SUMMARY REPORT:
RAFT CHANNEL AREA, POOL 8 ISLANDS, PHASE III, STAGE II PRE-PROJECT FISHERIES EVALUATION, POOL 8, 2009.

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PURPOSE

The purpose of this work is to continue to describe the baseline fisheries community prior to full completion of the Pool 8 Islands, Phase III, Stage II habitat rehabilitation and enhance project Navigation Pool 8 of the Mississippi River. Identical sampling was also done during 2007 and 2008.

METHODS

The Pool 8 Islands, Phase III, Stage II Habitat Rehabilitation and Enhancement Project is located in Navigation Pool 8 of the upper Mississippi River (Figure 1). The study area is located in the downstream one-third of the pool formed by Lock and Dam 8 and had a total water surface area of 19,676 acres as of the year 2002.

Stage II has a total of 12 planned islands. Construction of four West Islands and three of the North Islands began in spring 2008. Construction of four seed islands and one North Island began in July 2007 and was completed in summer 2008. In the fall of 2008, all islands were in place, but additions to these islands were done in 2009. By the fall of 2009, construction of all islands in Stage II was completed.

Standard Upper Mississippi River Conservation Committee (UMRCC) fyke nets were set by fisheries personnel. These fyke nets had a 50ft floating lead line, 3ft high and 6ft wide frame, and had a 0.75 inch bar mesh. During 2009, nets were set at randomly selected locations ensuring that the same proportion of nets were set on shorelines as done during the previous two years. Sites were selected using an ArcView GIS 3.3® software random point generating script and the Long Term Resource Monitoring Program (http://www.umesc.usgs.gov/data_library.html) 1998 bathymetric data (Rogala, 1997). Points were generated only in locations that had 0.3 to 1.1m water depth as measured at the middle of the net. Eleven locations were chosen in 2009. If a location was found to be logistically unsuitable for fyke netting, a randomly selected alternate location was chosen instead.

Fyke nets were fished from October 19 through 23, 2009 (Figure 2). These nets fished a total of 40.309 net-days. Nets were emptied daily during which all fish were removed.

In addition to fyke netting, an 18 foot-long welded aluminum flat-bottomed maxi-boom electro shocking boat equipped with a Wisconsin Box was used on approximately 10 minute day-time runs. Two booms extended 8 feet from the bow and the box controls were adjusted to produce 16 amps. Runs were randomly chosen from available locations that were between 0.4 and 1.6m deep. Randomly selected runs that were too shallow or too deep or otherwise adverse to electro shocking were not done and replaced with another randomly selected run. In 2009, a total of 45 runs were done during 7.515 hours of sampling (Figure 3, Table 1) done on six days from October 13 through October 22. For both gears, all fish were counted and measured.

We calculated Proportional Size Structures for selected quality (PSS_Q) and preferred (PSS_P) game fishes (Guy, et al., 2006) using values from (Gabelhouse, 1984) as well as catch per effort for these size categories. Because our fyke nets had bar mesh greater than 0.5 inches, we calculated PSS_Q and PSS_P for bluegill and pumpkinseed using a four-inch stock size rather a three-inch stock size and then converted these two metrics to three-inch PSS using the following formulas (Wisconsin Department of Natural Resources, 2010):

$$PSSQ3 = -4.10 + 0.97 (PSSQ4)$$
$$PSSP3 = - 0.41 + 0.76 (PSSP4).$$

Statistical tests were done using SAS® (2002-2003) software for Windows version 9.13 and were done at the alpha=0.05 level.

FINDINGS

The mean daily ambient water temperatures during 2009 sampling was 8.7°C and generally rose over the sampling period (Table 2). During sampling, the water surface elevation measured at the Brownsville, Minnesota, gage changed as much as 0.34 feet. The mean daily flow in cubic feet per second was 24637 and fluctuated as much as 6300 cubic feet per second.

