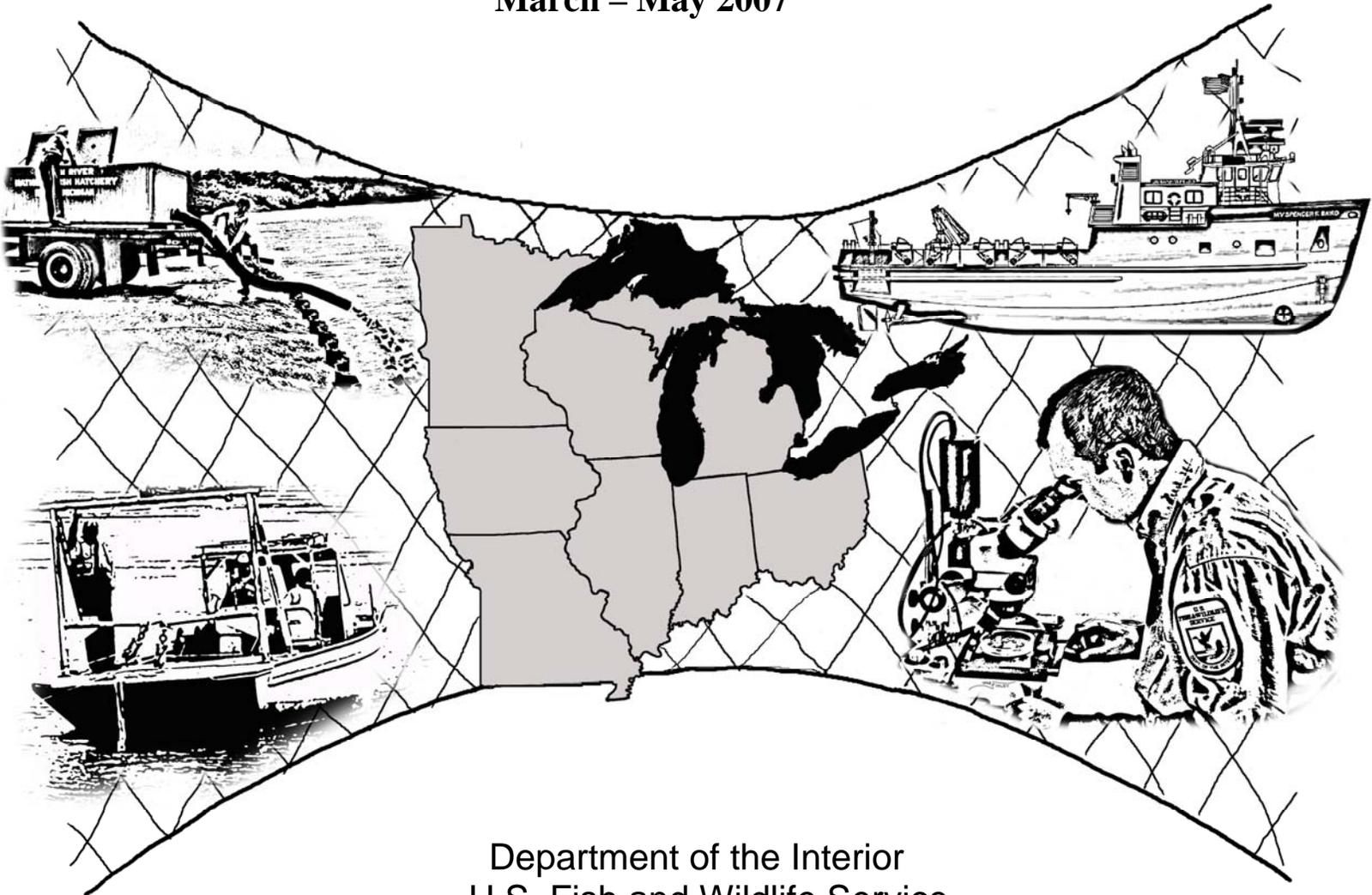


Region 3 Fisheries Data Series Report

FDS-2007-5

Fisheries Monitoring at Mel Price Lock & Dam: March – May 2007



Department of the Interior
U.S. Fish and Wildlife Service
Great Lakes-Big Rivers Region
Carterville National Fish and Wildlife
Conservation Office
Nathan S. Richards and Nate Caswell
September 2007



Disclaimer

The mention of trade names or commercial products in this report does not constitute endorsement or recommendation for use by the Federal government.

Nondiscrimination Clause

Equal opportunity to participate in and benefit from programs and activities of the U.S. Fish and Wildlife Service is available to all individuals regardless of race, religion, color, or physical or mental disability. For more information please contact:

U.S. Department of the Interior
Office for Equal Opportunity
1849 C. Street, N.W.
Washington, D.C. 20240

Mission Statement

The mission of the U.S. Fish and Wildlife Service is working with others to conserve, protect, and enhance fish, wildlife, plants and their habitats for the continuing benefit of the American people.

Suggested Citation

Richards, N. S. and N. M. Caswell. 2007. Fisheries Monitoring at Mel Price Lock & Dam: March – May 2007. Region 3 Fisheries Data Series Report FDS-2007-5, US Fish and Wildlife Service, Carterville National Fish and Wildlife Conservation Office, Marion, Illinois

Abstract

We evaluated the species composition of the fishery in the tailwater area of Mel Price Lock and Dam near Alton, Illinois. We conducted five sampling trips between March 26 and May 23, 2007. Sampling methods during each trip consisted of deep-water electrofishing, gill netting, and trammel netting at each of three sampling sites below the dam. We caught a total of 2,177 fish representing 28 species, of which 20 are classified as migratory. The most abundant species in our samples included blue catfish (*Ictalurus furcatus*; N=549), shovelnose sturgeon (*Scaphirhynchus platorynchus*; N=390), and silver carp (*Hypophthalmichthys molitrix*; N=339). Site 1 was the slack-water area below the auxiliary lock and was composed mostly of gizzard shad (*Dorosoma cepedianum*; N=300), silver carp (N=289), and bighead carp (*H. nobilis*; N=133). Site 2 was an area of faster-flowing water between the main and auxiliary locks and was composed mostly of blue catfish (N=435). Site 3 contained faster flows, and was located along the right, descending bank near the Maple Island side channel. Shovelnose sturgeon (N=390) composed the majority of fish caught at Site 3. We believe Site 3 would be the most suitable location for a fish passage structure, because of the physical characteristics of this location and because we found several migratory species (shovelnose sturgeon, pallid sturgeon [*S. albus*], and lake sturgeon [*Acipenser fulvescens*]) occupying this area. We suggest that the interagency Navigation Study Fish Passage Team discuss what additional information needs to be collected in 2008 to provide the most benefit to this and subsequent projects.

Introduction

The U.S. Army Corps of Engineers (USACE) Upper Mississippi River-Illinois Waterway System (UMR-IWW) Navigation Study was completed in September 2004, after more than 14 years of intensive study and evaluation of the navigation improvement and ecological restoration needs for the UMR-IWW system during 2000-2050. The final recommendation included a program of incremental implementation and comprehensive adaptive management to achieve the dual purposes of ensuring a sustainable natural ecosystem and navigation system. The program was initiated in 2005 as the working title of Upper Mississippi River (UMR) System Navigation and Ecosystem Sustainability Program (NESP; USACE 2006).

