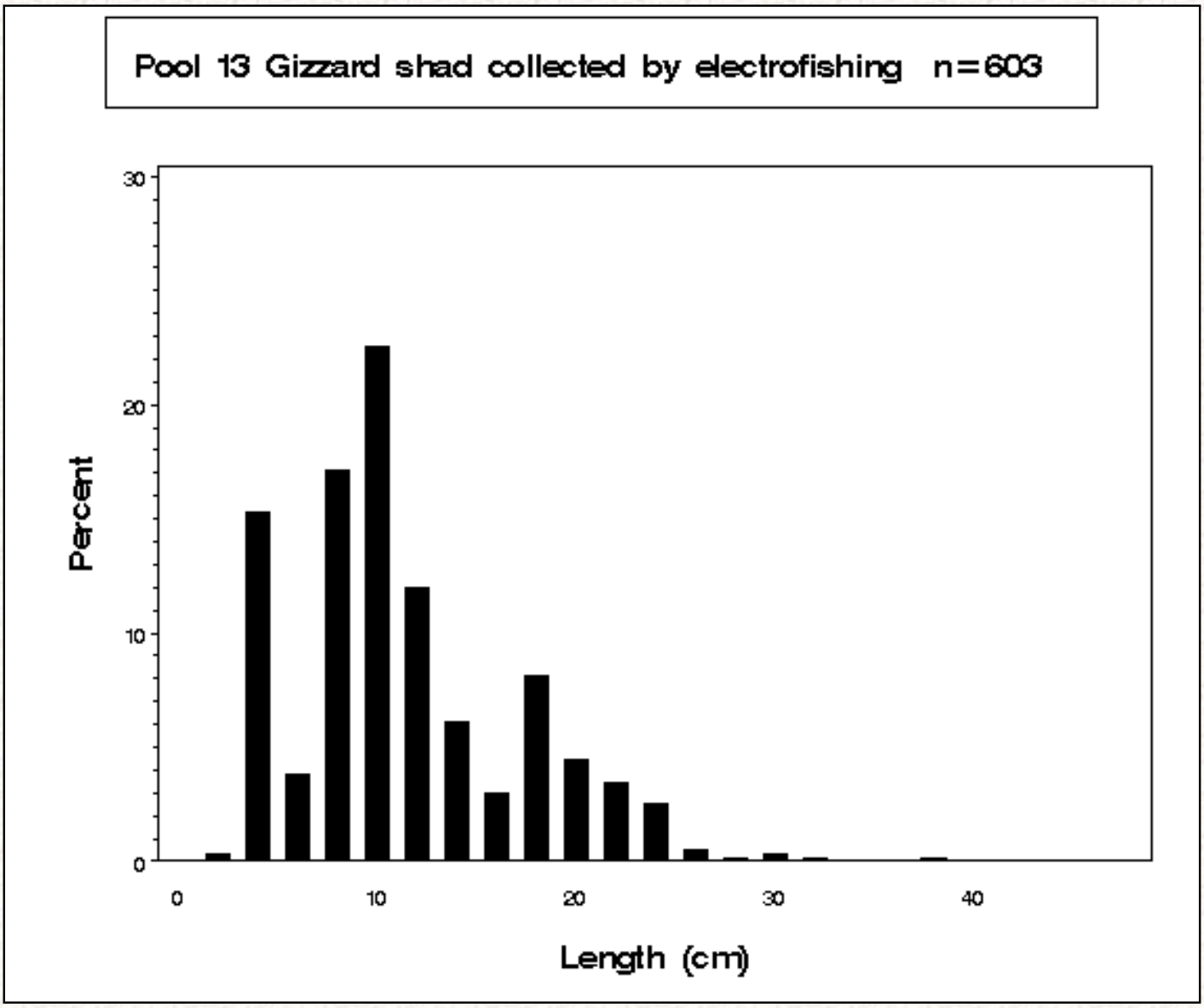

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Figure 3.3 Length distributions (*length*) as a percentage of catch (*percent*) for common carp (*Cyprinus carpio)* collected by electrofishing in Pool 13 of the Upper Mississippi River during 2002. Click here to view this species' length distributions in all study reaches.

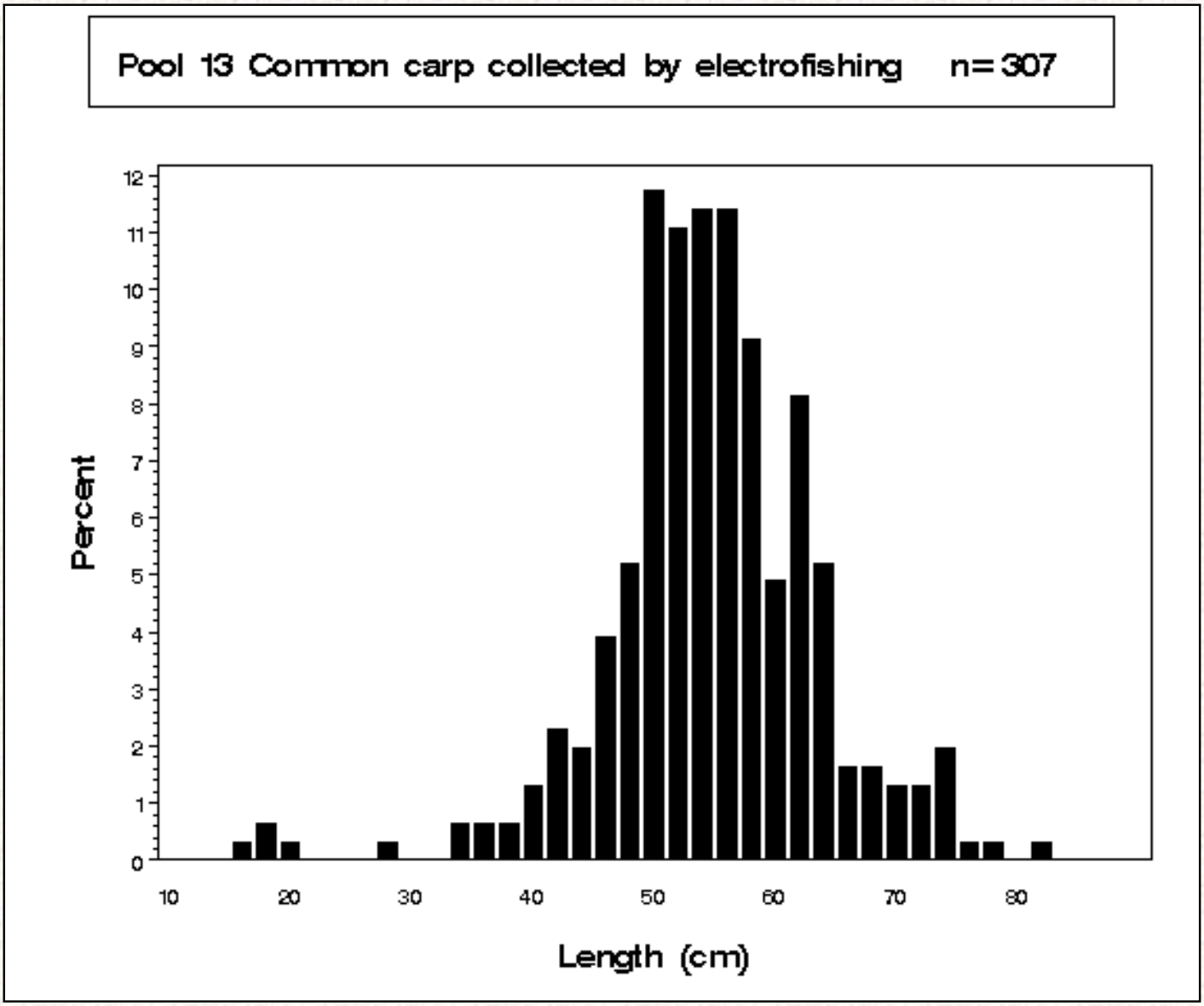

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Figure 4.3 Length distributions (*length*) as a percentage of catch (*percent*) for smallmouth buffalo (*Ictiobus bubalus)* collected by electrofishing in Pool 13 of the Upper Mississippi River during 2002. Click here to view this species' length distributions in all study reaches.

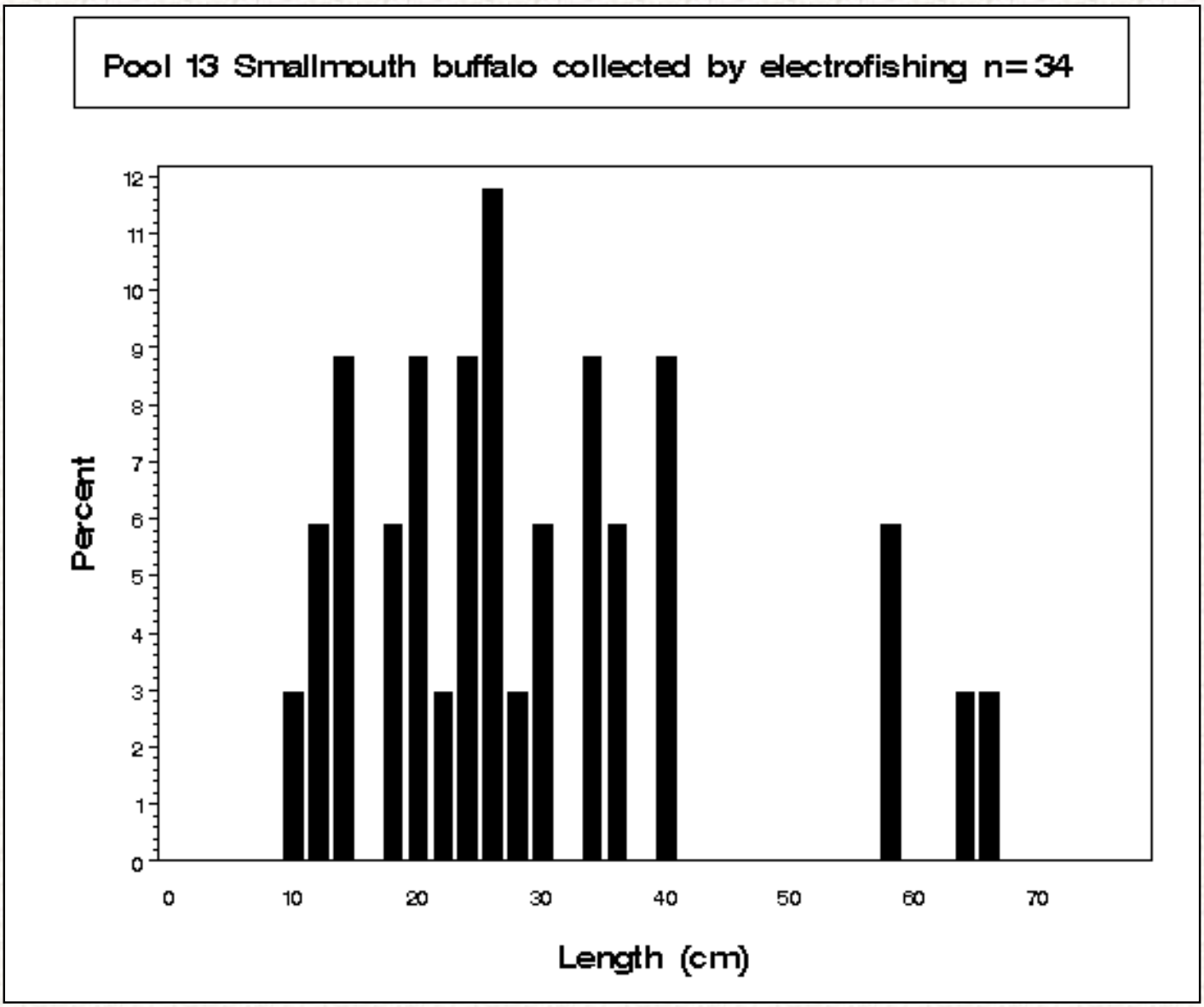

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Figure 5.3 Length distributions (*length*) as a percentage of catch (*percent*) for smallmouth buffalo (*Ictiobus bubalus)* collected by hoop netting in Pool 13 of the Upper Mississippi River during 2002. Click here to view this species' length distributions in all study reaches.

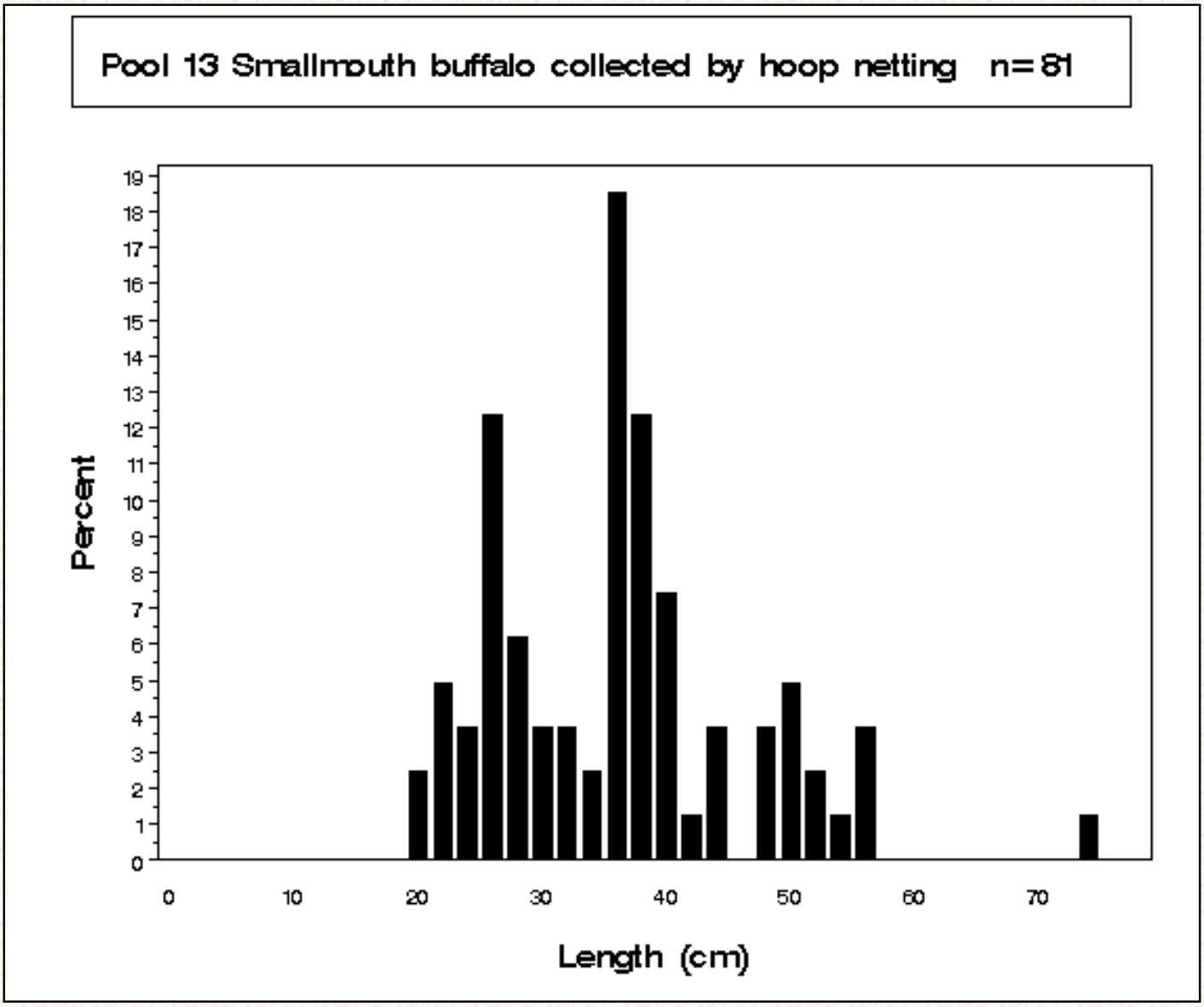

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Figure 6.3 Length distributions (*length*) as a percentage of catch (*percent*) for channel catfish (*Ictalurus punctatus)* collected by electrofishing in Pool 13 of the Upper Mississippi River during 2002. Click here to view this species' length distributions in all study reaches.

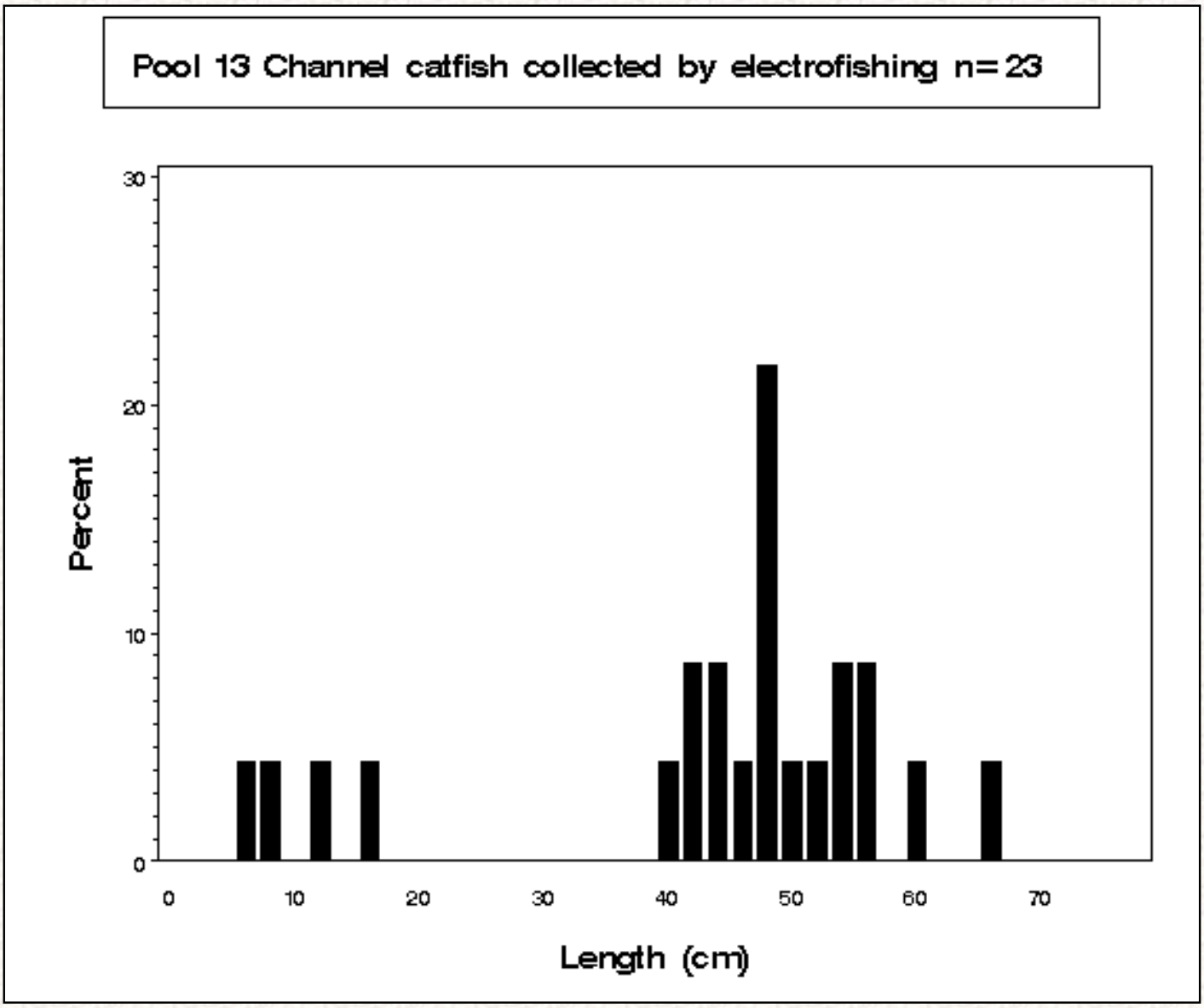

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Figure 7.3 Length distributions (*length*) as a percentage of catch (*percent*) for channel catfish (*Ictalurus punctatus)* collected by hoop netting in Pool 13 of the Upper Mississippi River during 2002. Click here to view this species' length distributions in all study reaches.

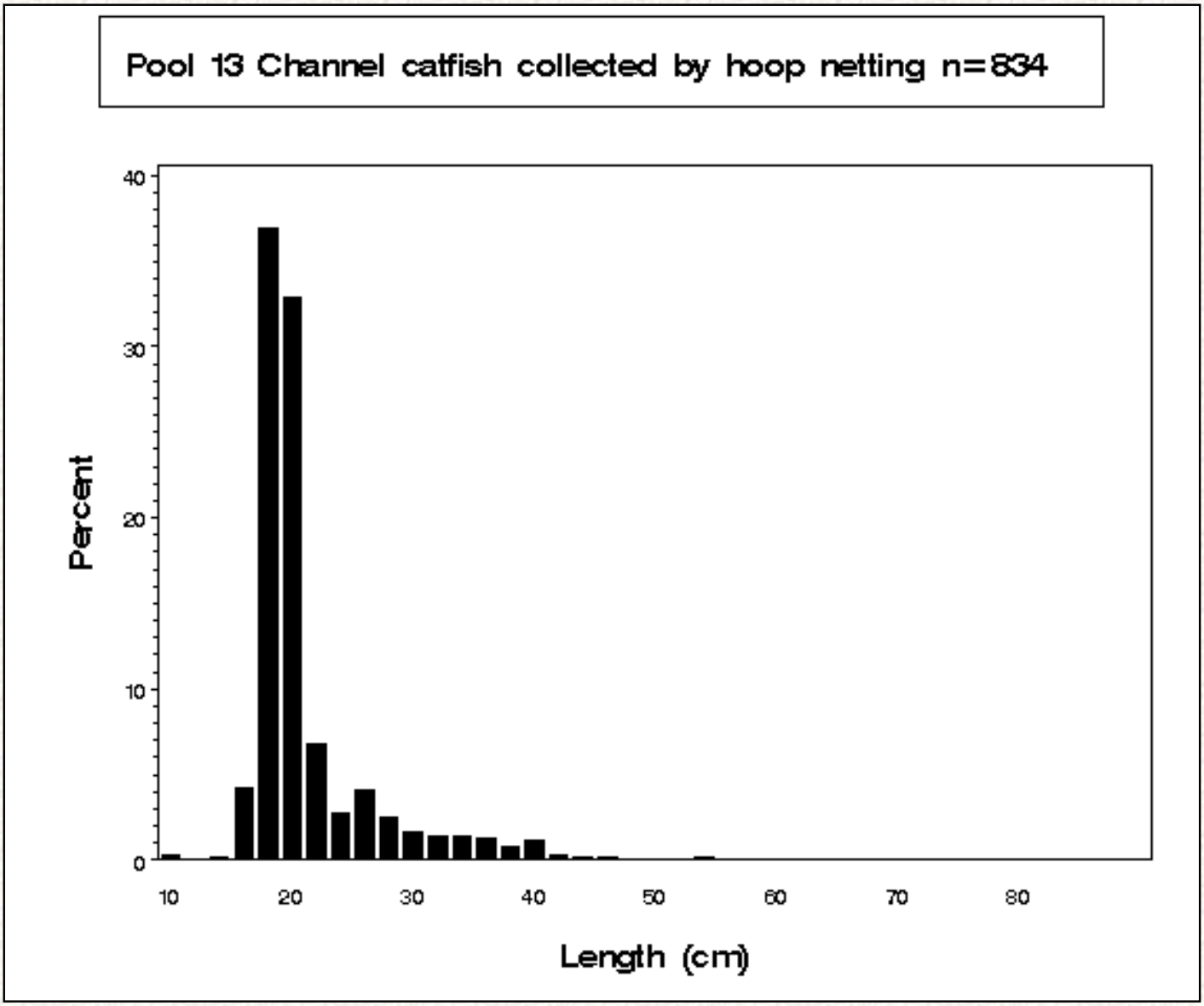

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Figure 8.3 Length distributions (*length*) as a percentage of catch (*percent*) for northern pike (*Esox lucius)* collected by electrofishing in Pool 13 of the Upper Mississippi River during 2002. Click here to view this species' length distributions in all study reaches.

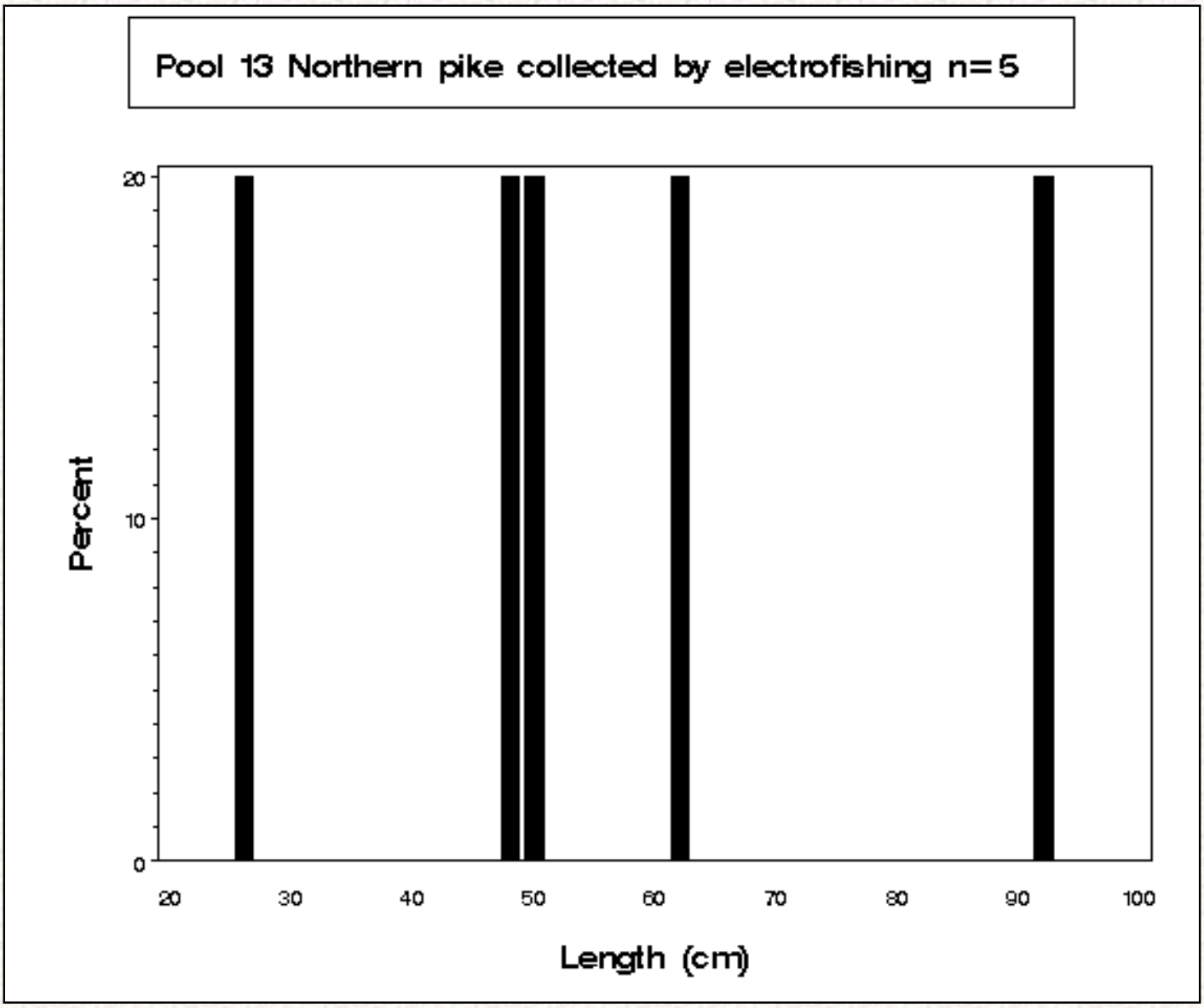

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Figure 9.3 Length distributions (*length*) as a percentage of catch (*percent*) for northern pike (*Esox lucius)* collected by fyke netting in Pool 13 of the Upper Mississippi River during 2002. Click here to view this species' length distributions in all study reaches.

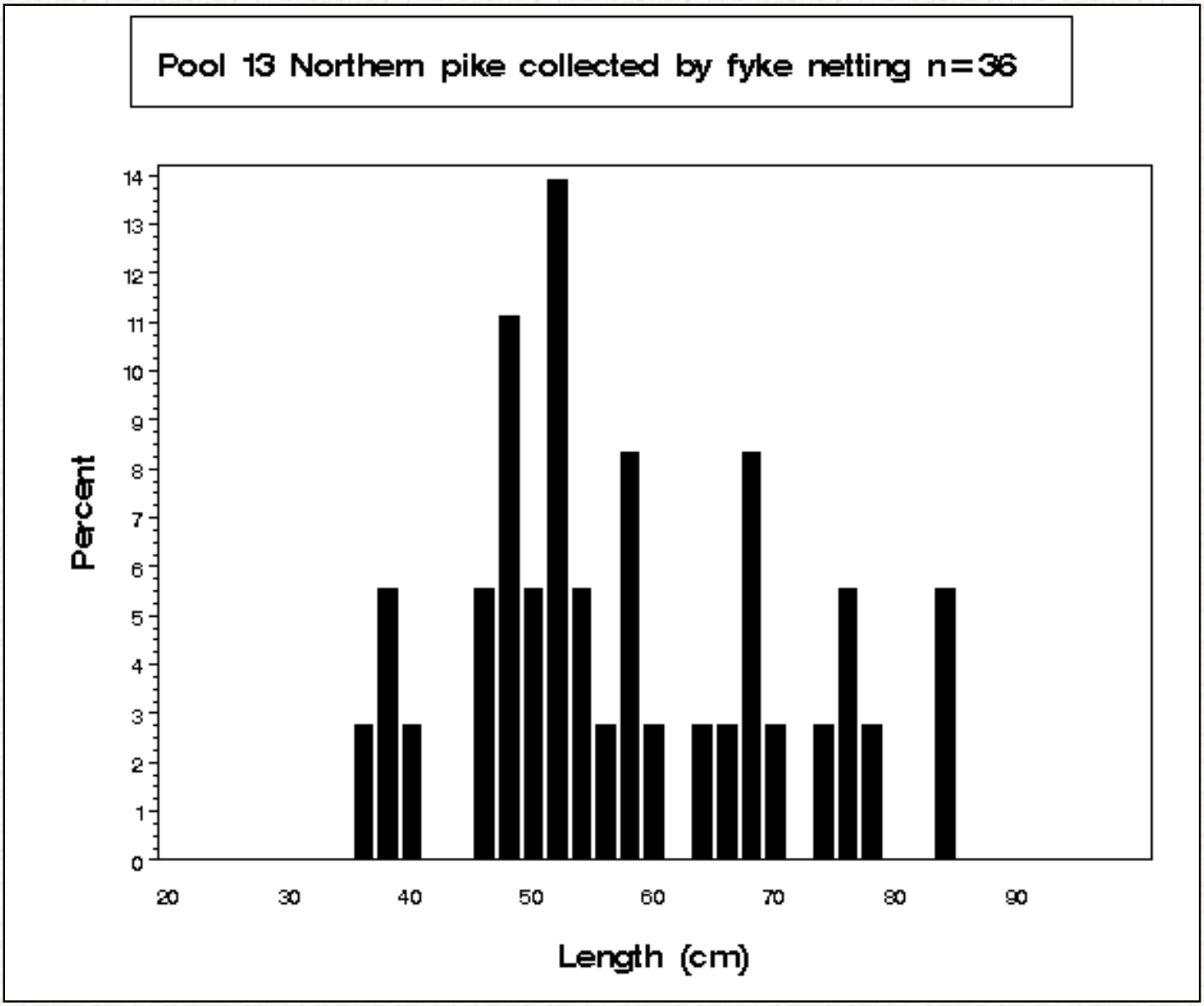

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Figure 10.3 Length distributions (*length*) as a percentage of catch (*percent*) for white bass (*Morone chrysops)* collected by electrofishing in Pool 13 of the Upper Mississippi River during 2002. Click here to view this species' length distributions in all study reaches.

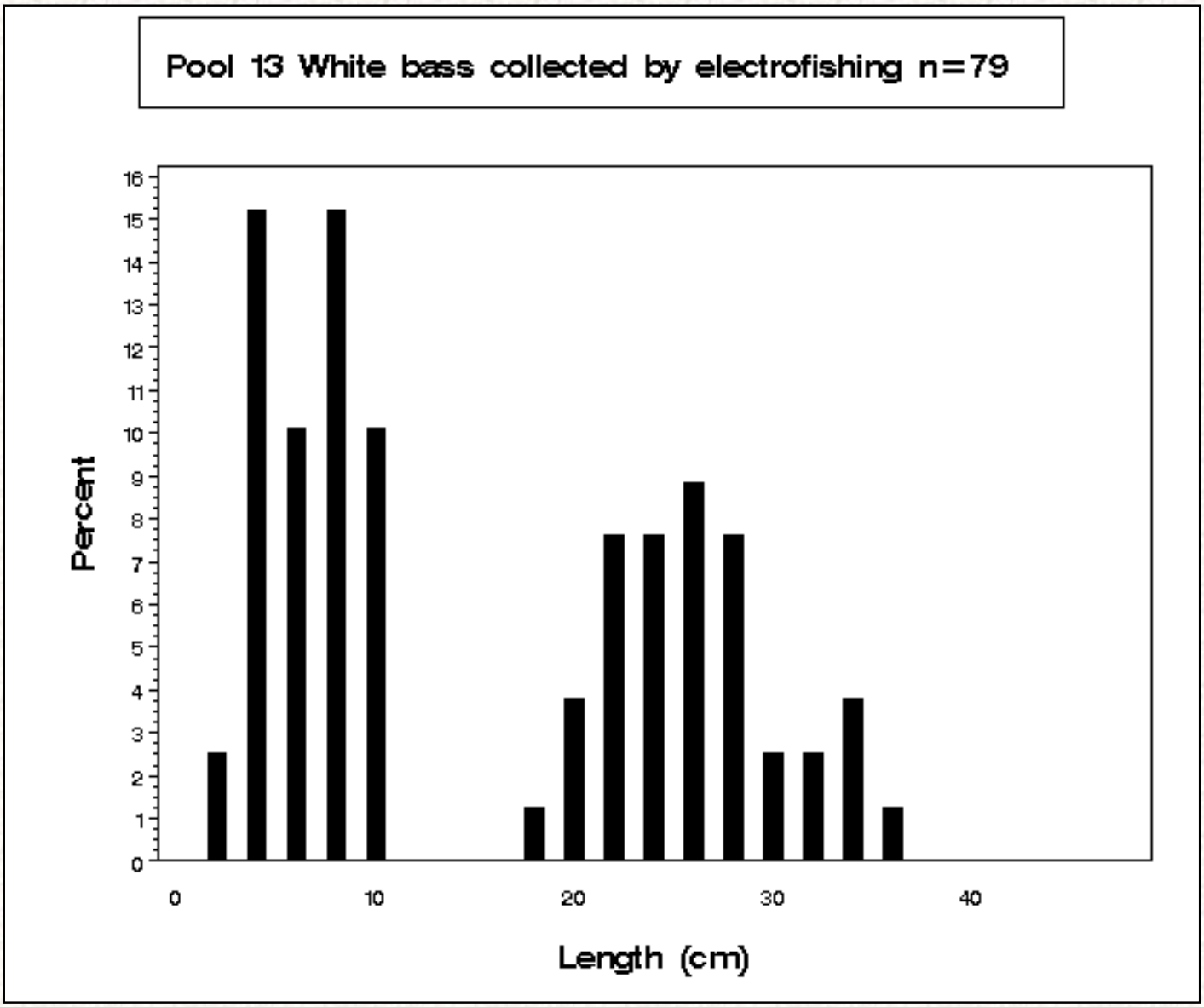

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Figure 11.3 Length distributions (*length*) as a percentage of catch (*percent*) for bluegill (*Lepomis macrochirus*) collected by electrofishing in Pool 13 of the Upper Mississippi River during 2002. Click here to view this species' length distributions in all study reaches.

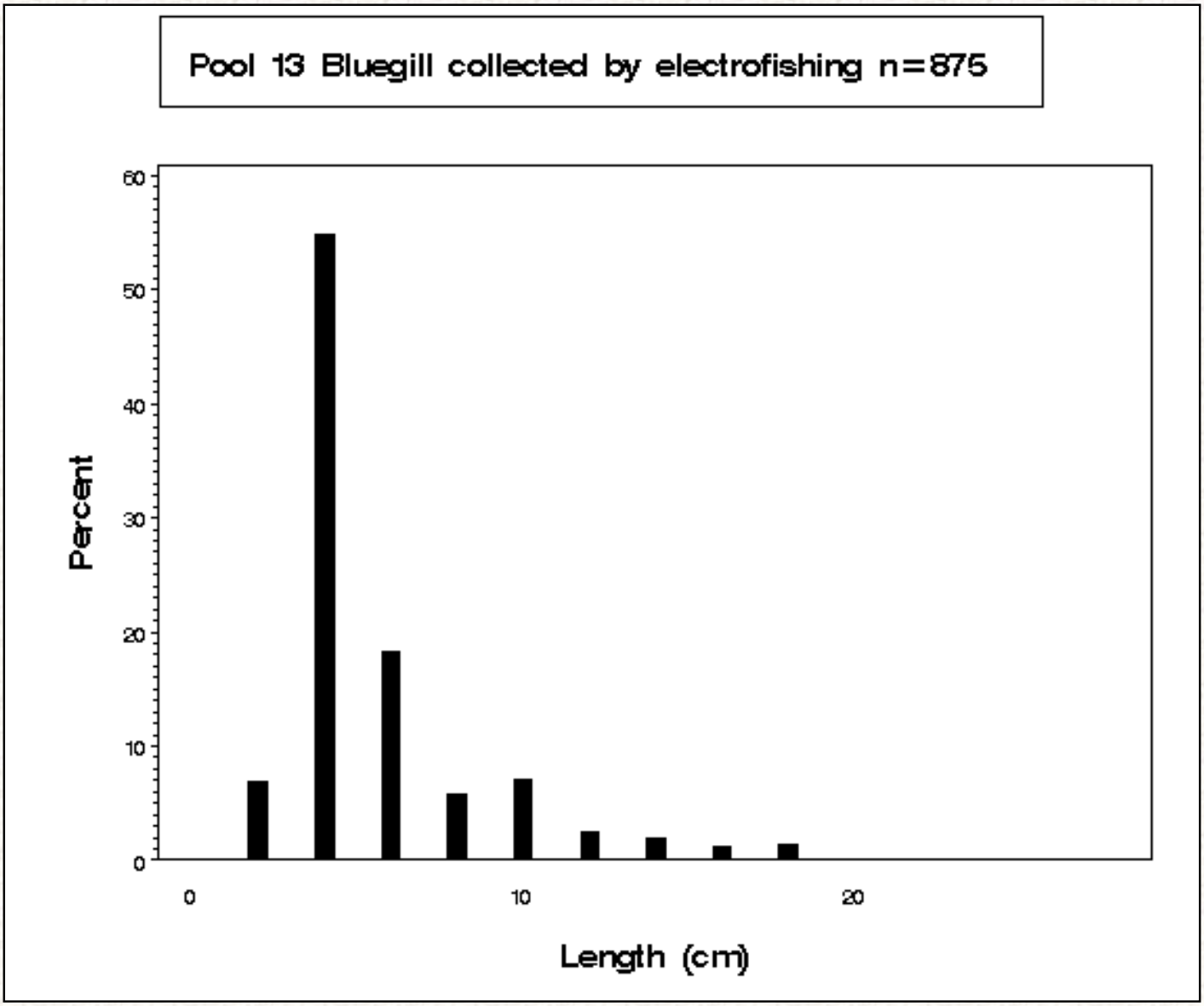

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Figure 12.3 Length distributions (*length*) as a percentage of catch (*percent*) for bluegill (*Lepomis macrochirus*) collected by fyke netting in Pool 13 of the Upper Mississippi River during 2002. Click here to view this species' length distributions in all study reaches.

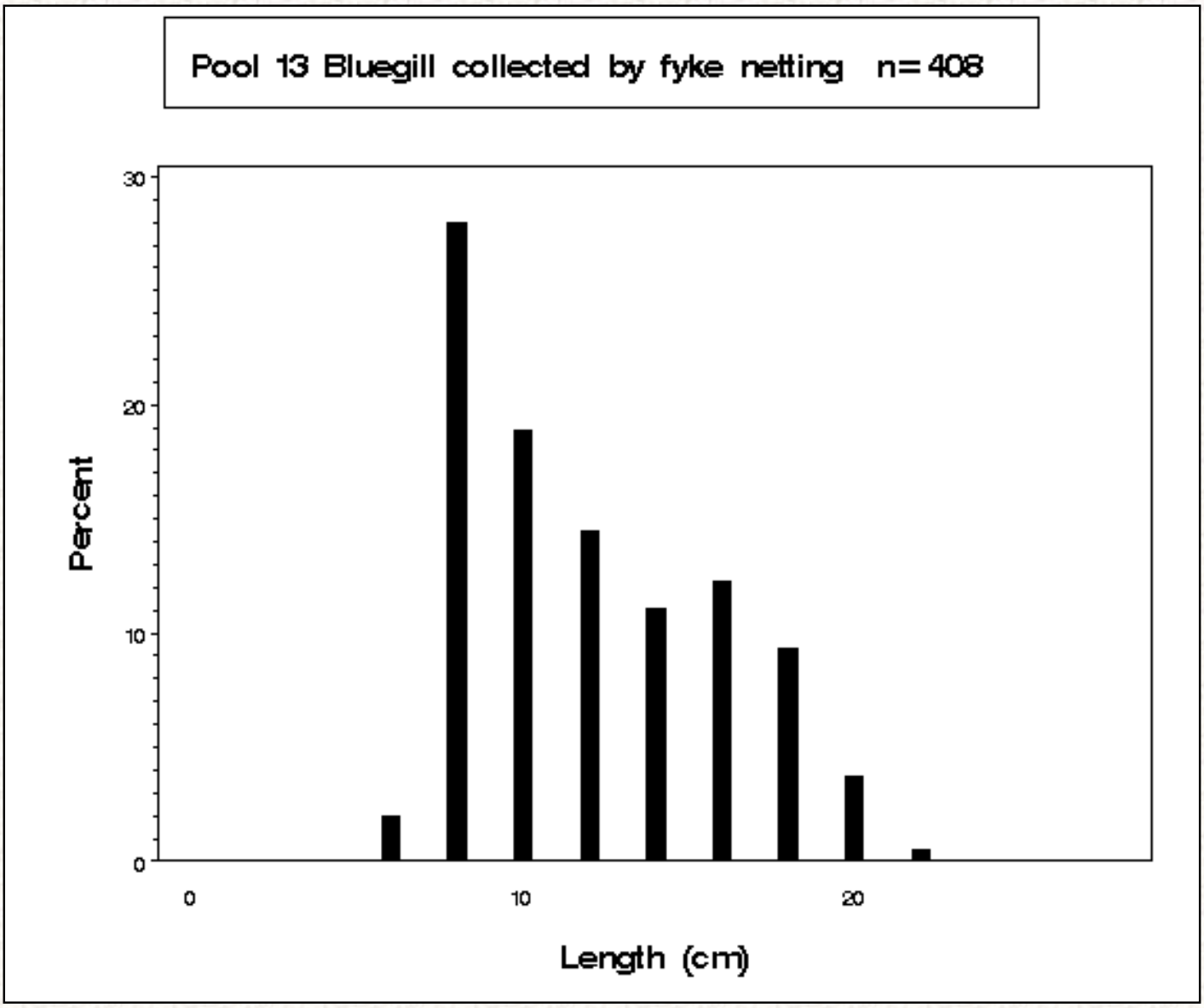

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Figure 13.3 Length distributions (*length*) as a percentage of catch (*percent*) for largemouth bass (*Micropterus salmoides)* collected by electrofishing in Pool 13 of the Upper Mississippi River during 2002. Click here to view this species' length distributions in all study reaches.

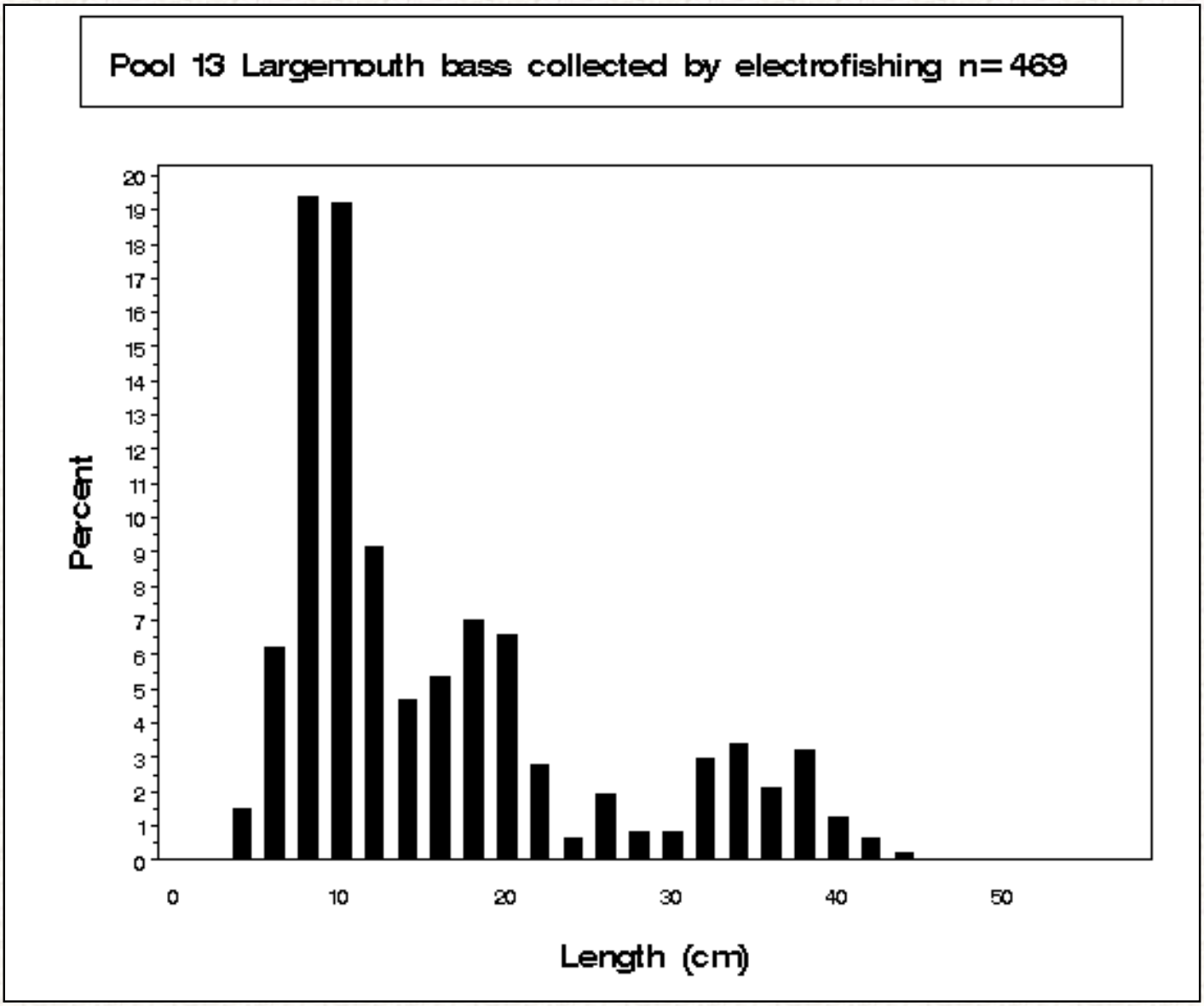

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Figure 14.3 Length distributions (*length*) as a percentage of catch (*percent*) for white crappie (*Pomoxis annularius)* collected by fyke netting in Pool 13 of the Upper Mississippi River during 2002. Click here to view this species' length distributions in all study reaches.