Mean temperature during 2009 was lower than either 2007 or 2008 (about 12.3°C). Mean flows during 2009 was substantially lower than 2007 (64353 cubic feet per second) and about the same as 2008 (21209 cubic feet per second).

Catch per Effort, Fyke Netting

During 2009 fyke netting, a total of 22 fish species and 375 individuals were recorded. The most common fish recorded was largemouth bass (32.53% of the total catch) followed by common carp (18.93%), bluegill (13.87%) and silver redhorse (8.53%) (Table 3). Mean catch per net-day for all species combined was 9.25 (standard deviation = 10.44, n = 40) and varied from a minimum of 0.00 to a maximum of 51.98. Catch rates for individual species are given in Table 3.

The greatest change in relative abundance among the years was for gizzard shad. It dropped from 37.64% of the catch in 2007 to 1.78% in 2008 and 0.80% in 2009 (see WDNR, 2009). Also, 2007 gizzard shad mean catch (27.21 per net-day) was significantly higher ($p<0.001$) than catches from either 2008 (0.73) or 2009 (0.07).

During 2009, mean catch per net-day for all species combined was 9.25 (standard deviation = 10.44, n = 40) and varied from a minimum of 0.00 to a maximum of 51.98.

Fyke net catch rates between 2007 (71.26), 2008 (41.10) and 2009 (9.25) for all species combined (Table 4) were significantly different among all years. Since gizzard shad abundance dropped drastically from 2007 through 2009, we tested fyke net catch rates between these years for all species combined excluding gizzard shad. Without this fish, the mean catch rate between 2007 (44.05 fish/net-day, standard deviation = 41.68, n=27) was not significantly different ($p=0.7493$) from 2008 (40.37 fish/net-day, standard deviation =47.43, n=36) (Table 5). The 2009 catch rate (9.18 fish/net-day, standard deviation =10.44, n=40) was significantly lower than either 2007 or 2008. This suggests that the lower total fish catch rate in 2009 compared to 2007 or 2008 was due to a change in abundance in fish species other than gizzard shad. These species were bluegill and black crappie. When eliminating all three fish species from a test of significant, there was no difference in catch rates among years for all remaining fish species combined. These three fish species accounted for 88.5% of the drop in total catch rate from 2007/2008 to 2009. This suggests that the decline in combined species catch rate in 2009 was due to changes in abundance of gizzard shad, bluegill and black crappie.

Catch per Effort, Electro Shocking

During 2009 electro-shocking, 27 fish species were recorded among 930 individuals. The most common fish recorded was largemouth bass (44.52% of the total catch) followed by bluegill (13.76%), yellow perch (12.04%) and emerald shiner (9.78%) (Table 6). Mean catch per hour for all species combined was 123.75 (standard deviation = 142.38, n = 45) during 7.515 total hours of fishing and varied from a minimum of 0.0 to a maximum of 700.599. Catch rates for individual species are given in Table 6.

As with fyke netting, the greatest change in relative abundance between the years 2007, 2008 and 2009 was for gizzard shad. It dropped from 73.25% of the catch in 2007 to 0.79% in 2008 to 0.75% of the catch in

2009. Also, 2007 gizzard shad mean catch rate (490.56 per hour) was significantly higher ($p<0.001$) than catch rates from either 2008 (0.79) or 2009 (0.75).

During 2009, mean catch per hour for all species combined was 123.75 (standard deviation = 142.38, n = 45) and varied from a minimum of 0.00 to a maximum of 700.60.