A series of 29 navigation locks and dams is used to manage water levels on 1,033 km of the northern reach of the UMR. Dams impose at least partial barriers to passage of the 143 indigenous fishes (Pitlo et al. 1995) in the UMR (Fremling et al. 1989). Improving upriver fish passage through the navigation dams is recognized as a way to manage the UMR toward a more sustainable river ecosystem (Upper Mississippi River Conservation Committee [UMRCC] 2001; Wilcox et al. 2004). An interdisciplinary and interagency Navigation Study Fish Passage Team was formed to study fish passage opportunities and alternatives at navigation dams on the UMR (Wilcox et al. 2004). Mel Price Lock and Dam near Alton, Illinois, was selected as the location for one of the first fish passage projects on the UMR navigation system.

This study was a follow-up to the initial fish monitoring work conducted by the Carterville National Fish and Wildlife Conservation Office (NFWCO) below Mel Price Lock and Dam during 2005-06 (Caswell 2006). Our objective was to determine the spring species composition of the fishery in known aggregation areas identified through hydroacoustic assessments below Mel Price Lock and Dam. This report is a synopsis of our findings during March – May 2007. Three sites in the tailwater area of Mel Price Lock and Dam were repeatedly sampled throughout the spring of 2007.

Study Site

The study site for this project was the tailwater area of Mel Price Lock and Dam near Alton, Illinois. During 2005-06, the USACE M/V Boyer conducted hydroacoustic surveys below the lock and dam, and repeatedly identified aggregations of fish within three general areas. Consequently, sampling sites were established within these areas known to contain concentrations of fish. The same sites were sampled during 2007. Site 1 was the area below the auxiliary lock along the left, descending bank extending below the end of the lock approach wall (Figure 1). Site 2 was the area between the main and auxiliary locks. Site 3 was along the right, descending bank near the Maple Island side channel.

Methods

The intent for the 2007 sampling season was to sample the tailwater area of Mel Price Lock and Dam before and after the river reached “open river” conditions. “Open river” is the stage at which the dam gates are opened due to high water volumes, and the river is then free-flowing. Sampling was conducted during open-river conditions for trips 1, 3, and 5. The dam gates were closed for sampling trips 2 and 4.

We made five, 4-day sampling trips to Mel Price Lock and Dam between March 26 and May 23, 2007. Sampling methods during each trip consisted of deep-water electrofishing, gill netting, and trammel netting. We used a 5000-W, 3-phase AC generator (Multi-Quip Model GDP 5000H) wired to three 1.2-m x 6.0-cm diameter electrodes constructed from galvanized steel

fence posts. A 12-V powered relay was used with a dual dead-man safety switch system. Wires running to the individual electrodes were 16-ga., multi-strand copper wire. Ropes were used to suspend the electrodes and attach the wires. A chase boat was used to retrieve fish that surfaced away from the electrofishing boat, and each boat had one person to dip fish. Each site was electrofished twice during each sampling trip. Electrofishing was conducted once with the electrodes on the bottom, and once at mid-water column (i.e., in the middle of suspended fish aggregations).

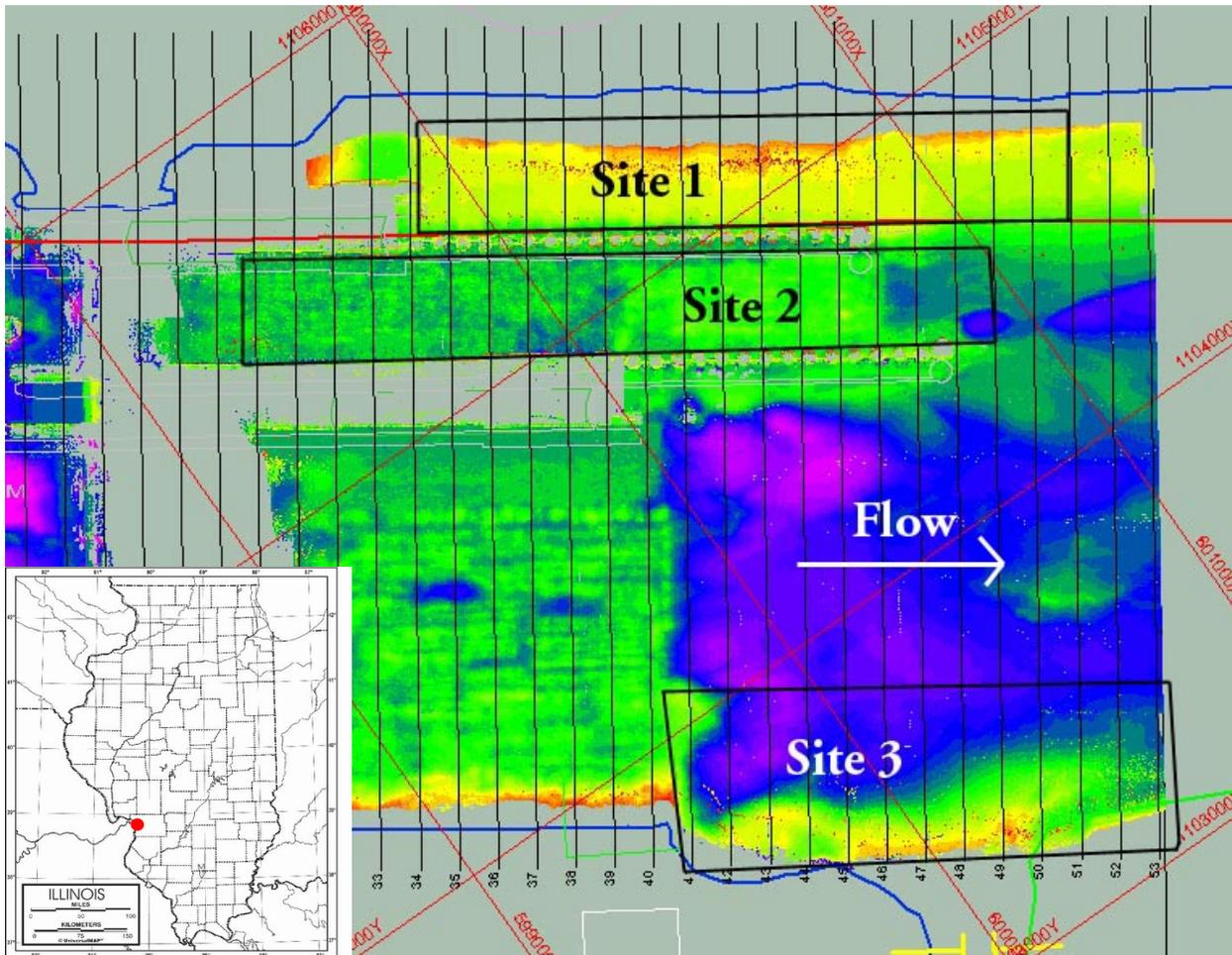


Figure 1.—Bathymetric map of the Mel Price Lock and Dam tailwater area showing sampling sites for deep water electrofishing and netting from March – May 2007. Insert: map of Illinois showing the approximate location (red circle) of Mel Price Lock and Dam.

Nets used at Mel Price Lock and Dam included: 1) 5.1-cm bar mesh, monofilament gill nets (45.7 m X 2.4 m), 2) experimental multifilament gill nets (30.5-m X 1.8 m), and 3) 8.9-cm bar mesh trammel nets (91.4-m X 3.0-m). Trammel nets were set independently while monofilament gill nets were set in tandem with the experimental, multifilament gill nets. All nets were set on the bottom. Original methodology included one of each net type to be set overnight at Sites 1 and 3 for two consecutive nights. However, lock maintenance activities at Site 1 limited our netting effort to only Site 3 during our last two trips to Mel Price. We did not

conduct any netting activities in Site 2 due to the swift, turbulent water and dangerous conditions often found in this location.