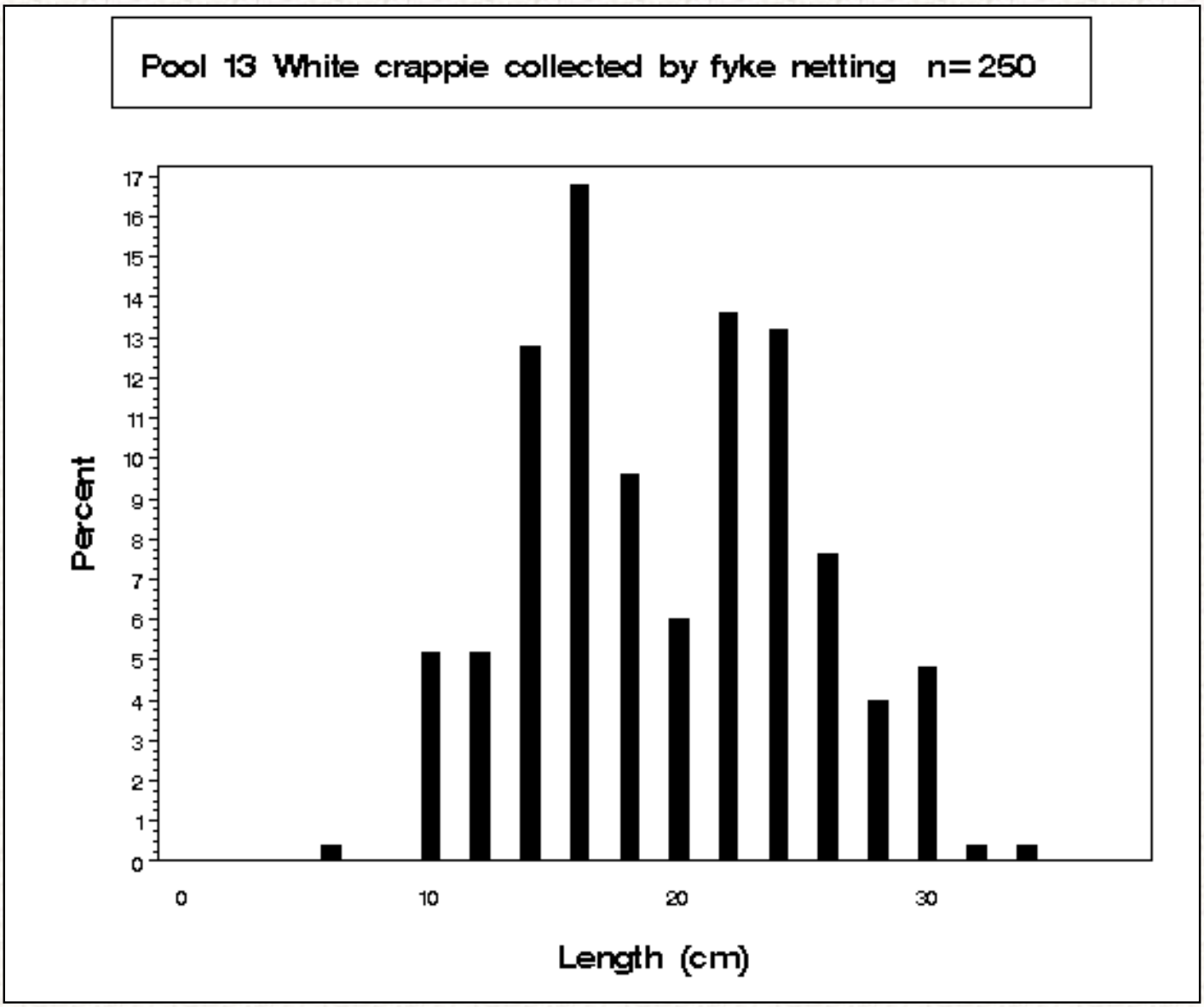

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Figure 15.3 Length distributions (*length*) as a percentage of catch (*percent*) for black crappie (*Pomoxis nigromaculatus*) collected by fyke netting in Pool 13 of the Upper Mississippi River during 2002. Click here to view this species' length distributions in all study reaches.

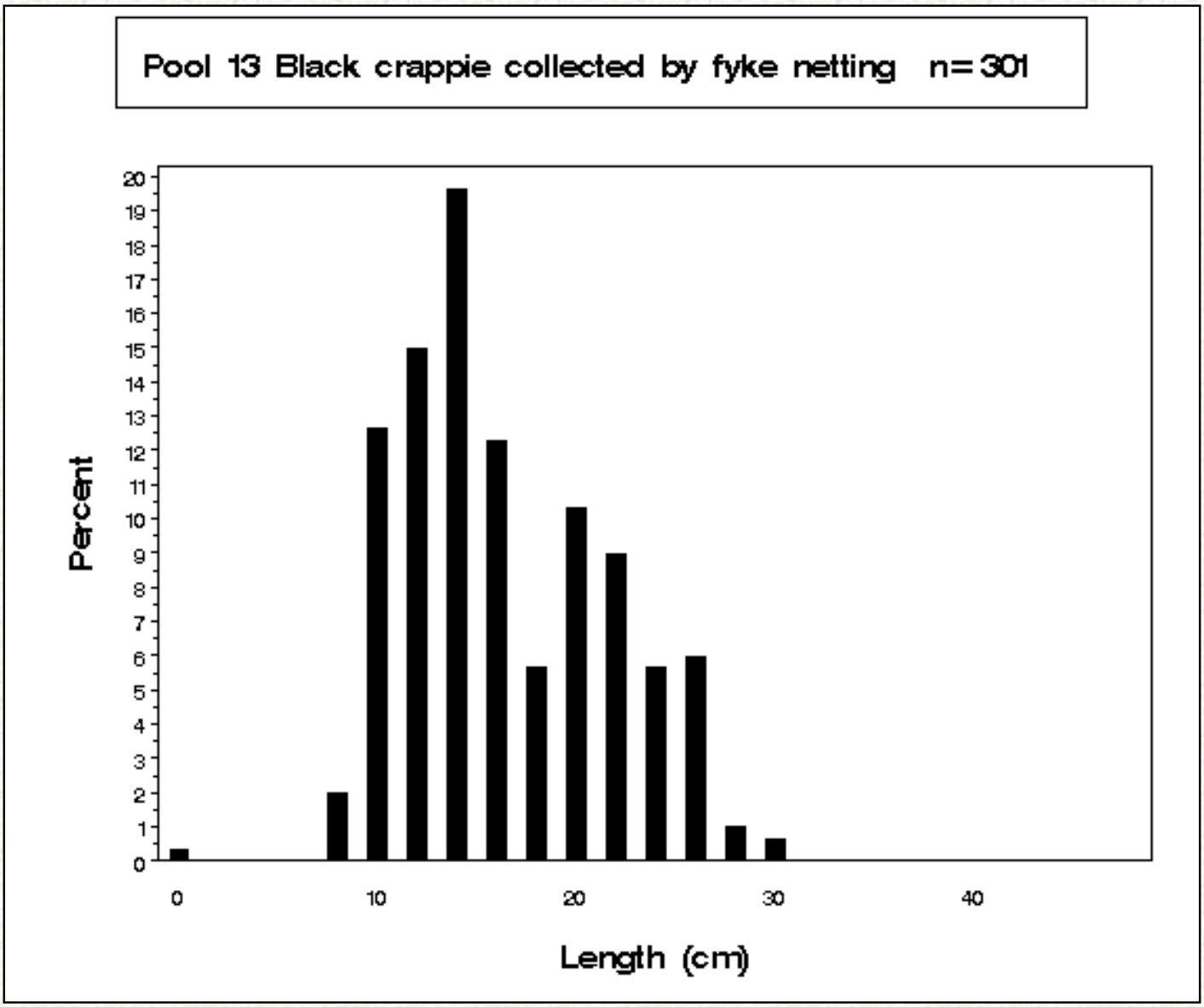

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Figure 16.3 Length distributions (*length*) as a percentage of catch (*percent*) for sauger (*Stizostedion canadense)* collected by electrofishing in Pool 13 of the Upper Mississippi River during 2002. Click here to view this species' length distributions in all study reaches.

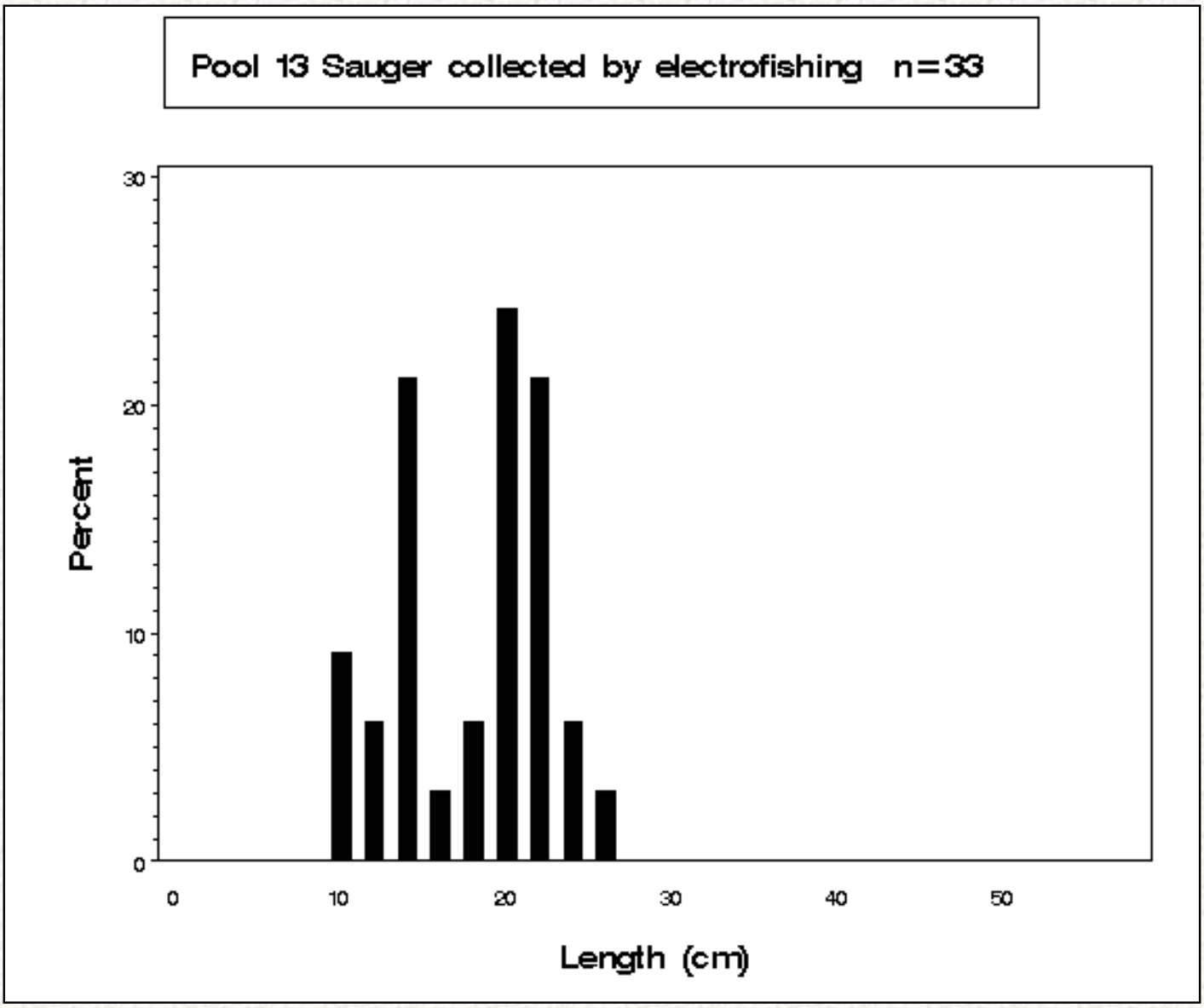

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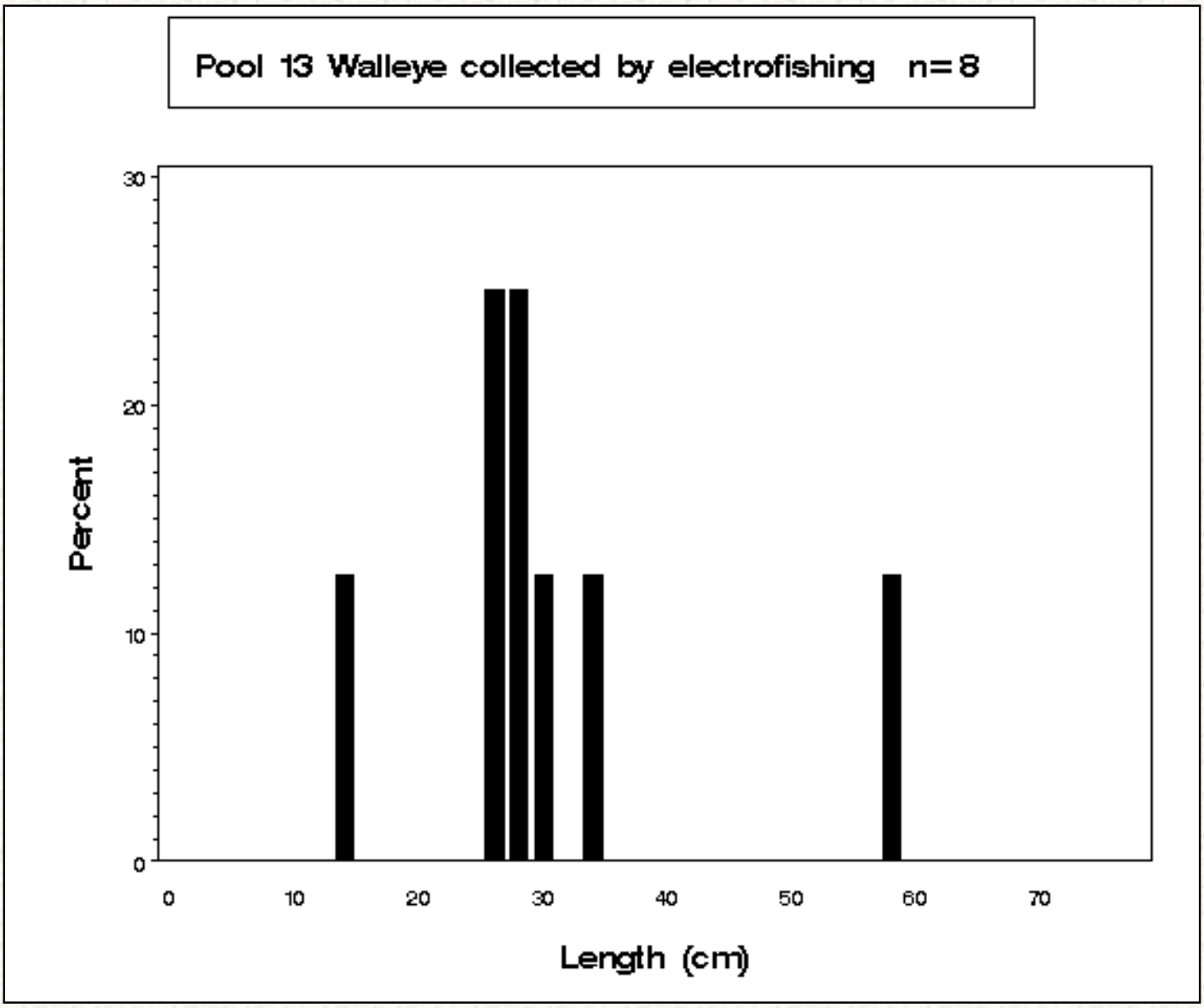
Figure 17.3 Length distributions (*length*) as a percentage of catch (*percent*) for walleye (*Stizostedion vitreum)* collected by electrofishing in Pool 13 of the Upper Mississippi River during 2002. Click here to view this species' length distributions in all study reaches.



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http://www.umesc.usgs.gov/reports_publications/ltrmp/fish/2002/figures/ia_walleye_electro.html

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Figure 18.3 Length distributions (*length*) as a percentage of catch (*percent*) for freshwater drum (*Aplodinotus grunniens*) collected by electrofishing in Pool 13 of the Upper Mississippi River during 2002. Click here to view this species' length distributions in all study reaches.

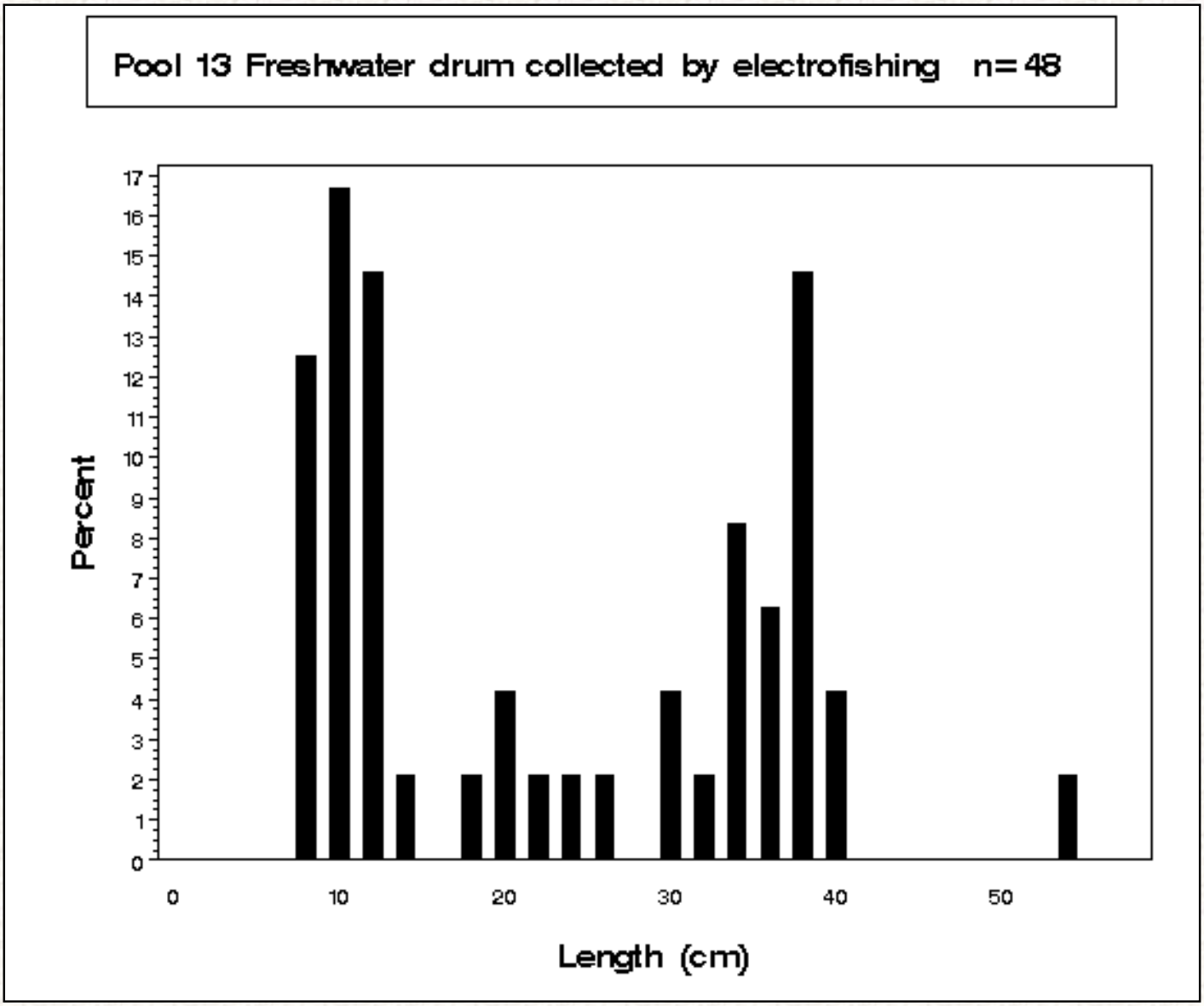

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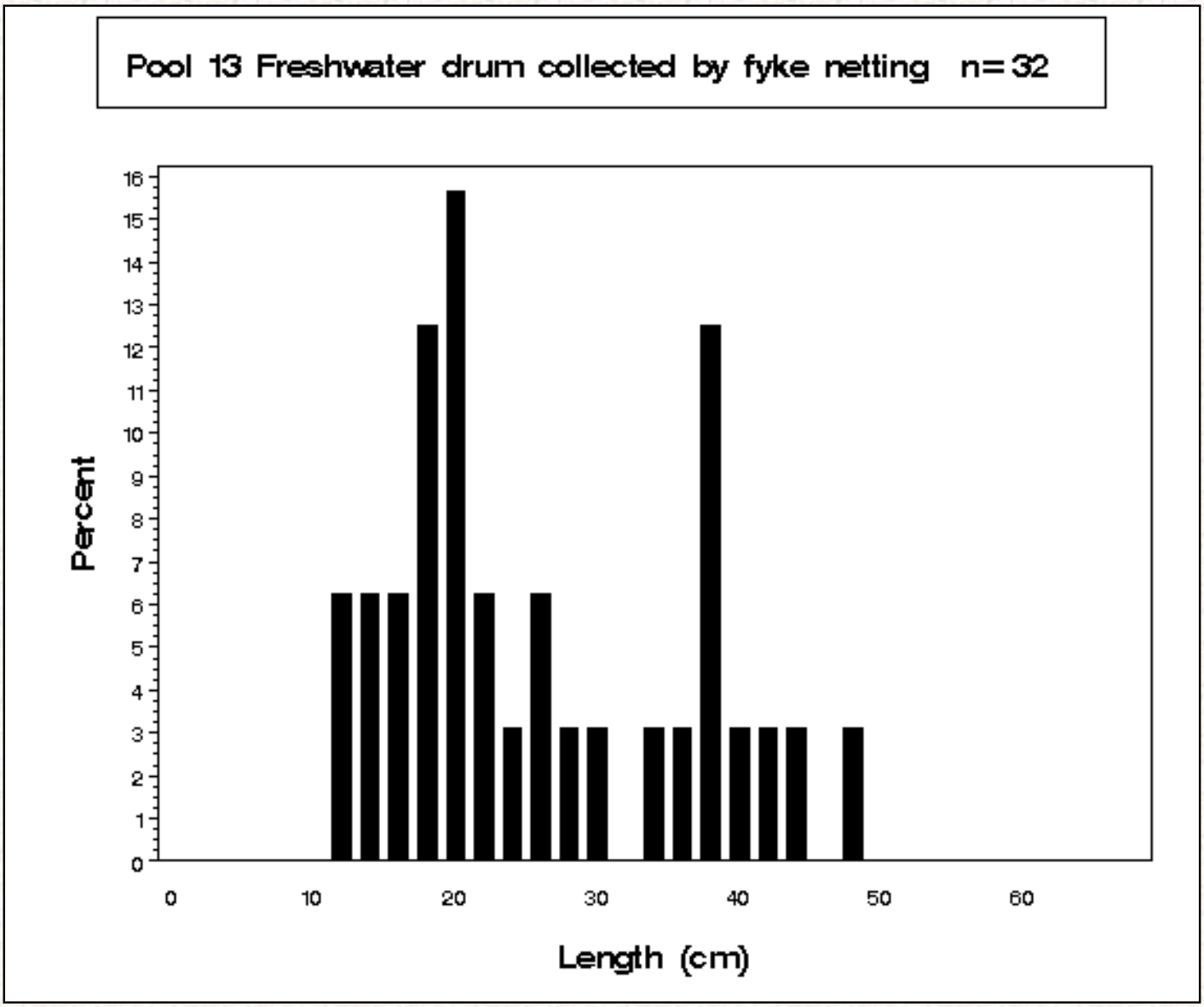
Figure 19.3 Length distributions (*length*) as a percentage of catch (*percent*) for freshwater drum (*Aplodinotus grunniens)* collected by fyke netting in Pool 13 of the Upper Mississippi River during 2002. Click here to view this species' length distributions in all study reaches.



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Pool 26, Upper Mississippi River
2002 Fish Collection Summary

This report is a bullet summary of the Long Term Resource Monitoring Program's (LTRMP) fish collection efforts conducted by the Great Rivers Field Station on Pool 26, Upper Mississippi River during 2002. Information on changes in fish catch over all years can be obtained from the Graphical Fish Database Browser.

- 272 fish collections were conducted using six gear types (Table 2.4).
- Low water levels resulted in one missed day electrofishing site in period 2. One large and one small hoop nets were also missed in period 2 (apparently run over by boats). Two extra sites were sampled: One extra fyke net was set in period 1 and one extra small hoop net was set in period 3 (Table 2.4; Figure 1.4).
- Of the 272 fish collections, 260 were from randomly selected sites. Twelve collections were made at fixed sites.
- Main channel border, unstructured; side channel border; and contiguous backwater, shoreline strata received the most sampling effort (Table 2.4).
- 47,820 fish were collected representing 59 species and 2 hybrids (Table 3.4). This total includes 391 unidentified buffalo (*Ictiobus* spp.) less than 100 mm long, 214 unidentified *Lepomis* spp. less than 30 mm long, 3 unidentified Centrarchids (Centrarchidae) less than 20 mm long, and 10 unidentified larval fish less than 20 mm long.
- The LTRMP species total for Pool 26 before the 2002 season was 90; no new species were collected in the 2002 season (Table 3.4).
- No species were collected that are Illinois-listed endangered species (Table 3.4).

- No species were collected that are Illinois-listed threatened species (Table 3.4).
- Other species that were collected and are noted as uncommon, rare, or probably strays from tributaries (Pitlo et al. 1995) in Pool 26 were central stoneroller, freckled madtom, grass pickerel, logperch, mud darter, redear sunfish, smallmouth bass, Mississippi silvery minnow, and grass carp were listed as rare and uncommon, respectively by Pitlo et al. (1995), but LTRMP collections in Pool 26 since 1995 suggest that they may no longer be uncommon (Table 3.4).
- Mean catch-per-unit-effort and standard effort for fish collected by gears using stratified random (Tables 4.4-11.4) and fixed-site sampling (Table 21.4) for each stratum are shown.
- Length distributions for selected species of fish are shown in Figures 2.4 to19.4.

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Table 2.4 Allocation of fish sampling effort among strata in Pool 26 of the Upper Mississippi River during 2002. 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					5				9
Large hoop net			7	10	2					19
Small hoop net			7	10	2					19
Mini fyke net	4		5	2	2	2				15
Trawling									4	4
Subtotal	**14**	**0**	**25**	**30**	**8**	**11**	**0**	**0**	**4**	**92**

Sampling period = 2: August 1–September 14

Sampling gear	BWCS	BWCO	SCB	MCBU	MCBW	IMPS	IMPO	TRI	TWZ	TOTAL
Day electrofishing	5		6	8	2	4				25
Fyke net	4					4				8
Large hoop net			6	10	2					18
Small hoop net			6	10	2					18
Mini fyke net	4		5	2	2	2				15
Trawling									4	4
Subtotal	**13**	**0**	**23**	**30**	**8**	**10**	**0**	**0**	**4**	**88**

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					4				8
Large hoop net			7	10	2					19
Small hoop net			7	11	2					20
Mini fyke net	4		5	2	2	2				15
Trawling									4	4
Subtotal	**14**	**0**	**25**	**31**	**8**	**10**	**0**	**0**	**4**	**92**
Total	**41**	**0**	**73**	**91**	**24**	**31**	**0**	**0**	**12**	**272**

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

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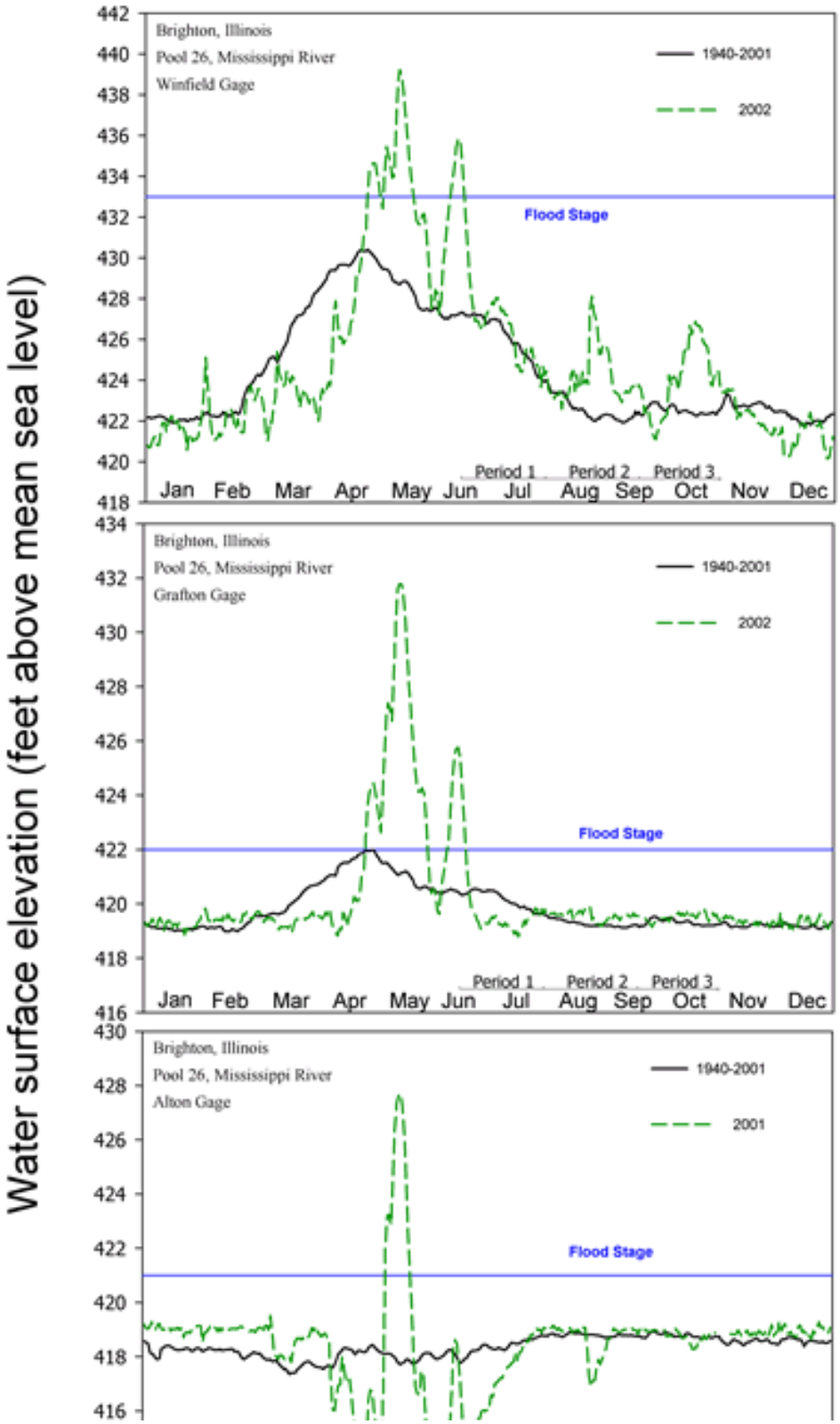

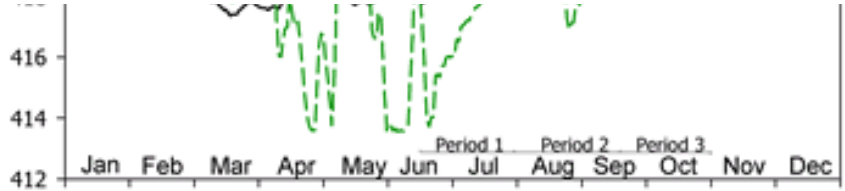

Figure 1.4. Daily water surface elevation from Winfield, Grafton, and Alton Gages for La Grange Pool, Illinois River, during 2002 and mean elevation since 1940. The U.S. Army Corps of Engineers discharge data were obtained in accordance with Upper Midwest Environmental Sciences Center established procedures (Wlosinski et al. 1995).

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Table 3.4 Total catches, by gear type, of fish collected in Pool 26 of the Upper Mississippi River during 2002. See Table 2.4 for the list of sampling gears actually deployed in this study reach.

Species	Common name	Scientific name	D	F	M	HS	HL	T	TOTAL
1	Shovelnose sturgeon	*Scaphirhynchus platorynchus*	-	-	-	-	-	8	8
2	Spotted gar	*Lepisosteus oculatus*	2	2	2	-	-	-	6
3	Longnose gar	*L. osseus*	1	1	-	-	-	-	2
4	Shortnose gar	*L. platostomus*	40	159	64	-	7	-	270
5	Bowfin	*Amia calva*	-	5	-	-	-	-	5
6	Goldeye	*Hiodon alosoides*	2	1	-	-	-	-	3
7	Mooneye	*H. tergisus*	4	-	-	-	-	-	4
8	American eel	*Anguilla rostrata*	-	-	-	1	-	-	1
9	Skipjack herring	*Alosa chrysochloris*	105	1	1	-	-	-	107
10	Gizzard shad	*Dorosoma cepedianum*	8435	42	24910	-	-	1	33388
11	Threadfin shad	*D. petenense*	75	-	-	-	-	-	75
12	Central stoneroller	*Campostoma anomalum*	-	-	3	-	-	-	3
13	Goldfish	*Carassius auratus*	1	-	-	-	-	-	1

14	Grass carp	*Ctenopharyngodon idella*	10	1	-	-	1	-	12
15	Red shiner	*Cyprinella lutrensis*	-	-	2	-	-	-	2
16	Spotfin shiner	*C. spiloptera*	33	-	141	-	-	-	174
17	Common carp	*Cyprinus carpio*	712	28	111	53	80	-	984
18	Carp x goldfish hybrid	*C. carpio x auratus*	1	-	-	-	-	-	1
19	Mississippi silvery minnow	*Hybognathus nuchalis*	37	-	170	-	-	-	207
20	Silver carp	*Hypopthalmichthys molitrix*	4	-	1	-	-	-	5
21	Bighead carp	*H. nobilis*	11	9	24	-	6	-	50
22	Silver chub	*Macrhybopsis storeriana*	13	-	1	-	-	7	21
23	Golden shiner	*Notemigonus crysoleucas*	1	-	2	-	-	-	3
24	Emerald shiner	*Notropis atherinoides*	1846	-	3069	-	-	2	4917
25	River shiner	*N. blennius*	30	-	40	-	-	-	70
26	Spottail shiner	*N. hudsonius*	-	-	2	-	-	-	2
27	Silverband shiner	*N. shumardi*	54	-	72	-	-	-	126
28	Sand shiner	*N. stramineus*	1	-	2	-	-	-	3
29	Channel shiner	*N. wickliffi*	82	-	163	-	-	-	245
30	Bluntnose minnow	*Pimephales notatus*	-	-	9	-	-	-	9
31	Bullhead minnow	*P. vigilax*	218	-	114	-	-	-	332
32	Creek chub	*Semotilus atromaculatus*	-	-	1	-	-	-	1

33	River carpsucker	*Carpiodes carpio*	144	16	23	-	5	1	189
34	Smallmouth buffalo	*Ictiobus bubalus*	110	10	-	2	227	-	349
35	Bigmouth buffalo	*I. cyprinellus*	45	-	2	-	-	-	47
36	Black buffalo	*I. niger*	22	2	1	-	3	-	28
37	Unidentified buffalo	*Ictiobus* sp.	129	-	262	-	-	-	391
38	Shorthead redhorse	*Moxostoma macrolepidotum*	18	4	-	-	4	-	26
39	Yellow bullhead	*Ameiurus natalis*	1	-	-	-	-	-	1
40	Blue catfish	*Ictalurus furcatus*	2	-	-	195	55	92	344
41	Channel catfish	*I. punctatus*	329	5	29	996	123	34	1516
42	Freckled madtom	*Noturus nocturnus*	-	-	1	1	-	-	2
43	Flathead catfish	*Pylodictis olivaris*	34	3	1	22	24	-	84
44	Grass pickerel	*Esox americanus vermiculatus*	1	-	-	-	-	-	1
45	Western mosquitofish	*Gambusia affinis*	9	-	267	-	-	-	276
46	Brook silverside	*Labidesthes sicculus*	2	-	2	-	-	-	4
47	White bass	*Morone chrysops*	212	103	100	20	11	-	446
48	Yellow bass	*M. mississippiensis*	2	3	1	-	-	-	6
49	Green sunfish	*Lepomis cyanellus*	287	1	13	-	-	-	301
50	Warmouth	*L. gulosus*	33	1	5	-	-	-	39

51	Orangespotted sunfish	*L. humilis*	259	13	66	-	-	-	338
52	Bluegill	*L. macrochirus*	738	85	60	6	1	-	890
53	Redear sunfish	*L. microlophus*	2	-	-	-	-	-	2
54	Green x bluegill sunfish	*L. cyanellus x macrochirus*	32	-	-	-	-	-	32
55	Unidentified Lepomis	*Lepomis* sp.	-	-	214	-	-	-	214
56	Smallmouth bass	*Micropterus dolomieu*	2	-	-	-	-	-	2
57	Largemouth bass	*M. salmoides*	68	1	6	-	-	-	75
58	White crappie	*Pomoxis annularis*	15	46	37	-	-	-	98
59	Black crappie	*P. nigromaculatus*	24	250	44	-	1	-	319
60	Unidentified sunfish	Unidentified Centrarchidae	-	-	3	-	-	-	3
61	Mud darter	*Etheostoma asprigene*	1	-	-	-	-	-	1
62	Logperch	*Percina caprodes*	2	-	2	-	-	-	4
63	Sauger	*Stizostedion canadense*	34	5	7	-	-	-	46
64	Freshwater drum	*Aplodinotus grunniens*	351	41	165	25	112	5	699
65	Larval fish	Unidentified	-	-	10	-	-	-	10
			14626	**838**	**30225**	**1321**	**660**	**150**	**47820**

Sampling gears:
D - Day electrofishing
F - Fyke netting
M - Mini fyke netting
HS - Small hoop netting
HL - Large hoop netting

T - Trawling

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Pool 26 Tables

Table*	Stratified Random Sampling
4.4	Mean catch-per-unit-effort for fish collected by day electrofishing
6.4	Mean catch-per-unit-effort for fish collected by fyke netting
8.4	Mean catch-per-unit-effort for fish collected by mini fyke netting
10.4	Mean catch-per-unit-effort for fish collected by small hoop netting
11.4	Mean catch-per-unit-effort for fish collected by large hoop netting
	Fixed-site Sampling
21.4	Mean catch-per-unit-effort for fish collected by bottom trawling

*Table numbers are not always in sequence because some gears were not fished in some study areas. Table numbers for each gear type are consistent among study areas.

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Table 4.4 Mean catch-per-unit-effort and (standard error) for fish collected by day electrofishing in Pool 26 of the Upper Mississippi River using stratified random sampling during 2002. The statistics under ALL pertain to unbiased means over all strata sampled by this gear (as indicated by nonmissing entries below and by Table 2.4). See Methods for definitions of catch-per-unit-effort and standard error. Scientific names for the species listed can be found in Table 1.

Common name	ALL	BWCS	IMPS	MCBU	MCBW	SCB
Spotted gar	0.06			0.08		
	(0.06)			(0.08)		
Longnose gar	0.02					0.06
	(0.02)					(0.06)
Shortnose gar	0.62	0.29	0.58	0.67	0.33	0.56
	(0.25)	(0.14)	(0.42)	(0.36)	(0.33)	(0.22)
Goldeye	0.04			0.04		0.06
	(0.03)			(0.04)		(0.06)
Mooneye	0.11			0.17		
	(0.07)			(0.10)		
Skipjack herring	1.63	0.35	2.42	2.21	1.50	0.44
	(0.53)	(0.24)	(1.14)	(0.79)	(0.96)	(0.25)

Gizzard shad	91.65	141.47	196.92	97.54	17.83	67.72
	(31.89)	(32.17)	(57.11)	(46.62)	(8.67)	(26.17)
Threadfin shad	0.41	0.12	4.92	0.50		0.11
	(0.16)	(0.12)	(3.08)	(0.24)		(0.08)
Goldfish	0.00		0.08			
	(0.00)		(0.08)			
Grass carp	0.10	0.18	0.17	0.08	0.17	0.11
	(0.04)	(0.13)	(0.17)	(0.06)	(0.17)	(0.08)
Spotfin shiner	0.53		0.25	0.50	1.00	0.67
	(0.16)		(0.18)	(0.19)	(0.37)	(0.34)
Common carp	13.79	5.12	1.50	15.75	5.67	10.83
	(2.49)	(1.11)	(0.70)	(3.57)	(1.41)	(2.68)
Carp x goldfish hybrid	0.03			0.04		
	(0.03)			(0.04)		
Mississippi silvery minnow	0.65		0.58	0.58		0.89
	(0.36)		(0.31)	(0.41)		(0.83)
Silver carp	0.01	0.24				
	(0.01)	(0.24)				
Bighead carp	0.25	0.12		0.38		
	(0.22)	(0.12)		(0.33)		
Silver chub	0.06		0.92	0.08		
	(0.04)		(0.61)	(0.06)		

Golden shiner	0.00	0.06				
	(0.00)	(0.06)				
Emerald shiner	8.48	21.65	92.92	7.21	11.00	6.89
	(1.64)	(6.54)	(67.03)	(2.15)	(4.23)	(1.66)
River shiner	0.62		0.17	0.63		0.72
	(0.25)		(0.17)	(0.32)		(0.46)
Silverband shiner	0.06		4.42			0.06
	(0.04)		(4.33)			(0.06)
Sand shiner	0.00		0.08			
	(0.00)		(0.08)			
Channel shiner	1.02	0.24	3.00	1.13		0.83
	(0.60)	(0.14)	(2.18)	(0.87)		(0.51)
Bullhead minnow	0.40	0.47	16.50	0.21	0.17	0.33
	(0.14)	(0.26)	(9.11)	(0.13)	(0.17)	(0.23)
River carpsucker	1.57	2.35	3.25	1.58	0.33	1.39
	(0.46)	(1.24)	(1.83)	(0.63)	(0.21)	(0.70)
Smallmouth buffalo	0.71	2.94	2.50	0.67	1.00	0.44
	(0.22)	(0.90)	(0.94)	(0.32)	(0.82)	(0.17)
Bigmouth buffalo	0.34	1.35	0.67	0.21		0.50
	(0.10)	(0.94)	(0.43)	(0.08)		(0.27)
Black buffalo	0.25	0.47	0.08	0.21	0.33	0.33
	(0.15)	(0.29)	(0.08)	(0.21)	(0.21)	(0.18)
Unidentified buffalo	0.28	6.88	1.00			

	(0.12)	(2.97)	(0.66)			
Shorthead redhorse	0.06		0.33	0.08	2.00	
	(0.06)		(0.14)	(0.08)	(1.00)	
Yellow bullhead	0.00		0.08			
	(0.00)		(0.08)			
Blue catfish	0.06			0.08		
	(0.04)			(0.06)		
Channel catfish	3.46	2.06	9.00	3.33	6.33	3.78
	(1.23)	(0.73)	(4.60)	(1.80)	(3.50)	(0.99)
Flathead catfish	0.42	0.24	0.25	0.50	1.67	0.28
	(0.09)	(0.18)	(0.18)	(0.12)	(1.28)	(0.14)
Grass pickerel	0.00	0.06				
	(0.00)	(0.06)				
Western mosquitofish	0.03	0.47				0.06
	(0.02)	(0.24)				(0.06)
Brook silverside	0.00		0.17			
	(0.00)		(0.17)			
White bass	3.18	2.24	2.92	3.46	1.33	2.67
	(0.63)	(0.43)	(0.87)	(0.85)	(0.67)	(0.98)
Yellow bass	0.00		0.17			
	(0.00)		(0.17)			
Green sunfish	0.76	6.82	11.67	0.54	2.83	0.06

	(0.18)	(2.38)	(4.33)	(0.22)	(1.25)	(0.06)
Warmouth	0.13	0.82	1.17	0.13	0.33	
	(0.05)	(0.40)	(0.71)	(0.07)	(0.33)	
Orangespotted sunfish	0.65	12.35	3.58	0.17	0.17	0.06
	(0.14)	(3.10)	(1.35)	(0.10)	(0.17)	(0.06)
Bluegill	2.86	11.29	38.50	2.71	0.50	0.89
	(1.01)	(3.30)	(18.37)	(1.48)	(0.22)	(0.40)
Redear sunfish	0.00		0.17			
	(0.00)		(0.17)			
Green x bluegill sunfish	0.03	0.12	2.50			
	(0.02)	(0.08)	(2.02)			
Smallmouth bass	0.03			0.04	0.17	
	(0.03)			(0.04)	(0.17)	
Largemouth bass	0.81	0.59	2.08	1.04	0.50	0.28
	(0.31)	(0.23)	(0.47)	(0.46)	(0.34)	(0.14)
White crappie	0.12	0.59	0.08	0.13		0.06
	(0.06)	(0.27)	(0.08)	(0.09)		(0.06)
Black crappie	0.14	0.41	0.83	0.08	0.17	0.22
	(0.05)	(0.24)	(0.59)	(0.06)	(0.17)	(0.13)
Mud darter	0.02					0.06
	(0.02)					(0.06)
Logperch	0.03		0.08	0.04		

	(0.03)		(0.08)	(0.04)		
Sauger	0.50	0.12	0.92	0.58	0.17	0.33
	(0.19)	(0.12)	(0.62)	(0.28)	(0.17)	(0.11)
Freshwater drum	5.52	2.35	5.42	6.13	2.83	4.56
	(1.05)	(0.84)	(2.20)	(1.42)	(1.56)	(1.62)

Sampling strata:
BWCS - Backwater, contiguous, shoreline
IMPS - Impounded, shoreline
MCBU - Main channel border, unstructured
MCBW - Main channel border, wing dam
SCB - Side channel border

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Table 6.4 Mean catch-per-unit-effort and (standard error) for fish collected by fyke netting in Pool 26 of the Upper Mississippi River using stratified random sampling during 2002. The statistics under ALL pertain to unbiased means over all strata sampled by this gear (as indicated by nonmissing entries below and by Table 2.4). See Methods for definitions of catch-per-unit-effort and standard error. Scientific names for the species listed can be found in Table 1.