Fish captured at Mel Price Lock and Dam were identified to species, and then: 1) sturgeons and paddlefish (*Polyodon spathula*) were measured (nearest millimeter; mm) for fork length (FL) and eye-fork length (EFL), respectively, and 2) all other species were measured (total length; TL) to the nearest millimeter. We constructed length-frequency histograms for the most abundant species at each site. We were unable to conduct statistical tests due to differences in sampling design, effort, and replicates that were not independent observations. Therefore, any conclusions or comparisons made throughout the paper are qualitative and for illustrative purposes only.

Results

We captured 2,177 fish representing 28 species from all trips to Mel Price Lock and Dam during March – May 2007 (Table 1). The most abundant species was blue catfish (*Ictalurus furcatus*), which accounted for over 25% (N=549) of the overall catch. Of the total number of blue catfish caught, over 79% (N=435) were caught deepwater electrofishing at Site 2. The next most abundant species were shovelnose sturgeon (*Scaphirhynchus platyrhynchus*; N=390), silver carp (*Hypophthalmichthys molitrix*; N=339), and gizzard shad (*Dorosoma cepedianum*; N=307). The overall catch at Mel Price Lock and Dam included 20 of the 37 species defined as migratory by Wilcox et al. (2004).

Electrofishing accounted for over 43% of the overall catch (929 individuals from 13 species; Table 2). We expended 8.7 h of electrofishing effort, which resulted in an overall electrofishing catch-per-unit effort (CPUE) of 107 fish/h. The most abundant fishes in the overall electrofishing sample were blue catfish (N=534), silver carp (N=191), and freshwater drum (*Aplodinotus grunniens*; N=133). Netting yielded 1,248 fish from 26 species with a CPUE of 2.4 fish/h (Table 2). The most abundant fish species captured during netting were shovelnose sturgeon (N=390), gizzard shad (N=297), silver carp (N=148), and bighead carp (*Hypophthalmichthys nobilis*; N=134).

We captured 1,116 fish from 23 species at Site 1 including gizzard shad (N=300; 27%), silver carp (N=289; 26%), and bighead carp (N=133; 12%; Table 3). The gizzard shad length range was 170 mm – 409 mm (Figure 2), silver carp lengths ranged from 180 mm to 899 mm (Figure 3), and bighead carp ranged from 260 mm to 1009 mm (Figure 4). Blue catfish (N=80) captured in this site were primarily juveniles that ranged in length from 115 mm to 850 mm (Figure 5). Of the 37 Upper Mississippi River migratory species identified by Wilcox et al. (2004), we caught 17 at this site.

Sampling during March – May 2007 at Site 2 resulted in the capture of 463 fish from seven species (Table 4). The catch at Site 2 was dominated by blue catfish (N=435), which accounted for nearly 94% of the overall catch. The blue catfish captured at Site 2 exhibited a wide range of lengths (130 mm to 1309 mm; Figure 6). The remaining species caught at Site 2 were represented by few individuals. All seven species caught at this site were classified as migratory (Wilcox et al. 2004).

We captured 598 fish from 19 species at Site 3 including 390 shovelnose sturgeon (65% of total catch), 61 freshwater drum (10%), and 49 silver carp (8%; Table 5). With the exception of these three species, the remaining 16 species were represented by few individuals. Shovelnose sturgeon lengths ranged from 380 mm to 809 mm (Figure 7), whereas freshwater drum lengths ranged from 130 mm to 549 mm (Figure 8). Silver carp lengths ranged from 220 mm to 699

mm. Using the length-frequency distribution, we classified silver carp into two age classes (Figure 9).

Table 1.—Fish captured at Mel Price Lock and Dam during March – May 2007. Asterisks denote migratory species as defined in Wilcox et al. (2004).

Family and Species	Number captured					Total
	Trip 1	Trip 2	Trip 3	Trip 4	Trip 5	
Acipenseridae						
Lake sturgeon <i>Acipenser fulvescens</i> *	2	1	5			8
Shovelnose sturgeon <i>Scaphirhynchus platyrhynchus</i> *	57	2	118	178	35	390
Pallid sturgeon <i>Scaphirhynchus albus</i> *			1			1
Polyodontidae						
Paddlefish <i>Polydon spathula</i> *	8	3		2		13
Lepisosteidae						
Shortnose gar <i>Lepisosteus platostomus</i>		17	12			29
Hiodontidae						
Goldeye <i>Hiodon alosoides</i> *			1			1
Clupeidae						
Skipjack herring <i>Alosa chrysochloris</i> *			13			13
Gizzard shad <i>Dorosoma cepedianum</i>	167	38	100		2	307
Cyprinidae						
Bighead carp <i>Hypophthalmichthys nobilis</i> *	15	5	120			140
Common carp <i>Cyprinus carpio</i>	18	7	21		1	47
Grass carp <i>Ctenopharyngodon idella</i>	2					2
Silver carp <i>Hypophthalmichthys molitrix</i> *	73	158	105	2	1	339
Catostomidae						
Bigmouth buffalo <i>Ictiobus cyprinellus</i> *			1			1
Black buffalo <i>Ictiobus niger</i>		1				1
Blue sucker <i>Cycleptus elongatus</i> *	1					1
Quillback <i>Carpoides cyprinus</i> *			2			2
River carpsucker <i>Carpoides carpio</i>	1	7	22		2	32
Shorthead redhorse <i>Moxostoma macrolepidotum</i> *	2		41			43
Smallmouth buffalo <i>Ictiobus bubalus</i> *	5	1			2	8
Ictaluridae						
Blue catfish <i>Ictalurus furcatus</i> *	132	119	118	91	89	549
Channel catfish <i>Ictalurus punctatus</i> *	9	15	6	5	2	37
Flathead catfish <i>Pylodictis olivaris</i> *		1	2	1	4	8
Moronidae						
White bass <i>Morone chrysops</i> *		3	2			5
Hybrid striped bass <i>Morone saxatilis</i> x <i>chrysops</i>		1	1			2
Centrarchidae						
White crappie <i>Pomoxis annularis</i>			1			1
Percidae						
Sauger <i>Sander canadensis</i> *			8			8
Walleye <i>Sander vitreum</i> *			4			4
Sciaenidae						
Freshwater drum <i>Aplodinotus grunniens</i> *	14	83	60	15	13	185
Total	506	462	764	294	151	2177

Table 2.—Fish captured with electrofishing (EF), and netting at Mel Price Lock and Dam during March – May 2007. Asterisks denote migratory species as defined in Wilcox et al. (2004).