Common name	ALL	BWCS	IMPS
Spotted gar	0.15	0.18	
	(0.15)	(0.18)	
Longnose gar	0.06	0.08	
	(0.06)	(0.08)	
Shortnose gar	9.34	10.95	2.35
	(2.93)	(3.63)	(0.79)
Bowfin	0.22	0.24	0.16
	(0.19)	(0.24)	(0.11)
Goldeye	0.07	0.08	
	(0.06)	(0.08)	
Skipjack herring	0.01		0.08
	(0.01)		(0.08)

Gizzard shad	2.79	3.38	0.23
	(2.08)	(2.58)	(0.12)
Grass carp	0.07	0.09	
	(0.07)	(0.09)	
Common carp	1.73	2.08	0.23
	(0.41)	(0.51)	(0.12)
Bighead carp	0.60	0.74	
	(0.39)	(0.49)	
River carpsucker	0.33	0.16	1.08
	(0.15)	(0.11)	(0.71)
Smallmouth buffalo	0.56	0.66	0.16
	(0.25)	(0.31)	(0.11)
Black buffalo	0.08	0.08	0.08
	(0.07)	(0.08)	(0.08)
Shorthead redhorse	0.22	0.25	0.08
	(0.11)	(0.13)	(0.08)
Channel catfish	0.18	0.17	0.24
	(0.09)	(0.11)	(0.13)
Flathead catfish	0.04		0.24
	(0.04)		(0.24)
White bass	4.69	4.95	3.56
	(1.53)	(1.87)	(1.66)
Yellow bass	0.10	0.08	0.16

	(0.07)	(0.08)	(0.11)
Green sunfish	0.07	0.08	
	(0.06)	(0.08)	
Warmouth	0.01		0.08
	(0.01)		(0.08)
Orangespotted sunfish	0.60	0.65	0.39
	(0.53)	(0.65)	(0.18)
Bluegill	3.92	4.21	2.67
	(0.71)	(0.86)	(0.82)
Largemouth bass	0.01		0.08
	(0.01)		(0.08)
White crappie	1.19	0.82	2.80
	(0.29)	(0.29)	(0.91)
Black crappie	5.31	2.60	17.07
	(1.08)	(0.72)	(5.05)
Sauger	0.18	0.16	0.24
	(0.09)	(0.11)	(0.12)
Freshwater drum	2.15	2.46	0.78
	(1.65)	(2.04)	(0.26)

Sampling strata:
BWCS - Backwater, contiguous, shoreline
IMPS - Impounded, shoreline

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Table 8.4 Mean catch-per-unit-effort and (standard error) for fish collected by mini fyke netting in Pool 26 of the Upper Mississippi River using stratified random sampling during 2002. The statistics under ALL pertain to unbiased means over all strata sampled by this gear (as indicated by nonmissing entries below and by Table 2.4). See Methods for definitions of catch-per-unit-effort and standard error. Scientific names for the species listed can be found in Table 1.

Common name	ALL	BWCS	IMPS	MCBU	MCBW	SCB
Spotted gar	0.00	0.09	0.17			
	(0.00)	(0.09)	(0.17)			
Shortnose gar	0.44	2.72	3.50	0.19	0.17	0.60
	(0.17)	(0.97)	(1.76)	(0.19)	(0.17)	(0.39)
Skipjack herring	0.02					0.06
	(0.02)					(0.06)
Gizzard shad	410.30	74.69	14.43	11.44	83.90	1398.52
	(397.33)	(70.08)	(8.07)	(9.61)	(80.60)	(1392.32)
Central stoneroller	0.13	0.09		0.15		0.08
	(0.10)	(0.09)		(0.15)		(0.08)
Red shiner	0.02		0.17			0.06

	(0.02)		(0.17)			(0.06)
Spotfin shiner	2.99	1.15	7.22	2.75	1.95	3.68
	(1.12)	(0.89)	(4.40)	(1.42)	(1.36)	(2.15)
Common carp	0.31	1.13	15.87			0.43
	(0.15)	(0.95)	(12.43)			(0.31)
Mississippi silvery minnow	2.37	0.42	5.33			8.05
	(2.28)	(0.34)	(5.12)			(7.98)
Silver carp	0.00	0.08				
	(0.00)	(0.08)				
Bighead carp	0.07	1.45	1.22			
	(0.05)	(1.19)	(0.63)			
Silver chub	0.00		0.17			
	(0.00)		(0.17)			
Golden shiner	0.00		0.34			
	(0.00)		(0.22)			
Emerald shiner	63.16	85.31	58.30	77.97	125.13	25.67
	(20.34)	(50.35)	(45.92)	(30.00)	(120.22)	(12.13)
River shiner	0.38	0.50	4.81	0.35		0.28
	(0.16)	(0.36)	(3.22)	(0.22)		(0.22)
Spottail shiner	0.03					0.12
	(0.03)					(0.12)
Silverband shiner	0.97	1.87				3.14

	(0.40)	(1.78)				(1.39)
Sand shiner	0.01	0.17				
	(0.01)	(0.17)				
Channel shiner	3.15	0.98	3.55	1.92	3.10	6.29
	(1.71)	(0.81)	(2.97)	(1.38)	(1.90)	(5.04)
Bluntnose minnow	0.03	0.08	1.21			0.06
	(0.02)	(0.08)	(1.01)			(0.06)
Bullhead minnow	0.83	2.08	12.34	0.88	1.45	0.18
	(0.40)	(1.12)	(5.96)	(0.59)	(1.45)	(0.13)
Creek chub	0.00	0.09				
	(0.00)	(0.09)				
River carpsucker	0.14		3.78	0.15		
	(0.11)		(3.58)	(0.15)		
Bigmouth buffalo	0.00	0.08	0.18			
	(0.00)	(0.08)	(0.18)			
Black buffalo	0.00	0.09				
	(0.00)	(0.09)				
Unidentified buffalo	0.82	11.38	19.75			0.67
	(0.35)	(6.96)	(14.71)			(0.60)
Channel catfish	1.17	0.41	0.51	1.41	0.37	0.73

	(0.31)	(0.23)	(0.35)	(0.45)	(0.23)	(0.34)
Freckled madtom	0.02					0.07
	(0.02)					(0.07)
Flathead catfish	0.09			0.14		
	(0.09)			(0.14)		
Western mosquitofish	2.24	19.35	2.92	2.07	0.45	0.24
	(1.46)	(12.45)	(2.92)	(2.07)	(0.45)	(0.19)
Brook silverside	0.04					0.15
	(0.04)					(0.15)
White bass	1.74	2.00	3.84	1.76	3.31	1.60
	(0.71)	(1.27)	(1.57)	(1.03)	(1.51)	(0.61)
Yellow bass	0.12			0.18		
	(0.12)			(0.18)		
Green sunfish	0.14	0.16	0.35		0.15	0.47
	(0.13)	(0.16)	(0.22)		(0.15)	(0.47)
Warmouth	0.02	0.40				
	(0.01)	(0.25)				
Orangespotted sunfish	0.23	4.43	1.74			0.13
	(0.05)	(1.07)	(0.65)			(0.09)
Bluegill	1.05	0.92	2.45	0.90	1.05	1.39
	(0.38)	(0.35)	(1.31)	(0.44)	(1.05)	(0.85)

Unidentified Lepomis	2.63	0.71	16.41			8.58
	(2.45)	(0.71)	(12.56)			(8.58)
Largemouth bass	0.03	0.34	0.17			0.07
	(0.02)	(0.34)	(0.17)			(0.07)
White crappie	0.35	0.42	4.23	0.32	0.19	0.31
	(0.15)	(0.23)	(2.94)	(0.20)	(0.19)	(0.19)
Black crappie	0.25	0.99	4.24			0.61
	(0.14)	(0.32)	(3.42)			(0.47)
Unidentified sunfish	0.01	0.25				
	(0.01)	(0.13)				
Logperch	0.00		0.17		0.15	
	(0.00)		(0.17)		(0.15)	
Sauger	0.11		0.18			0.37
	(0.09)		(0.18)			(0.31)
Freshwater drum	3.92	0.52	0.70	1.54	0.19	10.02
	(2.17)	(0.28)	(0.53)	(1.22)	(0.19)	(7.04)
Larval fish	0.15		0.52			0.50
	(0.11)		(0.52)			(0.39)

Sampling strata:
BWCS - Backwater, contiguous, shoreline
IMPS - Impounded, shoreline
MCBU - Main channel border, unstructured
MCBW - Main channel border, wing dam

SCB - Side channel border

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Table 10.4 Mean catch-per-unit-effort and (standard error) for fish collected by small hoop netting in Pool 26 of the Upper Mississippi River using stratified random sampling during 2002. The statistics under ALL pertain to unbiased means over all strata sampled by this gear (as indicated by nonmissing entries below and by Table 2.4). See Methods for definitions of catch-per-unit-effort and standard error. Scientific names for the species listed can be found in Table 1.

Common name	ALL	MCBU	MCBW	SCB
American eel	0.00		0.08	
	(0.00)		(0.08)	
Common carp	0.39	0.31	0.99	0.56
	(0.14)	(0.17)	(0.68)	(0.22)
Smallmouth buffalo	0.01	0.02	0.08	
	(0.01)	(0.02)	(0.08)	
Blue catfish	2.00	2.22	0.09	1.48
	(0.70)	(0.96)	(0.09)	(0.71)
Channel catfish	9.40	11.51	8.35	4.49
	(3.41)	(4.86)	(6.64)	(1.08)
Freckled madtom	0.01			0.02
	(0.01)			(0.02)

Flathead catfish	0.23	0.29	0.08	0.08
	(0.07)	(0.11)	(0.08)	(0.04)
White bass	0.15	0.02	0.08	0.45
	(0.12)	(0.02)	(0.08)	(0.40)
Bluegill	0.04			0.15
	(0.04)			(0.13)
Freshwater drum	0.24	0.27	0.09	0.18
	(0.06)	(0.08)	(0.09)	(0.07)

Sampling strata:
MCBU - Main channel border, unstructured
MCBW - Main channel border, wing dam
SCB - Side channel border

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Table 11.4 Mean catch-per-unit-effort and (standard error) for fish collected by large hoop netting in Pool 26 of the Upper Mississippi River using stratified random sampling during 2002. The statistics under ALL pertain to unbiased means over all strata sampled by this gear (as indicated by nonmissing entries below and by Table 2.4). See Methods for definitions of catch-per-unit-effort and standard error. Scientific names for the species listed can be found in Table 1.

Common name	ALL	MCBU	MCBW	SCB
Shortnose gar	0.06	0.07	0.09	0.05
	(0.04)	(0.05)	(0.09)	(0.05)
Grass carp	0.01	0.02		
	(0.01)	(0.02)		
Common carp	0.69	0.68	0.98	0.72
	(0.24)	(0.32)	(0.72)	(0.26)
Bighead carp	0.07	0.10		
	(0.06)	(0.09)		
River carpsucker	0.04	0.02		0.09
	(0.03)	(0.02)		(0.09)
Smallmouth buffalo	2.00	2.16	2.58	1.61

	(0.31)	(0.41)	(1.25)	(0.39)
Black buffalo	0.02	0.03	0.08	
	(0.02)	(0.03)	(0.08)	
Shorthead redhorse	0.04	0.03		0.05
	(0.02)	(0.02)		(0.04)
Blue catfish	0.60	0.77		0.20
	(0.15)	(0.20)		(0.13)
Channel catfish	1.30	1.65	0.35	0.48
	(0.41)	(0.58)	(0.26)	(0.12)
Flathead catfish	0.23	0.23	0.09	0.23
	(0.05)	(0.07)	(0.09)	(0.07)
White bass	0.09	0.05		0.20
	(0.06)	(0.05)		(0.16)
Bluegill	0.01			0.03
	(0.01)			(0.03)
Black crappie	0.01			0.03
	(0.01)			(0.03)
Freshwater drum	1.09	1.37	1.00	0.43
	(0.35)	(0.49)	(0.52)	(0.21)

Sampling strata:
MCBU - Main channel border, unstructured
MCBW - Main channel border, wing dam

SCB - Side channel border

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Table 21.4 Mean catch-per-unit-effort and (standard error) for fish collected by bottom trawling in Pool 26 of the Upper Mississippi River using fixed-site sampling during 2002. See Methods for definitions of catch-per-unit-effort and standard error. Scientific names for the species listed can be found in Table 1.

Common name	TWZ
Shovelnose sturgeon	0.67
	(0.31)
Gizzard shad	0.08
	(0.08)
Silver chub	0.58
	(0.36)
Emerald shiner	0.17
	(0.11)
River carpsucker	0.08
	(0.08)
Blue catfish	7.67
	(2.34)
Channel catfish	2.83

	(2.39)
Freshwater drum	0.42
	(0.23)

Sampling stratum:
TWZ - Tailwater

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Pool 26 Length Distributions

Length distributions (length) as a percentage of catch (percent) for selected species of interest collected by the Long Term Resource Monitoring Program. Fish species are listed in phylogenetical order following Robins et al. (1991) nomenclature. 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 because of local interest, while others were omitted (reach dependent). Scientific names for the species listed can be found in Table 1.

Figure*	Species	Method
2.4	Gizzard shad	Electrofishing
3.4	Common carp	Electrofishing
4.4	Smallmouth buffalo	Electrofishing
5.4	Smallmouth buffalo	Hoop netting
6.4	Channel catfish	Electrofishing
7.4	Channel catfish	Hoop netting
10.4	White bass	Electrofishing
11.4	Bluegill	Electrofishing
12.4	Bluegill	Fyke netting
13.4	Largemouth bass	Electrofishing
14.4	White crappie	Fyke netting
15.4	Black crappie	Fyke netting
16.4	Sauger	Electrofishing
18.4	Freshwater drum	Electrofishing

19.4	Freshwater drum	Fyke netting

*Figure numbers are not always in sequence because some species were not caught in some study areas. Figure numbers for each species and gear type are consistent among study areas.

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Last updated on August 12, 2004

Figure 2.4 Length distributions (*length*) as a percentage of catch (*percent*) for gizzard shad (*Dorosoma cepedianum)* collected by electrofishing in Pool 26 of the Upper Mississippi River during 2002. Click here to view this species' length distributions in all study reaches.

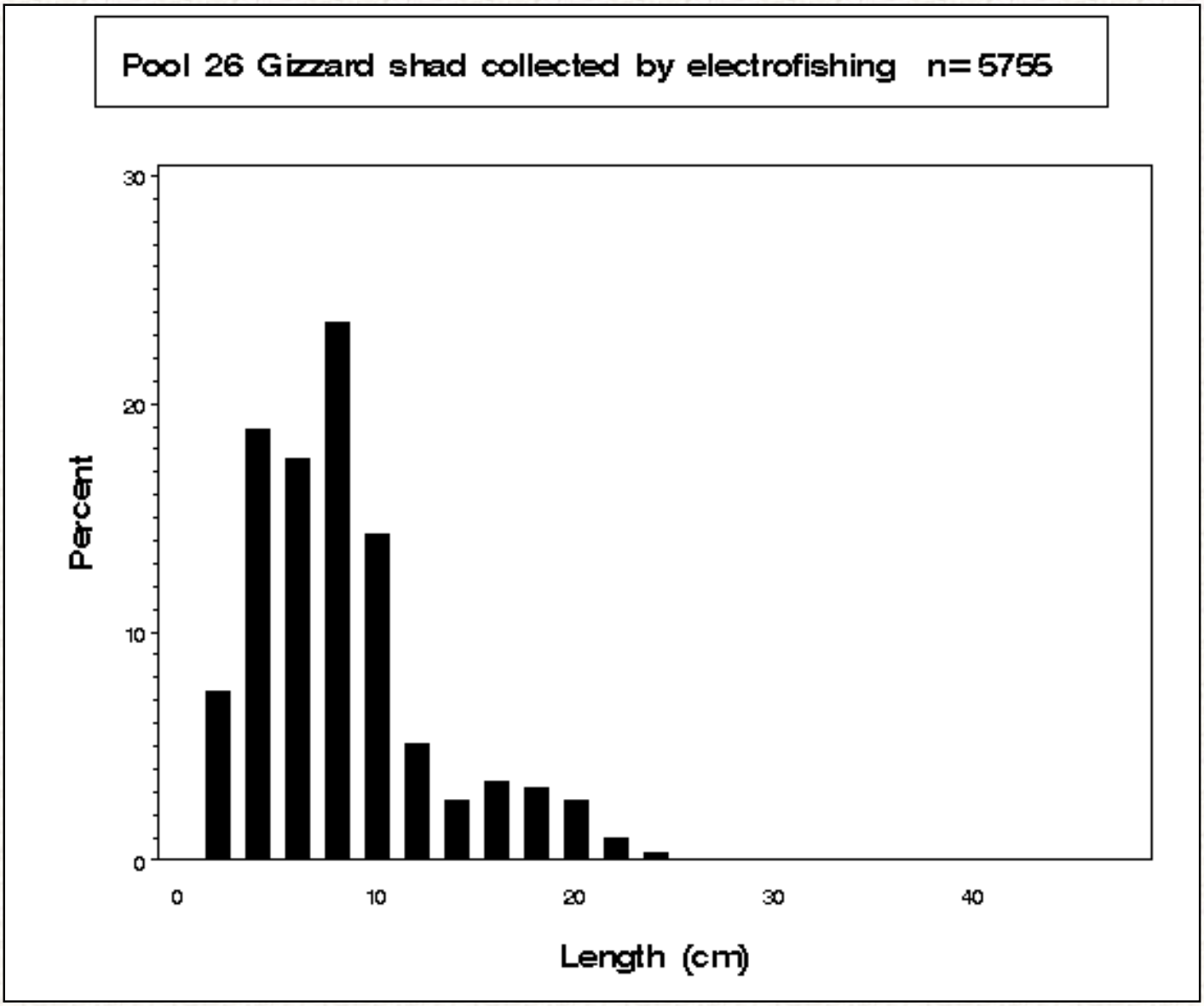

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Figure 3.4 Length distributions (*length*) as a percentage of catch (*percent*) for common carp (*Cyprinus carpio)* collected by electrofishing in Pool 26 of the Upper Mississippi River during 2002. Click here to view this species' length distributions in all study reaches.

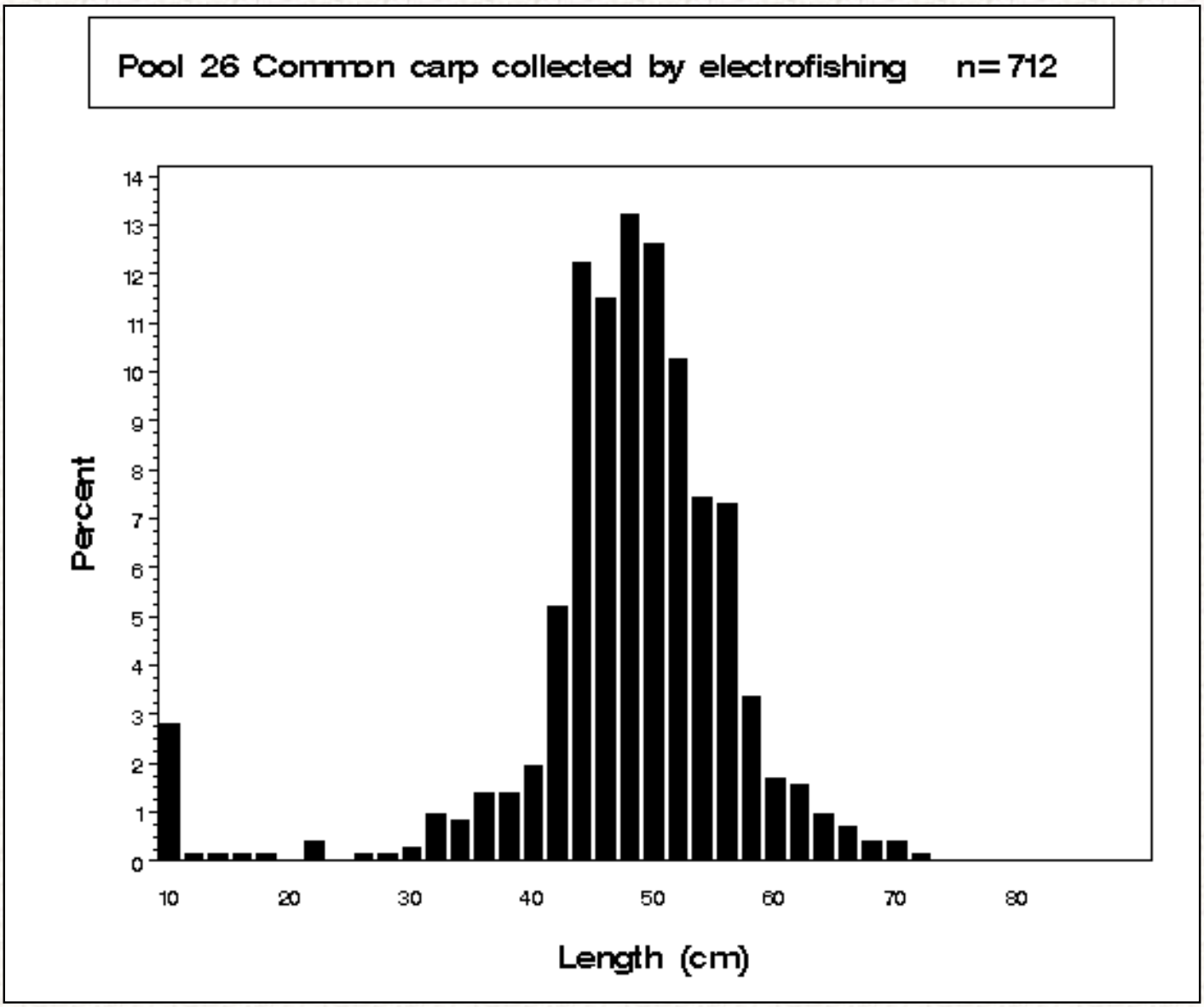

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Figure 4.4 Length distributions (*length*) as a percentage of catch (*percent*) for smallmouth buffalo (*Ictiobus bubalus)* collected by electrofishing in Pool 26 of the Upper Mississippi River during 2002. Click here to view this species' length distributions in all study reaches.

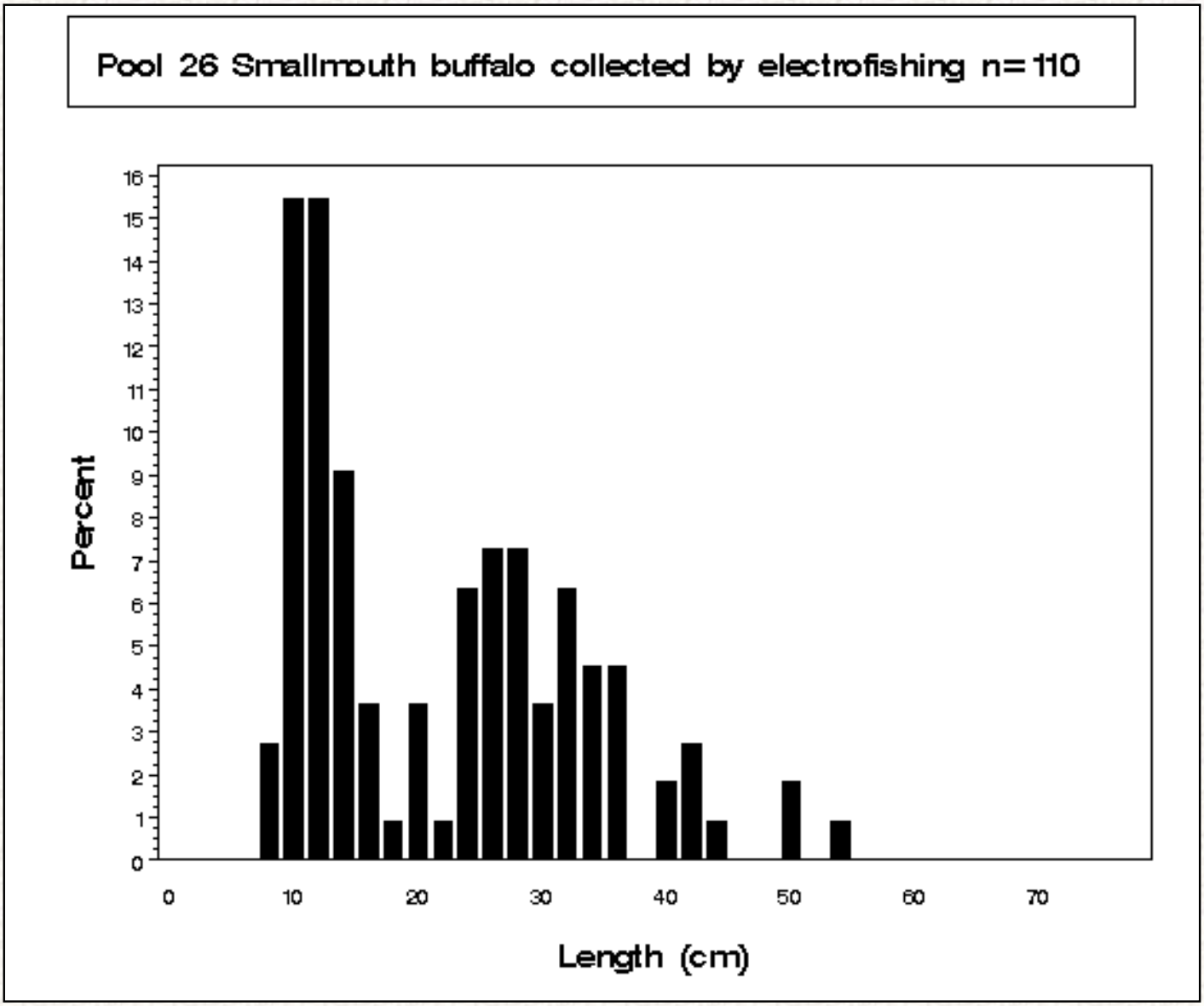

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Figure 5.4 Length distributions (*length*) as a percentage of catch (*percent*) for smallmouth buffalo (*Ictiobus bubalus)* collected by hoop netting in Pool 26 of the Upper Mississippi River during 2002. Click here to view this species' length distributions in all study reaches.

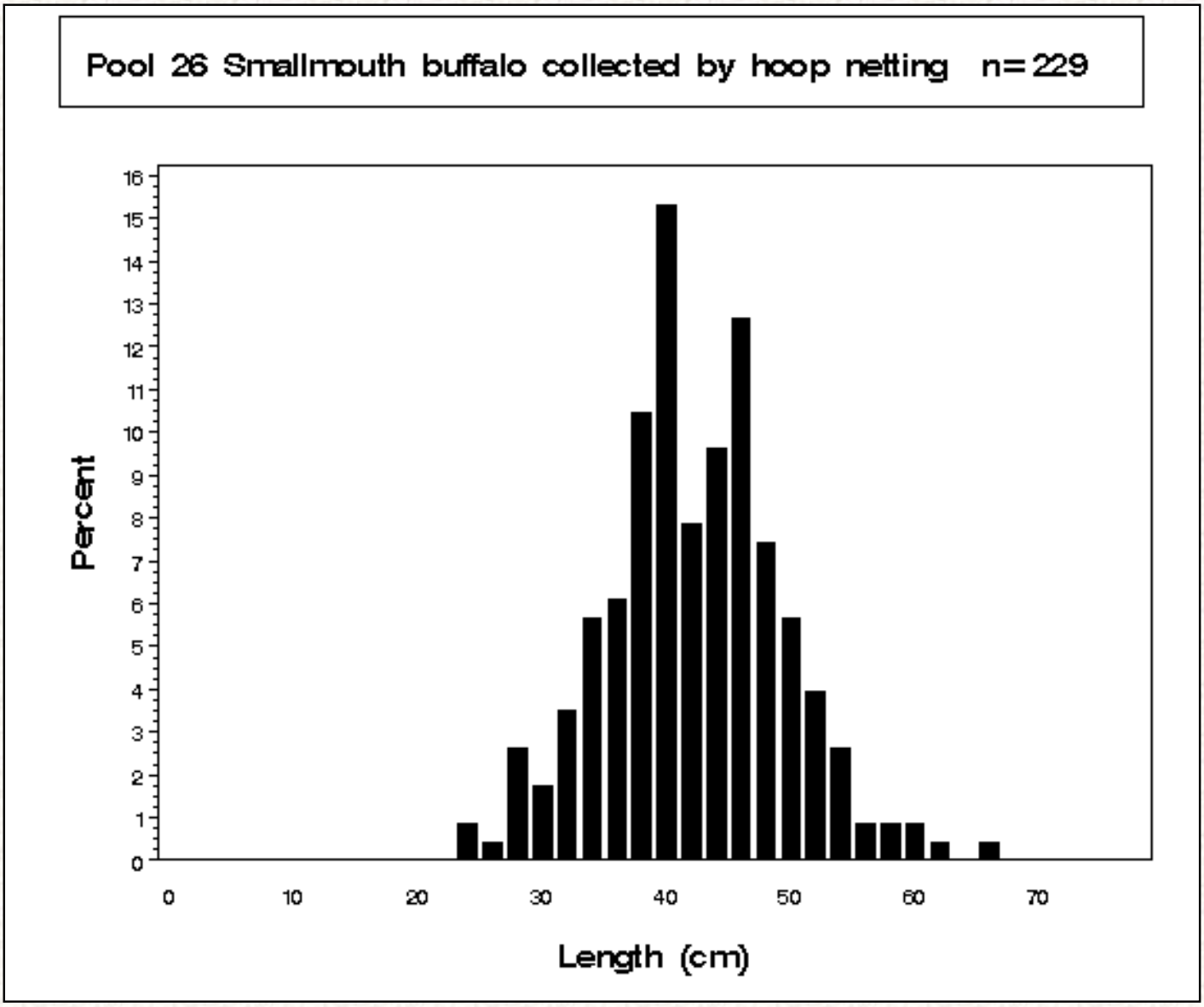

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Figure 6.4 Length distributions (*length*) as a percentage of catch (*percent*) for channel catfish (*Ictalurus punctatus)* collected by electrofishing in Pool 26 of the Upper Mississippi River during 2002. Click here to view this species' length distributions in all study reaches.

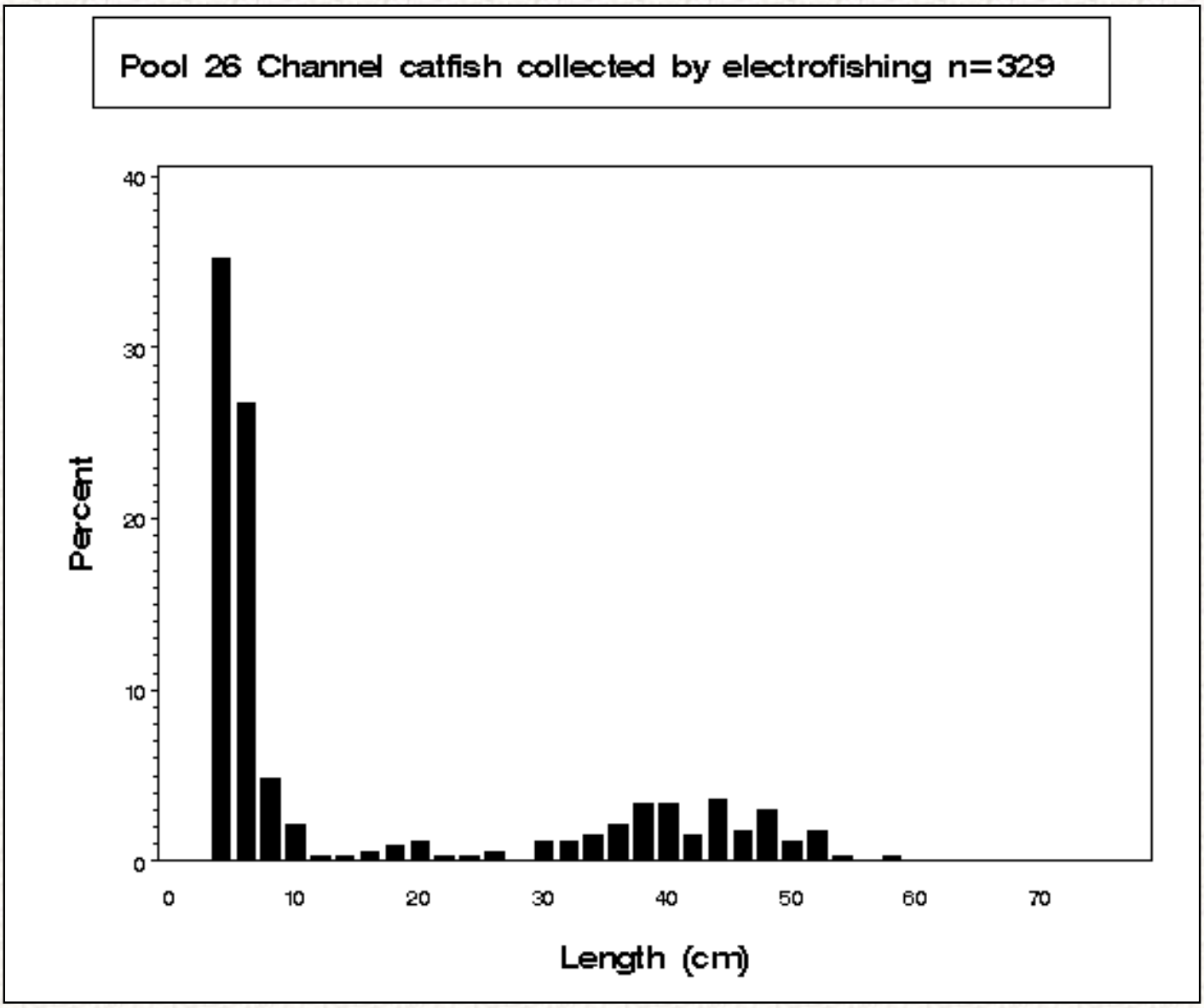

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Figure 7.4 Length distributions (*length*) as a percentage of catch (*percent*) for channel catfish (*Ictalurus punctatus)* collected by hoop netting in Pool 26 of the Upper Mississippi River during 2002. Click here to view this species' length distributions in all study reaches.

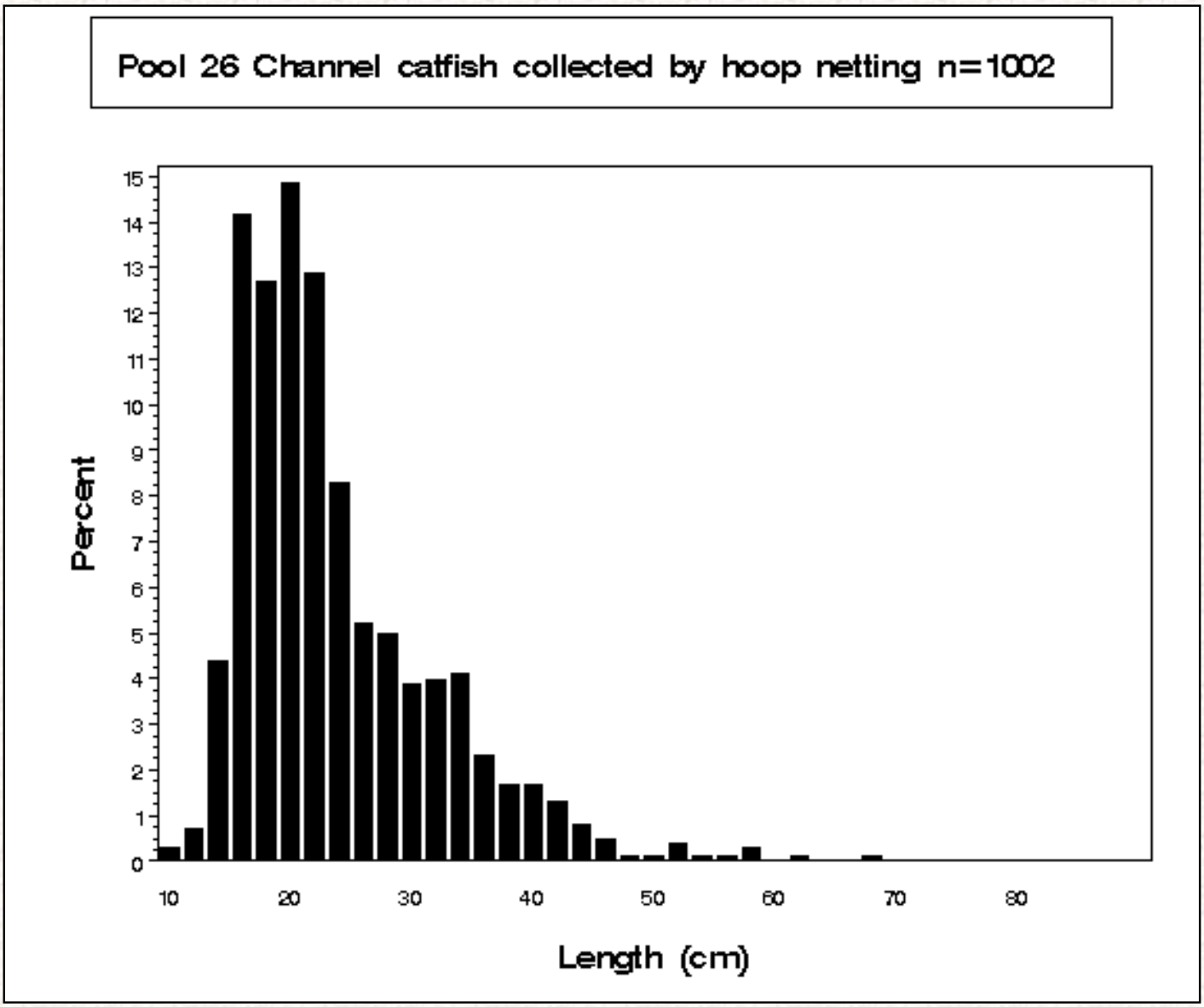

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Figure 10.4 Length distributions (*length*) as a percentage of catch (*percent*) for white bass (*Morone chrysops)* collected by electrofishing in Pool 26 of the Upper Mississippi River during 2002. Click here to view this species' length distributions in all study reaches.

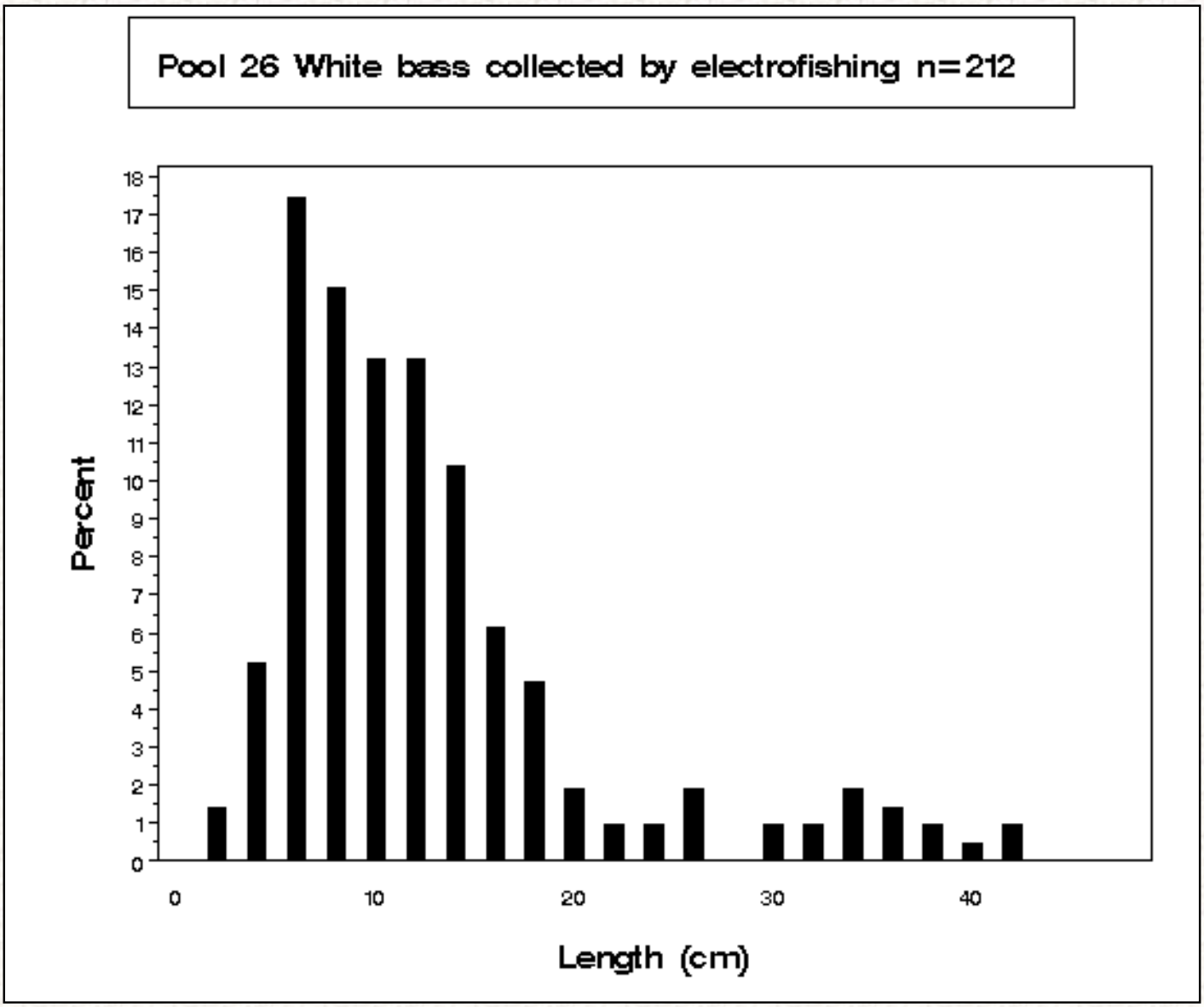

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Figure 11.4 Length distributions (*length*) as a percentage of catch (*percent*) for bluegill (*Lepomis macrochirus*) collected by electrofishing in Pool 26 of the Upper Mississippi River during 2002. Click here to view this species' length distributions in all study reaches.

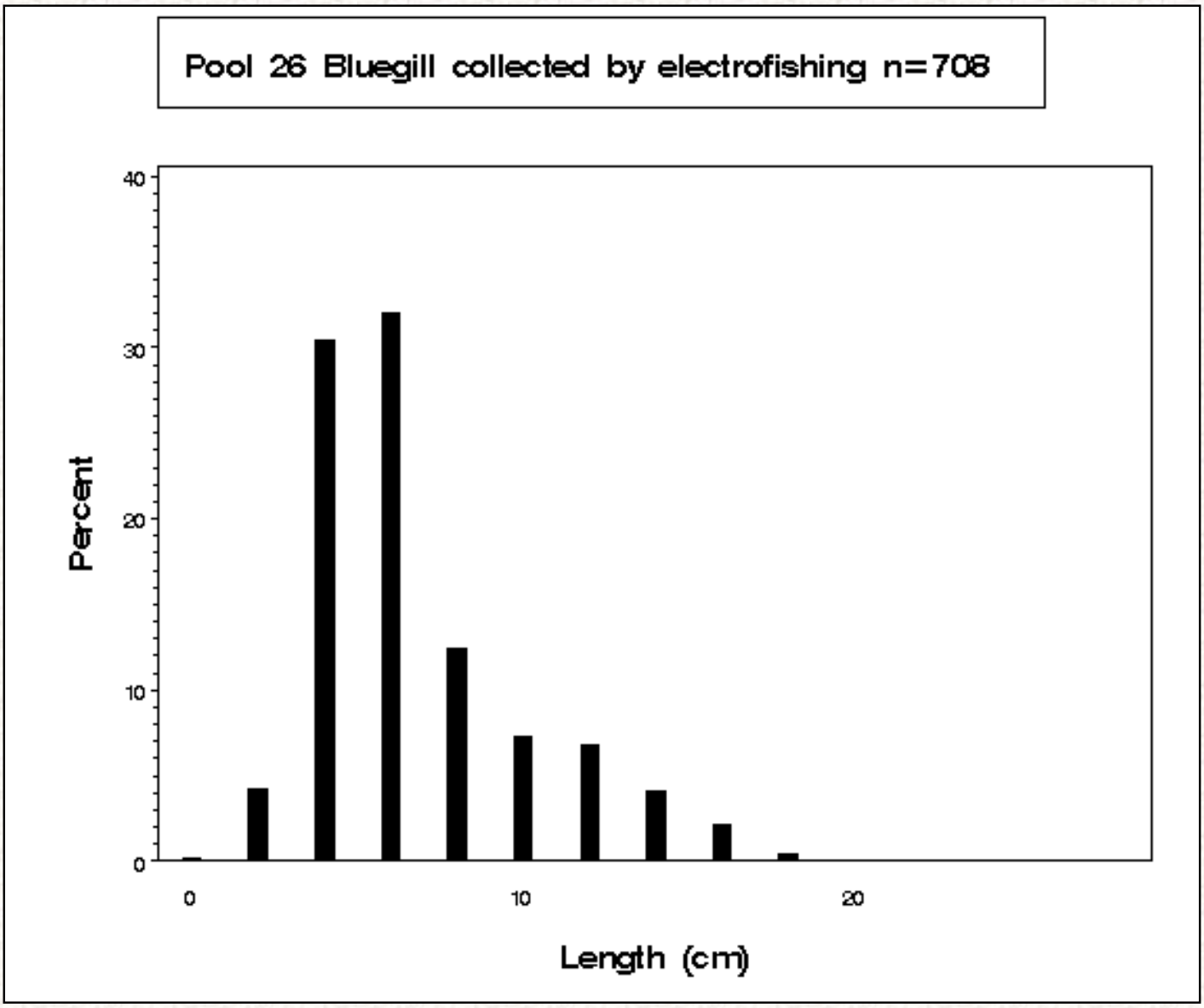

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Figure 12.4 Length distributions (*length*) as a percentage of catch (*percent*) for bluegill (*Lepomis macrochirus*) collected by fyke netting in Pool 26 of the Upper Mississippi River during 2002. Click here to view this species' length distributions in all study reaches.