Family and Species	Number captured						Total
	Bottom EF	Midwater EF	Total EF	Gill Nets	Trammel Nets	Total Nets	
Acipenseridae							
Lake sturgeon <i>Acipenser fulvescens</i> *				2	6	8	8
Shovelnose sturgeon <i>Scaphirhynchus platyrhynchus</i> *				357	33	390	390
Pallid sturgeon <i>Scaphirhynchus albus</i> *					1	1	1
Polyodontidae							
Paddlefish <i>Polydon spathula</i> *		1	1		12	12	13
Lepisosteidae							
Shortnose gar <i>Lepisosteus platostomus</i>				29		29	29
Hiodontidae							
Goldeye <i>Hiodon alosoides</i> *					1	1	1
Clupeidae							
Skipjack herring <i>Alosa chrysochloris</i> *				13		13	13
Gizzard shad <i>Dorosoma cepedianum</i>	4	6	10	297		297	307
Cyprinidae							
Bighead carp <i>Hypophthalmichthys nobilis</i> *	4	2	6	1	133	134	140
Common carp <i>Cyprinus carpio</i>				9	38	47	47
Grass carp <i>Ctenopharyngodon idella</i>					2	2	2
Silver carp <i>Hypophthalmichthys molitrix</i> *	142	49	191	82	66	148	339
Catostomidae							
Bigmouth buffalo <i>Ictiobus cyprinellus</i> *					1	1	1
Black buffalo <i>Ictiobus niger</i>	1		1				1
Blue sucker <i>Cycleptus elongatus</i> *				1		1	1
Quillback <i>Carpoides cyprinus</i> *				2		2	2
River carpsucker <i>Carpoides carpio</i>		7	7	25		25	32
Shorthead redhorse <i>Moxostoma macrolepidotum</i> *				43		43	43
Smallmouth buffalo <i>Ictiobus bubalus</i> *	4		4	3	1	4	8
Ictaluridae							
Blue catfish <i>Ictalurus furcatus</i> *	496	38	534	8	7	15	549
Channel catfish <i>Ictalurus punctatus</i> *	22	11	33	4		4	37
Flathead catfish <i>Pylodictis olivaris</i> *	5		5		3	3	8
Moronidae							
White bass <i>Morone chrysops</i> *	2		2	3		3	5
Hybrid striped bass <i>Morone saxatilis x chrysops</i>	1	1	2				2
Centrarchidae							
White crappie <i>Pomoxis annularis</i>				1		1	1
Percidae							
Sauger <i>Sander canadensis</i> *				8		8	8
Walleye <i>Sander vitreum</i> *				4		4	4
Sciaenidae							
Freshwater drum <i>Aplodinotus grunniens</i> *	123	10	133	36	16	52	185
Total	804	125	929	928	320	1248	2177

Table 3.—Totals and species of fish capture at Site 1 below Mel Price Lock and Dam during March – May 2007. Asterisks denote migratory species as defined in Wilcox et al. (2004).

Family and Species	Number captured					Total
	Trip 1	Trip 2	Trip 3	Trip 4	Trip 5	
Acipenseridae						
Lake sturgeon <i>Acipenser fulvescens</i> *		1				1
Shovelnose sturgeon <i>Scaphirhynchus platyrhynchus</i> *						
Pallid sturgeon <i>Scaphirhynchus albus</i> *						
Polyodontidae						
Paddlefish <i>Polydon spathula</i> *	7	2				9
Lepisosteidae						
Shortnose gar <i>Lepisosteus platostomus</i>		17	12			29
Hiodontidae						
Goldeye <i>Hiodon alosoides</i> *			1			1
Clupeidae						
Skipjack herring <i>Alosa chrysochloris</i> *	13					13
Gizzard shad <i>Dorosoma cepedianum</i>	167	34	99			300
Cyprinidae						
Bighead carp <i>Hypophthalmichthys nobilis</i> *	9	4	120			133
Common carp <i>Cyprinus carpio</i>	18	7	20			45
Grass carp <i>Ctenopharyngodon idella</i>	2					2
Silver carp <i>Hypophthalmichthys molitrix</i> *	69	116	101	2	1	289
Catostomidae						
Bigmouth buffalo <i>Ictiobus cyprinellus</i> *			1			1
Black buffalo <i>Ictiobus niger</i>						
Blue sucker <i>Cycleptus elongatus</i> *						
Quillback <i>Carpoides cyprinus</i> *			2			2
River carpsucker <i>Carpoides carpio</i>		5	22			27
Shorthead redhorse <i>Moxostoma macrolepidotum</i> *	1		41			42
Smallmouth buffalo <i>Ictiobus bubalus</i> *			1			1
Ictaluridae						
Blue catfish <i>Ictalurus furcatus</i> *		6	20	33	21	80
Channel catfish <i>Ictalurus punctatus</i> *	2	2	5	4		13
Flathead catfish <i>Pylodictis olivaris</i> *		1				1
Moronidae						
White bass <i>Morone chrysops</i> *			2			2
Hybrid striped bass <i>Morone saxatilis</i> x <i>chrysops</i>						
Centrarchidae						
White crappie <i>Pomoxis annularis</i>			1			1
Percidae						
Sauger <i>Sander canadensis</i> *			8			8
Walleye <i>Sander vitreum</i> *			4			4
Sciaenidae						
Freshwater drum <i>Aplodinotus grunniens</i> *	9	37	57	9		112
Total	297	232	517	48	22	1116

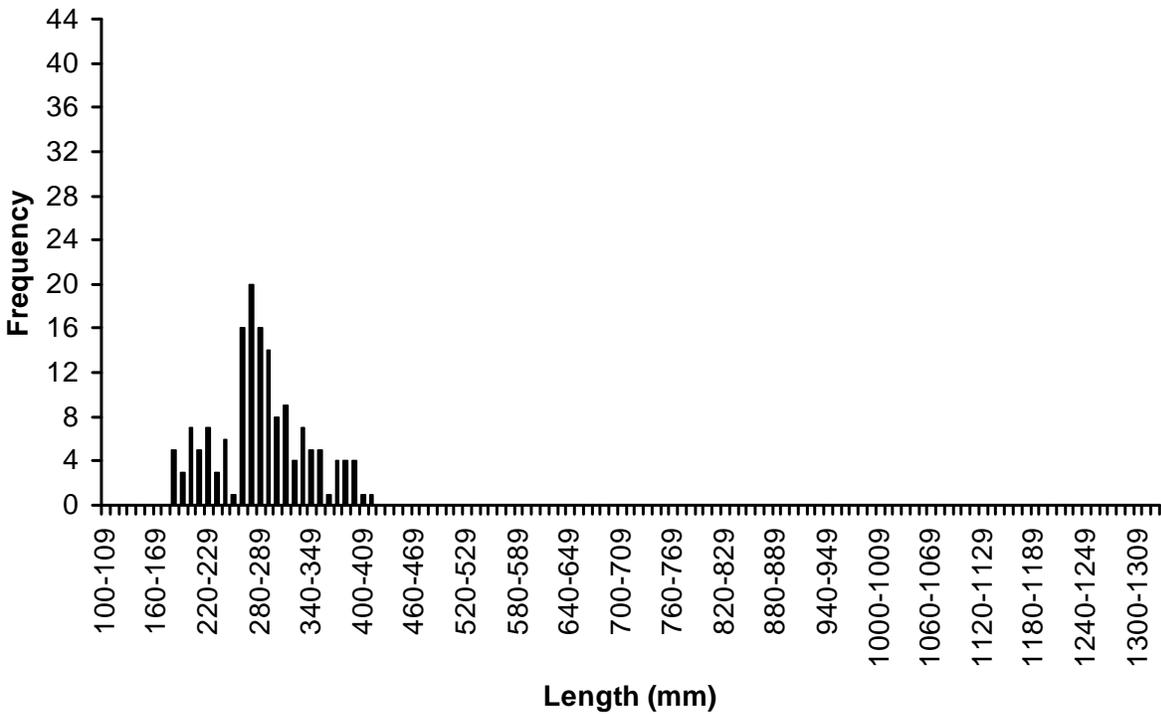


Figure 2.—Length-frequency distribution of gizzard shad (*Dorosoma cepedianum*; N=300) captured at Site 1 below Mel Price Lock and Dam during March – May 2007.