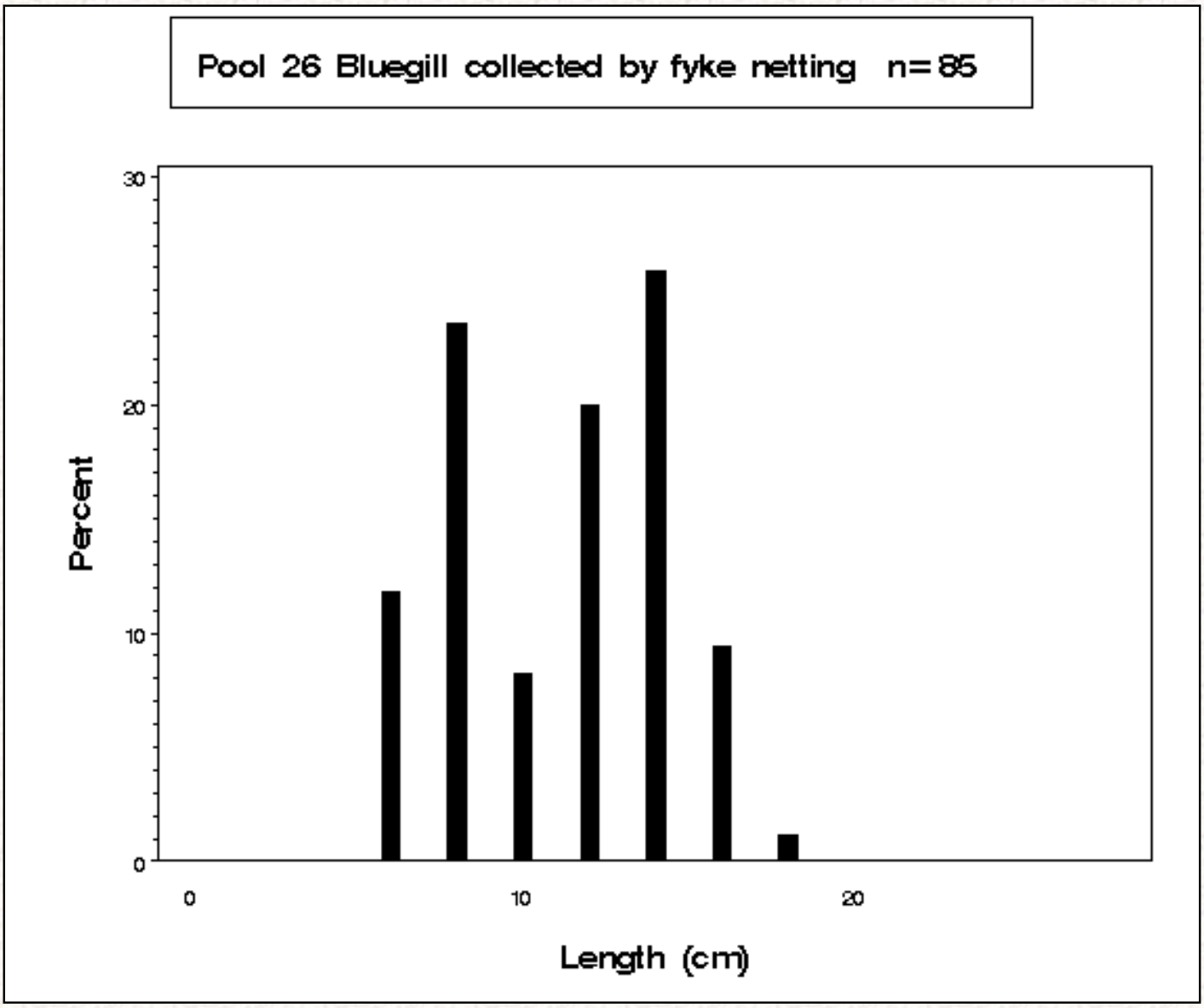

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Figure 13.4 Length distributions (*length*) as a percentage of catch (*percent*) for largemouth bass (*Micropterus salmoides)* collected by electrofishing in Pool 26 of the Upper Mississippi River during 2002. Click here to view this species' length distributions in all study reaches.

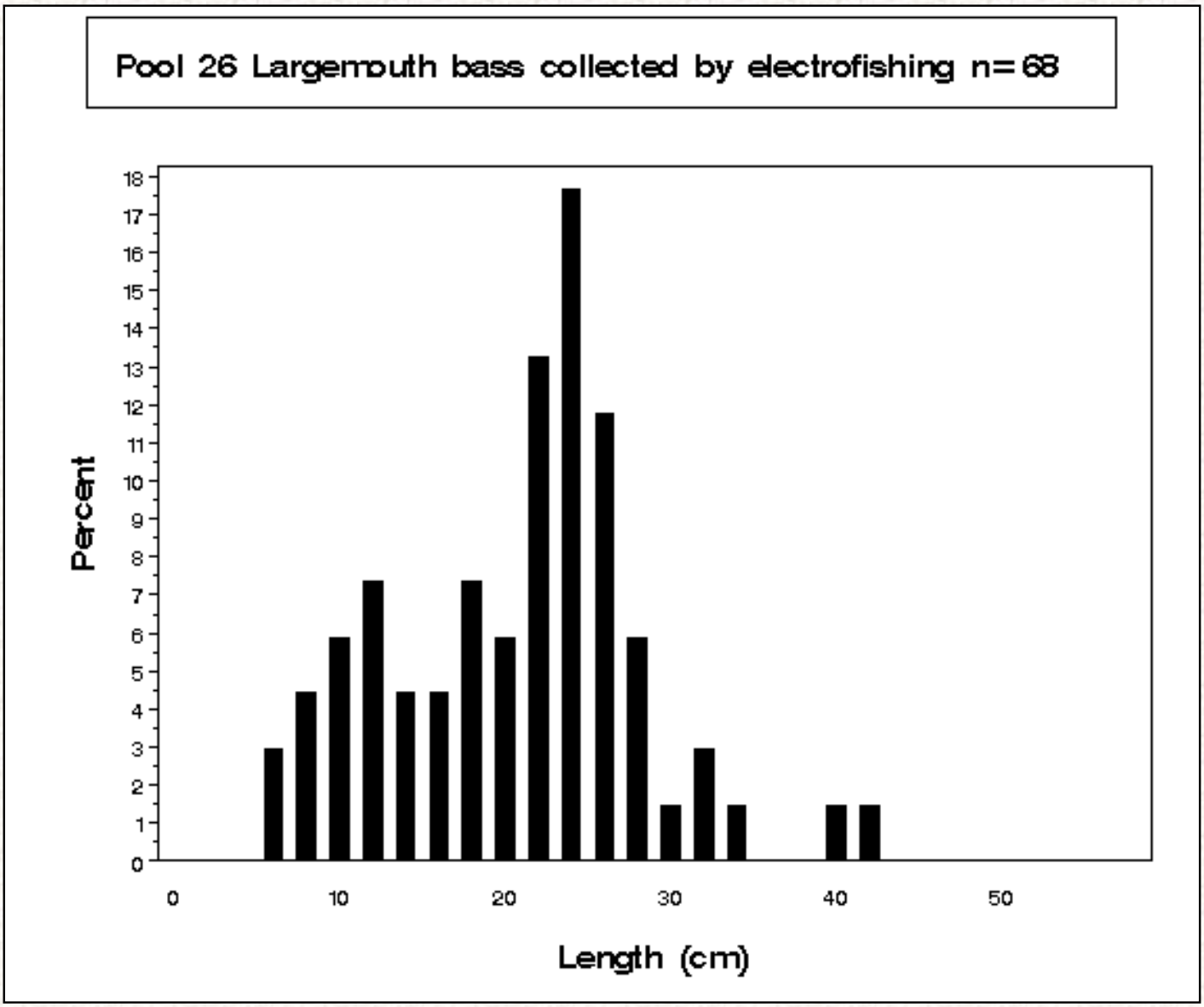

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Figure 14.4 Length distributions (*length*) as a percentage of catch (*percent*) for white crappie (*Pomoxis annularius)* collected by fyke netting in Pool 26 of the Upper Mississippi River during 2002. Click here to view this species' length distributions in all study reaches.

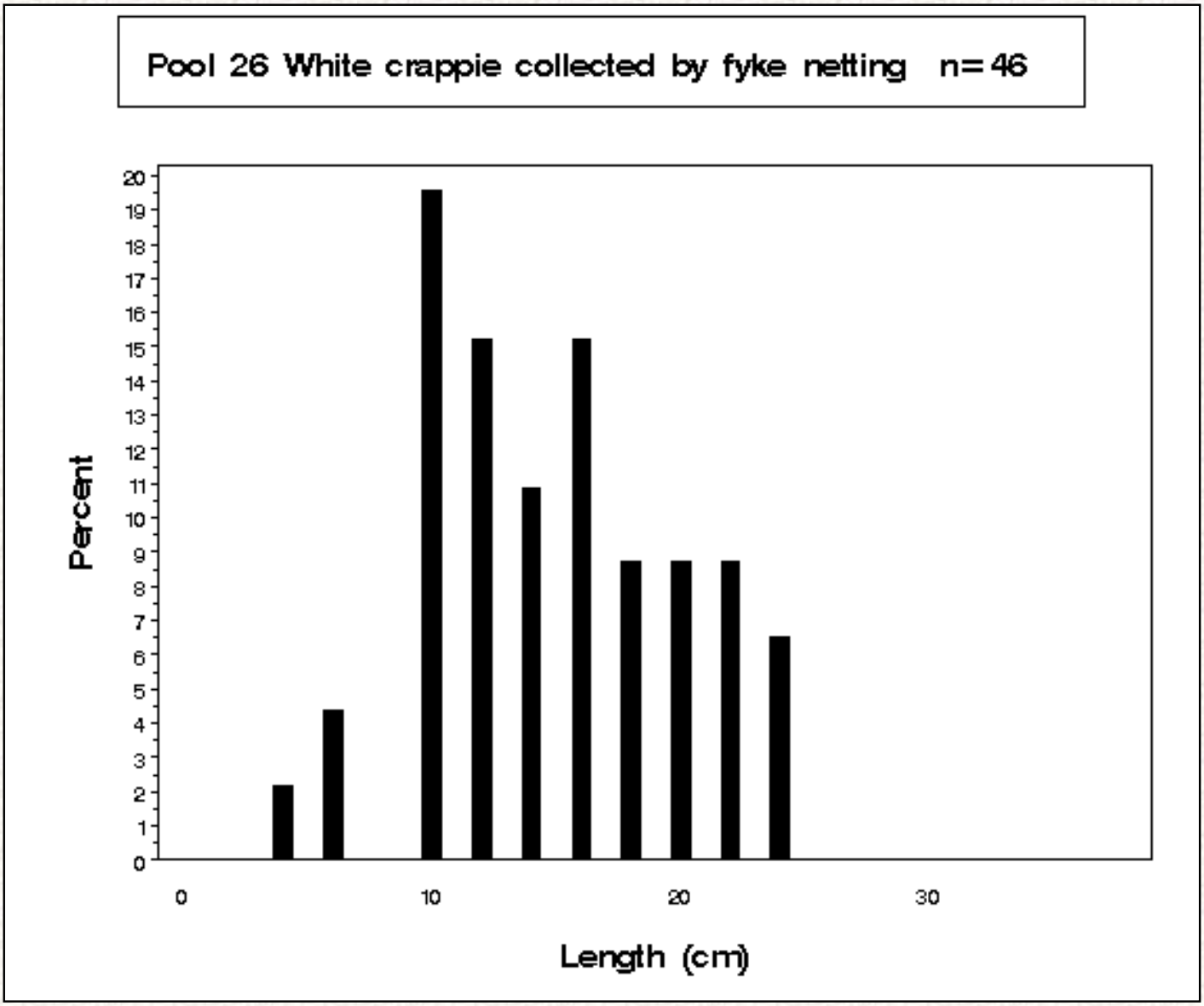

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Figure 15.4 Length distributions (*length*) as a percentage of catch (*percent*) for black crappie (*Pomoxis nigromaculatus*) collected by fyke netting in Pool 26 of the Upper Mississippi River during 2002. Click here to view this species' length distributions in all study reaches.

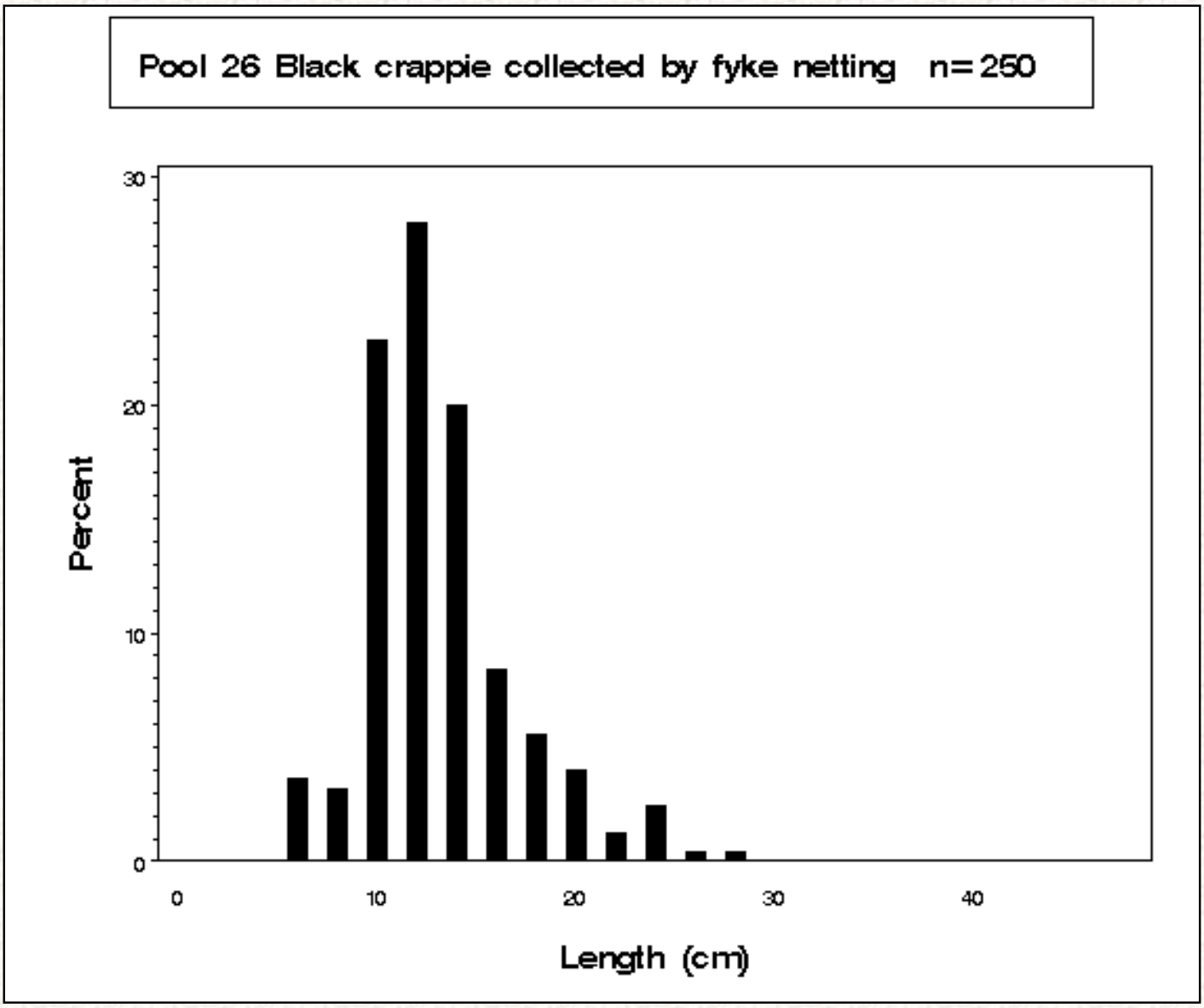

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Figure 16.4 Length distributions (*length*) as a percentage of catch (*percent*) for sauger (*Stizostedion canadense)* collected by electrofishing in Pool 26 of the Upper Mississippi River during 2002. Click here to view this species' length distributions in all study reaches.

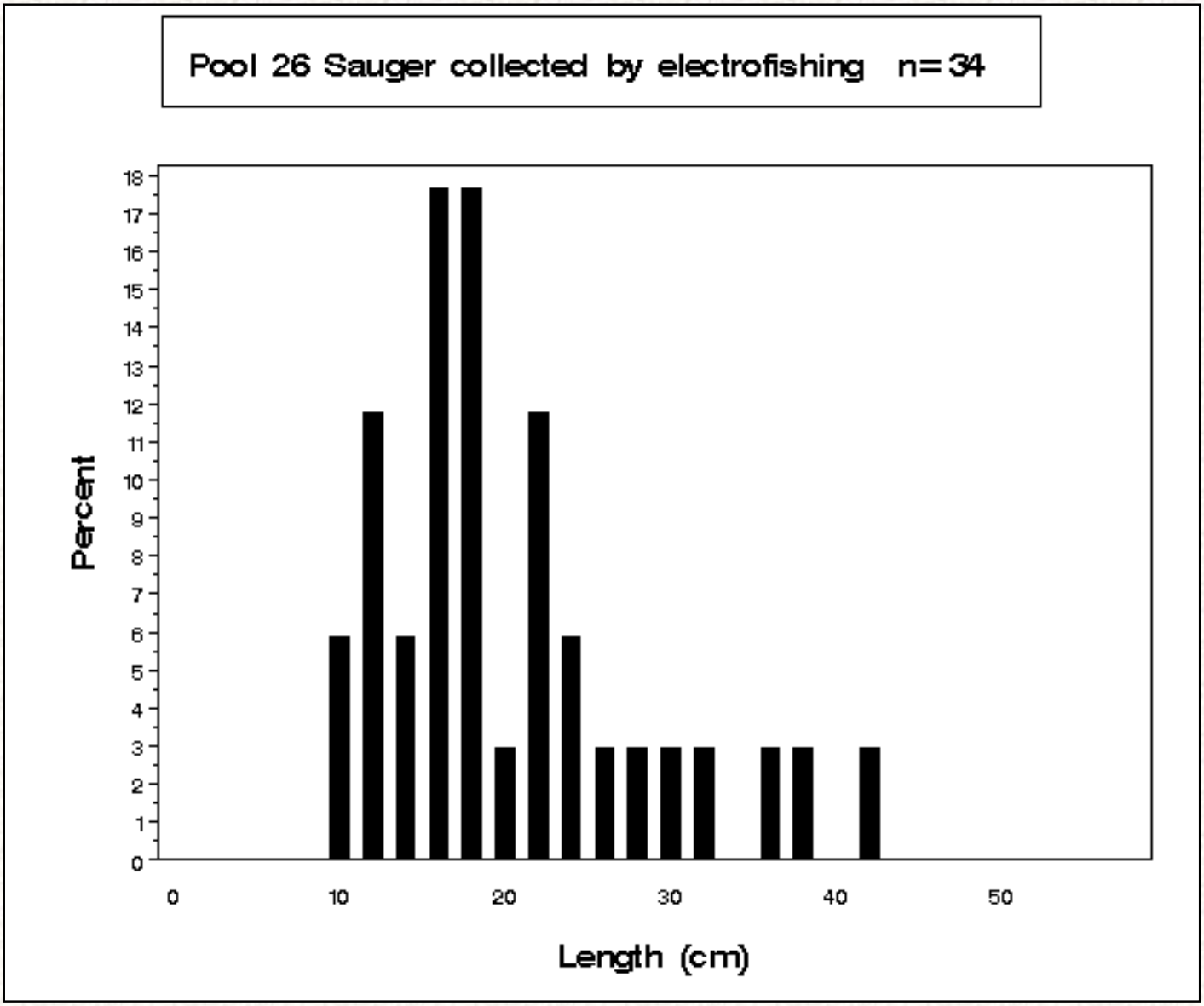

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Figure 18.4 Length distributions (*length*) as a percentage of catch (*percent*) for freshwater drum (*Aplodinotus grunniens*) collected by electrofishing in Pool 26 of the Upper Mississippi River during 2002. Click here to view this species' length distributions in all study reaches.

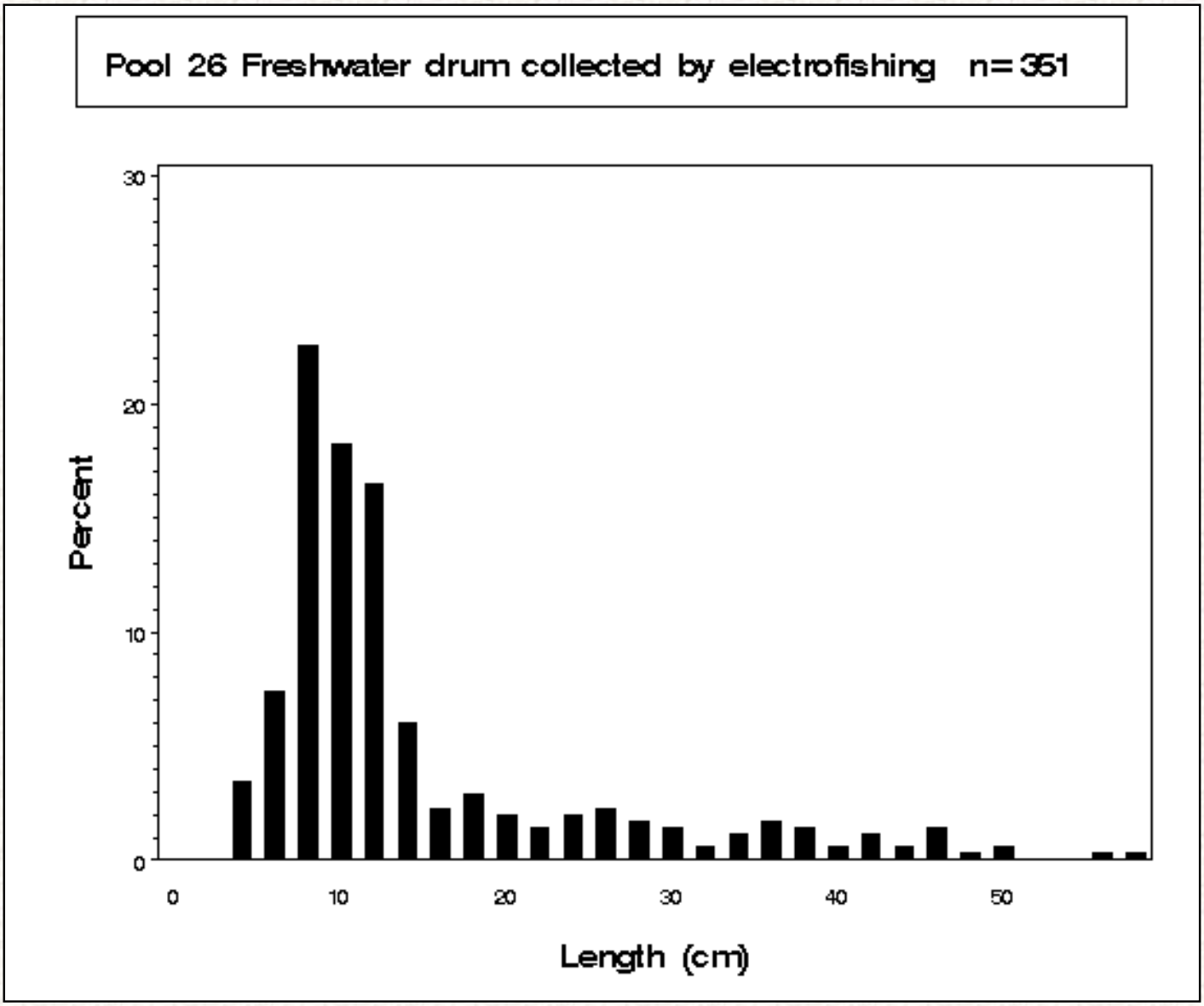

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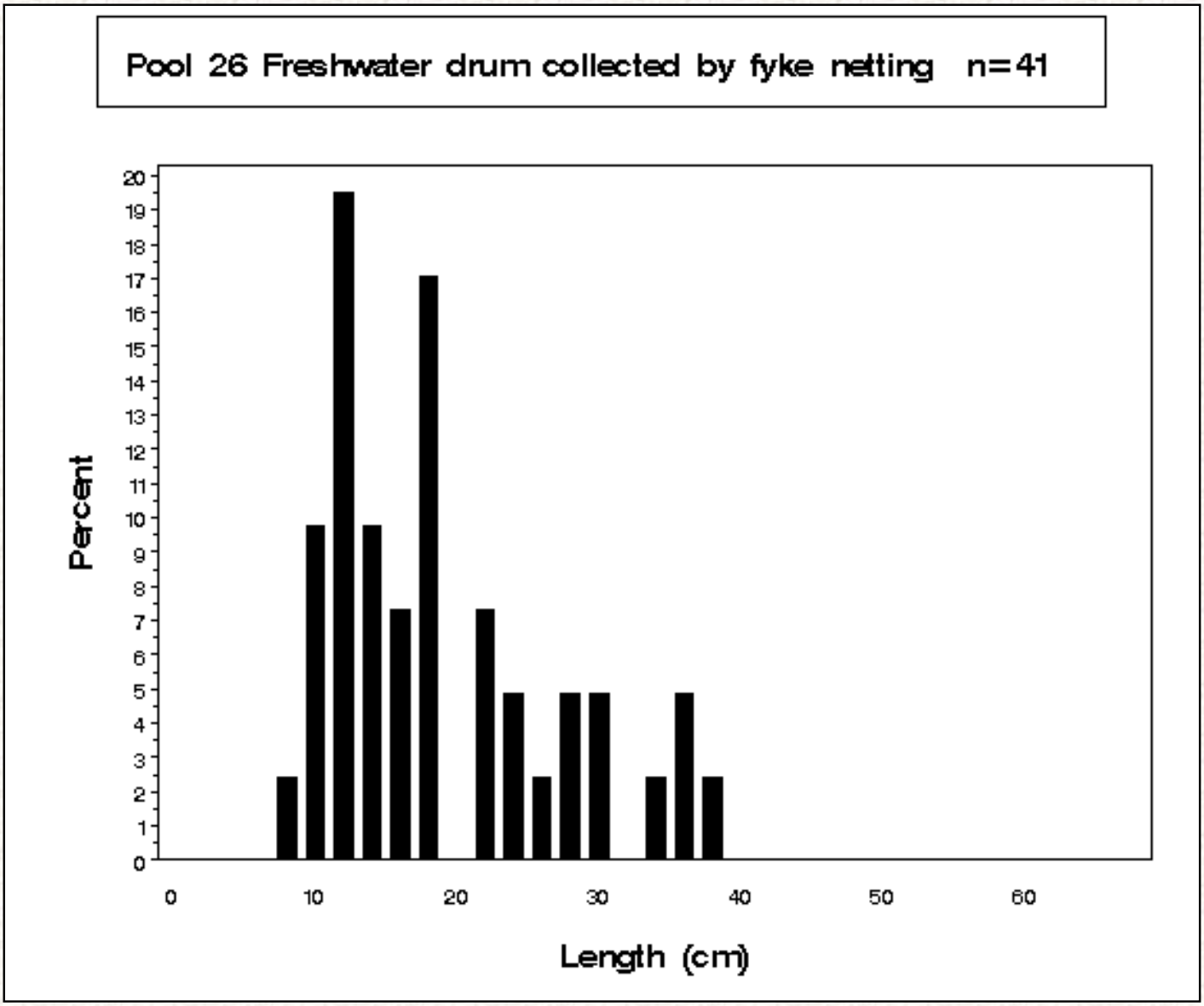
Figure 19.4 Length distributions (*length*) as a percentage of catch (*percent*) for freshwater drum (*Aplodinotus grunniens)* collected by fyke netting in Pool 26 of the Upper Mississippi River during 2002. Click here to view this species' length distributions in all study reaches.



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Open River, Upper Mississippi River 2002 Fish Collection Summary

This report is a bullet summary of the Long Term Resource Monitoring Program's (LTRMP) fish collection efforts conducted by the Open River Field Station on the Open River, Upper Mississippi River during 2002. Information on changes in fish catch over all years can be obtained from the Graphical Fish Database Browser.

- 247 fish collections were conducted using five gear types (Table 2.5).
- Water levels did not affect sample allocations (Table 2.5; Figure 1.5).
- Of the 247 fish collections, 202 were from randomly selected sites. Thirty collections were from tributary fixed sites and 15 were from main channel border, unstructured fixed sites.
- Side channel border; main channel border, unstructured; and main channel border wing dam strata received the most sampling effort. Tributary strata received the least amount of sampling effort (Table 2.5).
- 11,804 fish were collected representing 63 species and 1 hybrid (Table 3.5). This total includes 27 unidentified buffalo (*Ictiobus* sp.) less than 150 mm long, 7 unidentified Lepomis (*Lepomis* sp.), and 116 unidentified larval fish (Unidentified).
- Historically, 129 fish species have been collected from the Open River (Pitlo et al. 1995).
- The LTRMP species total for Open River before the 2002 season was 105. One new species was collected during 2002: Blackside darter (5; Table 3.5).
- Species captured that are Missouri-listed species of special concern included: Mississippi silvery minnow (7), pugnose minnow (1), blue sucker (11), and river

darter (4; Table 3.5).

- Three species of Asian carp were captured and included grass carp (6), bighead carp (84), and silver carp (13). These are exotic fish species that have been accidentally released into the Mississippi River system.
- Mean catch-per-unit-effort and standard effort for fish collected by gears using stratified- random (Tables 4.5-11.5) and fixed-site sampling (Tables 14.5-19.5) for each stratum are shown.
- Length distributions for selected species of fish are shown in Figures 2.5 to 19.5 .

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Table 2.5 Allocation of fish sampling effort among strata in the Open River of the Upper Mississippi River during 2002. 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	5	4			2		19
Fyke net			4	1				2		7
Large hoop net			8	5	4			2		19
Small hoop net			8	5	4			2		19
Mini fyke net			8	5	4			2		19
Subtotal	**0**	**0**	**36**	**21**	**16**	**0**	**0**	**10**	**0**	**83**

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			8	5	3			2		18
Small hoop net			8	5	3			2		18
Mini fyke net			8	5	4			2		19
Subtotal	**0**	**0**	**36**	**21**	**14**	**0**	**0**	**10**	**0**	**81**

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 hoop net			8	5	4			2		19
Mini fyke net			8	5	4			2		19
Subtotal	**0**	**0**	**36**	**21**	**16**	**0**	**0**	**10**	**0**	**83**
Total	**0**	**0**	**108**	**63**	**46**	**0**	**0**	**30**	**0**	**247**

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

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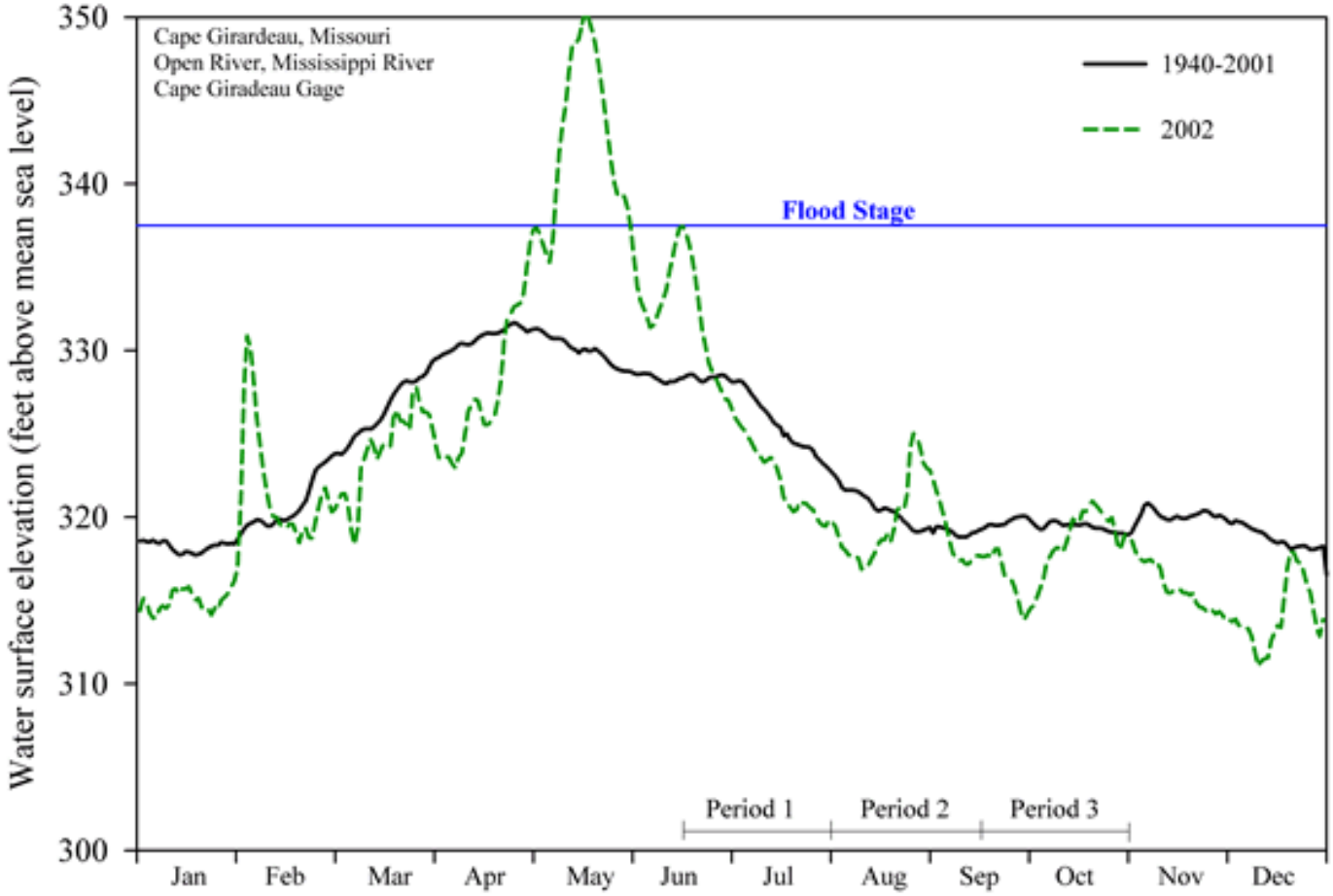

Figure 1.5. Daily water surface elevation from Cape Girardeau Gage for the Mississippi River, Open River, during 2002 and mean elevation since 1940. The U.S. Army Corps of Engineers discharge data were obtained in accordance with Upper Midwest Environmental Sciences Center established procedures (Wlosinski et al. 1995).

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Table 3.5 Total catches, by gear type, of fish collected in the Open River of the Upper Mississippi River during 2002. See Table 2.5 for the list of sampling gears actually deployed in this study reach.

Species	Common name	Scientific name	D	F	M	HS	HL	TOTAL
1	Chestnut lamprey	*Ichthyomyzon castaneus*	5	-	-	-	-	5
2	Shovelnose sturgeon	*Scaphirhynchus platorynchus*	-	-	-	-	4	4
3	Spotted gar	*Lepisosteus oculatus*	4	1	-	-	-	5
4	Longnose gar	*L. osseus*	12	2	6	-	1	21
5	Shortnose gar	*L. platostomus*	46	33	8	5	4	96
6	Bowfin	*Amia calva*	1	-	-	-	-	1
7	Goldeye	*Hiodon alosoides*	79	-	19	-	-	98
8	American eel	*Anguilla rostrata*	1	-	-	-	-	1
9	Skipjack herring	*Alosa chrysochloris*	44	-	7	-	1	52
10	Gizzard shad	*Dorosoma cepedianum*	4064	13	1292	-	2	5371
11	Threadfin shad	*D. petenense*	14	-	-	-	-	14
12	Grass carp	*Ctenopharyngodon idella*	2	-	-	1	3	6

13	Red shiner	*Cyprinella lutrensis*	156	-	48	-	-	204
14	Spotfin shiner	*C. spiloptera*	2	-	-	-	-	2
15	Blacktail shiner	*C. venusta*	9	-	-	-	-	9
16	Common carp	*Cyprinus carpio*	255	13	8	105	156	537
17	Mississippi silvery minnow	*Hybognathus nuchalis*	5	-	2	-	-	7
18	Silver carp	*Hypopthalmichthys molitrix*	4	-	8	-	1	13
19	Bighead carp	*H. nobilis*	76	-	6	-	2	84
20	Speckled chub	*Macrhybopsis aestivalis*	-	-	5	-	-	5
21	Emerald shiner	*Notropis atherinoides*	191	-	90	-	-	281
22	River shiner	*N. blennius*	12	-	12	-	-	24
23	Silverband shiner	*N. shumardi*	11	-	23	-	-	34
24	Channel shiner	*N. wickliffi*	33	-	436	-	-	469
25	Pugnose minnow	*Opsopoeodus emiliae*	1	-	-	-	-	1
26	Bluntnose minnow	*Pimephales notatus*	-	-	3	-	-	3
27	Bullhead minnow	*P. vigilax*	6	-	10	-	-	16
28	River carpsucker	*Carpiodes carpio*	54	5	2	-	10	71
29	Blue sucker	*Cycleptus elongatus*	9	-	2	-	-	11
30	Smallmouth buffalo	*Ictiobus bubalus*	39	1	-	4	131	175
31	Bigmouth buffalo	*I. cyprinellus*	11	1	-	-	2	14

32	Black buffalo	*I. niger*	15	-	-	3	33	51
33	Unidentified buffalo	*Ictiobus* sp.	1	-	26	-	-	27
34	Shorthead redhorse	*Moxostoma macrolepidotum*	2	-	-	-	-	2
35	Blue catfish	*Ictalurus furcatus*	16	1	2	68	18	105
36	Channel catfish	*I. punctatus*	96	10	77	959	83	1225
37	Stonecat	*Noturus flavus*	-	-	1	-	-	1
38	Freckled madtom	*N. nocturnus*	5	-	1	-	-	6
39	Flathead catfish	*Pylodictis olivaris*	51	2	2	13	16	84
40	Pirate perch	*Aphredoderus sayanus*	1	-	-	-	-	1
41	Blackstripe topminnow	*Fundulus notatus*	6	-	-	-	-	6
42	Blackspotted topminnow	*F. olivaceus*	2	-	-	-	-	2
43	Western mosquitofish	*Gambusia affinis*	15	-	2	-	-	17
44	Brook silverside	*Labidesthes sicculus*	13	-	1	-	-	14
45	Inland silverside	*Menidia beryllina*	1	-	-	-	-	1
46	White bass	*Morone chrysops*	103	9	235	3	4	354
47	Striped x white bass	*M. saxatilis x chrysops*	-	-	1	-	-	1
48	Green sunfish	*Lepomis cyanellus*	72	-	269	-	-	341
49	Warmouth	*L. gulosus*	3	-	5	-	-	8
50	Orangespotted sunfish	*L. humilis*	34	-	71	-	-	105

51	Bluegill	*L. macrochirus*	64	5	186	-	-	255
52	Unidentified Lepomis	*Lepomis* sp.	-	-	7	-	-	7
53	Spotted bass	*Micropterus punctulatus*	26	-	-	-	1	27
54	Largemouth bass	*M. salmoides*	4	-	-	-	-	4
55	White crappie	*Pomoxis annularis*	3	3	47	-	-	53
56	Black crappie	*P. nigromaculatus*	8	6	5	4	2	25
57	Mud darter	*Etheostoma asprigene*	1	-	1	-	-	2
58	Johnny darter	*E. nigrum*	-	-	9	-	-	9
59	Logperch	*Percina caprodes*	10	-	23	-	-	33
60	Blackside darter	*P. maculata*	-	-	5	-	-	5
61	Dusky darter	*P. sciera*	1	-	4	-	-	5
62	River darter	*P. shumardi*	-	-	4	-	-	4
63	Sauger	*Stizostedion canadense*	6	2	5	2	-	15
64	Freshwater drum	*Aplodinotus grunniens*	113	56	1064	4	22	1259
65	Larval fish	Unidentified	1	-	115	-	-	116
			5819	**163**	**4155**	**1171**	**496**	**11804**

Sampling gears:
D - Day electrofishing
F - Fyke netting
M - Mini fyke netting
HS - Small hoop netting
HL - Large hoop netting

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Open River Tables

Table*	Stratified Random Sampling
4.5	Mean catch-per-unit-effort for fish collected by day electrofishing
6.5	Mean catch-per-unit-effort for fish collected by fyke netting
8.5	Mean catch-per-unit-effort for fish collected by mini fyke netting
10.5	Mean catch-per-unit-effort for fish collected by small hoop netting
11.5	Mean catch-per-unit-effort for fish collected by large hoop netting
	Fixed-site Sampling
14.5	Mean catch-per-unit-effort for fish collected by day electrofishing
16.5	Mean catch-per-unit-effort for fish collected by fyke netting
17.5	Mean catch-per-unit-effort for fish collected by mini fyke netting
18.5	Mean catch-per-unit-effort for fish collected by small hoop netting
19.5	Mean catch-per-unit-effort for fish collected by large hoop netting

*Table numbers are not always in sequence because some gears were not fished in some study areas. Table numbers for each gear type are consistent among study areas.

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Last updated on August 16, 2004

Table 4.5 Mean catch-per-unit-effort and (standard error) for fish collected by day electrofishing in Open River of the Upper Mississippi River using stratified random sampling during 2002. The statistics under ALL pertain to unbiased means over all strata sampled by this gear (as indicated by nonmissing entries below and by Table 2.5). See Methods for definitions of catch-per-unit-effort and standard error. Scientific names for the species listed can be found in Table 1.

Common name	ALL	MCBU	MCBW	SCB
Chestnut lamprey	0.08	0.08	0.42	
	(0.07)	(0.08)	(0.29)	
Longnose gar	0.17	0.17	0.17	0.21
	(0.10)	(0.11)	(0.17)	(0.10)
Shortnose gar	1.45	1.58	0.29	0.58
	(0.38)	(0.43)	(0.16)	(0.22)
Goldeye	2.45	2.58	0.50	1.63
	(1.02)	(1.16)	(0.42)	(1.04)
American eel	0.00		0.08	
	(0.00)		(0.08)	
Skipjack herring	0.98	1.00	0.08	0.88
	(0.34)	(0.39)	(0.08)	(0.48)

Gizzard shad	60.74	58.83	60.85	74.73
	(13.99)	(15.47)	(31.67)	(31.65)
Threadfin shad	0.19	0.17	0.12	0.35
	(0.10)	(0.11)	(0.12)	(0.13)
Grass carp	0.00		0.08	
	(0.00)		(0.08)	
Red shiner	1.56	1.08	1.08	5.08
	(0.59)	(0.65)	(0.38)	(1.58)
Spotfin shiner	0.01			0.08
	(0.01)			(0.08)
Blacktail shiner	0.02			0.21
	(0.02)			(0.15)
Common carp	4.45	4.50	5.91	3.94
	(1.24)	(1.42)	(1.30)	(0.68)
Mississippi silvery minnow	0.08	0.08		0.04
	(0.07)	(0.08)		(0.04)
Silver carp	0.00			0.04
	(0.00)			(0.04)
Emerald shiner	4.49	4.67	1.08	3.50
	(1.98)	(2.27)	(0.58)	(1.01)
River shiner	0.01		0.33	0.04
	(0.01)		(0.19)	(0.04)

Silverband shiner	0.12	0.08		0.38
	(0.08)	(0.08)		(0.21)
Channel shiner	1.00	1.08	0.25	0.48
	(0.53)	(0.61)	(0.13)	(0.22)
Bullhead minnow	0.01		0.17	0.04
	(0.01)		(0.11)	(0.04)
River carpsucker	0.76	0.75	0.46	0.90
	(0.45)	(0.51)	(0.21)	(0.29)
Blue sucker	0.18	0.17		0.27
	(0.15)	(0.17)		(0.25)
Smallmouth buffalo	0.50	0.50	0.75	0.52
	(0.25)	(0.29)	(0.45)	(0.15)
Bigmouth buffalo	0.10	0.08	0.08	0.23
	(0.07)	(0.08)	(0.08)	(0.10)
Black buffalo	0.39	0.42	0.29	0.19
	(0.13)	(0.15)	(0.16)	(0.08)
Unidentified buffalo	0.07	0.08		
	(0.07)	(0.08)		
Shorthead redhorse	0.00			0.04
	(0.00)			(0.04)
Blue catfish	0.31	0.33	0.83	0.08

	(0.12)	(0.14)	(0.39)	(0.06)
Channel catfish	3.38	3.67	0.83	1.44
	(1.72)	(1.97)	(0.58)	(0.55)
Freckled madtom	0.01		0.17	0.10
	(0.01)		(0.17)	(0.06)
Flathead catfish	0.92	0.92	1.08	0.90
	(0.38)	(0.43)	(0.43)	(0.27)
Blackstripe topminnow	0.01		0.08	0.04
	(0.00)		(0.08)	(0.04)
Blackspotted topminnow	0.00		0.08	
	(0.00)		(0.08)	
Western mosquitofish	0.01			0.08
	(0.01)			(0.08)
Brook silverside	0.59	0.67		0.04
	(0.45)	(0.51)		(0.04)
Inland silverside	0.00		0.08	
	(0.00)		(0.08)	
White bass	2.57	2.75	1.83	1.29
	(0.66)	(0.76)	(0.42)	(0.33)
Green sunfish	0.50	0.25	0.71	2.35
	(0.18)	(0.18)	(0.23)	(0.76)

Warmouth	0.00			0.04
	(0.00)			(0.04)
Orangespotted sunfish	0.12	0.08	0.17	0.42
	(0.08)	(0.08)	(0.17)	(0.22)
Bluegill	0.19	0.08	0.87	0.92
	(0.08)	(0.08)	(0.41)	(0.26)
Spotted bass	0.02		0.25	0.17
	(0.01)		(0.18)	(0.10)
Largemouth bass	0.01		0.25	0.04
	(0.01)		(0.25)	(0.04)
White crappie	0.00			0.04
	(0.00)			(0.04)
Black crappie	0.07	0.08	0.17	
	(0.07)	(0.08)	(0.11)	
Mud darter	0.07	0.08		
	(0.07)	(0.08)		
Logperch	0.45	0.50	0.08	0.08
	(0.44)	(0.50)	(0.08)	(0.06)
Sauger	0.09	0.08	0.08	0.13
	(0.07)	(0.08)	(0.08)	(0.07)
Freshwater drum	3.82	4.25	1.87	0.81
	(1.63)	(1.87)	(0.63)	(0.35)

Larval fish	0.00		0.08	
	(0.00)		(0.08)	

Sampling strata:
MCBU - Main channel border, unstructured
MCBW - Main channel border, wing dam
SCB - Side channel border

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Table 6.5 Mean catch-per-unit-effort and (standard error) for fish collected by fyke netting in Open River of the Upper Mississippi River using stratified random sampling during 2002. The statistics under ALL pertain to unbiased means over all strata sampled by this gear (as indicated by nonmissing entries below and by Table 2.5). See Methods for definitions of catch-per-unit-effort and standard error. Scientific names for the species listed can be found in Table 1.

Common name	ALL	SCB
Spotted gar	0.08	0.08
	(0.08)	(0.08)
Longnose gar	0.18	0.18
	(0.12)	(0.12)
Shortnose gar	2.42	2.42
	(1.10)	(1.10)
Gizzard shad	1.02	1.02
	(0.65)	(0.66)
Common carp	0.66	0.66
	(0.35)	(0.35)
River carpsucker	0.17	0.17
	(0.11)	(0.11)

Smallmouth buffalo	0.09	0.09
	(0.09)	(0.09)
Bigmouth buffalo	0.08	0.08
	(0.08)	(0.08)
Blue catfish	0.08	0.08
	(0.08)	(0.08)
Channel catfish	0.65	0.65
	(0.38)	(0.38)
White bass	0.40	0.40
	(0.25)	(0.25)
Bluegill	0.41	0.41
	(0.19)	(0.19)
White crappie	0.17	0.17
	(0.11)	(0.11)
Black crappie	0.33	0.33
	(0.19)	(0.19)
Sauger	0.09	0.09
	(0.09)	(0.09)
Freshwater drum	1.47	1.47
	(0.84)	(0.84)

Sampling stratum:
SCB - Side channel border

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Table 8.5 Mean catch-per-unit-effort and (standard error) for fish collected by mini fyke netting in Open River of the Upper Mississippi River using stratified random sampling during 2002. The statistics under ALL pertain to unbiased means over all strata sampled by this gear (as indicated by nonmissing entries below and by Table 2.5). See Methods for definitions of catch-per-unit-effort and standard error. Scientific names for the species listed can be found in Table 1.