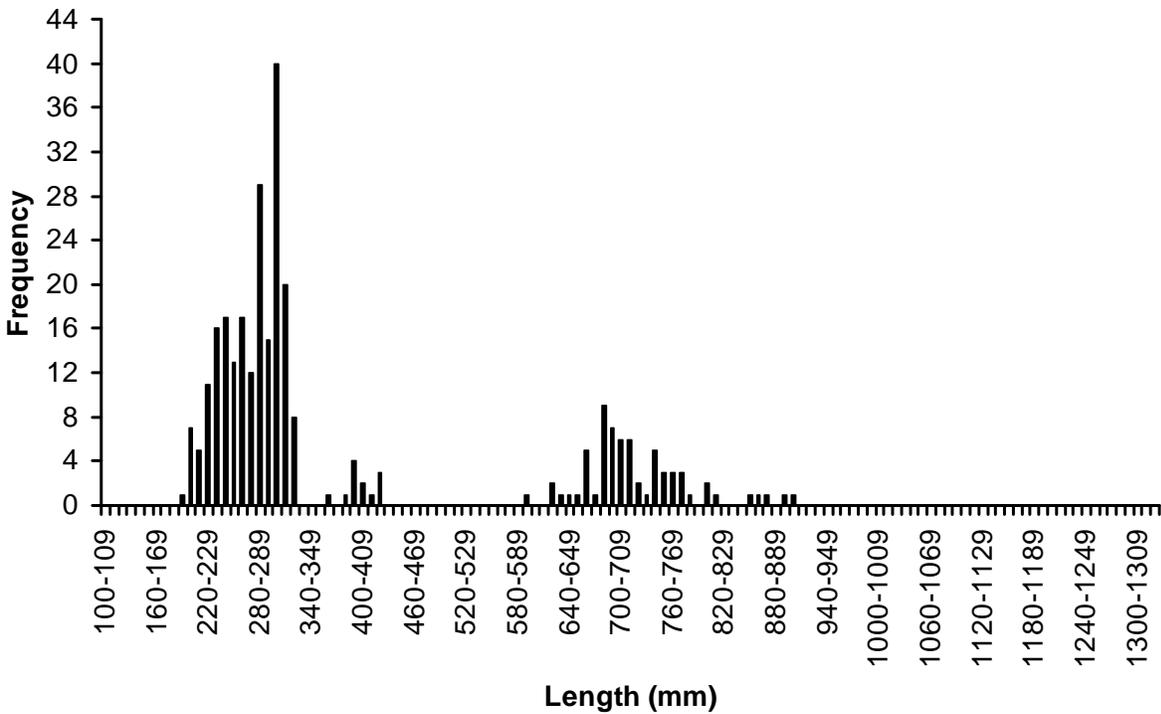


Figure 3.—Length-frequency distribution of silver carp (*Hypophthalmichthys molitrix*; N=289) captured at Site 1 below Mel Price Lock and Dam during March – May 2007.

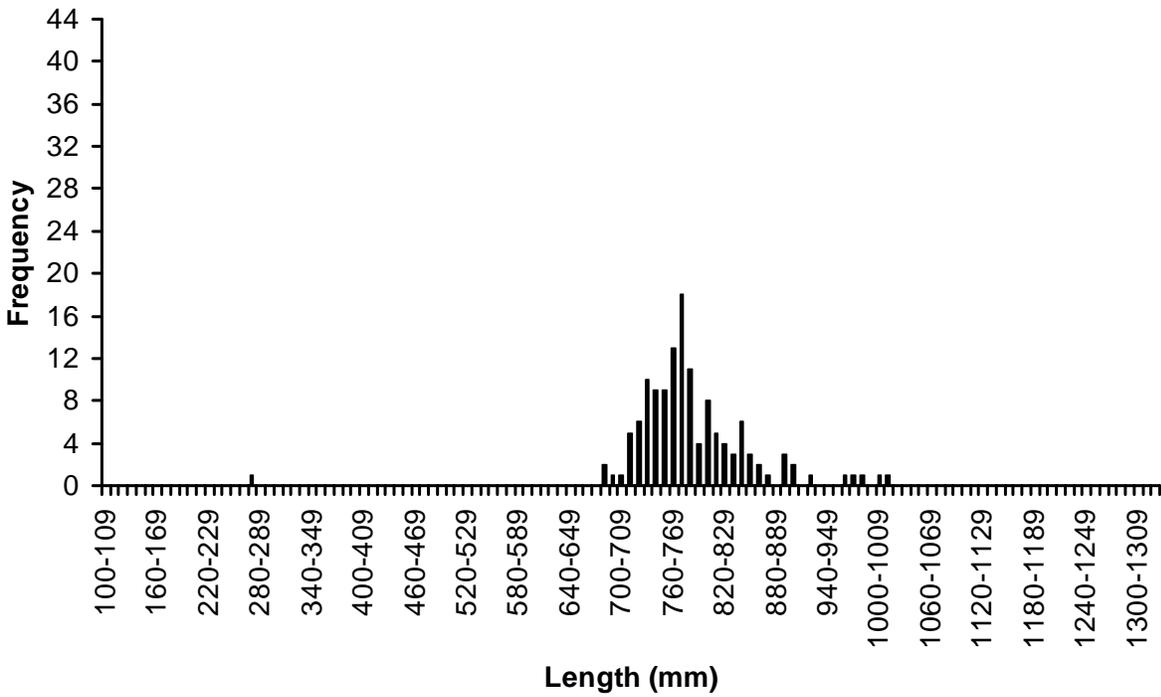


Figure 4.—Length-frequency distribution of bighead carp (*Hypophthalmichthys nobilis*; N=133) captured at Site 1 below Mel Price Lock and Dam during March – May 2007.

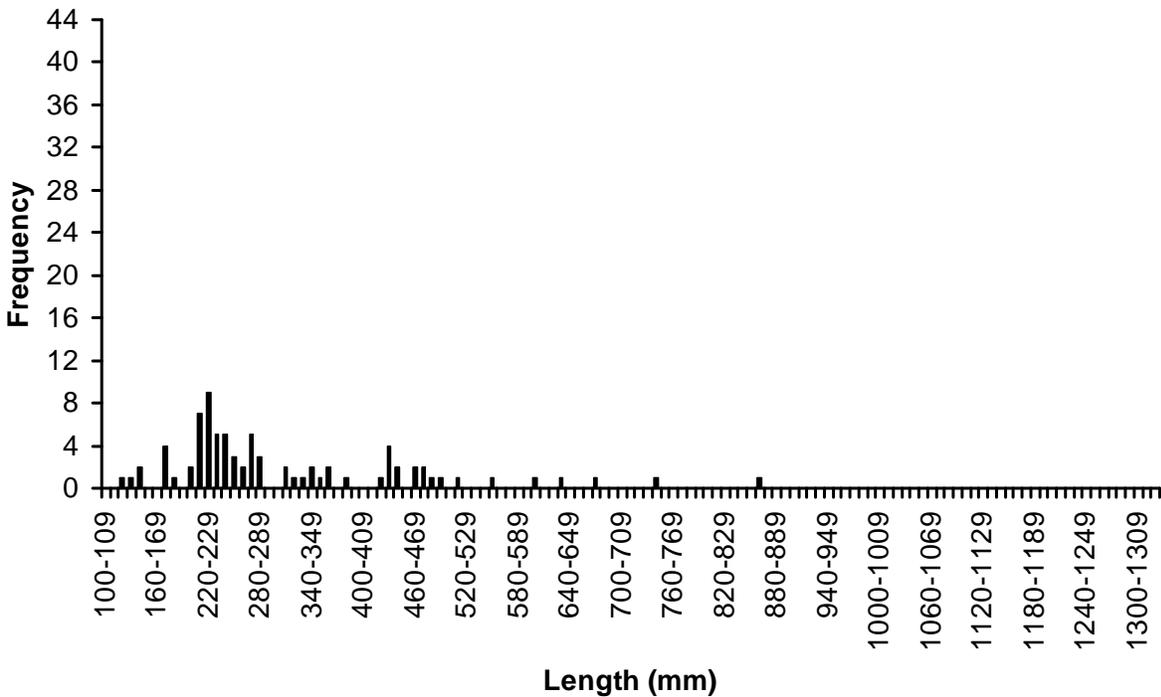


Figure 5.—Length-frequency distribution of blue catfish (*Ictalurus furcatus*; N=80) captured at Site 1 below Mel Price Lock and Dam during March – May 2007.

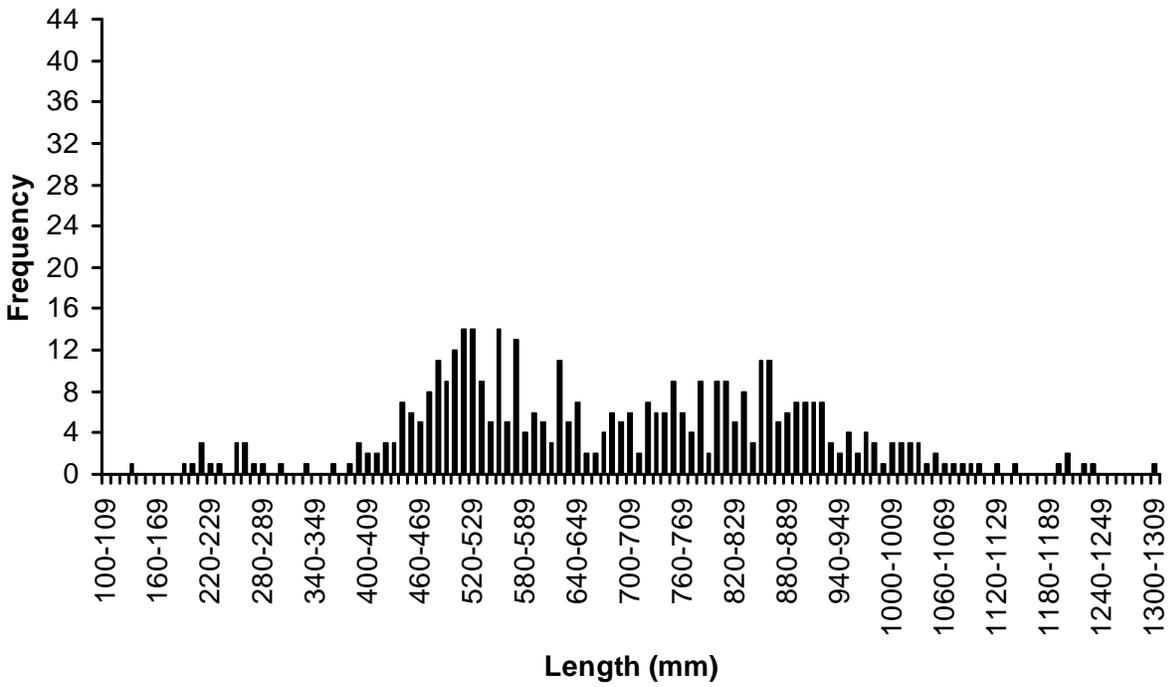


Figure 6.—Length-frequency distribution of blue catfish (*Ictalurus furcatus*; N=435) captured at Site 2 below Mel Price Lock and Dam during March – May 2007.

Table 4.—Fish captured at Site 2 below Mel Price Lock and Dam during March – May 2007. Asterisks denote migratory species as defined in Wilcox et al. (2004).

Family and Species	Number captured					Total
	Trip 1	Trip 2	Trip 3	Trip 4	Trip 5	
Acipenseridae						
Lake sturgeon <i>Acipenser fulvescens</i> *						
Shovelnose sturgeon <i>Scaphirhynchus platyrhynchus</i> *						
Pallid sturgeon <i>Scaphirhynchus albus</i> *						
Polyodontidae						
Paddlefish <i>Polydon spathula</i> *						
Lepisosteidae						
Shortnose gar <i>Lepisosteus platostomus</i>						
Hiodontidae						
Goldeye <i>Hiodon alosoides</i> *						
Clupeidae						
Skipjack herring <i>Alosa chrysochloris</i> *						
Gizzard shad <i>Dorosoma cepedianum</i>						
Cyprinidae						
Bighead carp <i>Hypophthalmichthys nobilis</i> *	1					1
Common carp <i>Cyprinus carpio</i>						
Grass carp <i>Ctenopharyngodon idella</i>						
Silver carp <i>Hypophthalmichthys molitrix</i> *	1					1
Catostomidae						
Bigmouth buffalo <i>Ictiobus cyprinellus</i> *						
Black buffalo <i>Ictiobus niger</i>						
Blue sucker <i>Cycleptus elongatus</i> *						
Quillback <i>Carpoides cyprinus</i> *						
River carpsucker <i>Carpoides carpio</i>						
Shorthead redhorse <i>Moxostoma macrolepidotum</i> *						
Smallmouth buffalo <i>Ictiobus bubalus</i> *	1				2	3
Ictaluridae						
Blue catfish <i>Ictalurus furcatus</i> *	129	113	81	52	60	435
Channel catfish <i>Ictalurus punctatus</i> *	6			1	2	9
Flathead catfish <i>Pylodictis olivaris</i> *					2	2
Moronidae						
White bass <i>Morone chrysops</i> *						
Hybrid striped bass <i>Morone saxatilis</i> x <i>chrysops</i>						
Centrarchidae						
White crappie <i>Pomoxis annularis</i>						
Percidae						
Sauger <i>Sander canadensis</i> *						
Walleye <i>Sander vitreum</i> *						
Sciaenidae						
Freshwater drum <i>Aplodinotus grunniens</i> *	2	1		5	4	12
Total	140	114	81	58	70	463

Table 5.—Fish captured at Site 3 below Mel Price Lock and Dam during March – May 2007. Asterisks denote migratory species as defined in Wilcox et al. (2004).