Common name	ALL	MCBU	MCBW	SCB
Longnose gar	0.04			0.30
	(0.03)			(0.22)
Shortnose gar	0.10	0.09	0.17	0.13
	(0.08)	(0.09)	(0.17)	(0.07)
Goldeye	0.64	0.66	0.10	0.48
	(0.58)	(0.66)	(0.10)	(0.28)
Skipjack herring	0.47	0.54		
	(0.32)	(0.37)		
Gizzard shad	45.20	48.86	2.45	21.84
	(30.35)	(34.81)	(1.27)	(7.25)
Red shiner	1.75	1.94	1.21	0.44
	(0.93)	(1.07)	(1.12)	(0.18)

Common carp	0.33	0.36		0.14
	(0.18)	(0.21)		(0.10)
Mississippi silvery minnow	0.08	0.08		0.05
	(0.07)	(0.08)		(0.05)
Silver carp	0.26	0.27		0.25
	(0.17)	(0.20)		(0.17)
Bighead carp	0.02			0.16
	(0.02)			(0.16)
Speckled chub	0.36	0.41		
	(0.23)	(0.26)		
Emerald shiner	4.11	4.62	0.09	0.71
	(2.44)	(2.80)	(0.09)	(0.37)
River shiner	0.12	0.08	0.17	0.44
	(0.08)	(0.08)	(0.17)	(0.36)
Silverband shiner	0.21	0.17	0.68	0.47
	(0.11)	(0.11)	(0.51)	(0.35)
Channel shiner	11.26	11.40	1.28	11.07
	(5.43)	(6.19)	(0.66)	(5.58)
Bluntnose minnow	0.01			0.08
	(0.01)			(0.06)
Bullhead minnow	0.46	0.51		0.12
	(0.44)	(0.51)		(0.09)

Blue sucker	0.07	0.08		0.05
	(0.07)	(0.08)		(0.05)
Unidentified buffalo	0.21	0.17		0.54
	(0.15)	(0.17)		(0.23)
Blue catfish	0.15	0.17		
	(0.15)	(0.17)		
Channel catfish	1.70	1.77	2.02	1.21
	(0.48)	(0.54)	(0.83)	(0.47)
Stonecat	0.01			0.04
	(0.01)			(0.04)
Freckled madtom	0.01			0.05
	(0.01)			(0.05)
Flathead catfish	0.07	0.09		
	(0.07)	(0.09)		
Western mosquitofish	0.15	0.17		
	(0.10)	(0.12)		
Brook silverside	0.01			0.04
	(0.01)			(0.04)
White bass	7.17	7.59	0.98	4.55
	(4.36)	(5.00)	(0.53)	(2.21)
Striped x white bass	0.07	0.08		

	(0.07)	(0.08)		
Green sunfish	17.01	19.25	0.08	1.92
	(16.69)	(19.15)	(0.08)	(1.20)
Warmouth	0.07	0.08		
	(0.07)	(0.08)		
Orangespotted sunfish	1.86	1.98	0.26	1.12
	(1.64)	(1.88)	(0.19)	(0.54)
Bluegill	5.72	6.14	0.73	3.03
	(4.01)	(4.60)	(0.25)	(1.16)
Unidentified Lepomis	0.24	0.26		0.17
	(0.23)	(0.26)		(0.17)
White crappie	0.21	0.17		0.53
	(0.15)	(0.17)		(0.31)
Black crappie	0.01			0.09
	(0.01)			(0.09)
Mud darter	0.01			0.05
	(0.01)			(0.05)
Johnny darter	0.00		0.09	
	(0.00)		(0.09)	
Dusky darter	0.00		0.09	
	(0.00)		(0.09)	
Sauger	0.02			0.18

	(0.01)			(0.08)
Freshwater drum	7.77	2.69	3.96	45.43
	(3.34)	(1.18)	(1.56)	(27.04)
Larval fish	0.86	0.26		5.31
	(0.63)	(0.19)		(5.16)

Sampling strata:
MCBU - Main channel border, unstructured
MCBW - Main channel border, wing dam
SCB - Side channel border

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Table 10.5 Mean catch-per-unit-effort and (standard error) for fish collected by small hoop netting in Open River of the Upper Mississippi River using stratified random sampling during 2002. The statistics under ALL pertain to unbiased means over all strata sampled by this gear (as indicated by nonmissing entries below and by Table 2.5). See Methods for definitions of catch-per-unit-effort and standard error. Scientific names for the species listed can be found in Table 1.

Common name	ALL	MCBU	MCBW	SCB
Shortnose gar	0.01			0.04
	(0.00)			(0.03)
Grass carp	0.04	0.04		
	(0.04)	(0.04)		
Common carp	1.03	1.05	1.06	0.86
	(0.23)	(0.26)	(0.30)	(0.25)
Smallmouth buffalo	0.04	0.04	0.09	0.02
	(0.04)	(0.04)	(0.09)	(0.02)
Black buffalo	0.04	0.04		0.02
	(0.04)	(0.04)		(0.02)
Blue catfish	1.08	1.21	1.41	0.08
	(0.40)	(0.45)	(0.60)	(0.04)

Channel catfish	3.36	2.29	1.86	11.32
	(1.01)	(0.90)	(0.98)	(5.36)
Flathead catfish	0.16	0.16	0.09	0.13
	(0.10)	(0.11)	(0.06)	(0.05)
White bass	0.01			0.06
	(0.00)			(0.03)
Black crappie	0.01			0.08
	(0.01)			(0.05)
Sauger	0.00			0.02
	(0.00)			(0.02)
Freshwater drum	0.04	0.04		0.04
	(0.04)	(0.04)		(0.03)

Sampling strata:
MCBU - Main channel border, unstructured
MCBW - Main channel border, wing dam
SCB - Side channel border

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Table 11.5 Mean catch-per-unit-effort and (standard error) for fish collected by large hoop netting in Open River of the Upper Mississippi River using stratified random sampling during 2002. The statistics under ALL pertain to unbiased means over all strata sampled by this gear (as indicated by nonmissing entries below and by Table 2.5). See Methods for definitions of catch-per-unit-effort and standard error. Scientific names for the species listed can be found in Table 1.

Common name	ALL	MCBU	MCBW	SCB
Shovelnose sturgeon	0.01			0.09
	(0.01)			(0.09)
Longnose gar	0.00			0.02
	(0.00)			(0.02)
Shortnose gar	0.00			0.02
	(0.00)			(0.02)
Skipjack herring	0.00			0.02
	(0.00)			(0.02)
Gizzard shad	0.01			0.04
	(0.00)			(0.03)
Grass carp	0.04	0.04		0.02
	(0.04)	(0.04)		(0.02)

Common carp	1.30	1.27	0.75	1.55
	(0.46)	(0.53)	(0.43)	(0.40)
Bighead carp	0.00			0.02
	(0.00)			(0.02)
River carpsucker	0.01			0.11
	(0.01)			(0.09)
Smallmouth buffalo	1.17	1.14	0.18	1.46
	(0.34)	(0.39)	(0.10)	(0.39)
Bigmouth buffalo	0.00			0.02
	(0.00)			(0.02)
Black buffalo	0.21	0.21		0.22
	(0.10)	(0.11)		(0.10)
Blue catfish	0.42	0.47	0.05	0.07
	(0.19)	(0.22)	(0.05)	(0.04)
Channel catfish	0.93	0.93		1.01
	(0.30)	(0.34)		(0.37)
Flathead catfish	0.20	0.21	0.05	0.16
	(0.07)	(0.08)	(0.05)	(0.06)
White bass	0.04	0.04		0.06
	(0.04)	(0.04)		(0.06)
Spotted bass	0.04	0.04		
	(0.04)	(0.04)		
Black crappie	0.01			0.04

	(0.01)			(0.04)
Freshwater drum	0.33	0.35	0.09	0.21
	(0.17)	(0.19)	(0.06)	(0.09)

Sampling strata:
MCBU - Main channel border, unstructured
MCBW - Main channel border, wing dam
SCB - Side channel border

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Table 14.5 Mean catch-per-unit-effort and (standard error) for fish collected by day electrofishing in Open River of the Upper Mississippi River using fixed-site sampling during 2002. See Methods for definitions of catch-per-unit-effort and standard error. Scientific names for the species listed can be found in Table 1.

Common name	MCBU	TRI
Spotted gar	0.00	0.67
	(0.00)	(0.42)
Longnose gar	0.00	0.50
	(0.00)	(0.50)
Shortnose gar	0.67	1.17
	(0.67)	(0.48)
Bowfin	0.00	0.17
	(0.00)	(0.17)
Goldeye	1.00	0.00
	(1.00)	(0.00)
Skipjack herring	0.00	1.67
	(0.00)	(1.67)
Gizzard shad	22.33	105.00

	(12.24)	(58.03)
Grass carp	0.00	0.17
	(0.00)	(0.17)
Red shiner	0.67	1.00
	(0.67)	(0.37)
Blacktail shiner	0.00	0.67
	(0.00)	(0.42)
Common carp	0.67	6.17
	(0.33)	(1.45)
Mississippi silvery minnow	1.00	0.00
	(1.00)	(0.00)
Silver carp	0.00	0.50
	(0.00)	(0.34)
Bighead carp	0.00	12.67
	(0.00)	(12.67)
Emerald shiner	0.67	5.67
	(0.67)	(2.01)
River shiner	2.33	0.00
	(2.33)	(0.00)
Silverband shiner	0.00	0.17
	(0.00)	(0.17)
Channel shiner	0.33	0.67
	(0.33)	(0.49)

Pugnose minnow	0.00	0.17
	(0.00)	(0.17)
Bullhead minnow	0.00	0.50
	(0.00)	(0.50)
River carpsucker	0.33	2.33
	(0.33)	(0.95)
Smallmouth buffalo	0.33	1.67
	(0.33)	(0.42)
Bigmouth buffalo	0.00	0.50
	(0.00)	(0.34)
Black buffalo	0.00	0.33
	(0.00)	(0.21)
Shorthead redhorse	0.00	0.17
	(0.00)	(0.17)
Channel catfish	1.33	0.50
	(1.33)	(0.22)
Flathead catfish	0.00	0.50
	(0.00)	(0.34)
Pirate perch	0.00	0.17
	(0.00)	(0.17)
Blackstripe topminnow	0.00	0.67
	(0.00)	(0.49)
Blackspotted topminnow	0.00	0.17

	(0.00)	(0.17)
Western mosquitofish	0.00	2.17
	(0.00)	(2.17)
Brook silverside	0.00	0.67
	(0.00)	(0.33)
White bass	2.67	1.67
	(0.33)	(0.80)
Green sunfish	0.00	0.67
	(0.00)	(0.49)
Warmouth	0.00	0.33
	(0.00)	(0.33)
Orangespotted sunfish	0.00	3.50
	(0.00)	(1.61)
Bluegill	0.00	5.17
	(0.00)	(2.06)
Spotted bass	0.33	3.00
	(0.33)	(1.51)
White crappie	0.00	0.33
	(0.00)	(0.21)
Black crappie	0.00	0.83
	(0.00)	(0.48)
Logperch	0.00	0.17
	(0.00)	(0.17)

Dusky darter	0.00	0.17
	(0.00)	(0.17)
Sauger	0.33	0.00
	(0.33)	(0.00)
Freshwater drum	0.33	3.17
	(0.33)	(2.18)

Sampling strata:
MCBU - Main channel border, unstructured
TRI - Tributary mouth

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Table 16.5 Mean catch-per-unit-effort and (standard error) for fish collected by fyke netting in Open River of the Upper Mississippi River using fixed-site sampling during 2002. See Methods for definitions of catch-per-unit-effort and standard error. Scientific names for the species listed can be found in Table 1.

Common name	MCBU	TRI
Shortnose gar	0.71	0.34
	(0.35)	(0.22)
Gizzard shad	0.00	0.18
	(0.00)	(0.18)
Common carp	0.00	0.82
	(0.00)	(0.29)
River carpsucker	0.35	0.32
	(0.35)	(0.32)
Channel catfish	0.32	0.16
	(0.32)	(0.16)
Flathead catfish	0.35	0.16
	(0.35)	(0.16)
White bass	1.43	0.00

	(1.43)	(0.00)
White crappie	0.00	0.18
	(0.00)	(0.18)
Black crappie	0.00	0.33
	(0.00)	(0.21)
Sauger	0.00	0.16
	(0.00)	(0.16)
Freshwater drum	6.52	3.26
	(4.58)	(1.73)

Sampling strata:
MCBU - Main channel border, unstructured
TRI - Tributary mouth

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Table 17.5 Mean catch-per-unit-effort and (standard error) for fish collected by mini fyke netting in Open River of the Upper Mississippi River using fixed-site sampling during 2002. See Methods for definitions of catch-per-unit-effort and standard error. Scientific names for the species listed can be found in Table 1.

Common name	MCBU	TRI
Shortnose gar	0.33	0.18
	(0.33)	(0.18)
Goldeye	0.35	0.00
	(0.35)	(0.00)
Skipjack herring	0.35	0.00
	(0.35)	(0.00)
Gizzard shad	67.02	1.50
	(32.35)	(1.00)
Red shiner	0.33	0.00
	(0.33)	(0.00)
Common carp	0.00	0.18
	(0.00)	(0.18)
Bighead carp	0.00	0.32

	(0.00)	(0.32)
Emerald shiner	4.35	0.68
	(3.84)	(0.33)
Silverband shiner	0.70	0.00
	(0.70)	(0.00)
Channel shiner	9.82	0.82
	(7.75)	(0.64)
Bluntnose minnow	0.35	0.00
	(0.35)	(0.00)
Bullhead minnow	0.00	0.17
	(0.00)	(0.17)
River carpsucker	0.33	0.16
	(0.33)	(0.16)
Unidentified buffalo	1.75	1.16
	(1.75)	(0.80)
Channel catfish	0.35	0.36
	(0.35)	(0.23)
Flathead catfish	0.00	0.18
	(0.00)	(0.18)
White bass	7.96	2.37
	(5.26)	(1.50)
Warmouth	0.00	0.72
	(0.00)	(0.54)

Orangespotted sunfish	2.67	2.01
	(2.67)	(2.01)
Bluegill	8.74	2.15
	(7.76)	(1.78)
White crappie	3.02	4.20
	(2.51)	(2.54)
Black crappie	0.67	0.18
	(0.67)	(0.18)
Johnny darter	0.00	1.47
	(0.00)	(1.47)
Logperch	0.00	4.21
	(0.00)	(4.21)
Blackside darter	0.00	0.92
	(0.00)	(0.92)
Dusky darter	0.00	0.55
	(0.00)	(0.55)
River darter	0.00	0.73
	(0.00)	(0.73)
Sauger	0.35	0.00
	(0.35)	(0.00)
Freshwater drum	9.09	1.92
	(8.11)	(1.04)

Sampling strata:

MCBU - Main channel border, unstructured
TRI - Tributary mouth

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Table 18.5 Mean catch-per-unit-effort and (standard error) for fish collected by small hoop netting in Open River of the Upper Mississippi River using fixed-site sampling during 2002. See Methods for definitions of catch-per-unit-effort and standard error. Scientific names for the species listed can be found in Table 1.

Common name	MCBU	TRI
Shortnose gar	0.00	0.27
	(0.00)	(0.18)
Common carp	0.00	1.45
	(0.00)	(0.64)
Black buffalo	0.00	0.09
	(0.00)	(0.09)
Blue catfish	0.00	0.35
	(0.00)	(0.35)
Channel catfish	50.67	1.20
	(50.67)	(0.81)
Flathead catfish	0.18	0.00
	(0.18)	(0.00)
Sauger	0.17	0.00

	(0.17)	(0.00)
Freshwater drum	0.00	0.09
	(0.00)	(0.09)

Sampling strata:
MCBU - Main channel border, unstructured
TRI - Tributary mouth

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Table 19.5 Mean catch-per-unit-effort and (standard error) for fish collected by large hoop netting in Open River of the Upper Mississippi River using fixed-site sampling during 2002. See Methods for definitions of catch-per-unit-effort and standard error. Scientific names for the species listed can be found in Table 1.

Common name	MCBU	TRI
Shortnose gar	0.00	0.25
	(0.00)	(0.17)
Grass carp	0.00	0.09
	(0.00)	(0.09)
Common carp	1.57	2.83
	(1.11)	(1.28)
Silver carp	0.00	0.09
	(0.00)	(0.09)
Bighead carp	0.00	0.09
	(0.00)	(0.09)
River carpsucker	0.00	0.43
	(0.00)	(0.21)
Smallmouth buffalo	3.48	1.33

	(2.36)	(0.86)
Bigmouth buffalo	0.00	0.09
	(0.00)	(0.09)
Black buffalo	0.35	1.43
	(0.35)	(0.96)
Blue catfish	0.33	0.09
	(0.33)	(0.09)
Channel catfish	0.17	1.36
	(0.17)	(1.05)
Flathead catfish	0.17	0.17
	(0.17)	(0.11)
Freshwater drum	0.18	0.18
	(0.18)	(0.18)

Sampling stratum:
MCBU - Main channel border, unstructured
TRI - Tributary mouth

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Open River Length Distributions

Length distributions (length) as a percentage of catch (percent) for selected species of interest collected by the Long Term Resource Monitoring Program. Fish species are listed in phylogenetical order following Robins et al. (1991) nomenclature. 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 because of local interest, while others were omitted (reach dependent). Scientific names for the species listed can be found in Table 1.

Figure*	Species	Method
2.5	Gizzard shad	Electrofishing
3.5	Common carp	Electrofishing
4.5	Smallmouth buffalo	Electrofishing
5.5	Smallmouth buffalo	Hoop netting
6.5	Channel catfish	Electrofishing
7.5	Channel catfish	Hoop netting
10.5	White bass	Electrofishing
11.5	Bluegill	Electrofishing
12.5	Bluegill	Fyke netting
13.5	Largemouth bass	Electrofishing
14.5	White crappie	Fyke netting
16.5	Sauger	Electrofishing
18.5	Freshwater drum	Electrofishing

19.5	Freshwater drum	Fyke netting

*Figure numbers are not always in sequence because some species were not caught in some study areas. Figure numbers for each species and gear type are consistent among study areas.

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Figure 2.5 Length distributions (*length*) as a percentage of catch (*percent*) for gizzard shad (*Dorosoma cepedianum)* collected by electrofishing in Open River of the Upper Mississippi River during 2002. Click here to view this species' length distributions in all study reaches.

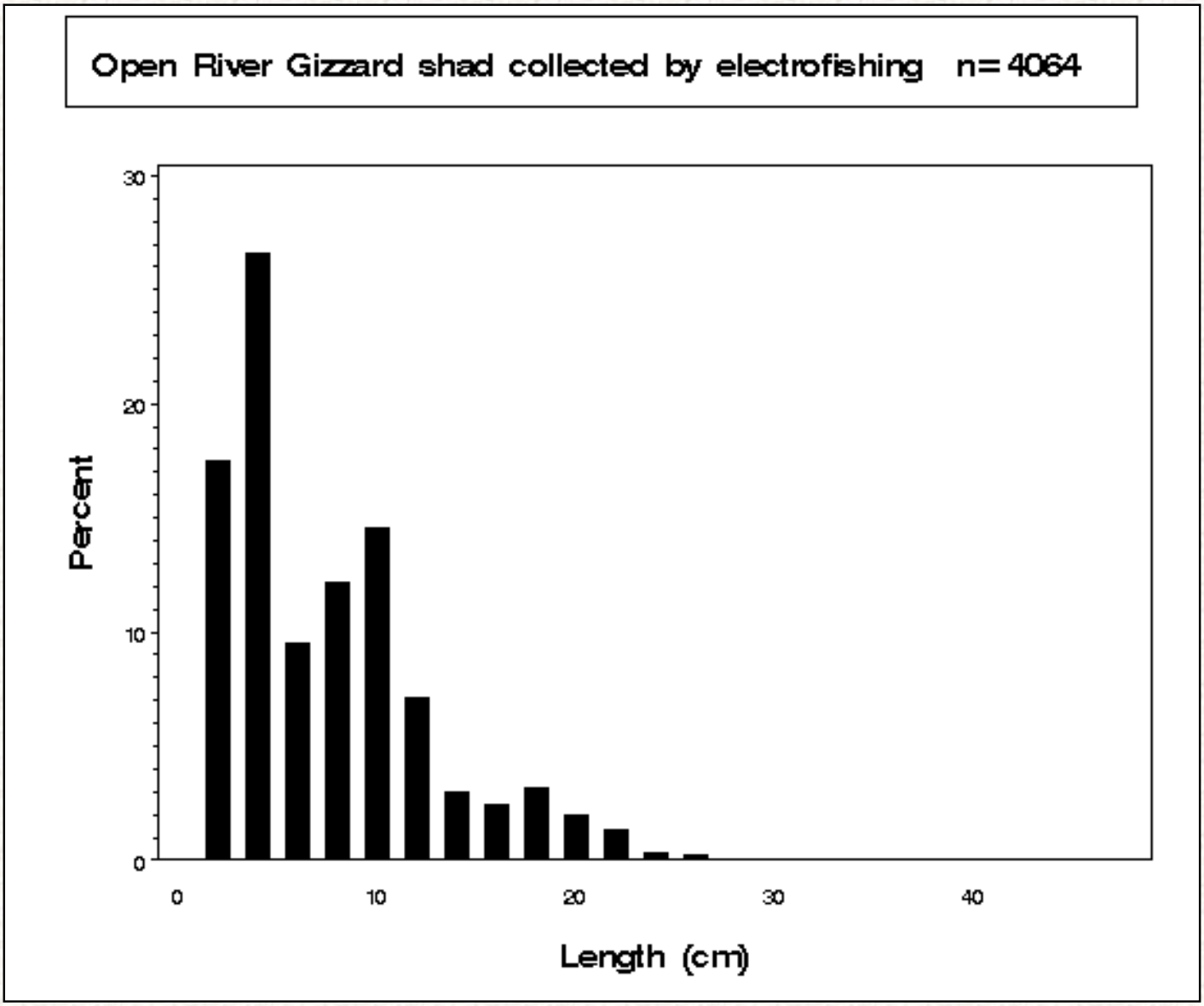

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Figure 3.5 Length distributions (*length*) as a percentage of catch (*percent*) for common carp (*Cyprinus carpio)* collected by electrofishing in Open River of the Upper Mississippi River during 2002. Click here to view this species' length distributions in all study reaches.

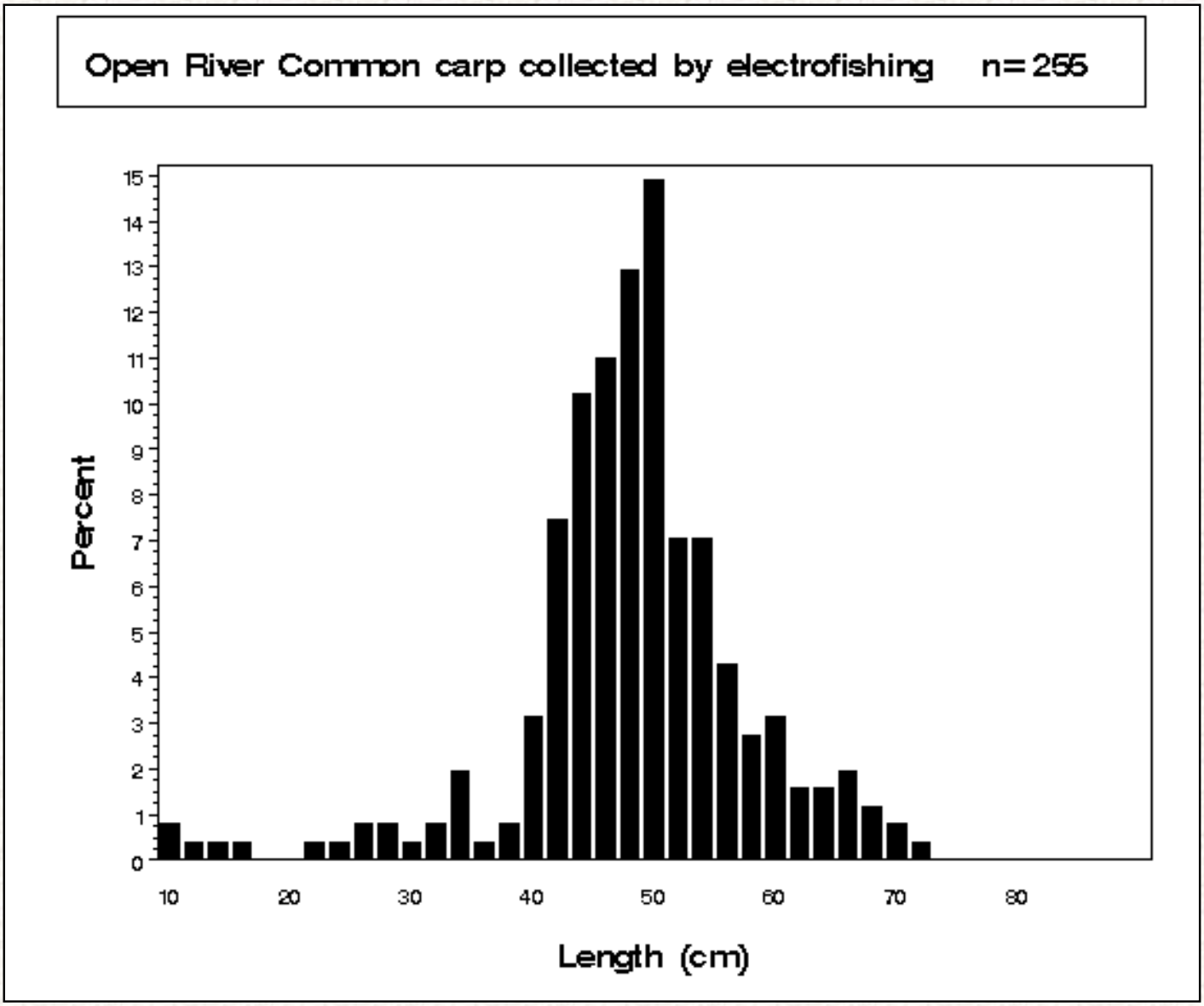

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Figure 4.5 Length distributions (*length*) as a percentage of catch (*percent*) for smallmouth buffalo (*Ictiobus bubalus)* collected by electrofishing in Open River of the Upper Mississippi River during 2002. Click here to view this species' length distributions in all study reaches.

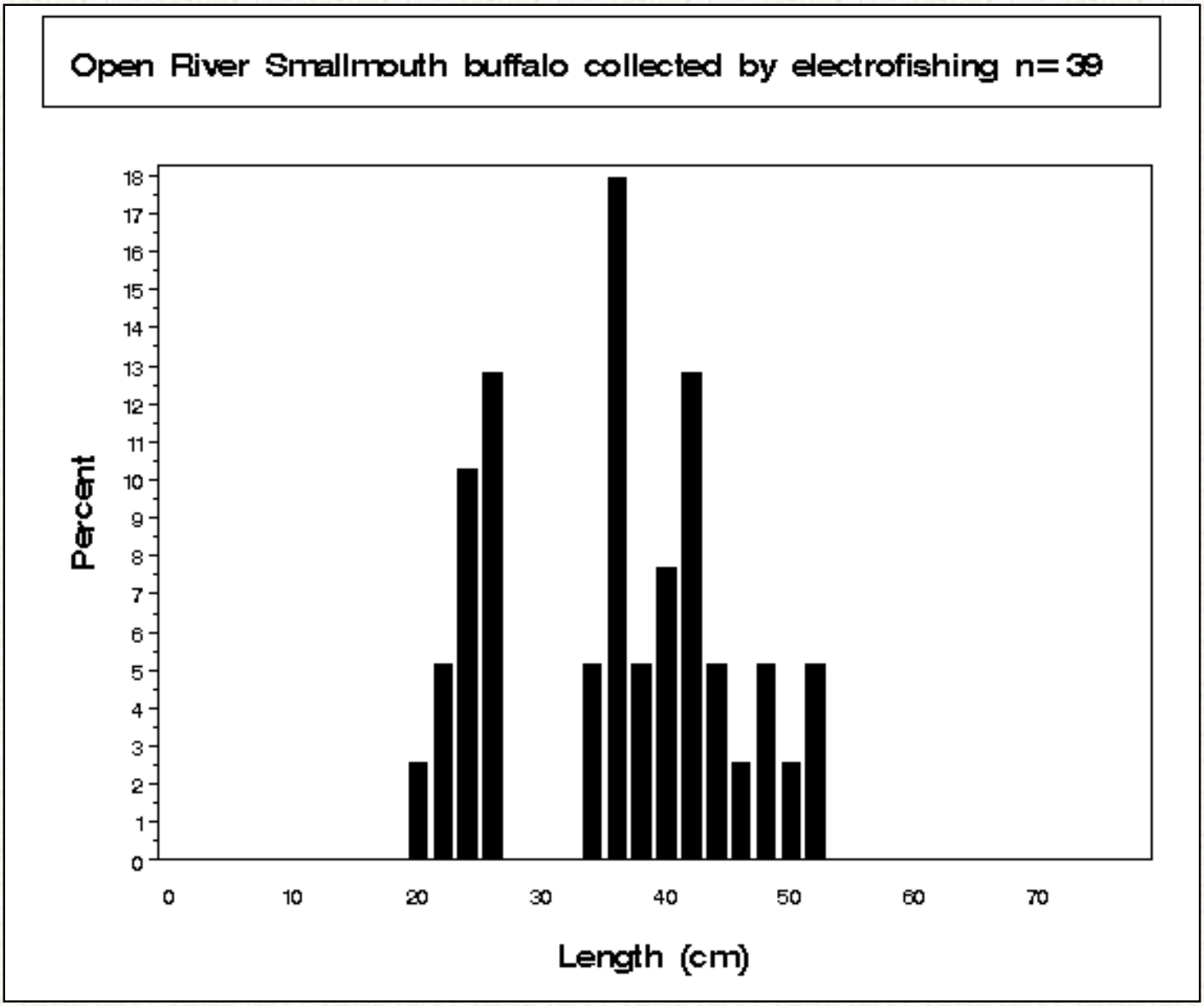

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Figure 5.5 Length distributions (*length*) as a percentage of catch (*percent*) for smallmouth buffalo (*Ictiobus bubalus)* collected by hoop netting in Open River of the Upper Mississippi River during 2002. Click here to view this species' length distributions in all study reaches.

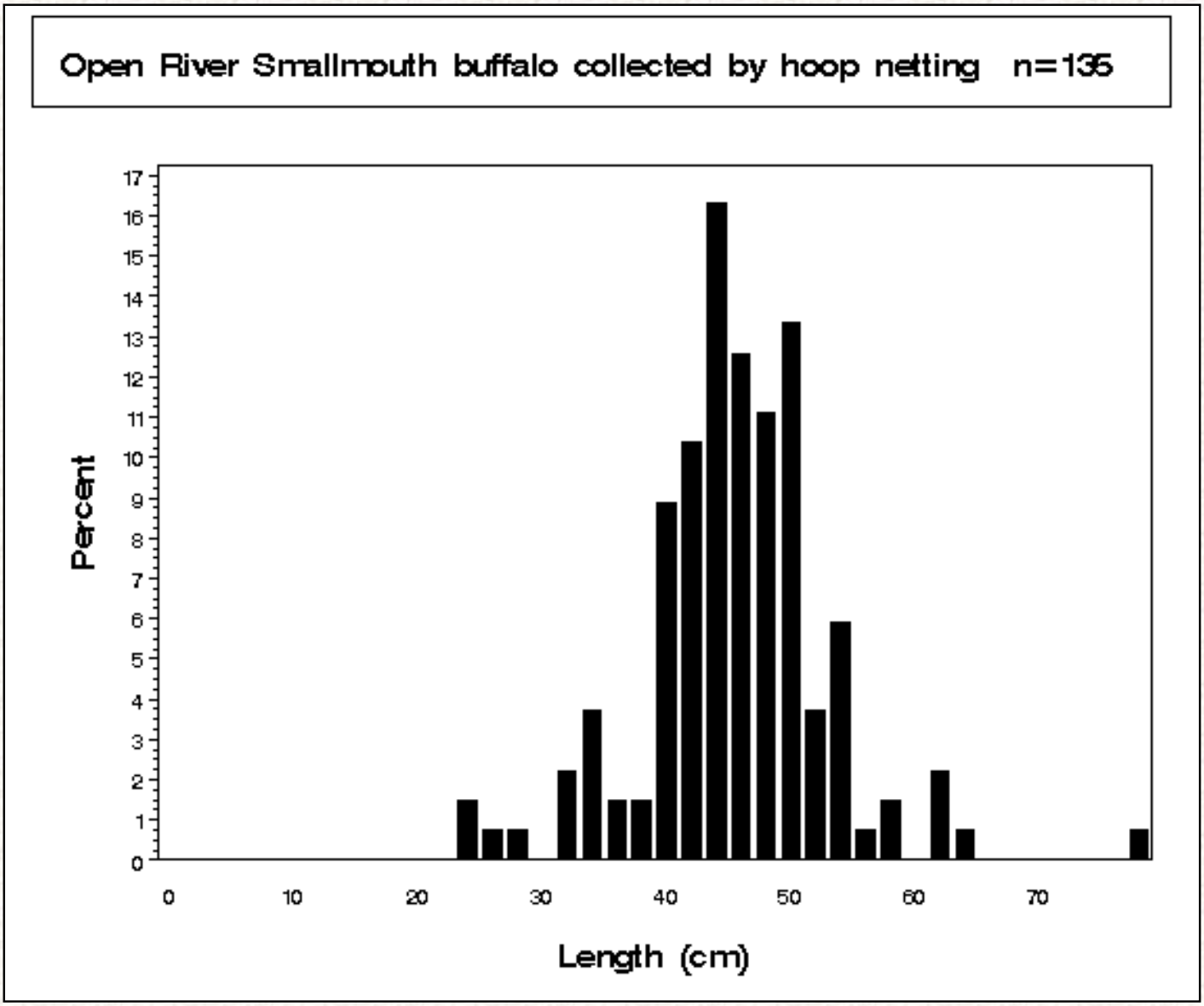

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Figure 6.5 Length distributions (*length*) as a percentage of catch (*percent*) for channel catfish (*Ictalurus punctatus)* collected by electrofishing in Open River of the Upper Mississippi River during 2002. Click here to view this species' length distributions in all study reaches.

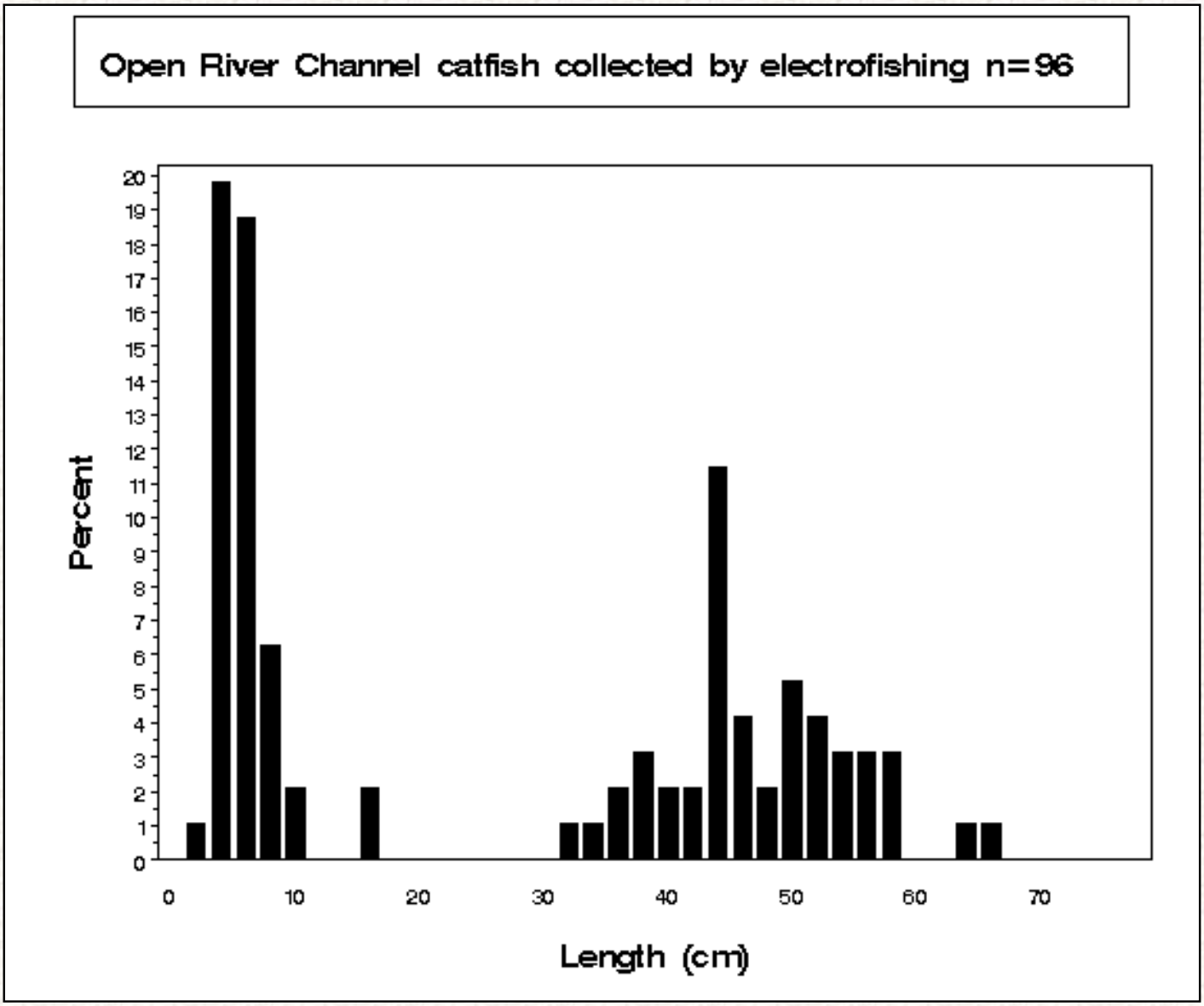

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Figure 7.5 Length distributions (*length*) as a percentage of catch (*percent*) for channel catfish (*Ictalurus punctatus)* collected by hoop netting in Open River of the Upper Mississippi River during 2002. Click here to view this species' length distributions in all study reaches.

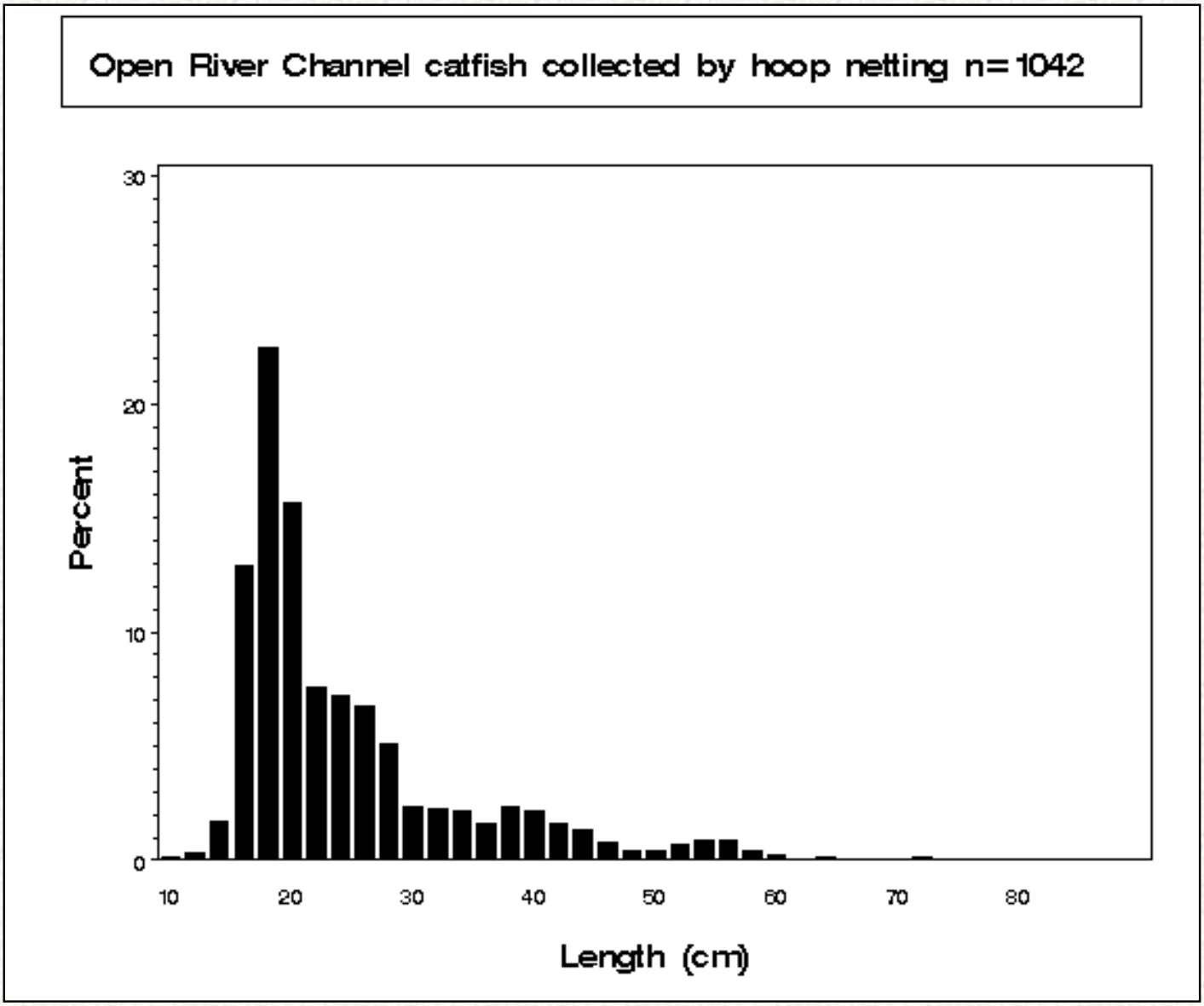

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Figure 10.5 Length distributions (*length*) as a percentage of catch (*percent*) for white bass (*Morone chrysops)* collected by electrofishing in Open River of the Upper Mississippi River during 2002. Click here to view this species' length distributions in all study reaches.

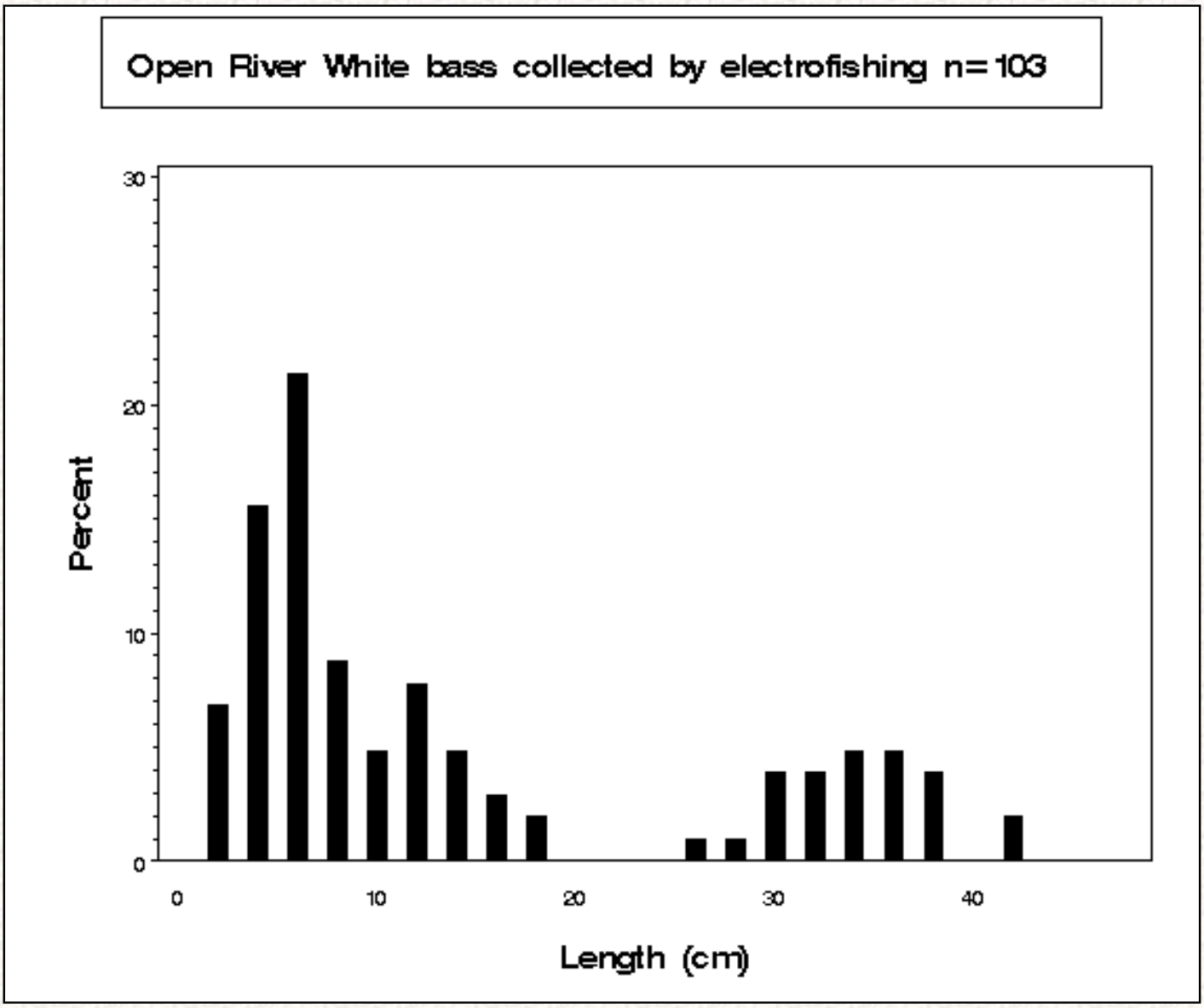

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Figure 11.5 Length distributions (*length*) as a percentage of catch (*percent*) for bluegill (*Lepomis macrochirus*) collected by electrofishing in Open River of the Upper Mississippi River during 2002. Click here to view this species' length distributions in all study reaches.

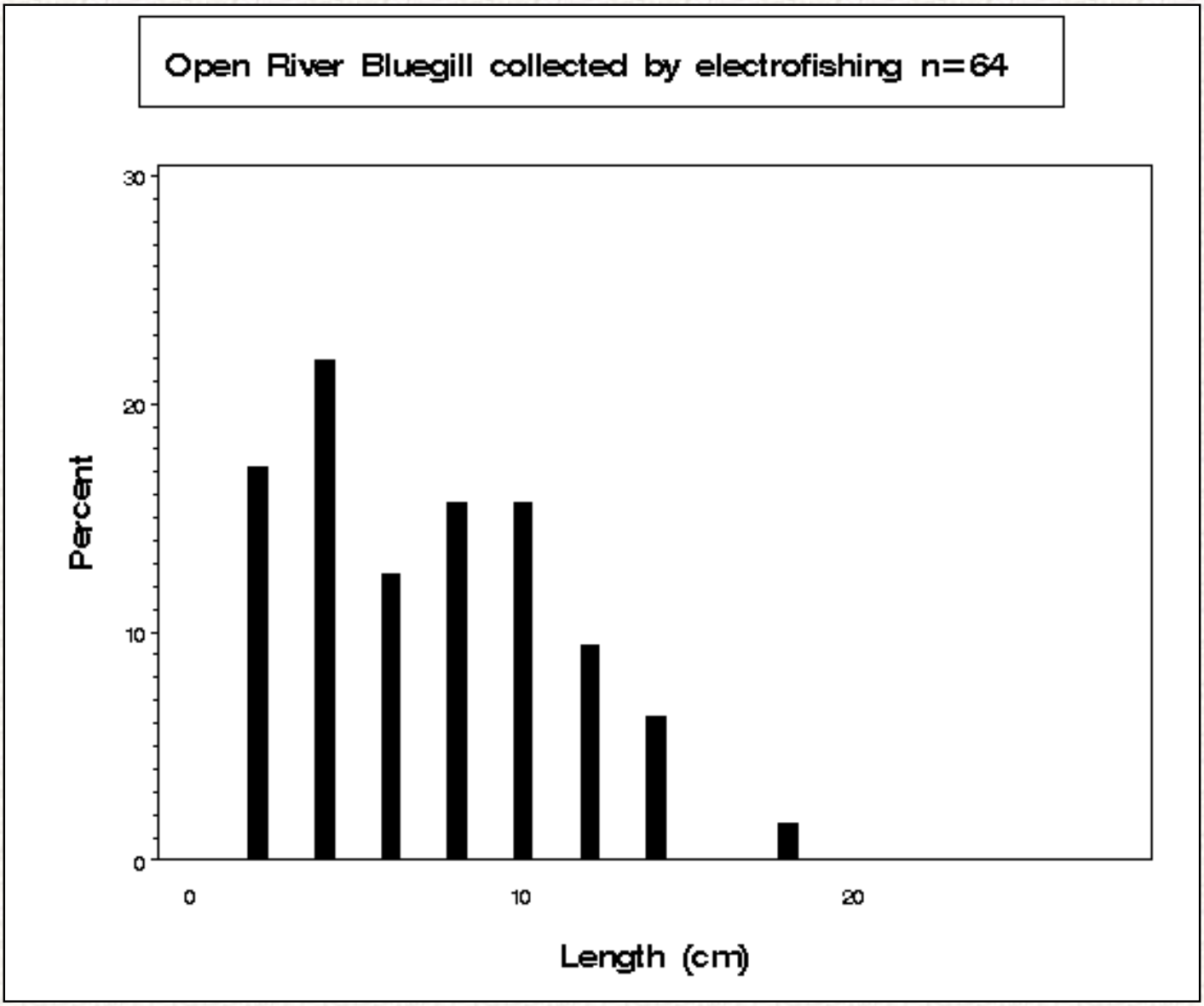

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Figure 12.5 Length distributions (*length*) as a percentage of catch (*percent*) for bluegill (*Lepomis macrochirus*) collected by fyke netting in Open River of the Upper Mississippi River during 2002. Click here to view this species' length distributions in all study reaches.

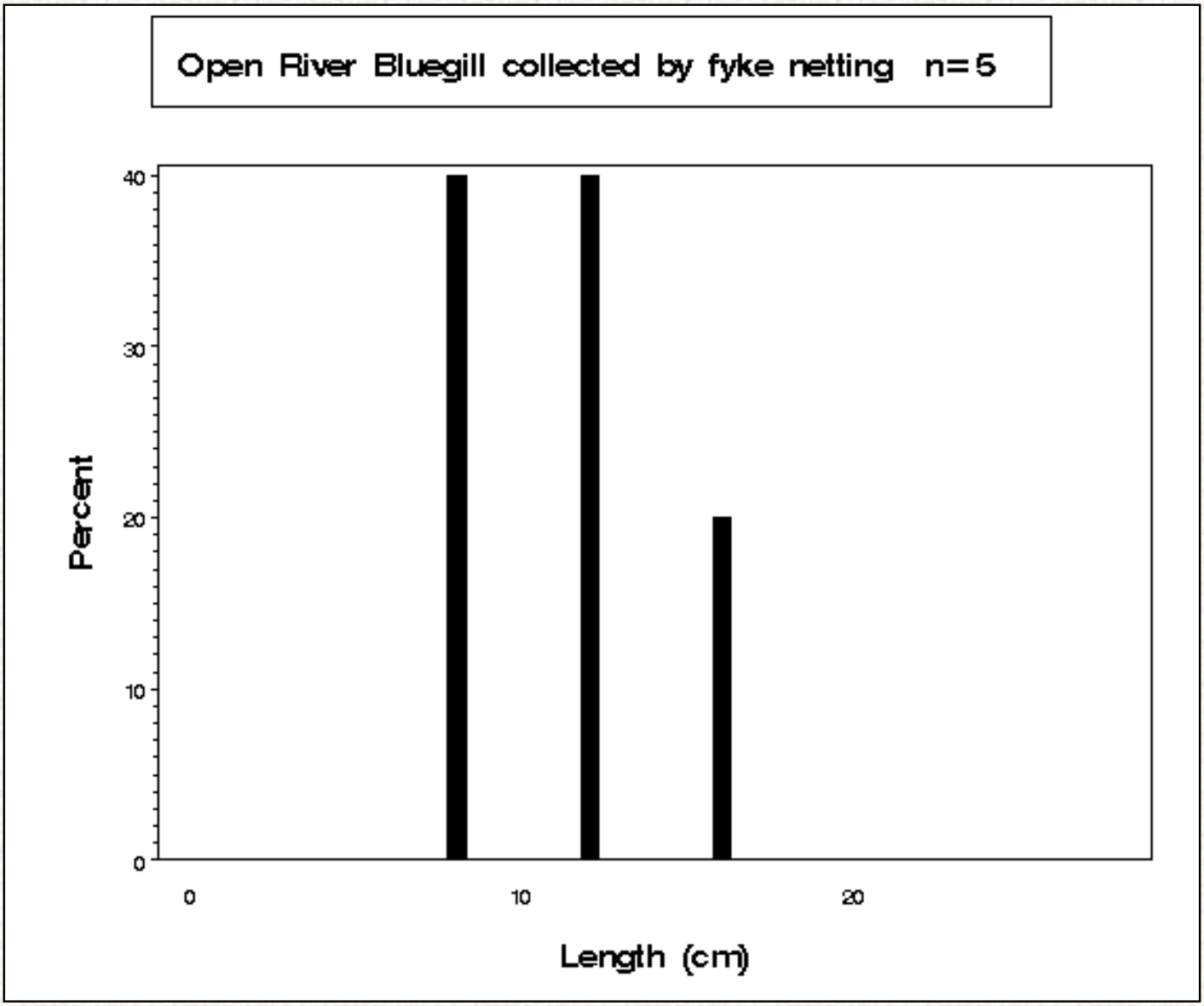

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Figure 13.5 Length distributions (*length*) as a percentage of catch (*percent*) for largemouth bass (*Micropterus salmoides)* collected by electrofishing in Open River of the Upper Mississippi River during 2002. Click here to view this species' length distributions in all study reaches.

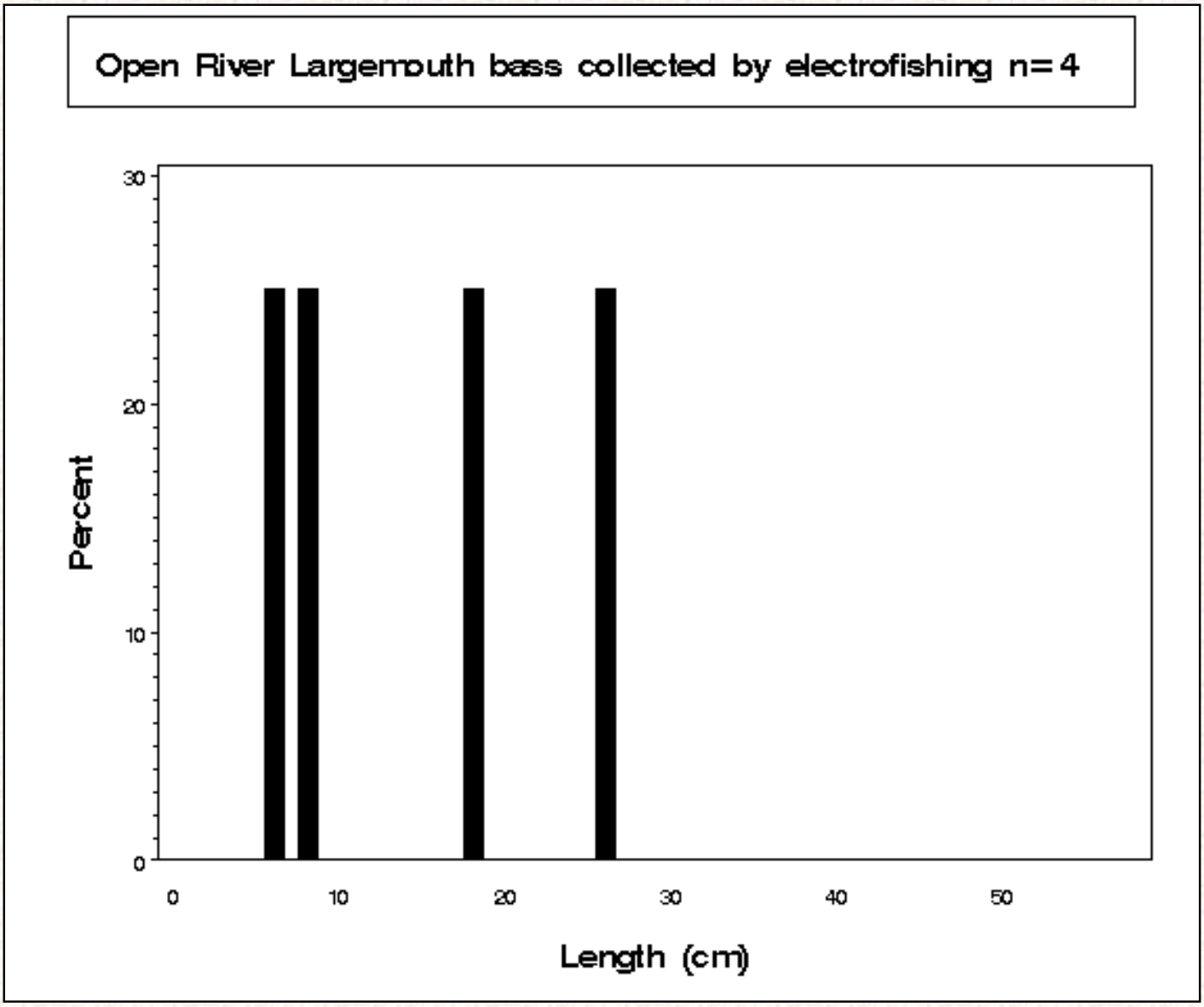

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Figure 14.5 Length distributions (*length*) as a percentage of catch (*percent*) for white crappie (*Pomoxis annularius)* collected by fyke netting in Open River of the Upper Mississippi River during 2002. Click here to view this species' length distributions in all study reaches.

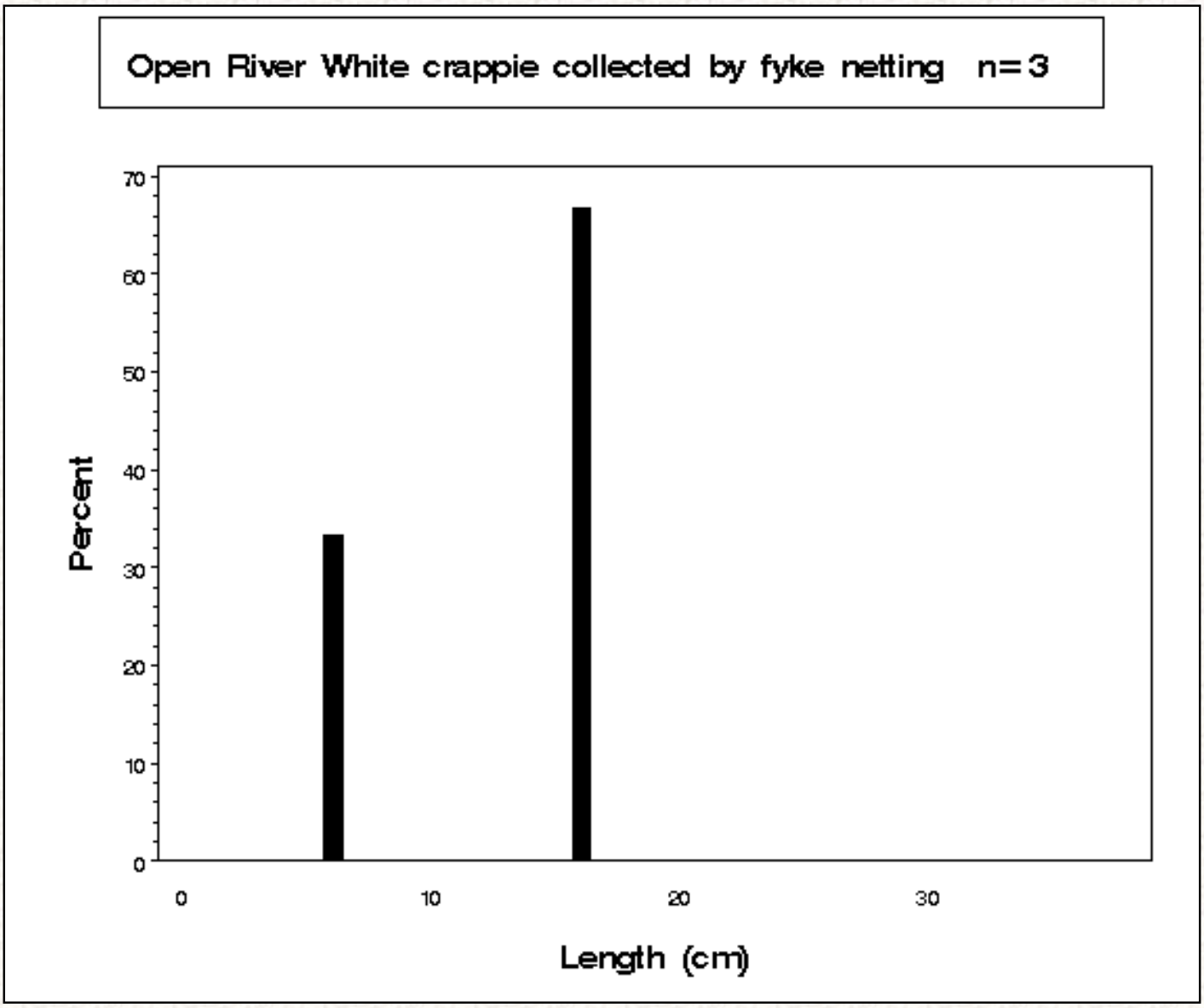

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Figure 16.5 Length distributions (*length*) as a percentage of catch (*percent*) for sauger (*Stizostedion canadense)* collected by electrofishing in Open River of the Upper Mississippi River during 2002. Click here to view this species' length distributions in all study reaches.

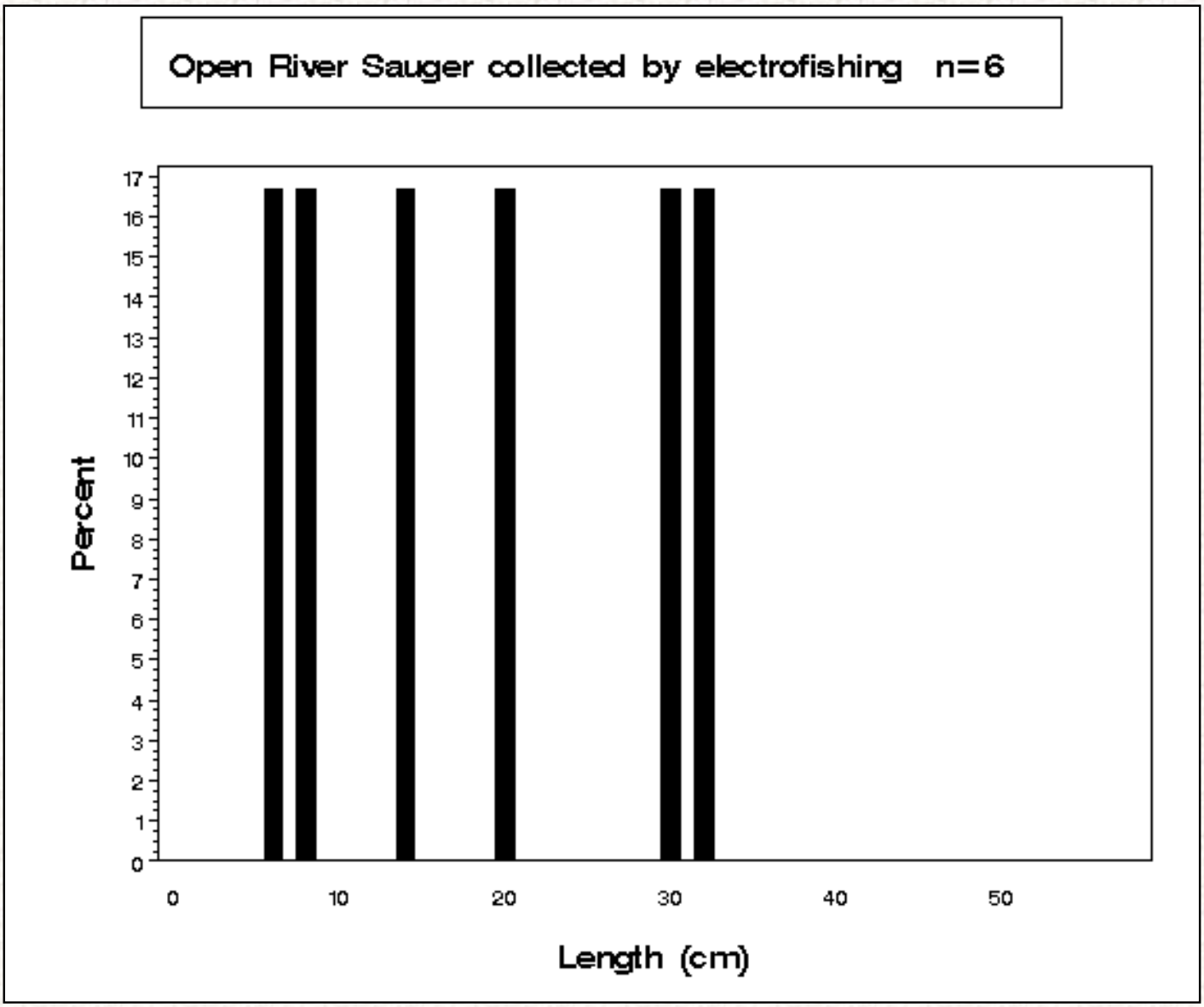

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Figure 18.5 Length distributions (*length*) as a percentage of catch (*percent*) for freshwater drum (*Aplodinotus grunniens*) collected by electrofishing in Open River of the Upper Mississippi River during 2002. Click here to view this species' length distributions in all study reaches.

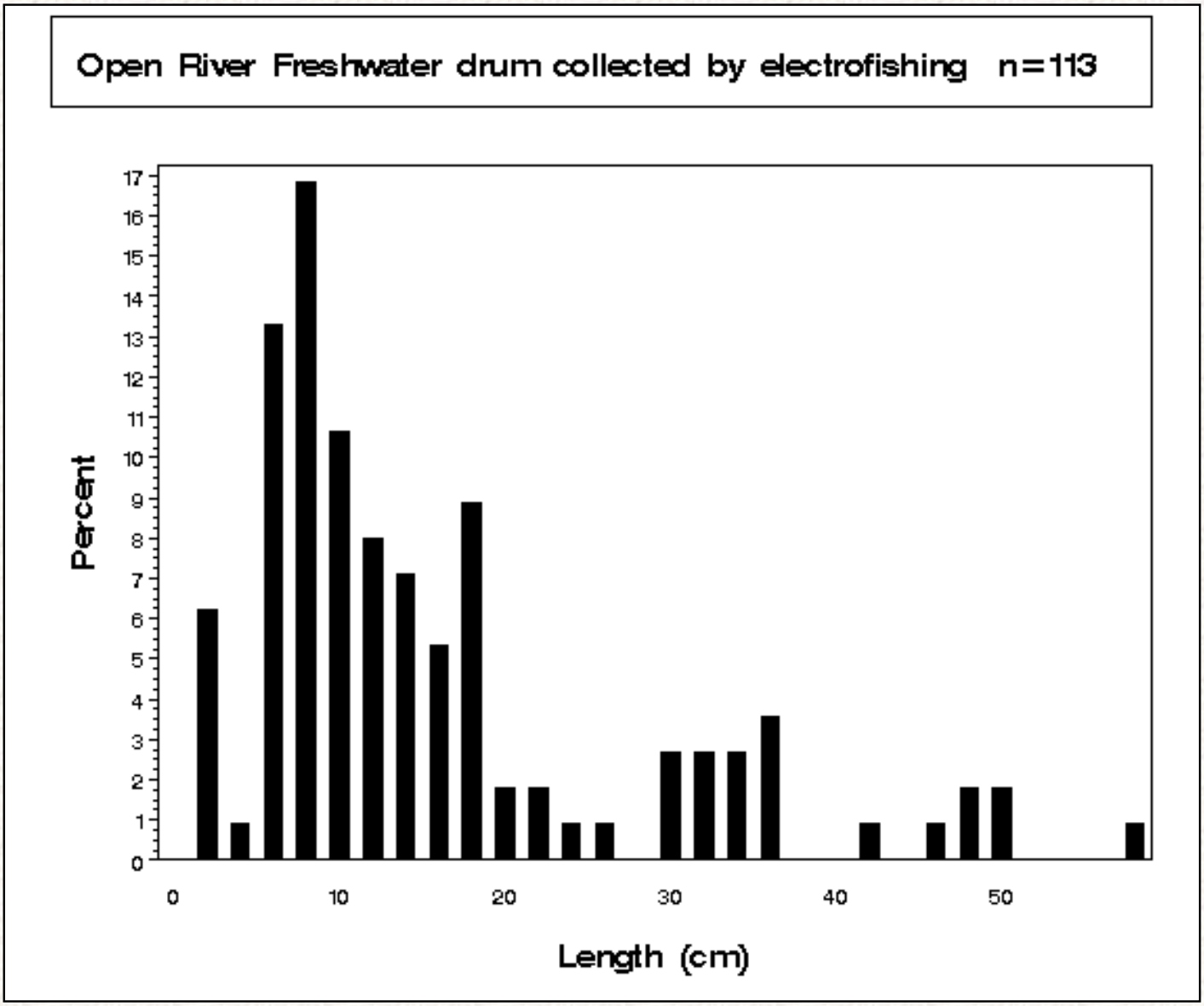

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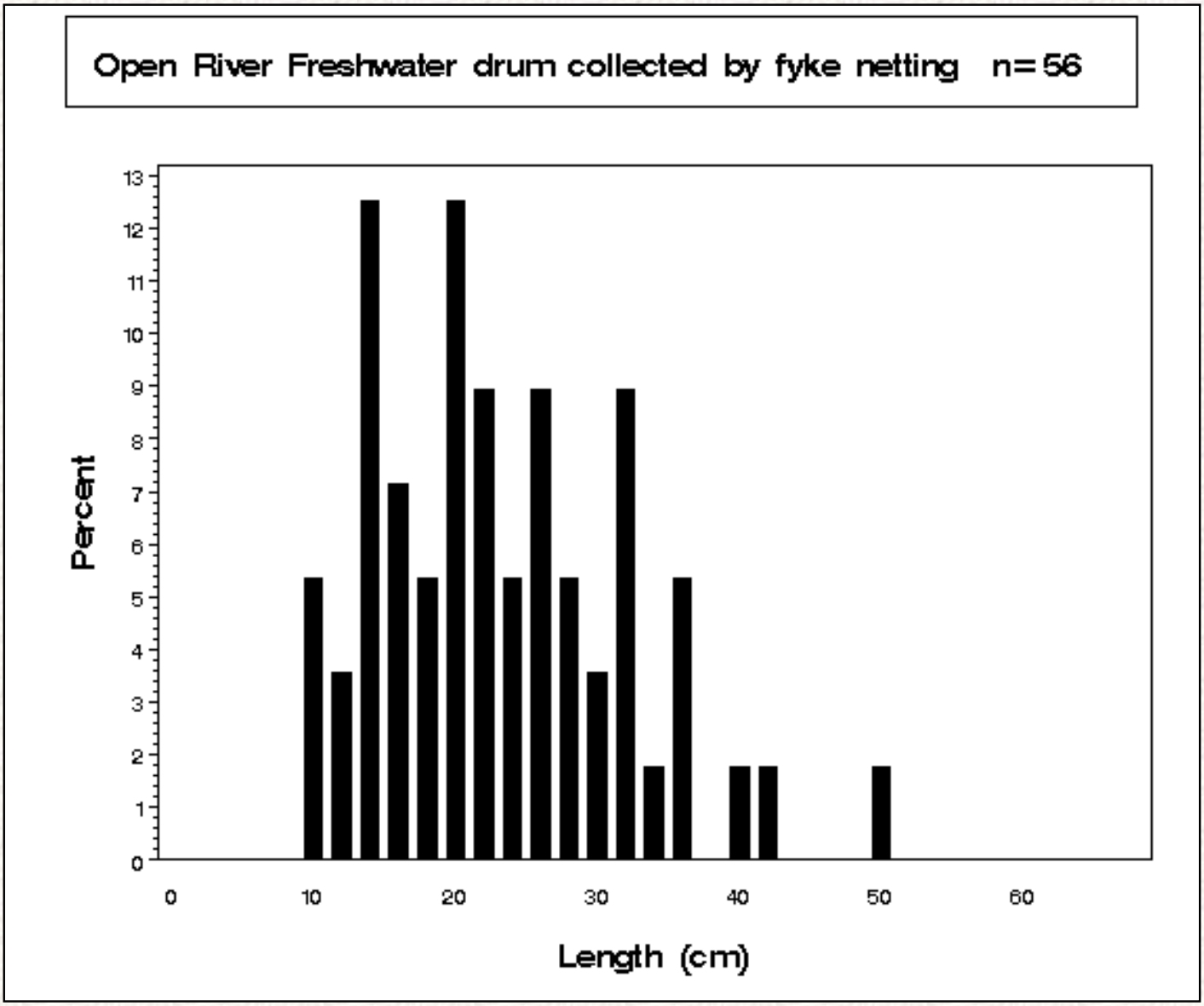
Figure 19.5 Length distributions (*length*) as a percentage of catch (*percent*) for freshwater drum (*Aplodinotus grunniens)* collected by fyke netting in Open River of the Upper Mississippi River during 2002. Click here to view this species' length distributions in all study reaches.



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La Grange Pool, Illinois River
2002 Fish Collection Summary

This report is a bullet summary of the Long Term Resource Monitoring Program's (LTRMP) fish collection efforts conducted by the Havana Field Station on La Grange Pool, Illinois River during 2002. Information on changes in fish catch over all years can be obtained from the Graphical Fish Database Browser.

- 402 fish collections were conducted using six gear types (Table 2.6).
- Water levels did not affect sample allocations. All gear allocations were completed among strata for all three sampling periods (Table 2.6; Figure 1.6).
- Two TWZ sites were sampled, La Grange Lock and Dam and Peoria Lock and Dam; data from both TWZ sites were combined for analysis (Table 2.6).
- Side channel border; main channel border, unstructured; and backwater, contiguous-shoreline strata received the most sampling effort (Table 2.6).
- 270,905 fish were collected representing 67 species and 4 hybrids. This is the largest annual LTRMP catch to date (Table 3.6).
- Fish distribution records for La Grange Pool of the Illinois River (Smith 1979) document 115 fish species from La Grange Pool.
- The LTRMP species total for La Grange Pool collected by LTRMP through 2002 is 85 species and 9 hybrids; blue sucker and pumpkinseed x bluegill hybrids were collected for the first time in 2002 (Table 3.6).
- Gizzard shad, unidentified clupeids, and threadfin shad catches accounted for 82%

of the total catch in 2002.

- 8 non-native species (and 3 non-native hybrids) have been collected by LTRMP monitoring of La Grange Pool; of these, only striped bass were not collected in 2002.
- No federal or state threatened or endangered species have been collected by LTRMP monitoring of La Grange Pool.
- Mean catch-per-unit-effort and standard effort for fish collected by gears using stratified random (Tables 4.6-11.6) and fixed-site sampling (Tables 14.6-21.6) for each stratum are shown.
- Length distributions for selected species of fish are shown in Figures 2.6 to19.6.

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Table 2.6 Allocation of fish sampling effort among strata in La Grange Pool of the Illinois River during 2002. 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		14	12					4	42
Fyke net	10								4	14
Large hoop net			8	8					4	20
Small hoop net			8	8					4	20
Mini fyke net	10		8	8					4	30
Trawling									8	8
Subtotal	**32**	**0**	**38**	**36**	**0**	**0**	**0**	**0**	**28**	**134**

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			8	8					4	20
Small hoop net			8	8					4	20
Mini fyke net	10		8	8					4	30
Trawling									8	8
Subtotal	**32**	**0**	**38**	**36**	**0**	**0**	**0**	**0**	**28**	**134**

Sampling period = 3: September 15–October 31

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			8	8					4	20
Small hoop net			8	8					4	20
Mini fyke net	10		8	8					4	30
Trawling									8	8
Subtotal	**32**	**0**	**38**	**36**	**0**	**0**	**0**	**0**	**28**	**134**
Total	**96**	**0**	**114**	**108**	**0**	**0**	**0**	**0**	**84**	**402**

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

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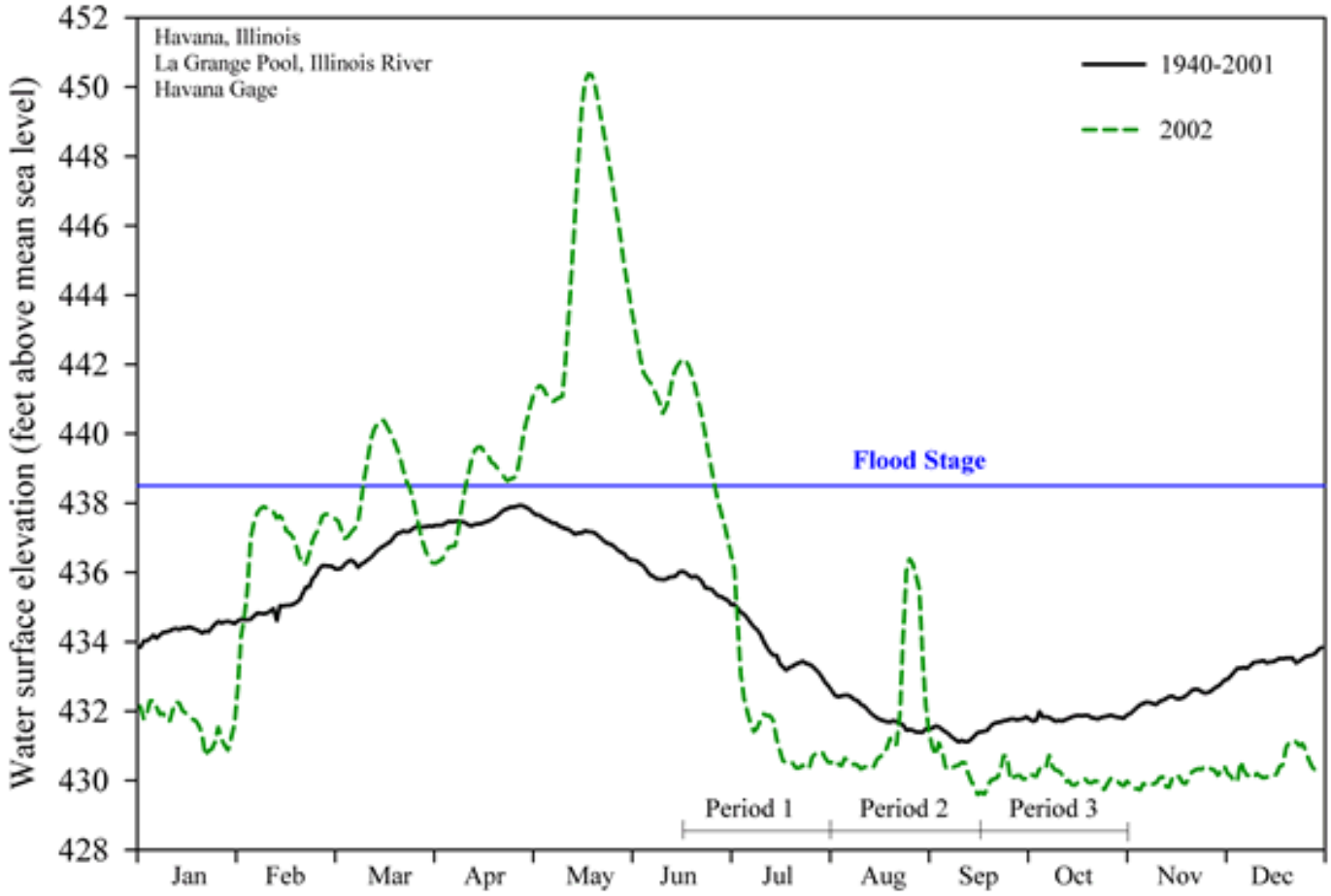

Figure 1.6. Daily water surface elevation from Havana Gage for La Grange Pool, Illinois River, during 2002 and mean elevation since 1940. The U.S. Army Corps of Engineers discharge data were obtained in accordance with Upper Midwest Environmental Sciences Center established procedures (Wlosinski et al. 1995).

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Table 3.6 Total catches, by gear type, of fish collected in La Grange Pool of the Illinois River during 2002. See Table 2.6 for the list of sampling gears actually deployed in this study reach.

Species	Common name	Scientific name	D	F	M	HS	HL	T	TOTAL
1	Paddlefish	*Polyodon spathula*	1	-	-	-	-	-	1
2	Spotted gar	*Lepisosteus oculatus*	6	11	2	-	-	-	19
3	Longnose gar	*L. osseus*	15	5	17	-	-	-	37
4	Shortnose gar	*Lepisosteus platostomus*	89	172	62	-	-	-	323
5	Bowfin	*Amia calva*	11	34	-	-	-	-	45
6	Goldeye	*Hiodon alosoides*	5	1	-	-	-	-	6
7	American eel	*Anguilla rostrata*	-	-	-	1	-	-	1
8	Skipjack herring	*Alosa chrysochloris*	217	14	77	-	-	1	309
9	Gizzard shad	*Dorosoma cepedianum*	22965	166	102568	3	10	2	125714
10	Threadfin shad	*D. petenense*	475	2	14273	-	-	-	14750
11	Unidentified herring	*Clupeidae* sp.	145	-	82661	-	-	-	82806
12	Central stoneroller	*Campostoma anomalum*	2	-	22	-	-	-	24
13	Goldfish	*Carassius auratus*	37	9	6	-	-	-	52

14	Grass carp	*Ctenopharyngodon idella*	30	1	2	2	2	-	37
15	Red shiner	*Cyprinella lutrensis*	30	-	90	-	-	-	120
16	Common carp	*Cyprinus carpio*	1617	141	487	328	486	1	3060
17	Carp x goldfish hybrid	*C. carpio x auratus*	27	6	-	-	1	-	34
18	Silver carp	*Hypopthalmichthys molitrix*	65	-	-	-	1	-	66
19	Bighead carp	*H. nobilis*	13	16	2	-	125	-	156
20	Silver chub	*Macrhybopsis storeriana*	6	-	15	-	-	-	21
21	Golden shiner	*Notemigonus crysoleucas*	20	-	48	-	-	-	68
22	Emerald shiner	*Notropis atherinoides*	1422	-	9595	-	-	2	11019
23	River shiner	*N. blennius*	4	-	26	-	-	-	30
24	Spottail shiner	*N. hudsonius*	18	-	161	-	-	-	179
25	Silverband shiner	*N. shumardi*	13	-	70	-	-	1	84
26	Sand shiner	*N. stramineus*	-	-	3	-	-	-	3
27	Bluntnose minnow	*Pimephales notatus*	-	-	21	-	-	-	21
28	Fathead minnow	*P. promelas*	1	-	-	-	-	-	1
29	Bullhead minnow	*P. vigilax*	87	-	297	-	-	-	384
30	River carpsucker	*Carpiodes carpio*	147	167	9	-	3	-	326
31	Quillback	*C. cyprinus*	10	2	-	-	2	-	14
32	Highfin carpsucker	*C. velifer*	4	2	-	-	-	-	6

33	White sucker	*Catostomus commersoni*	1	-	-	-	-	-	1
34	Blue sucker	*Cycleptus elongatus*	1	-	-	-	-	-	1
35	Smallmouth buffalo	*Ictiobus bubalus*	472	29	2	32	672	-	1207
36	Bigmouth buffalo	*I. cyprinellus*	590	6	1	-	1	-	598
37	Black buffalo	*I. niger*	48	4	-	1	8	-	61
38	Unidentified buffalo	*Ictiobus* sp.	35	-	947	-	-	-	982
39	Golden redhorse	*Moxostoma erythrurum*	-	-	1	-	3	-	4
40	Shorthead redhorse	*M. macrolepidotum*	14	19	2	1	2	-	38
41	Black bullhead	*Ameiurus melas*	154	18	998	-	-	-	1170
42	Yellow bullhead	*A. natalis*	15	25	43	-	-	-	83
43	Brown bullhead	*A.s nebulosus*	9	30	-	-	-	-	39
44	Channel catfish	*Ictalurus punctatus*	264	13	443	609	161	140	1630
45	Stonecat	*Noturus flavus*	-	-	-	-	-	1	1
46	Flathead catfish	*Pylodictis olivaris*	55	2	4	9	19	-	89
47	Grass pickerel	*Esox americanus vermiculatus*	-	-	1	-	-	-	1
48	Northern pike	*E. lucius*	2	-	-	-	-	-	2
49	Pirate perch	*Aphredoderus sayanus*	1	-	23	-	-	1	25
50	Blackstripe topminnow	*Fundulus notatus*	-	-	3	-	-	-	3
51	Western mosquitofish	*Gambusia affinis*	29	-	479	-	-	-	508

52	Brook silverside	*Labidesthes sicculus*	26	-	73	-	-	-	99
53	White perch	*Morone americana*	2	5	1	-	-	-	8
54	White bass	*M. chrysops*	1040	1290	2462	2	7	1	4802
55	Yellow bass	*M. mississippiensis*	19	72	30	-	-	-	121
56	White perch x Yellow bass	*M. americana x M. mississippiensis*	4	18	5	-	-	-	27
57	Green sunfish	*Lepomis cyanellus*	46	8	23	-	-	-	77
58	Warmouth	*L. gulosus*	14	9	11	-	-	-	34
59	Orangespotted sunfish	*L. humilis*	62	25	91	-	-	-	178
60	Bluegill	*L. macrochirus*	1075	567	8939	-	-	3	10584
61	Redear sunfish	*L.microlophus*	2	4	1	-	-	-	7
62	Green x bluegill sunfish	*L. cyanellus x macrochirus*	7	1	1	-	-	-	9
63	Pumpkinseed x bluegill	*L. gibbosus x macrochirus*	1	-	-	-	-	-	1
64	Smallmouth bass	*Micropterus dolomieu*	7	-	2	-	-	-	9
65	Largemouth bass	*M. salmoides*	371	8	62	-	-	-	441
66	White crappie	*Pomoxis annularis*	820	358	1712	1	3	2	2896
67	Black crappie	*P. nigromaculatus*	231	697	186	2	-	-	1116
68	Mud darter	*Etheostoma asprigene*	7	-	38	-	-	-	45
69	Johnny darter	*E. nigrum*	-	-	5	-	-	-	5
70	Logperch	*Percina caprodes*	5	-	92	-	-	1	98
71	Sauger	*Stizostedion canadense*	38	1	10	-	-	-	49
72	Walleye	*S. vitreum*	2	-	2	-	-	-	4

73	Freshwater drum	*Aplodinotus grunniens*	368	149	2622	20	93	884	4136
			33319	**4107**	**229829**	**1011**	**1599**	**1040**	**270905**

Sampling gears:
D - Day electrofishing
F - Fyke netting
M - Mini fyke netting
HS - Small hoop netting
HL - Large hoop netting

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La Grange Pool Tables

Table*	Stratified Random Sampling
4.6	Mean catch-per-unit-effort for fish collected by day electrofishing
6.6	Mean catch-per-unit-effort for fish collected by fyke netting
8.6	Mean catch-per-unit-effort for fish collected by mini fyke netting
10.6	Mean catch-per-unit-effort for fish collected by small hoop netting
11.6	Mean catch-per-unit-effort for fish collected by large hoop netting
	Fixed-site Sampling
14.6	Mean catch-per-unit-effort for fish collected by day electrofishing.
16.6	Mean catch-per-unit-effort for fish collected by fyke netting
17.6	Mean catch-per-unit-effort for fish collected by mini fyke netting
18.6	Mean catch-per-unit-effort for fish collected by small hoop netting
19.6	Mean catch-per-unit-effort for fish collected by large hoop netting
21.6	Mean catch-per-unit-effort for fish collected by bottom trawling
*Table numbers are not always in sequence because some gears were not fished in some study areas. Table numbers for each gear type are consistent among study areas.	

Table 4.6 Mean catch-per-unit-effort and (standard error) for fish collected by day electrofishing in La Grange Pool of the Illinois River using stratified random sampling during 2002. The statistics under ALL pertain to unbiased means over all strata sampled by this gear (as indicated by nonmissing entries below and by Table 2.6). See Methods for definitions of catch-per-unit-effort and standard error. Scientific names for the species listed can be found in Table 1.

Common name	ALL	BWCS	MCBU	SCB
Spotted gar	0.04	0.17		
	(0.04)	(0.14)		
Longnose gar	0.09		0.11	0.22
	(0.04)		(0.05)	(0.09)
Shortnose gar	0.62	0.61	0.64	0.44
	(0.13)	(0.33)	(0.14)	(0.13)
Bowfin	0.05	0.11	0.03	0.06
	(0.03)	(0.07)	(0.03)	(0.06)
Goldeye	0.02		0.03	
	(0.02)		(0.03)	
Skipjack herring	2.98	0.06	4.22	0.58
	(1.11)	(0.04)	(1.60)	(0.20)

Gizzard shad	167.68	78.14	193.61	277.89
	(40.60)	(22.93)	(57.50)	(86.20)
Threadfin shad	5.38	1.31	7.14	1.50
	(1.53)	(0.40)	(2.19)	(0.32)
Central stoneroller	0.02		0.03	
	(0.02)		(0.03)	
Goldfish	0.26	0.31	0.25	0.08
	(0.08)	(0.14)	(0.11)	(0.05)
Grass carp	0.12	0.25	0.06	0.28
	(0.05)	(0.13)	(0.06)	(0.12)
Red shiner	0.21	0.28	0.19	0.06
	(0.09)	(0.12)	(0.12)	(0.04)
Common carp	8.20	17.61	4.00	19.11
	(0.83)	(2.64)	(0.64)	(4.04)
Carp x goldfish hybrid	0.16	0.22	0.14	0.08
	(0.05)	(0.09)	(0.06)	(0.06)
Silver carp	0.20	0.36	0.08	1.11
	(0.10)	(0.36)	(0.05)	(0.39)
Bighead carp	0.05	0.11	0.03	0.08
	(0.03)	(0.07)	(0.03)	(0.05)
Silver chub	0.05	0.11	0.03	0.03
	(0.03)	(0.09)	(0.03)	(0.03)

Golden shiner	0.16	0.47	0.06	0.03
	(0.09)	(0.34)	(0.04)	(0.03)
Emerald shiner	12.21	5.47	14.58	14.08
	(2.97)	(2.54)	(4.16)	(3.90)
River shiner	0.05	0.06	0.06	
	(0.03)	(0.06)	(0.04)	
Spottail shiner	0.15	0.42	0.06	0.03
	(0.07)	(0.25)	(0.04)	(0.03)
Silverband shiner	0.16	0.03	0.22	0.03
	(0.07)	(0.03)	(0.10)	(0.03)
Fathead minnow	0.01	0.03		
	(0.01)	(0.03)		
Bullhead minnow	1.17	0.69	1.42	0.11
	(0.72)	(0.29)	(1.03)	(0.07)
River carpsucker	1.46	1.69	1.42	0.75
	(0.33)	(0.60)	(0.42)	(0.31)
Quillback	0.08	0.22	0.03	0.03
	(0.04)	(0.12)	(0.03)	(0.03)
Highfin carpsucker	0.02	0.08		
	(0.02)	(0.08)		

Blue sucker	0.02		0.03	
	(0.02)		(0.03)	
Smallmouth buffalo	2.62	5.86	1.36	3.47
	(0.41)	(0.75)	(0.52)	(0.97)
Bigmouth buffalo	3.44	10.00	0.97	4.14
	(0.84)	(2.78)	(0.64)	(1.50)
Black buffalo	0.28	0.89	0.06	0.31
	(0.06)	(0.20)	(0.06)	(0.10)
Unidentified buffalo	0.29	0.39	0.25	0.25
	(0.09)	(0.17)	(0.12)	(0.12)
Shorthead redhorse	0.11	0.03	0.14	0.11
	(0.04)	(0.03)	(0.06)	(0.05)
Black bullhead	2.53	0.33	3.47	0.47
	(1.97)	(0.11)	(2.84)	(0.42)
Yellow bullhead	0.11	0.33	0.03	0.06
	(0.04)	(0.14)	(0.03)	(0.04)
Brown bullhead	0.06	0.25		
	(0.02)	(0.08)		
Channel catfish	1.81	2.19	1.61	2.69
	(0.26)	(0.65)	(0.28)	(0.98)
Flathead catfish	0.28	0.33	0.25	0.36

	(0.07)	(0.16)	(0.07)	(0.11)
Northern pike	0.01	0.06		
	(0.01)	(0.06)		
Pirate perch	0.00			0.03
	(0.00)			(0.03)
Western mosquitofish	0.35	0.14	0.44	0.14
	(0.21)	(0.08)	(0.30)	(0.06)
Brook silverside	0.20	0.61	0.06	0.06
	(0.09)	(0.31)	(0.06)	(0.06)
White perch	0.00			0.03
	(0.00)			(0.03)
White bass	5.75	3.14	6.75	5.31
	(1.04)	(0.71)	(1.48)	(0.91)
Yellow bass	0.08	0.08	0.08	0.11
	(0.05)	(0.06)	(0.06)	(0.07)
Green sunfish	0.26	0.75	0.08	0.08
	(0.09)	(0.31)	(0.05)	(0.05)
Warmouth	0.06	0.22		
	(0.02)	(0.08)		
Orangespotted sunfish	0.47	1.42	0.14	0.17
	(0.13)	(0.44)	(0.09)	(0.09)
Bluegill	5.61	17.28	1.50	2.44

	(1.00)	(3.72)	(0.40)	(0.42)
Green x bluegill sunfish	0.02	0.08		
	(0.01)	(0.05)		
Smallmouth bass	0.02		0.03	0.03
	(0.02)		(0.03)	(0.03)
Largemouth bass	1.83	5.61	0.47	1.31
	(0.35)	(1.29)	(0.16)	(0.78)
White crappie	3.24	10.94	0.50	1.44
	(1.12)	(4.35)	(0.14)	(0.49)
Black crappie	1.38	4.22	0.36	0.83
	(0.30)	(1.11)	(0.11)	(0.33)
Mud darter	0.07	0.03	0.08	0.06
	(0.04)	(0.03)	(0.06)	(0.04)
Logperch	0.02		0.03	0.08
	(0.02)		(0.03)	(0.05)
Sauger	0.39	0.06	0.53	0.28
	(0.12)	(0.04)	(0.17)	(0.14)
Walleye	0.04		0.06	
	(0.03)		(0.04)	
Freshwater drum	3.46	4.22	3.25	2.33
	(0.52)	(0.77)	(0.70)	(0.53)

Sampling strata:
BWCS - Backwater, contiguous, shoreline
MCBU - Main channel border, unstructured
SCB - Side channel border

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Table 6.6 Mean catch-per-unit-effort and (standard error) for fish collected by fyke netting in La Grange Pool of the Illinois River using stratified random sampling during 2002. The statistics under ALL pertain to unbiased means over all strata sampled by this gear (as indicated by nonmissing entries below and by Table 2.6). See Methods for definitions of catch-per-unit-effort and standard error. Scientific names for the species listed can be found in Table 1.