Family and Species	Number captured					Total
	Trip 1	Trip 2	Trip 3	Trip 4	Trip 5	
Acipenseridae						
Lake sturgeon <i>Acipenser fulvescens</i> *	2		5			7
Shovelnose sturgeon <i>Scaphirhynchus platyrhynchus</i> *	57	2	118	178	35	390
Pallid sturgeon <i>Scaphirhynchus albus</i> *			1			1
Polyodontidae						
Paddlefish <i>Polydon spathula</i> *	1	1		2		4
Lepisosteidae						
Shortnose gar <i>Lepisosteus platostomus</i>						
Hiodontidae						
Goldeye <i>Hiodon alosoides</i> *						
Clupeidae						
Skipjack herring <i>Alosa chrysochloris</i> *						
Gizzard shad <i>Dorosoma cepedianum</i>		4	1		2	7
Cyprinidae						
Bighead carp <i>Hypophthalmichthys nobilis</i> *	5	1				6
Common carp <i>Cyprinus carpio</i>			1		1	2
Grass carp <i>Ctenopharyngodon idella</i>						
Silver carp <i>Hypophthalmichthys molitrix</i> *	3	42	4			49
Catostomidae						
Bigmouth buffalo <i>Ictiobus cyprinellus</i> *						
Black buffalo <i>Ictiobus niger</i>		1				1
Blue sucker <i>Cycleptus elongatus</i> *	1					1
Quillback <i>Carpoides cyprinus</i> *						
River carpsucker <i>Carpoides carpio</i>	1	2			2	5
Shorthead redhorse <i>Moxostoma macrolepidotum</i> *	1					1
Smallmouth buffalo <i>Ictiobus bubalus</i> *	3	1				4
Ictaluridae						
Blue catfish <i>Ictalurus furcatus</i> *	3		17	6	8	34
Channel catfish <i>Ictalurus punctatus</i> *	1	13	1			15
Flathead catfish <i>Pylodictis olivaris</i> *			2	1	2	5
Moronidae						
White bass <i>Morone chrysops</i> *		3				3
Hybrid striped bass <i>Morone saxatilis</i> x <i>chrysops</i>		1	1			2
Centrarchidae						
White crappie <i>Pomoxis annularis</i>						
Percidae						
Sauger <i>Sander canadensis</i> *						
Walleye <i>Sander vitreum</i> *						
Sciaenidae						
Freshwater drum <i>Aplodinotus grunniens</i> *	3	45	3	1	9	61
Total	81	116	154	188	59	598

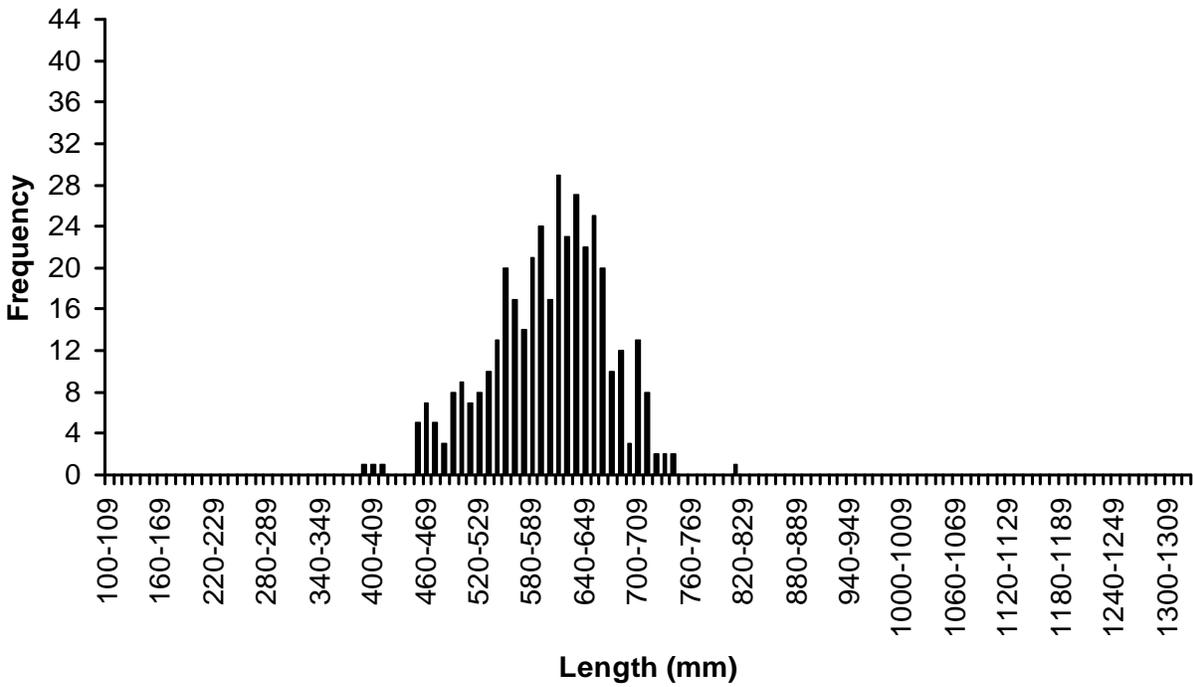


Figure 7.—Length-frequency distribution of shovelnose sturgeon (*Scaphirhynchus platorynchus*; N=390) captured at Site 3 below Mel Price Lock and Dam during March – May 2007.

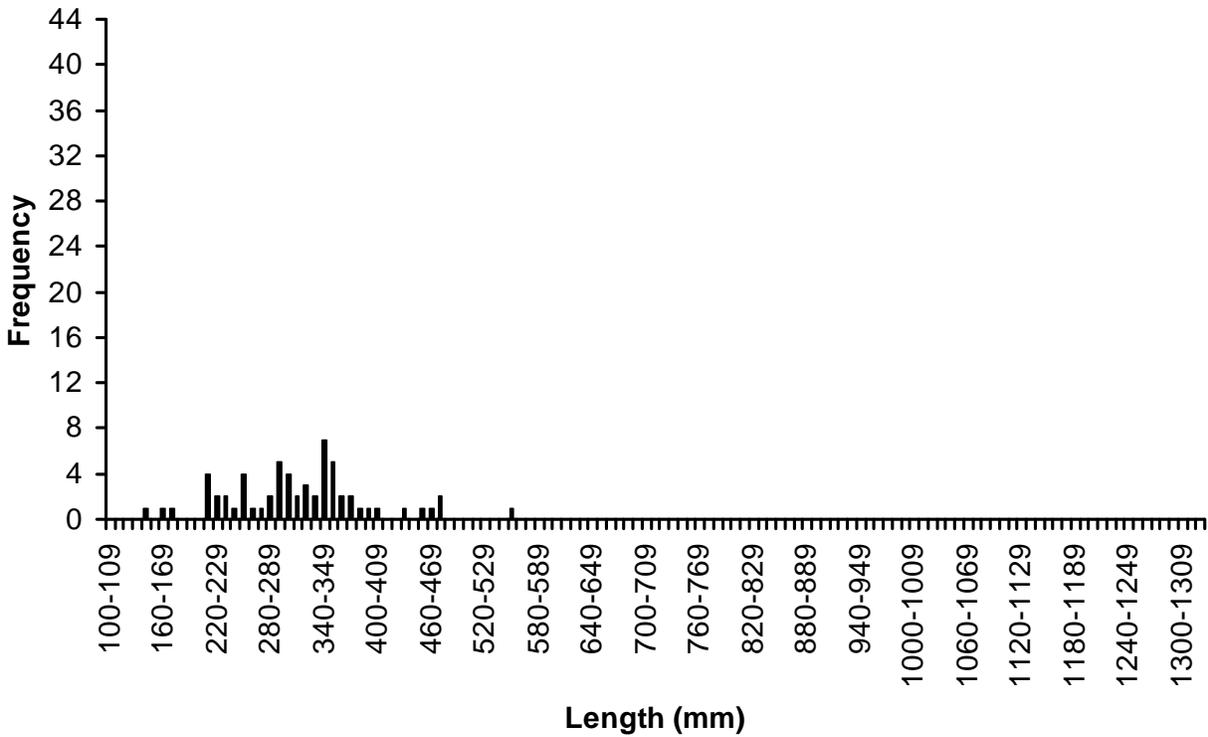


Figure 8.—Length-frequency distribution of freshwater drum (*Aplodinotus grunniens*; N=61) captured at Site 3 below Mel Price Lock and Dam during March – May 2007.