Common name	ALL	BWCS
Spotted gar	0.36	0.36
	(0.33)	(0.33)
Longnose gar	0.03	0.03
	(0.03)	(0.03)
Shortnose gar	2.71	2.71
	(0.89)	(0.89)
Bowfin	1.06	1.06
	(0.36)	(0.36)
Gizzard shad	2.67	2.67
	(0.92)	(0.93)
Threadfin shad	0.07	0.07
	(0.05)	(0.05)

Goldfish	0.03	0.03
	(0.03)	(0.03)
Grass carp	0.03	0.03
	(0.03)	(0.03)
Common carp	3.42	3.42
	(0.75)	(0.75)
Carp x goldfish hybrid	0.19	0.19
	(0.08)	(0.09)
Bighead carp	0.49	0.49
	(0.20)	(0.20)
River carpsucker	5.25	5.25
	(2.78)	(2.79)
Quillback	0.06	0.06
	(0.04)	(0.04)
Highfin carpsucker	0.03	0.03
	(0.03)	(0.03)
Smallmouth buffalo	0.92	0.92
	(0.25)	(0.25)
Bigmouth buffalo	0.20	0.20
	(0.10)	(0.10)
Black buffalo	0.10	0.10
	(0.05)	(0.05)

Shorthead redhorse	0.46	0.46
	(0.17)	(0.17)
Black bullhead	0.40	0.40
	(0.19)	(0.19)
Yellow bullhead	0.74	0.74
	(0.38)	(0.38)
Brown bullhead	0.90	0.90
	(0.23)	(0.23)
Channel catfish	0.36	0.36
	(0.14)	(0.14)
White perch	0.03	0.03
	(0.03)	(0.03)
White bass	12.10	12.10
	(4.10)	(4.12)
Yellow bass	1.70	1.70
	(0.96)	(0.96)
Green sunfish	0.23	0.23
	(0.12)	(0.12)
Warmouth	0.30	0.30
	(0.23)	(0.23)
Orangespotted sunfish	0.36	0.36
	(0.19)	(0.19)

Bluegill	10.30	10.30
	(2.43)	(2.44)
Redear sunfish	0.10	0.10
	(0.06)	(0.06)
Green x bluegill sunfish	0.03	0.03
	(0.03)	(0.03)
Largemouth bass	0.23	0.23
	(0.11)	(0.11)
White crappie	6.60	6.60
	(1.86)	(1.87)
Black crappie	18.20	18.20
	(4.95)	(4.97)
Freshwater drum	4.10	4.10
	(1.28)	(1.28)

Sampling stratum:
BWCS - Backwater, contiguous, shoreline

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Table 8.6 Mean catch-per-unit-effort and (standard error) for fish collected by mini fyke netting in La Grange Pool of the Illinois River using stratified random sampling during 2002. The statistics under ALL pertain to unbiased means over all strata sampled by this gear (as indicated by nonmissing entries below and by Table 2.6). See Methods for definitions of catch-per-unit-effort and standard error. Scientific names for the species listed can be found in Table 1.

Common name	ALL	BWCS	MCBU	SCB
Spotted gar	0.02	0.06		
	(0.01)	(0.04)		
Longnose gar	0.14	0.31	0.08	0.10
	(0.07)	(0.22)	(0.06)	(0.10)
Shortnose gar	0.94	0.55	1.09	0.78
	(0.25)	(0.27)	(0.35)	(0.33)
Skipjack herring	0.92	0.09	1.23	0.98
	(0.45)	(0.09)	(0.64)	(0.46)
Gizzard shad	558.25	202.54	689.06	570.90
	(339.57)	(84.73)	(486.75)	(249.75)
Threadfin shad	359.97	1.89	508.88	109.11
	(304.40)	(1.17)	(437.43)	(95.60)

Central stoneroller	0.51		0.74	
	(0.33)		(0.47)	
Goldfish	0.18		0.26	
	(0.12)		(0.18)	
Grass carp	0.06		0.08	
	(0.06)		(0.08)	
Red shiner	0.63	0.16	0.81	0.51
	(0.48)	(0.10)	(0.69)	(0.29)
Common carp	13.49	0.38	19.18	0.71
	(9.86)	(0.23)	(14.16)	(0.32)
Bighead carp	0.02	0.06		
	(0.02)	(0.06)		
Silver chub	0.16	0.13	0.17	0.20
	(0.08)	(0.13)	(0.10)	(0.12)
Golden shiner	0.25	0.36	0.17	0.89
	(0.09)	(0.15)	(0.10)	(0.84)
Emerald shiner	13.98	7.38	15.54	27.62
	(5.98)	(2.85)	(8.52)	(7.78)
River shiner	0.14		0.20	
	(0.14)		(0.20)	
Spottail shiner	2.14		2.98	1.38
	(0.89)		(1.28)	(1.11)

Silverband shiner	0.54	0.38	0.62	0.11
	(0.22)	(0.32)	(0.29)	(0.11)
Sand shiner	0.09		0.12	
	(0.09)		(0.12)	
Bluntnose minnow	0.01			0.30
	(0.01)			(0.30)
Bullhead minnow	2.32	0.38	3.05	2.16
	(1.07)	(0.15)	(1.54)	(1.46)
River carpsucker	0.11	0.07	0.13	
	(0.07)	(0.05)	(0.09)	
Smallmouth buffalo	0.02	0.07		
	(0.01)	(0.05)		
Bigmouth buffalo	0.00			0.05
	(0.00)			(0.05)
Unidentified buffalo	21.71	0.39	30.72	4.52
	(14.07)	(0.15)	(20.22)	(2.68)
Shorthead redhorse	0.06		0.09	
	(0.04)		(0.06)	
Black bullhead	25.69	0.89	36.43	1.68

	(24.91)	(0.28)	(35.80)	(1.00)
Yellow bullhead	0.53	0.88	0.43	0.10
	(0.28)	(0.31)	(0.39)	(0.07)
Channel catfish	4.65	1.24	5.86	5.54
	(1.29)	(0.34)	(1.84)	(2.02)
Flathead catfish	0.03		0.04	
	(0.03)		(0.04)	
Pirate perch	0.06	0.24		
	(0.03)	(0.11)		
Blackstripe topminnow	0.03	0.10		
	(0.02)	(0.07)		
Western mosquitofish	4.85	1.49	5.50	13.87
	(2.74)	(0.92)	(3.86)	(10.15)
Brook silverside	0.69	2.03	0.21	0.31
	(0.38)	(1.45)	(0.14)	(0.26)
White perch	0.00			0.05
	(0.00)			(0.05)
White bass	27.56	2.58	35.64	45.37
	(12.69)	(1.56)	(18.17)	(21.88)
Yellow bass	0.24	0.44	0.17	0.16
	(0.11)	(0.31)	(0.10)	(0.12)
Green sunfish	0.14	0.06	0.17	0.05

	(0.09)	(0.04)	(0.13)	(0.05)
Warmouth	0.04	0.13		0.10
	(0.03)	(0.10)		(0.10)
Orangespotted sunfish	0.62	0.99	0.48	0.56
	(0.19)	(0.36)	(0.24)	(0.23)
Bluegill	26.80	10.59	9.31	386.23
	(17.63)	(8.14)	(6.43)	(377.27)
Smallmouth bass	0.06		0.08	
	(0.04)		(0.06)	
Largemouth bass	1.00	0.29	1.27	0.82
	(0.46)	(0.20)	(0.65)	(0.57)
White crappie	7.65	4.16	5.23	64.27
	(3.19)	(3.21)	(2.54)	(56.34)
Black crappie	0.75	0.62	0.42	6.52
	(0.28)	(0.42)	(0.17)	(5.01)
Mud darter	0.71	0.16	0.94	0.16
	(0.48)	(0.11)	(0.69)	(0.09)
Johnny darter	0.06		0.08	0.05
	(0.04)		(0.06)	(0.05)
Logperch	0.82		1.14	0.58
	(0.45)		(0.65)	(0.53)
Sauger	0.07	0.04	0.08	0.16

	(0.04)	(0.04)	(0.06)	(0.12)
Walleye	0.06		0.08	
	(0.04)		(0.06)	
Freshwater drum	56.73	9.69	77.14	10.77
	(49.46)	(6.30)	(71.05)	(6.54)

Sampling stratum:
BWCS - Backwater, contiguous, shoreline
MCBU - Main channel border, unstructured
SCB - Side channel border

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Table 10.6 Mean catch-per-unit-effort and (standard error) for fish collected by small hoop netting in La Grange Pool of the Illinois River using stratified random sampling during 2002. The statistics under ALL pertain to unbiased means over all strata sampled by this gear (as indicated by nonmissing entries below and by Table 2.6). See Methods for definitions of catch-per-unit-effort and standard error. Scientific names for the species listed can be found in Table 1.

Common name	ALL	MCBU	SCB
Gizzard shad	0.06	0.06	
	(0.04)	(0.04)	
Grass carp	0.04	0.04	
	(0.04)	(0.04)	
Common carp	2.61	2.73	0.71
	(0.90)	(0.96)	(0.21)
Smallmouth buffalo	0.31	0.32	0.26
	(0.13)	(0.14)	(0.26)
Black buffalo	0.02	0.02	
	(0.02)	(0.02)	
Shorthead redhorse	0.00		0.03

	(0.00)		(0.03)
Channel catfish	8.31	8.52	5.08
	(3.68)	(3.91)	(4.50)
Flathead catfish	0.04	0.04	0.08
	(0.03)	(0.03)	(0.05)
White bass	0.04	0.04	
	(0.03)	(0.03)	
White crappie	0.02	0.02	
	(0.02)	(0.02)	
Black crappie	0.04	0.04	
	(0.03)	(0.03)	
Freshwater drum	0.17	0.17	0.17
	(0.07)	(0.07)	(0.08)

Sampling strata:
MCBU - Main channel border, unstructured
SCB - Side channel border

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Table 11.6 Mean catch-per-unit-effort and (standard error) for fish collected by large hoop netting in La Grange Pool of the Illinois River using stratified random sampling during 2002. The statistics under ALL pertain to unbiased means over all strata sampled by this gear (as indicated by nonmissing entries below and by Table 2.6). See Methods for definitions of catch-per-unit-effort and standard error. Scientific names for the species listed can be found in Table 1.

Common name	ALL	MCBU	SCB
Gizzard shad	0.08	0.08	0.03
	(0.05)	(0.05)	(0.03)
Grass carp	0.02	0.02	0.03
	(0.02)	(0.02)	(0.03)
Common carp	2.67	2.63	3.26
	(0.86)	(0.92)	(0.98)
Silver carp	0.00		0.03
	(0.00)		(0.03)
Bighead carp	1.83	1.92	0.49
	(0.88)	(0.94)	(0.34)
River carpsucker	0.02	0.02	0.03
	(0.02)	(0.02)	(0.03)

Quillback	0.04	0.04	
	(0.03)	(0.03)	
Smallmouth buffalo	7.85	8.15	3.24
	(1.83)	(1.95)	(1.08)
Bigmouth buffalo	0.02	0.02	
	(0.02)	(0.02)	
Black buffalo	0.14	0.14	
	(0.08)	(0.09)	
Golden redhorse	0.06	0.06	
	(0.04)	(0.05)	
Shorthead redhorse	0.04	0.04	
	(0.03)	(0.03)	
Channel catfish	2.23	2.30	1.14
	(0.70)	(0.75)	(0.55)
Flathead catfish	0.02	0.02	0.03
	(0.02)	(0.02)	(0.03)
White bass	0.04	0.04	
	(0.04)	(0.04)	
White crappie	0.04	0.04	0.03
	(0.04)	(0.04)	(0.03)
Freshwater drum	1.06	1.12	0.22
	(0.66)	(0.70)	(0.15)

Sampling strata:
MCBU - Main channel border, unstructured
SCB - Side channel border

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Table 14.6 Mean catch-per-unit-effort and (standard error) for fish collected by day electrofishing in La Grange Pool of the Illinois River using fixed-site sampling during 2002. See Methods for definitions of catch-per-unit-effort and standard error. Scientific names for the species listed can be found in Table 1.

Common name	SCB	TWZ
Paddlefish	0.00	0.08
	(0.00)	(0.08)
Longnose gar	0.50	0.00
	(0.22)	(0.00)
Shortnose gar	0.50	2.08
	(0.22)	(0.82)
Bowfin	0.00	0.33
	(0.00)	(0.26)
Goldeye	0.00	0.33
	(0.00)	(0.26)
Skipjack herring	0.67	3.17
	(0.42)	(1.84)
Gizzard shad	188.67	170.50

	(86.34)	(91.08)
Threadfin shad	1.50	9.00
	(0.50)	(3.23)
Central stoneroller	0.17	0.00
	(0.17)	(0.00)
Goldfish	0.00	1.17
	(0.00)	(0.34)
Grass carp	1.00	0.25
	(0.52)	(0.18)
Red shiner	1.17	0.33
	(0.79)	(0.26)
Common carp	13.67	5.75
	(1.84)	(1.49)
Carp x goldfish hybrid	0.67	0.58
	(0.49)	(0.36)
Silver carp	0.83	0.33
	(0.48)	(0.14)
Bighead carp	0.83	0.00
	(0.65)	(0.00)
Emerald shiner	8.33	11.92
	(4.96)	(9.79)
Silverband shiner	0.00	0.25
	(0.00)	(0.18)

Bullhead minnow	0.83	0.17
	(0.54)	(0.11)
River carpsucker	1.17	0.08
	(0.60)	(0.08)
Highfin carpsucker	0.17	0.00
	(0.17)	(0.00)
White sucker	0.00	0.08
	(0.00)	(0.08)
Smallmouth buffalo	4.00	5.25
	(1.24)	(2.48)
Bigmouth buffalo	6.17	0.75
	(1.72)	(0.28)
Black buffalo	0.33	0.08
	(0.21)	(0.08)
Unidentified buffalo	0.17	0.17
	(0.17)	(0.17)
Shorthead redhorse	0.33	0.17
	(0.21)	(0.17)
Channel catfish	0.67	2.17
	(0.33)	(1.55)
Flathead catfish	2.00	0.75
	(0.68)	(0.30)
Western mosquitofish	0.50	0.00

	(0.34)	(0.00)
White perch	0.00	0.08
	(0.00)	(0.08)
White bass	6.83	37.67
	(2.56)	(8.62)
Yellow bass	0.00	0.75
	(0.00)	(0.45)
Green sunfish	0.33	0.92
	(0.21)	(0.48)
Warmouth	0.00	0.50
	(0.00)	(0.19)
Bluegill	4.67	23.58
	(1.91)	(4.38)
Redear sunfish	0.00	0.17
	(0.00)	(0.11)
Green x bluegill sunfish	0.00	0.33
	(0.00)	(0.33)
Pumpkinseed x bluegill	0.00	0.08
	(0.00)	(0.08)
Smallmouth bass	0.00	0.42
	(0.00)	(0.23)
Largemouth bass	0.50	8.50
	(0.50)	(2.21)

White crappie	2.00	28.67
	(0.86)	(13.34)
Black crappie	1.50	2.25
	(0.43)	(0.74)
Mud darter	0.17	0.00
	(0.17)	(0.00)
Logperch	0.00	0.08
	(0.00)	(0.08)
Sauger	0.00	0.58
	(0.00)	(0.34)
Freshwater drum	1.50	0.50
	(0.62)	(0.26)

Sampling strata:
SCB - Side channel border
TWZ - Tailwater

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Table 16.6 Mean catch-per-unit-effort and (standard error) for fish collected by fyke netting in La Grange Pool of the Illinois River using fixed-site sampling during 2002. See Methods for definitions of catch-per-unit-effort and standard error. Scientific names for the species listed can be found in Table 1.

Common name	TWZ
Longnose gar	0.34
	(0.23)
Shortnose gar	7.20
	(2.07)
Bowfin	0.17
	(0.12)
Goldeye	0.08
	(0.08)
Skipjack herring	1.16
	(0.89)
Gizzard shad	6.86
	(3.30)
Goldfish	0.69

	(0.46)
Common carp	2.97
	(1.86)
Bighead carp	0.09
	(0.09)
River carpsucker	0.17
	(0.11)
Highfin carpsucker	0.08
	(0.08)
Black buffalo	0.09
	(0.09)
Shorthead redhorse	0.42
	(0.42)
Black bullhead	0.50
	(0.20)
Yellow bullhead	0.08
	(0.08)
Brown bullhead	0.17
	(0.12)
Channel catfish	0.16
	(0.11)
Flathead catfish	0.17
	(0.12)

White perch	0.34
	(0.26)
White bass	76.27
	(38.49)
Yellow bass	1.42
	(0.57)
Green sunfish	0.09
	(0.09)
Orangespotted sunfish	1.11
	(0.73)
Bluegill	21.22
	(13.15)
Redear sunfish	0.09
	(0.09)
Largemouth bass	0.08
	(0.08)
White crappie	13.31
	(5.24)
Black crappie	11.76
	(5.49)
Sauger	0.08
	(0.08)
Freshwater drum	2.03

	(1.07)

Sampling stratum:
TWZ - Tailwater

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Table 17.6 Mean catch-per-unit-effort and (standard error) for fish collected by mini fyke netting in La Grange Pool of the Illinois River using fixed-site sampling during 2002. See Methods for definitions of catch-per-unit-effort and standard error. Scientific names for the species listed can be found in Table 1.

Common name	SCB	TWZ
Longnose gar	0.61	0.00
	(0.61)	(0.00)
Shortnose gar	0.40	0.16
	(0.25)	(0.11)
Skipjack herring	3.93	0.49
	(3.68)	(0.33)
Gizzard shad	12380.7	623.77
	(12373.5)	(602.21)
Threadfin shad	5.75	0.51
	(3.28)	(0.30)
Central stoneroller	0.43	0.18
	(0.43)	(0.12)
Red shiner	0.00	4.97

	(0.00)	(4.88)
Common carp	1.66	0.65
	(0.71)	(0.34)
Silver chub	0.64	0.00
	(0.64)	(0.00)
Golden shiner	0.62	1.08
	(0.41)	(0.74)
Emerald shiner	19.31	664.61
	(6.20)	(572.44)
River shiner	0.00	1.65
	(0.00)	(1.65)
Spottail shiner	7.31	2.49
	(6.16)	(1.88)
Silverband shiner	2.05	2.49
	(1.07)	(2.04)
Bluntnose minnow	0.00	1.36
	(0.00)	(1.36)
Bullhead minnow	4.09	12.17
	(3.34)	(9.08)
River carpsucker	0.00	0.34
	(0.00)	(0.34)
Unidentified buffalo	3.00	9.59
	(1.84)	(9.50)

Golden redhorse	0.00	0.08
	(0.00)	(0.08)
Black bullhead	0.61	6.88
	(0.25)	(4.18)
Yellow bullhead	0.20	0.24
	(0.20)	(0.24)
Channel catfish	3.51	11.46
	(1.33)	(6.20)
Flathead catfish	0.20	0.17
	(0.20)	(0.11)
Grass pickerel	0.00	0.08
	(0.00)	(0.08)
Pirate perch	0.00	1.26
	(0.00)	(1.26)
Western mosquitofish	5.53	0.91
	(4.51)	(0.63)
White bass	46.10	36.33
	(30.40)	(18.93)
Yellow bass	0.20	0.64
	(0.20)	(0.34)
Green sunfish	0.00	1.31
	(0.00)	(0.62)
Warmouth	0.20	0.31

	(0.20)	(0.31)
Orangespotted sunfish	1.02	2.57
	(0.79)	(1.77)
Bluegill	187.31	10.09
	(185.32)	(5.60)
Redear sunfish	0.00	0.08
	(0.00)	(0.08)
Green x bluegill sunfish	0.00	0.08
	(0.00)	(0.08)
Largemouth bass	1.02	0.17
	(0.65)	(0.12)
White crappie	35.69	4.49
	(34.70)	(1.00)
Black crappie	2.45	1.66
	(1.98)	(0.96)
Mud darter	0.82	0.34
	(0.82)	(0.23)
Johnny darter	0.00	0.18
	(0.00)	(0.12)
Logperch	2.04	3.69
	(2.04)	(2.36)
Sauger	0.21	0.24
	(0.21)	(0.13)

Freshwater drum	50.80	1.72
	(44.81)	(1.03)

Sampling strata:
SCB - Side channel border
TWZ - Tailwater

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Table 18.6 Mean catch-per-unit-effort and (standard error) for fish collected by small hoop netting in La Grange Pool of the Illinois River using fixed-site sampling during 2002. See Methods for definitions of catch-per-unit-effort and standard error. Scientific names for the species listed can be found in Table 1.

Common name	SCB	TWZ
American eel	0.09	0.00
	(0.09)	(0.00)
Common carp	1.52	6.45
	(0.97)	(2.77)
Smallmouth buffalo	0.17	0.25
	(0.17)	(0.10)
Channel catfish	1.00	0.25
	(0.50)	(0.17)
Flathead catfish	0.00	0.17
	(0.00)	(0.11)
Freshwater drum	0.08	0.21
	(0.08)	(0.08)

Sampling strata:
SCB - Side channel border

TWZ - Tailwater

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Table 19.6 Mean catch-per-unit-effort and (standard error) for fish collected by large hoop netting in La Grange Pool of the Illinois River using fixed-site sampling during 2002. See Methods for definitions of catch-per-unit-effort and standard error. Scientific names for the species listed can be found in Table 1.

Common name	SCB	TWZ
Gizzard shad	0.08	0.16
	(0.08)	(0.16)
Common carp	8.42	6.05
	(3.06)	(3.06)
Carp x goldfish hybrid	0.00	0.04
	(0.00)	(0.04)
Bighead carp	0.17	0.66
	(0.11)	(0.66)
River carpsucker	0.00	0.04
	(0.00)	(0.04)
Smallmouth buffalo	7.20	3.28
	(3.84)	(1.43)
Black buffalo	0.08	0.00

	(0.08)	(0.00)
Channel catfish	0.00	0.51
	(0.00)	(0.26)
Flathead catfish	0.09	0.67
	(0.09)	(0.34)
White bass	0.00	0.20
	(0.00)	(0.11)
Freshwater drum	0.51	1.04
	(0.51)	(0.24)

Sampling strata:
SCB - Side channel border
TWZ - Tailwater

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Table 21.6 Mean catch-per-unit-effort and (standard error) for fish collected by bottom trawling in La Grange Pool of the Illinois River using fixed-site sampling during 2002. See Methods for definitions of catch-per-unit-effort and standard error. Scientific names for the species listed can be found in Table 1.

Common name	TWZ
Skipjack herring	0.04
	(0.04)
Gizzard shad	0.08
	(0.06)
Common carp	0.04
	(0.04)
Emerald shiner	0.08
	(0.08)
Silverband shiner	0.04
	(0.04)
Channel catfish	5.83
	(2.35)
Stonecat	0.04

	(0.04)
Pirate perch	0.04
	(0.04)
White bass	0.04
	(0.04)
Bluegill	0.13
	(0.09)
White crappie	0.08
	(0.08)
Logperch	0.04
	(0.04)
Freshwater drum	36.83
	(34.48)

Sampling stratum:
SCB - Side channel border

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La Grange Pool Length Distributions

Length distributions (length) as a percentage of catch (percent) for selected species of interest collected by the Long Term Resource Monitoring Program. Fish species are listed in phylogenetical order following Robins et al. (1991) nomenclature. 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 because of local interest, while others were omitted (reach dependent). Scientific names for the species listed can be found in Table 1.

Figure*	Species	Method
2.6	Gizzard shad	Electrofishing
3.6	Common carp	Electrofishing
4.6	Smallmouth buffalo	Electrofishing
5.6	Smallmouth buffalo	Hoop netting
6.6	Channel catfish	Electrofishing
7.6	Channel catfish	Hoop netting
8.6	Northern pike	Electrofishing
10.6	White bass	Electrofishing
11.6	Bluegill	Electrofishing
12.6	Bluegill	Fyke netting
13.6	Largemouth bass	Electrofishing
14.6	White crappie	Fyke netting
15.6	Black crappie	Fyke netting
16.6	Sauger	Electrofishing

17.6	Walleye	Electrofishing
18.6	Freshwater drum	Electrofishing
19.6	Freshwater drum	Fyke netting

*Figure numbers are not always in sequence because some species were not caught in some study areas. Figure numbers for each species and gear type are consistent among study areas.

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Figure 2.6 Length distributions (*length*) as a percentage of catch (*percent*) for gizzard shad (*Dorosoma cepedianum)* collected by electrofishing in La Grange Pool of the Illinois River during 2002. Click here to view this species' length distributions in all study reaches.

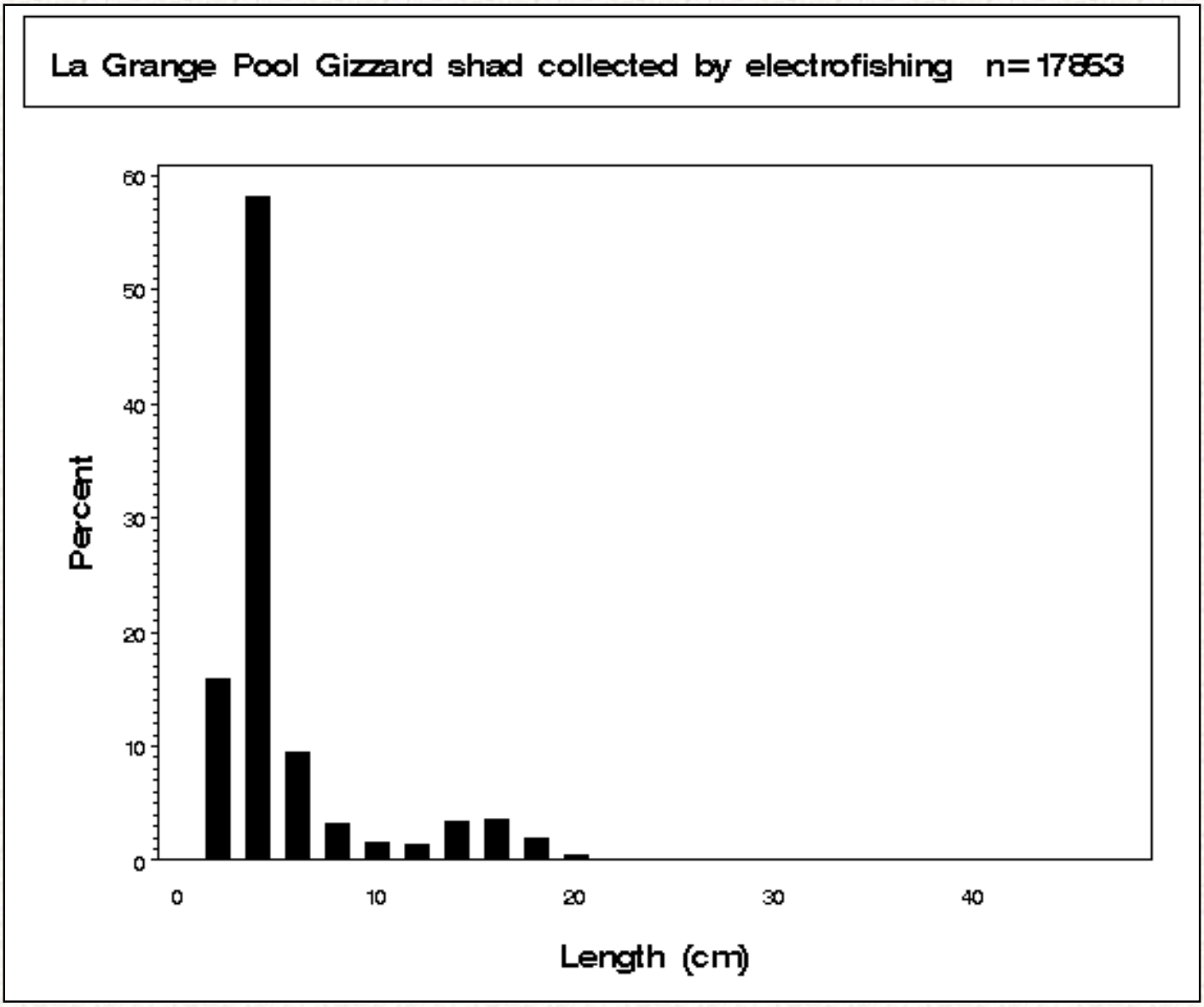

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Figure 3.6 Length distributions (*length*) as a percentage of catch (*percent*) for common carp (*Cyprinus carpio)* collected by electrofishing in La Grange Pool of the Illinois River during 2002. Click here to view this species' length distributions in all study reaches.

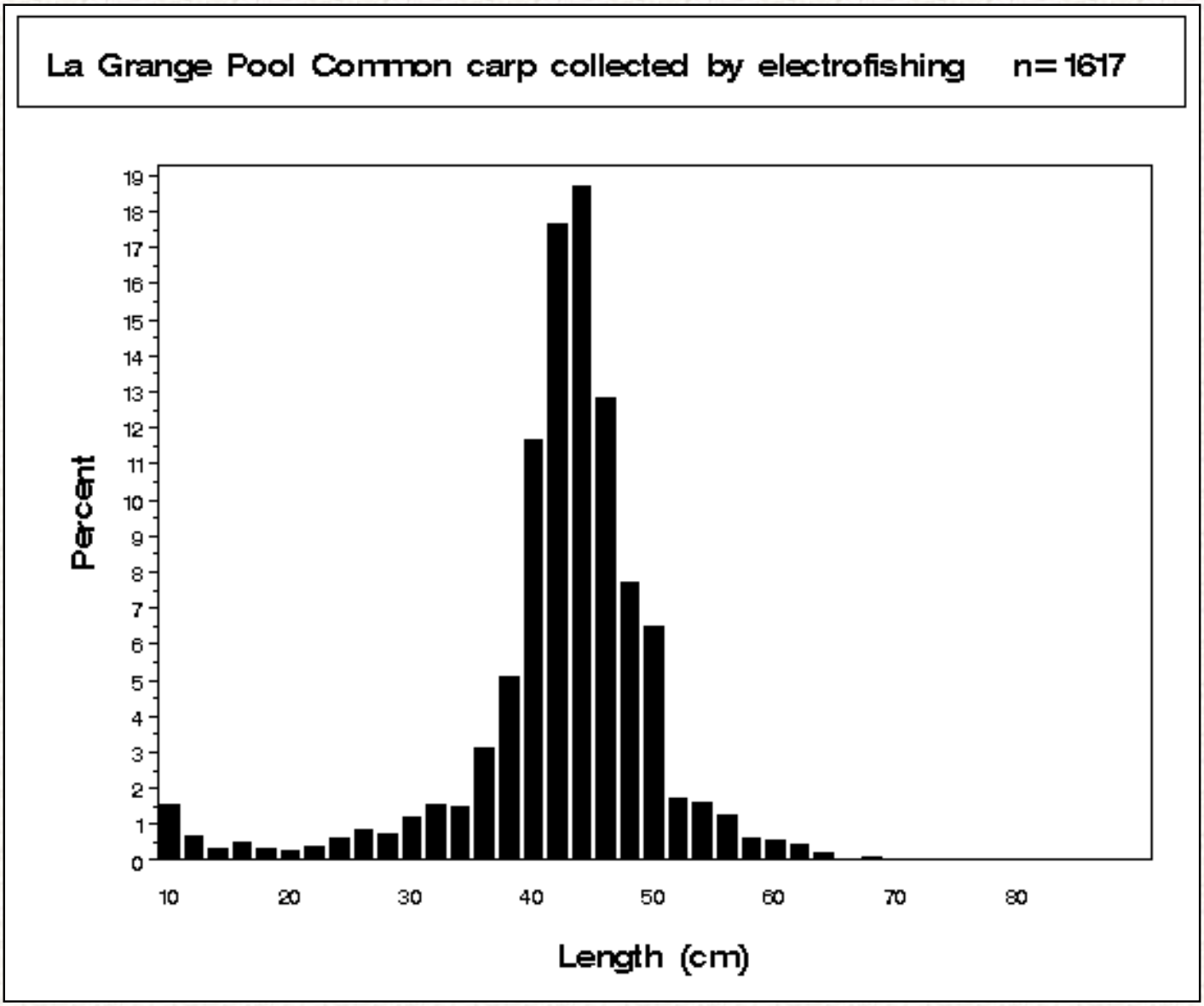

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Figure 4.6 Length distributions (*length*) as a percentage of catch (*percent*) for smallmouth buffalo (*Ictiobus bubalus)* collected by electrofishing in La Grange Pool of the Upper Mississippi River during 2002. Click here to view this species' length distributions in all study reaches.

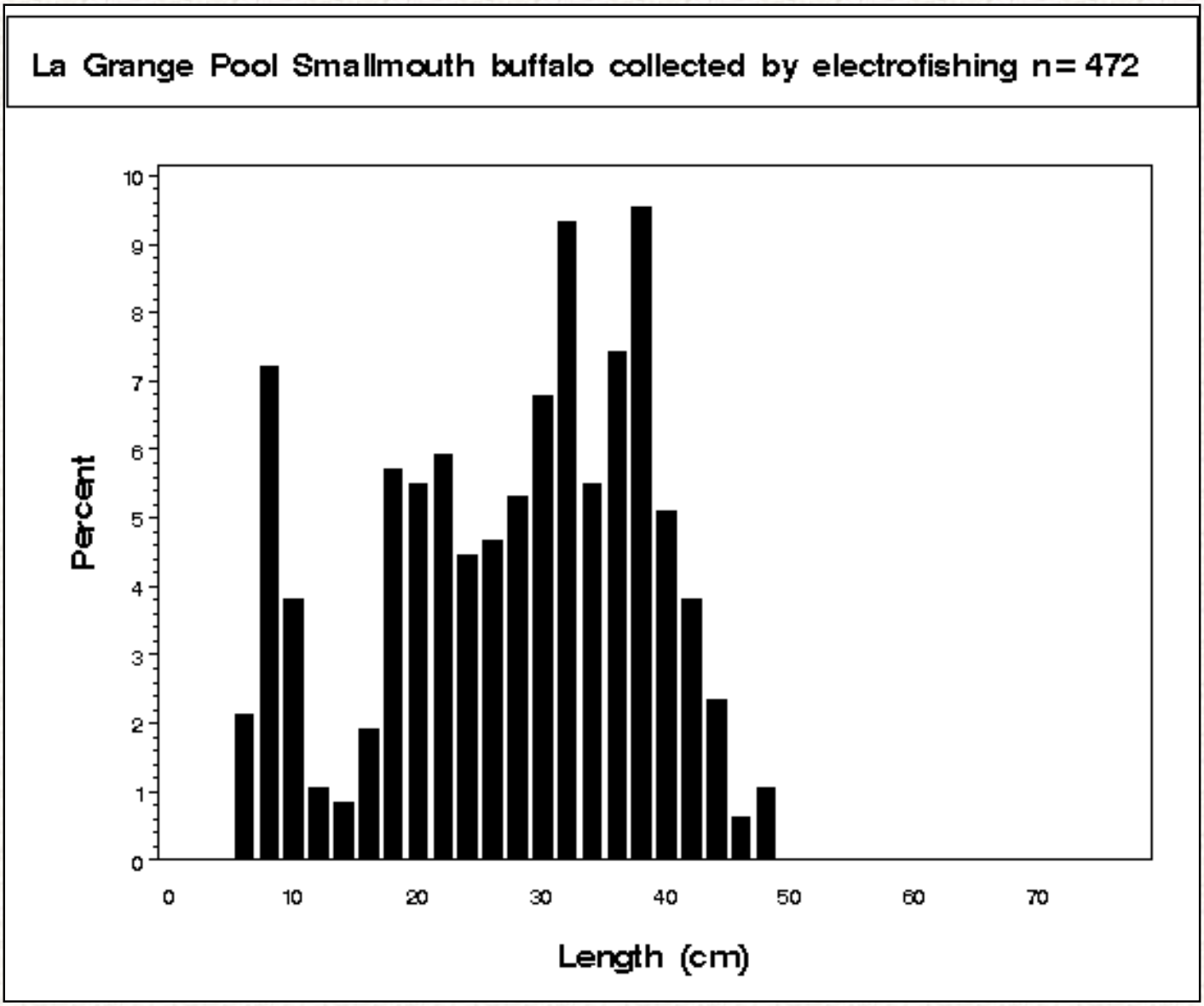

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Figure 5.6 Length distributions (*length*) as a percentage of catch (*percent*) for smallmouth buffalo (*Ictiobus bubalus)* collected by hoop netting in La Grange Pool of the Illinois River during 2002. Click here to view this species' length distributions in all study reaches.

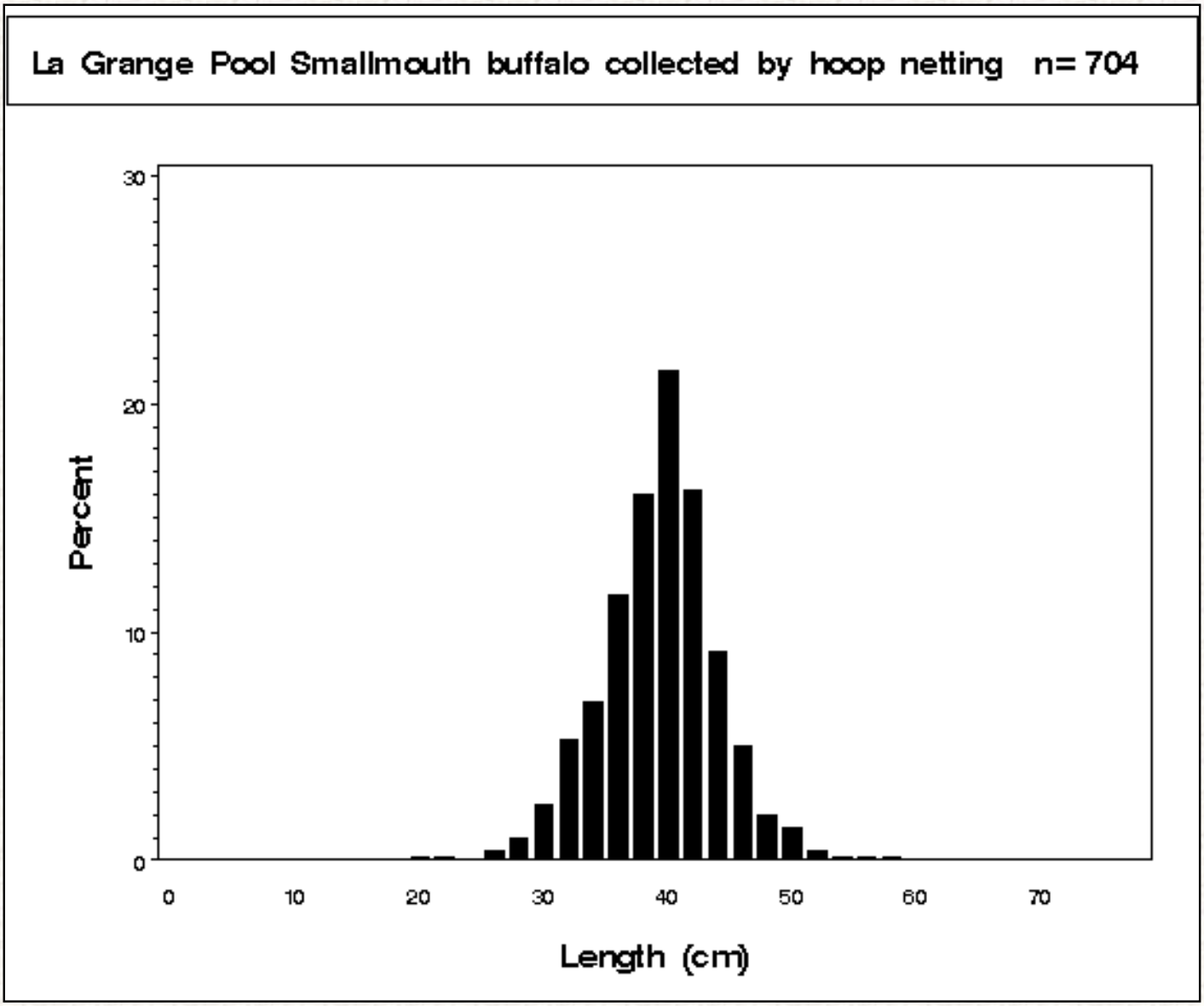

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Figure 6.6 Length distributions (*length*) as a percentage of catch (*percent*) for channel catfish (*Ictalurus punctatus)* collected by electrofishing in La Grange Pool of the Illinois River during 2002. Click here to view this species' length distributions in all study reaches.

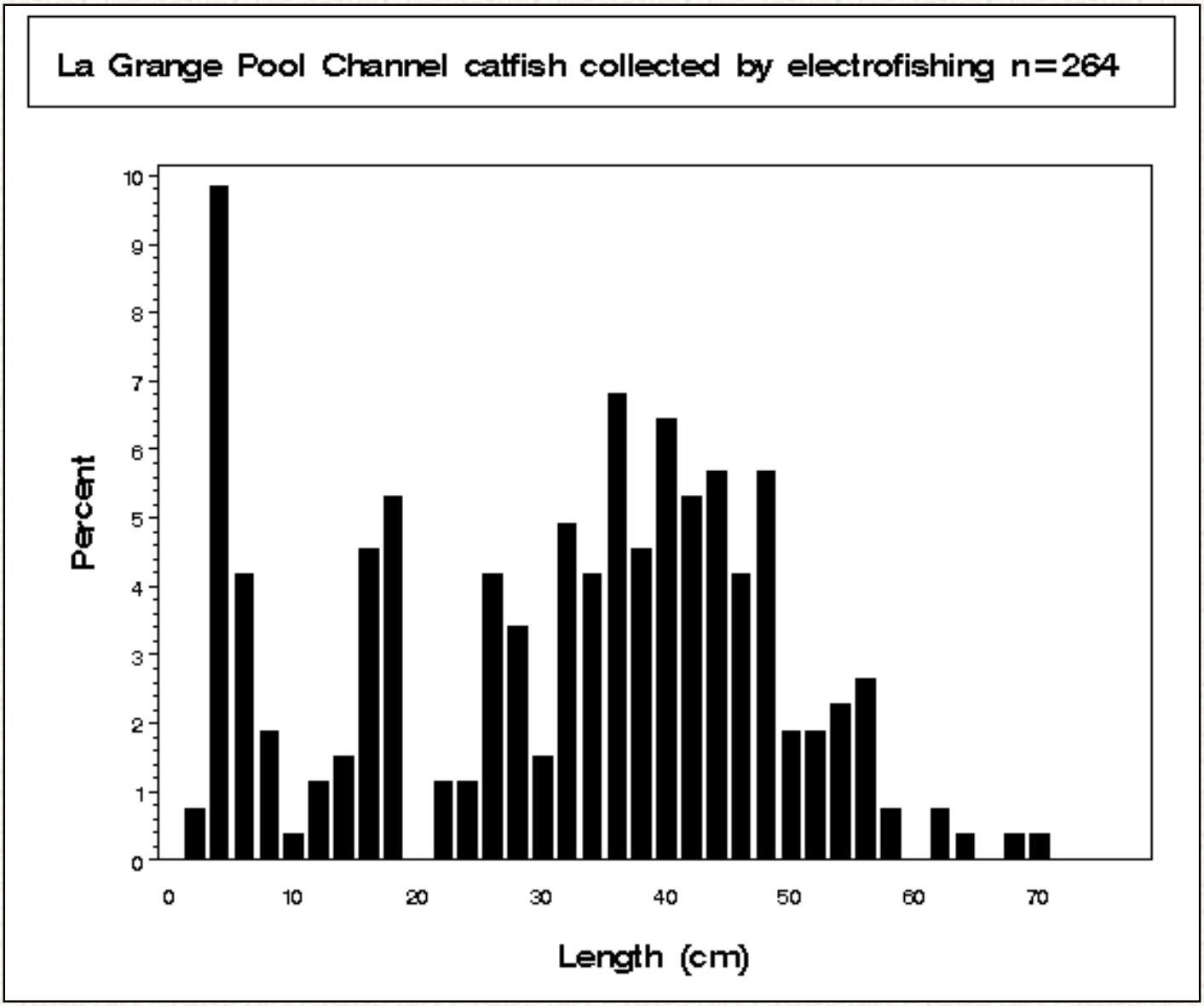

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Figure 7.6 Length distributions (*length*) as a percentage of catch (*percent*) for channel catfish (*Ictalurus punctatus)* collected by hoop netting in La Grange Pool of the Illinois River during 2002. Click here to view this species' length distributions in all study reaches.

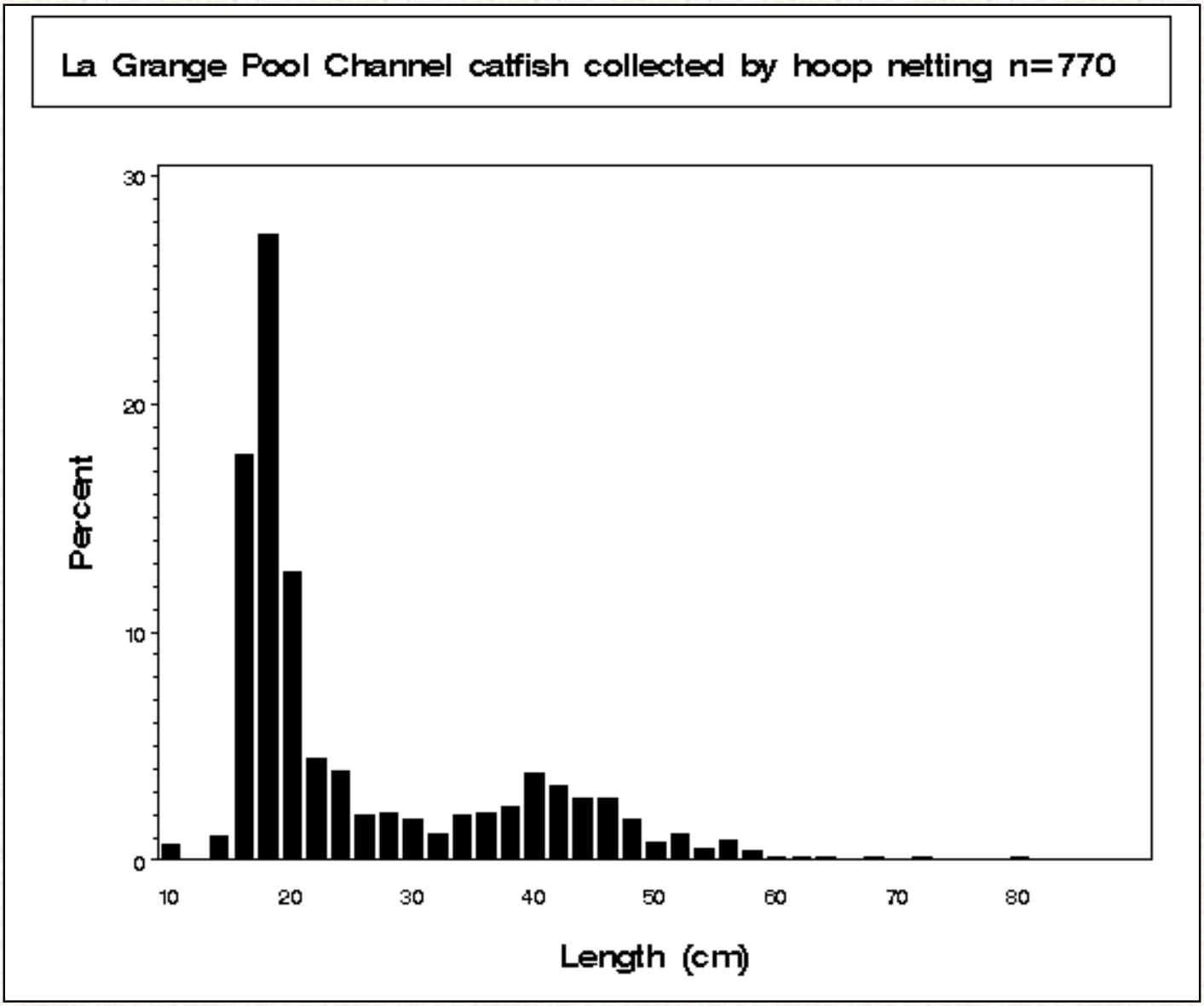

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Figure 8.6 Length distributions (*length*) as a percentage of catch (*percent*) for northern pike (*Esox lucius)* collected by electrofishing in Pool 13 of the Upper Mississippi River during 2002. Click here to view this species' length distributions in all study reaches.

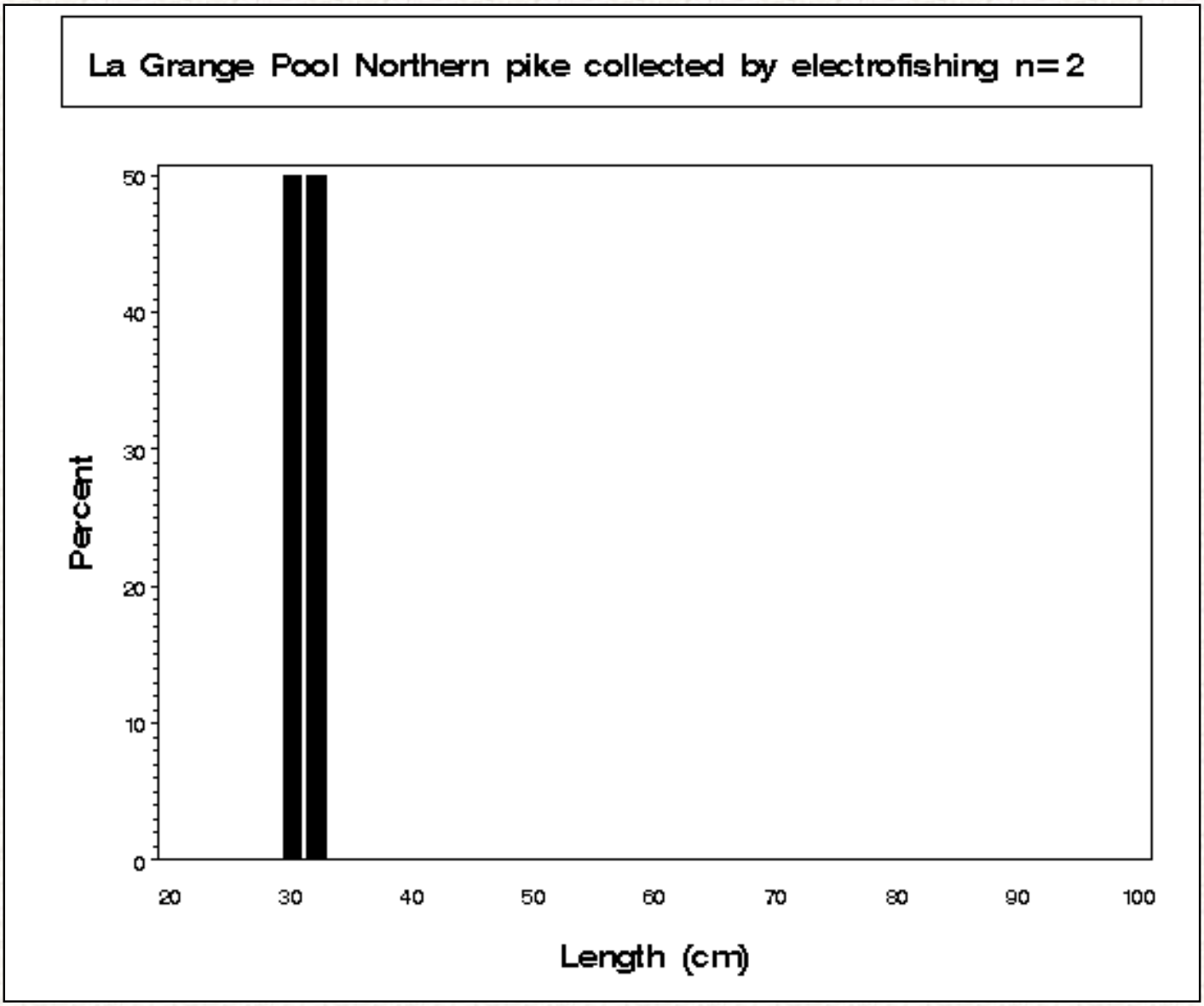

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Figure 10.6 Length distributions (*length*) as a percentage of catch (*percent*) for white bass (*Morone chrysops)* collected by electrofishing in La Grange Pool of the Upper Mississippi River during 2002. Click here to view this species' length distributions in all study reaches.

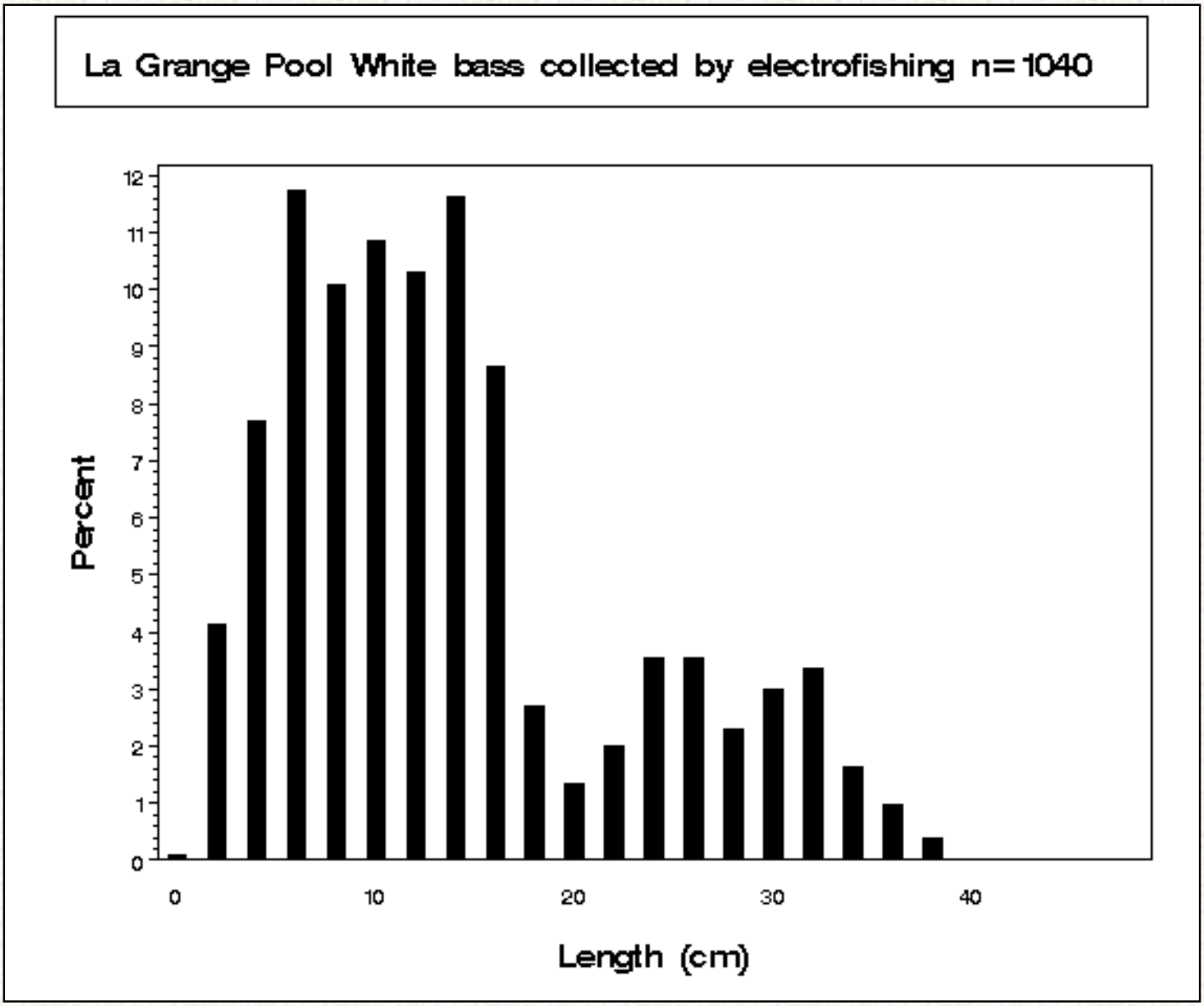

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Figure 11.6 Length distributions (*length*) as a percentage of catch (*percent*) for bluegill (*Lepomis macrochirus*) collected by electrofishing in La Grange Pool of the Upper Mississippi River during 2002. Click here to view this species' length distributions in all study reaches.

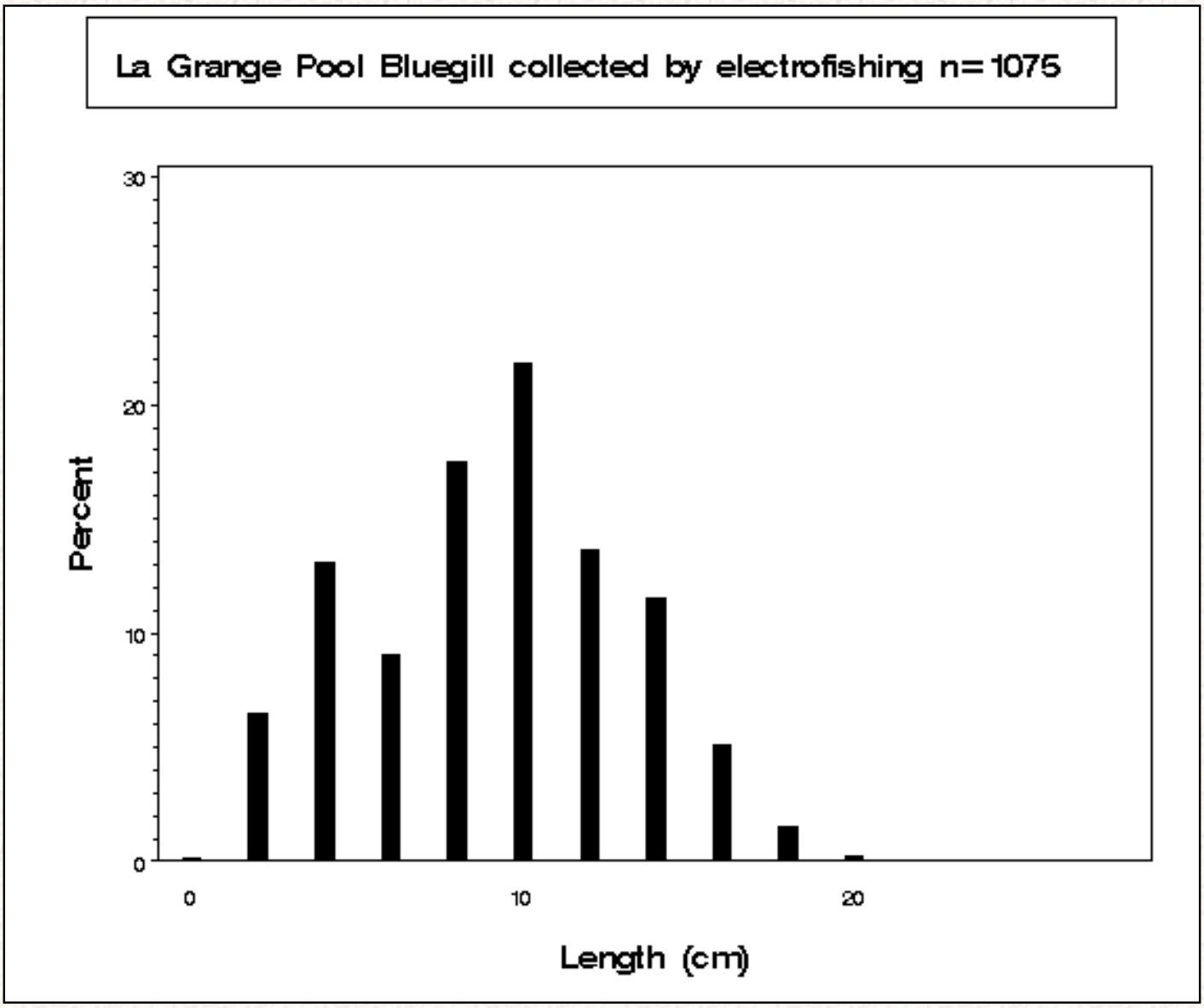

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Figure 12.6 Length distributions (*length*) as a percentage of catch (*percent*) for bluegill (*Lepomis macrochirus*) collected by fyke netting in La Grange Pool of the Illinois River during 2002. Click here to view this species' length distributions in all study reaches.

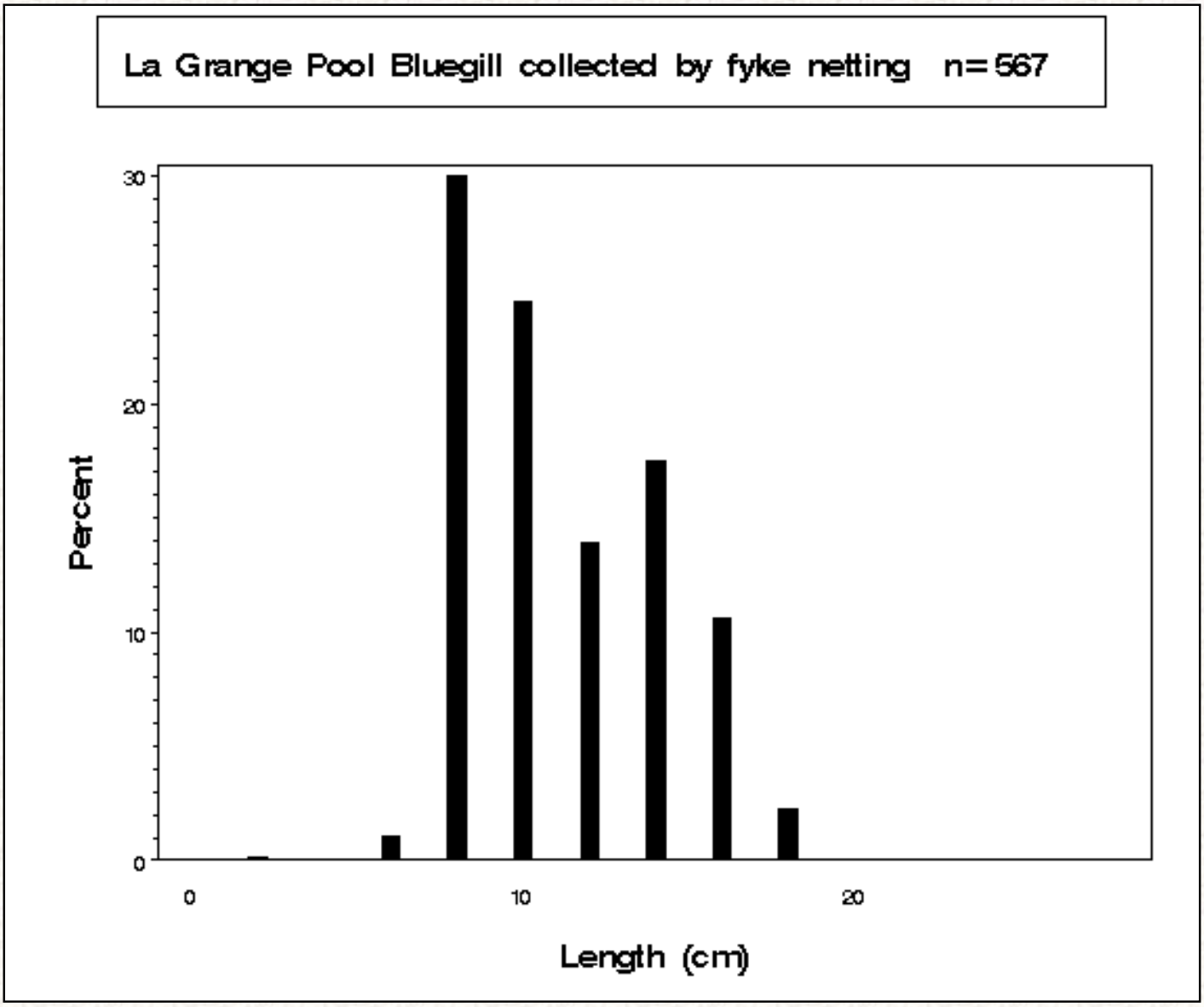

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Figure 13.6 Length distributions (*length*) as a percentage of catch (*percent*) for largemouth bass (*Micropterus salmoides)* collected by electrofishing in La Grange Pool of the Illinois River during 2002. Click here to view this species' length distributions in all study reaches.

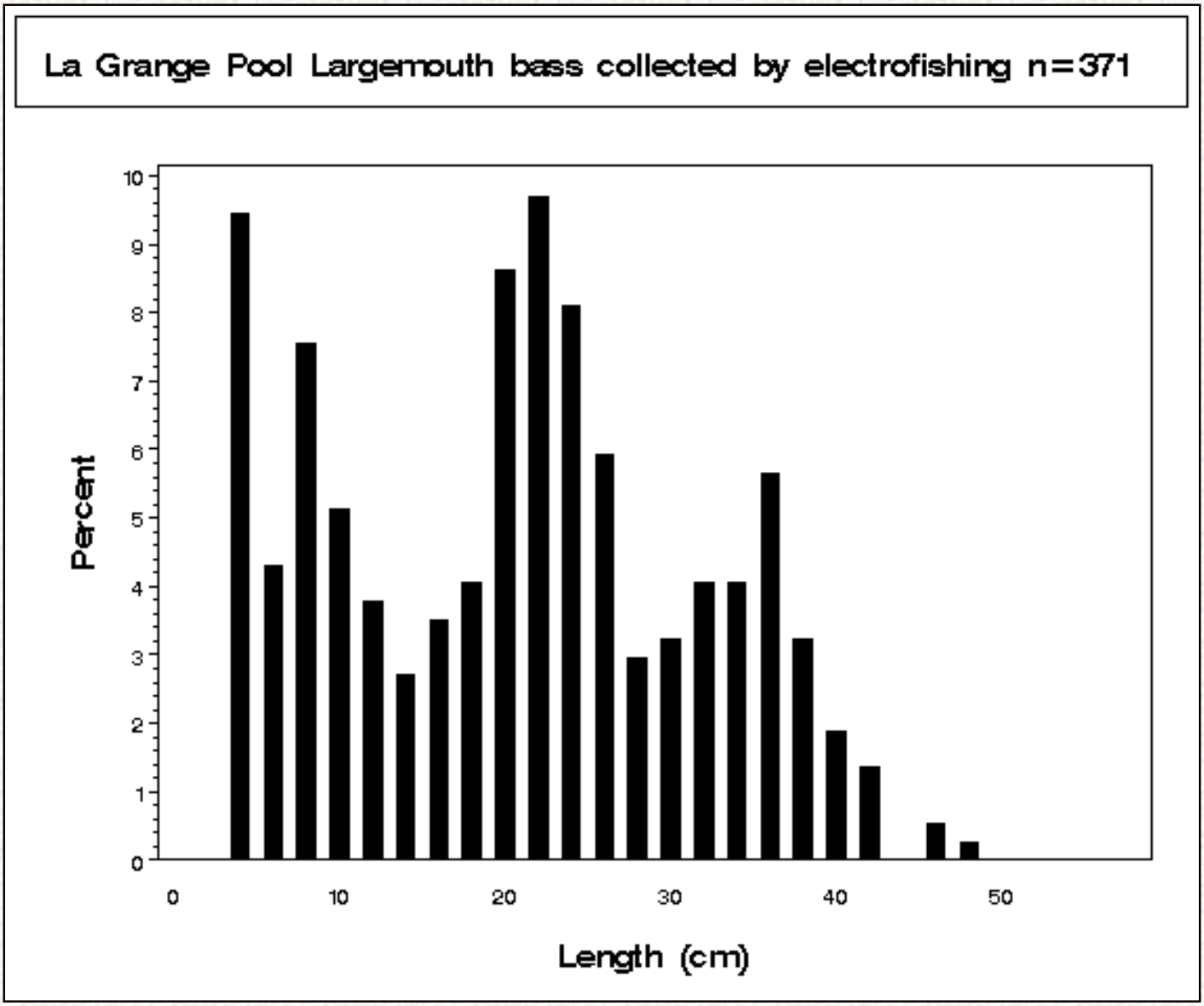

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Figure 14.6 Length distributions (*length*) as a percentage of catch (*percent*) for white crappie (*Pomoxis annularius)* collected by fyke netting in La Grange Pool of the Illinois River during 2002. Click here to view this species' length distributions in all study reaches.

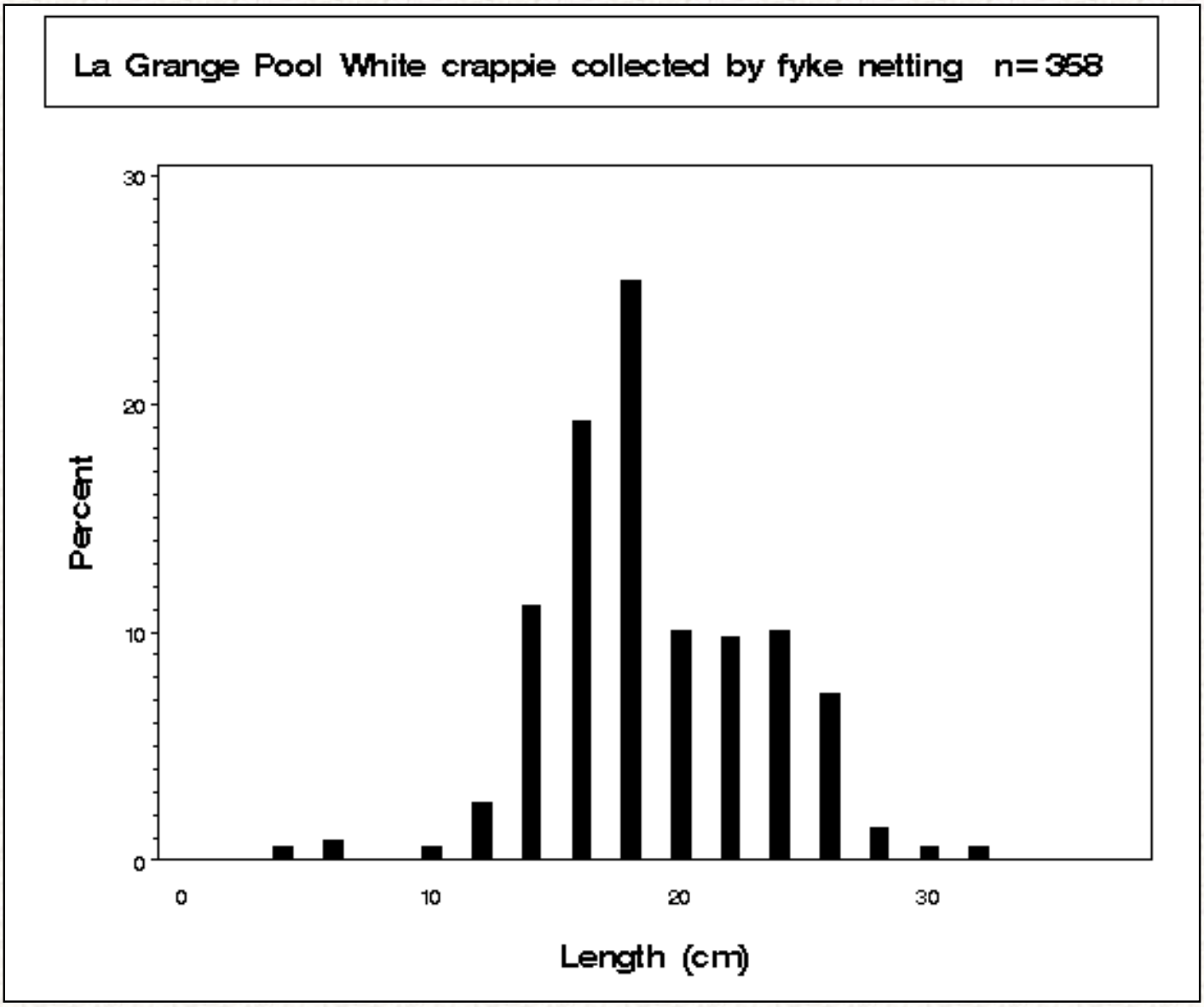

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Figure 15.6 Length distributions (*length*) as a percentage of catch (*percent*) for black crappie (*Pomoxis nigromaculatus*) collected by fyke netting in La Grange Pool of the Illinois River during 2002. Click here to view this species' length distributions in all study reaches.

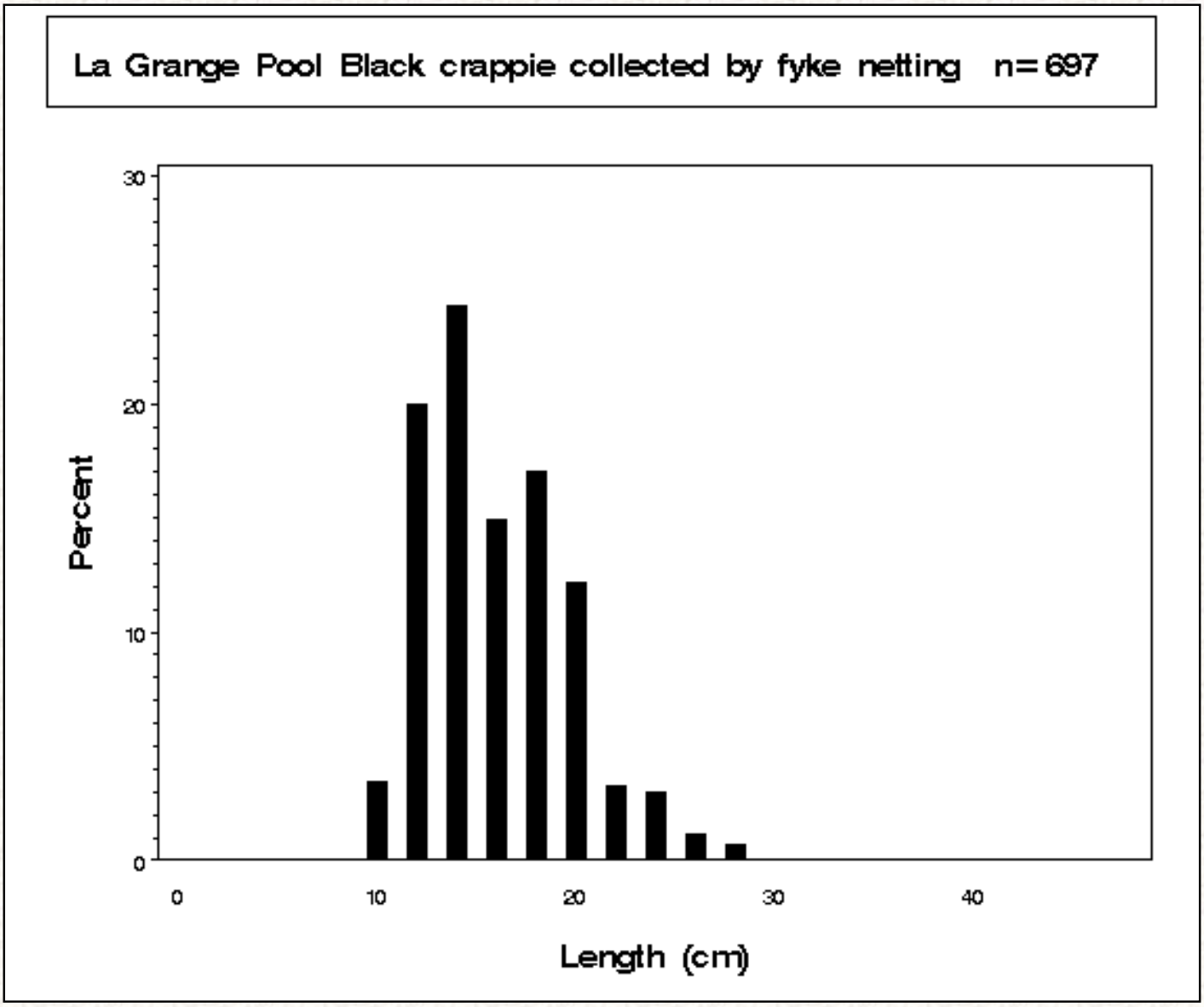

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Figure 16.6 Length distributions (*length*) as a percentage of catch (*percent*) for sauger (*Stizostedion canadense)* collected by electrofishing in La Grange Pool of the Illinois River during 2002. Click here to view this species' length distributions in all study reaches.

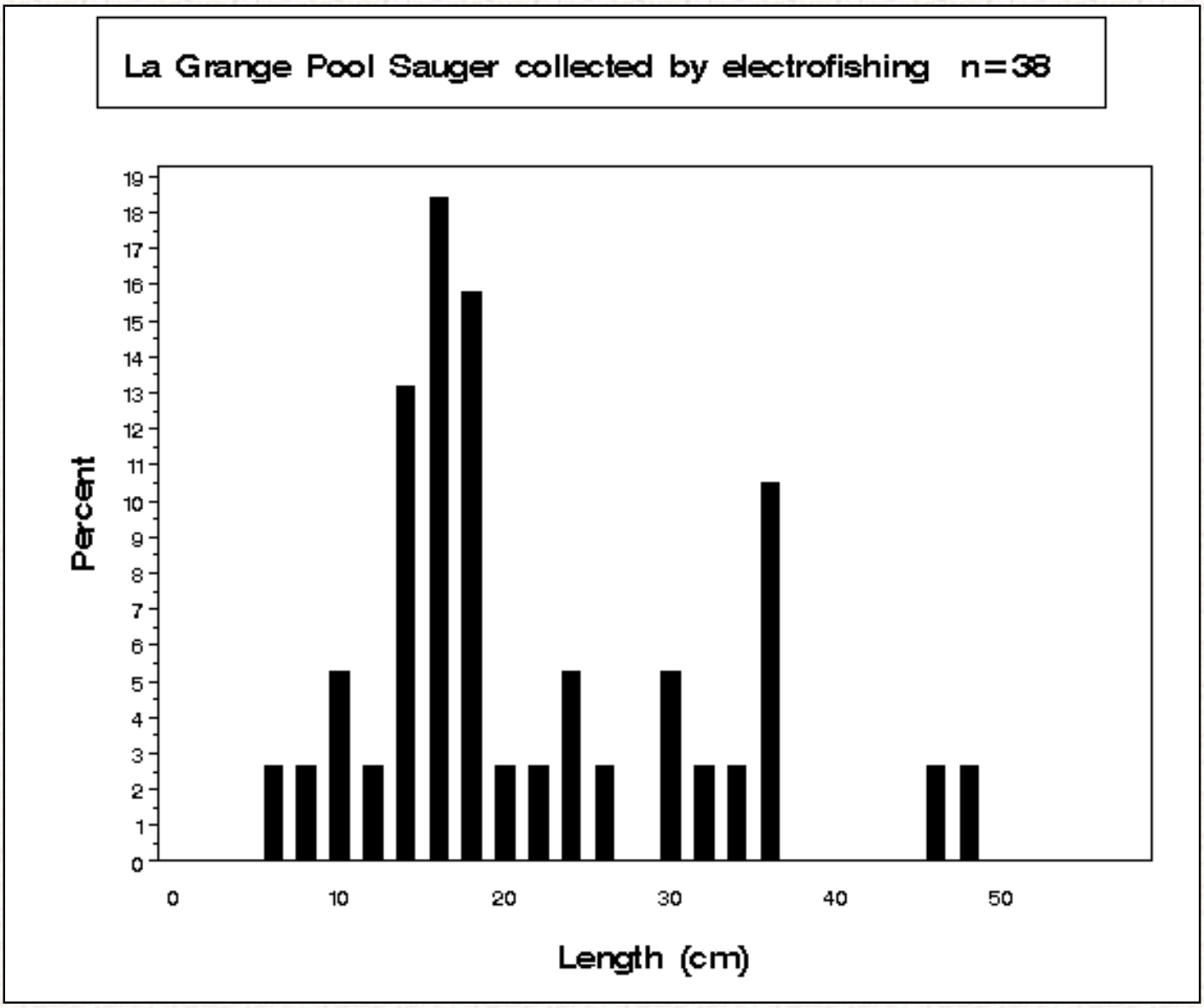

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Figure 17.6 Length distributions (*length*) as a percentage of catch (*percent*) for walleye (*Stizostedion vitreum)* collected by electrofishing in La Grange Pool of the Upper Mississippi River during 2002. Click here to view this species' length distributions in all study reaches.

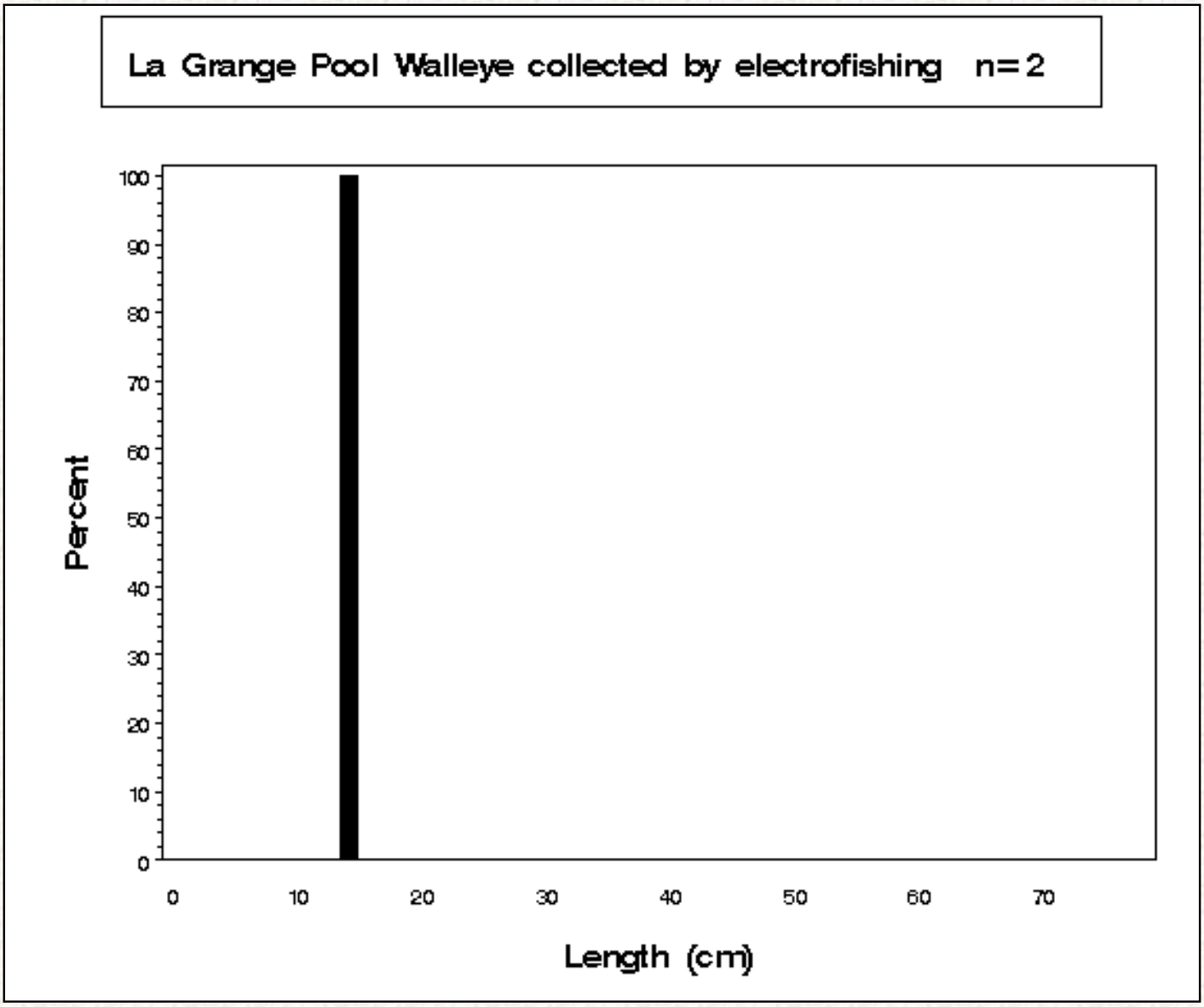

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Figure 18.6 Length distributions (*length*) as a percentage of catch (*percent*) for freshwater drum (*Aplodinotus grunniens*) collected by electrofishing in La Grange Pool of the Illinois River during 2002. Click here to view this species' length distributions in all study reaches.

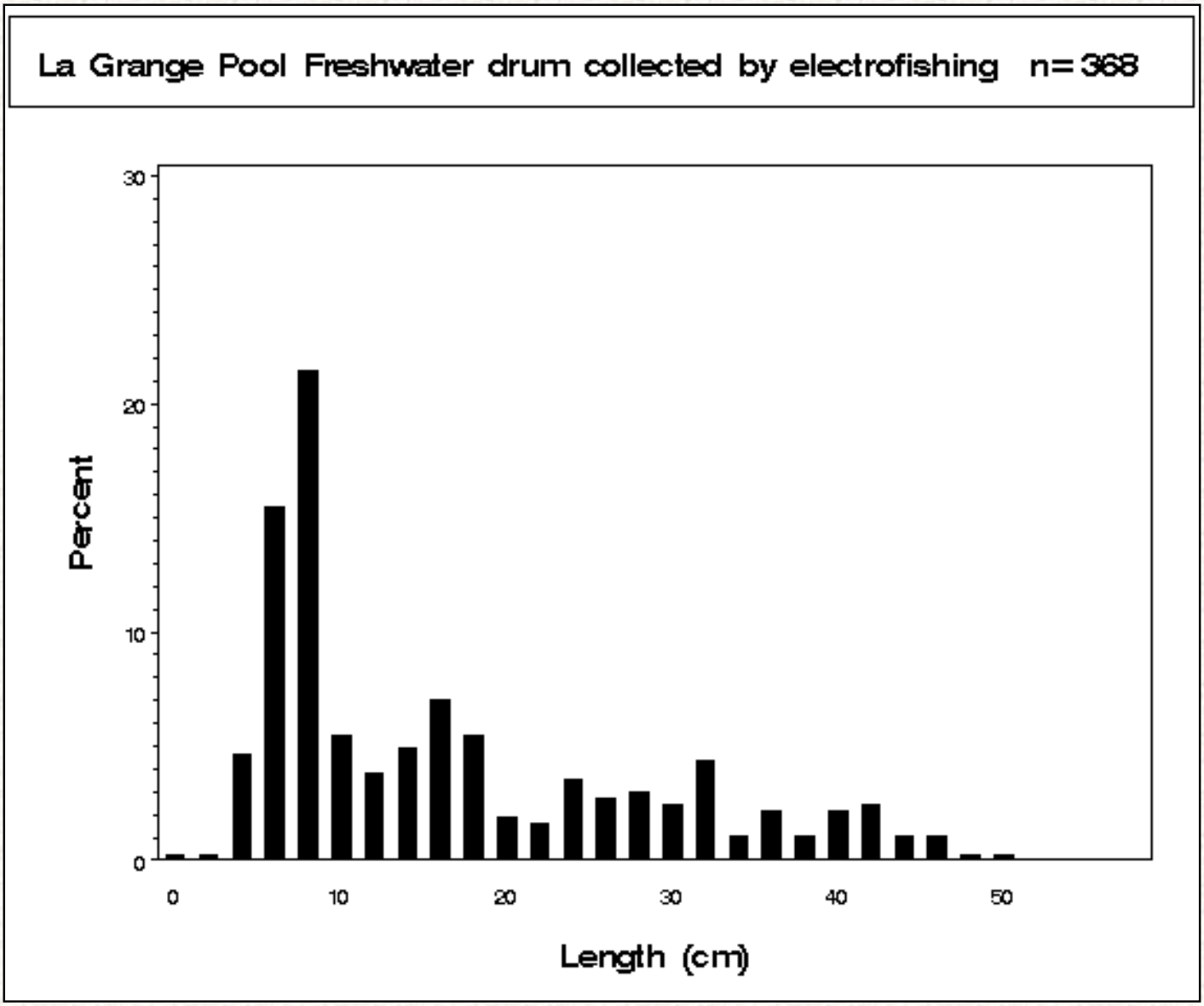

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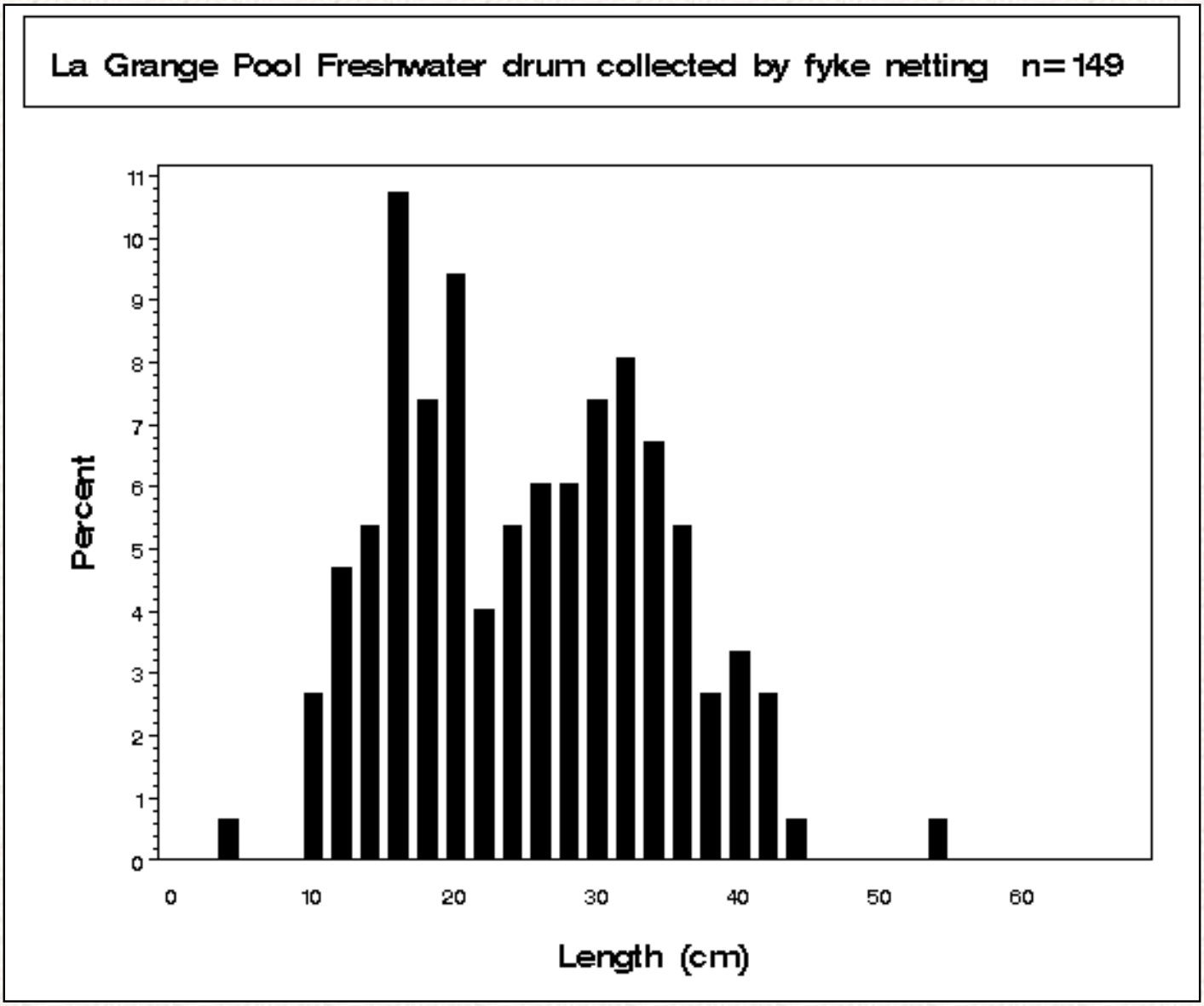
Figure 19.6 Length distributions (*length*) as a percentage of catch (*percent*) for freshwater drum (*Aplodinotus grunniens)* collected by fyke netting in La Grange Pool of the Upper Mississippi River during 2002. Click here to view this species' length distributions in all study reaches.



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Acknowledgments

This report is a result of the efforts of the staff and partners of the Long Term Resource Monitoring Program (LTRMP) of the Upper Mississippi River. The LTRMP is a cooperative effort by the U.S. Geological Survey, the U.S. Army Corps of Engineers, the Illinois Department of Natural Resources, the Iowa Department of Natural Resources, the Minnesota Department of Natural Resources, the Missouri Department of Conservation, and the Wisconsin Department of Natural Resources. Monitoring is conducted by six field stations operated by the participating state resource management and research agencies. We especially thank the staff at the LTRMP field stations for their sampling assistance and Steve Gutreuter for his efforts in writing most of the statistical analysis program used in this report.

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