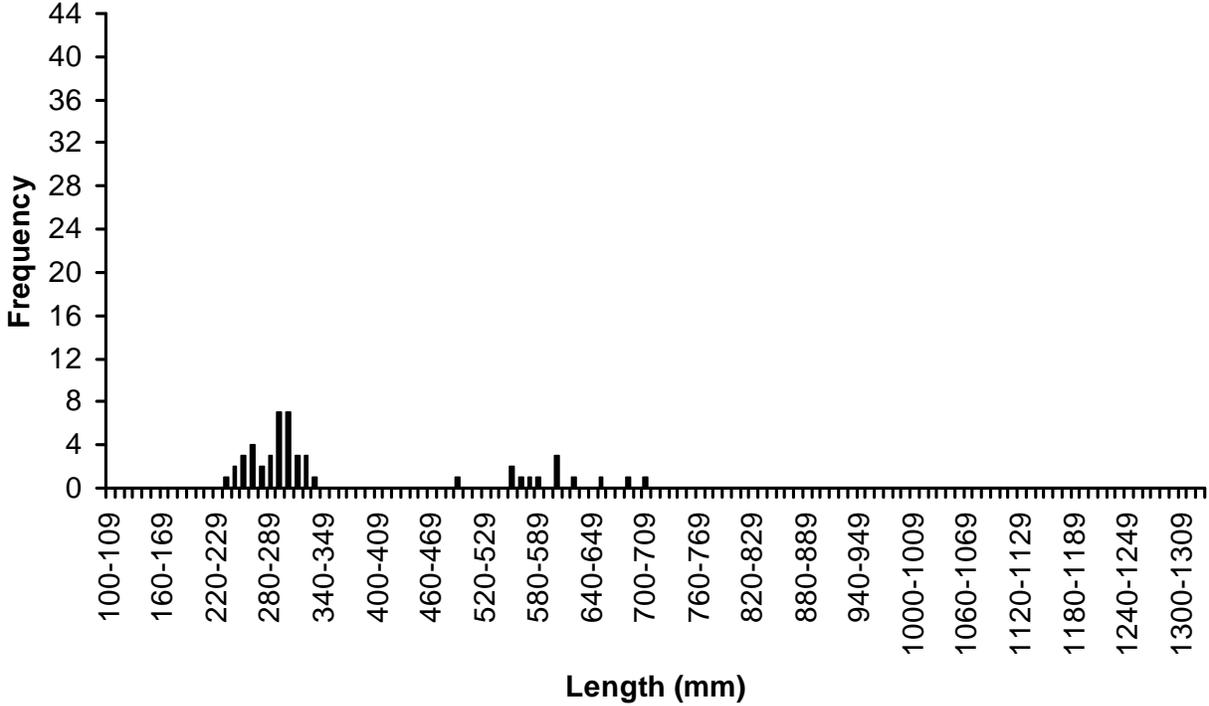


Figure 9.—Length-frequency distribution of silver carp (*Hypophthalmichthys molitrix*; N=49) captured at Site 3 below Mel Price Lock and Dam during March – May 2007.

Discussion and Recommendations

Trammel nets were used more during 2007 than in 2005-2006 and water temperatures remained low enough for deep-water electrofishing to be relatively efficient throughout the spring of 2007. The effort expended during the spring of 2007 was more intensive than in 2005-2006, so we caught more species in greater numbers. With the exception of Site 1, the most abundant species caught at each site were similar between April 2006 and 2007.

The catch distribution at Site 1 during April 2006 was dominated by freshwater drum, blue catfish, and gizzard shad. We consider results from 2007 sampling as somewhat contradictory. The overall catch was composed of gizzard shad, silver carp, and bighead carp, which accounted for 65% of all individuals caught. Additionally, the silver carp catch was predominately juveniles. Interestingly, Caswell (2006) noted that large aggregations of small fish were suspended 2-5 m below the surface at Site 1 during June 2005. Although he was unable to catch large numbers of juvenile silver carp, he concluded that the large aggregations were predominately juvenile silver carp. This year's results gives support to the conclusion reached in 2006.

In 2006, we did not recommend Site 1 for a fish passage structure at Mel Price Lock and Dam. Our results in 2007 support this conclusion. Invasive Asian carps contributed 42% of the overall catch at Site 1. Additionally, target migratory species were composed of mostly juveniles. We believe that Site 1 would not attract actively migrating adults. Instead, we believe that this area is used as a resting area for migratory fish and a backwater area for juvenile fish.

As Caswell (2006) noted, increasing the flow in this area and documenting the response of migratory fish should be evaluated if this site continues to be considered for fish passage.

After sampling in 2005-2007, we believe that we collected a good representation of the species that are available to our gear at Site 2, namely blue catfish. It is possible that these fish aggregate to either feed or migrate past the dam. This area may have potential for fish passage improvements, because of the high flows when the gates are open and the presence of at least one migratory species and low numbers of a few others.

Sampling at Site 3 during 2007 resulted in the capture of notably more shovelnose sturgeon than the previous year. This could be due in part to a more intensive sampling effort and/or the increased use of trammel nets. It should be noted that during trips 3 and 4 we had high shovelnose sturgeon catches.

Based on our sampling to date, Site 3 would be the most suitable location for fish passage. We feel that the physical characteristics of this location, the layout of Mel Price Lock and Dam, and the fact that we know a number of migratory species occupy this area in the spring warrants the further evaluation of a fish passage structure in this area.

We believe we have good information on what fishes are using the area below Mel Price Lock and Dam during the spring season. We feel that within the limitations of our gear and sampling periods, we have learned what we can about fish in aggregation areas below this dam. We are uncertain whether or not additional sampling in the same places with the same effort will provide significant new information in 2008. We suggest that the interagency Navigation Study Fish Passage Team discuss what additional information needs to be collected in 2008 to provide the most benefit to this project and subsequent projects.

Literature cited

- Caswell, N. 2007. 2006. Fisheries monitoring at Mel Price Lock & Dam: May 2005 – June 2006. U.S. Fish and Wildlife Service Fisheries Data Series Report FDS 2006-1. U.S. Fish and Wildlife Service Carterville Fishery Resources Office, Marion, Illinois.
- Fremling, C. R., J. L. Rasmussen, R. E. Sparks, S. P. Cobb, C. F. Bryan, and T. O. Clafin. 1989. Mississippi River fisheries: A case history. Pages 309-351 *in* D. P. Dodge, editor. Proceedings of the International Large Rivers Symposium (LARS). Canadian Special Publication of Fisheries and Aquatic Sciences 106.
- Pitlo, J., Jr., A. Van Vooren, and J. Rasmussen. 1995. Distribution and relative abundance of Upper Mississippi River fishes. Upper Mississippi River Conservation Committee Fish Technical Section, Rock Island, Illinois.
- Upper Mississippi River Conservation Committee. 2001. A working river and a river that works. Upper Mississippi River Conservation Committee Fish Technical Section, Rock Island, Illinois.
- U.S. Army Corps of Engineers (USACE) Rock Island District. 2006. Upper Mississippi River System - Navigation and Ecosystem Sustainability Program. U.S. Army Corps of Engineers. Available: <http://www2.mvr.usace.army.mil/NESP/>. (September 2006).
- Wilcox, D. B., E. L. Stefanik, D. E. Kelner, M. A. Cornish, D. J. Johnson, I. J. Hodgins, S. J. Zigler, and B. L. Johnson. 2004. Improving fish passage through navigation dams on the Upper Mississippi River system. Upper Mississippi River – Illinois Waterway System Navigation Study Interim Report, U.S. Army Corps of Engineers, St. Paul Minnesota, Rock Island, Illinois, St. Louis, Missouri.