Electro-shocking catch rates for all species combined from 2009 was significantly different from 2007 (669.99) but not 2008 (107.64) (Table 7). Since gizzard shad abundance dropped drastically from 2007 to 2008, we tested electro shocking catch rates among all years for all species combined excluding gizzard shad. Similar to fyke netting, electro shocking without this fish, catch rates between 2007 (179.43 fish/hour, standard deviation = 187.74, n=44) and 2008 (106.79 fish/hour, standard deviation = 112.53, n=42) were not significantly different (Table 8) but was different from 2009 (122.82 fish/hour, standard deviation = 142.01, n=45). This suggests that, like fyke netting, the difference in total fish catch rates between 2007 and 2009 (546.24 fish/hour) was not solely due to a decline in gizzard shad abundance and that other species contributed to this decline. As with fyke netting, decreases in catch rates of bluegill and black crappie contributed significantly to the change between 2007 and 2009. When eliminating all three fish species from a test of significance, there was no difference in catch rates among years for all remaining fish species combined. These three fish species accounted for the entire drop in total catch rate from 2007 to 2009. This suggests, as with fyke netting, that the decline in combined species catch rate from electro shocking from 2007 to 2009 was due to changes in abundance of gizzard shad, bluegill and black crappie.

Length Distributions

For fyke netted 2009 fish species where there were sufficient numbers, we generated total length distributions and mean total lengths (Figures 4 through 7). Of the five fish species tested for differences in mean total length among years (black crappie, bluegill, largemouth bass, rock bass and yellow perch) only bluegill was significantly larger than one or both previous years (Table 9). Fish species that were smaller than a previous year included largemouth bass, rock bass and yellow perch.

The PSS_Q and PSS_P and associated catch rates by species and year for netted fish species are presented in Table 10. The "acceptable" value of PSS_Q for bluegill, pumpkinseed and rock bass is 40 to 60 (Wisconsin Department of Natural Resources, 2010). The "acceptable" value for crappies is 40. All values of PSS_Q for these four fish species fell below the state level for "acceptable". The "acceptable" value of PSS_P for bluegill, crappies and rock bass is 5. Only black crappies from 2007 met or exceeded this (6.25) and all other fish species and years did not. This suggests none of these four fish species' size structures were "acceptable" during 2007 through 2009 except preferred-sized black crappie in 2007.

For electro shocked 2009 fish species where there were sufficient numbers, we generated total length distributions and mean total lengths (Figures 8 through 13). Of the four fish species tested for differences in mean total length among years (black crappie, bluegill, largemouth bass, and yellow perch) bluegill and black crappie were significantly larger than both previous years (Table 11). There was no difference in mean size of electro shocked largemouth bass and yellow perch among years.

The PSS_Q and PSS_P and associated catch rates by species and year for electro shocked fish species are presented in Table 12. We calculated PSS_Q and PSS_P values for two fish species: bluegill and pumpkinseed. Values for both fish species fell below the state level for "acceptable". This suggests none of these two fish species' size structures were "acceptable" during 2007 through 2009.

CONCLUSIONS

Combined species fyke net catch rates significantly declined from 2007 to 2009. This decline was primarily due to a change in catch rates of gizzard shad, bluegill and black crappie. Combined species electro shocking catch rates significant declined from 2007 to 2009. As with fyke netting, this decline was due to changes in catch rates of gizzard shad, bluegill and black crappie.

Mean total length of selected species changed over time. Of the fish species compared from fyke nets, bluegills were significantly larger in 2009, while largemouth bass, rock bass and yellow perch were smaller. For electro shocked fish species, both bluegills and black crappies were larger in 2009, while largemouth bass and

yellow perch sizes were the same as previous years. Of the 24 calculations made for PSS_Q and PSS_P, only one (preferred-sized black crappie in 2007) met state standards for "acceptable".

RECOMMENDATIONS

1. Continue to monitor the fisheries community in the Pool 8 Islands, Phase III, Stage II habitat rehabilitation and enhancement project in Navigation Pool 8 of the Mississippi River. Monitoring should continue for several years after the completion of this habitat project.
2. Monitoring results should be compared with ongoing Lake Assessment sampling results, which could serve as a reference condition.

REFERENCES

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FIGURE 1. LOCATION OF PHASE III, STAGE II (RAFT CHANNEL AREA) STUDY FISHERIES AREA IN NAVIGATION POOL 8 OF THE UPPER MISSISSIPPI RIVER.

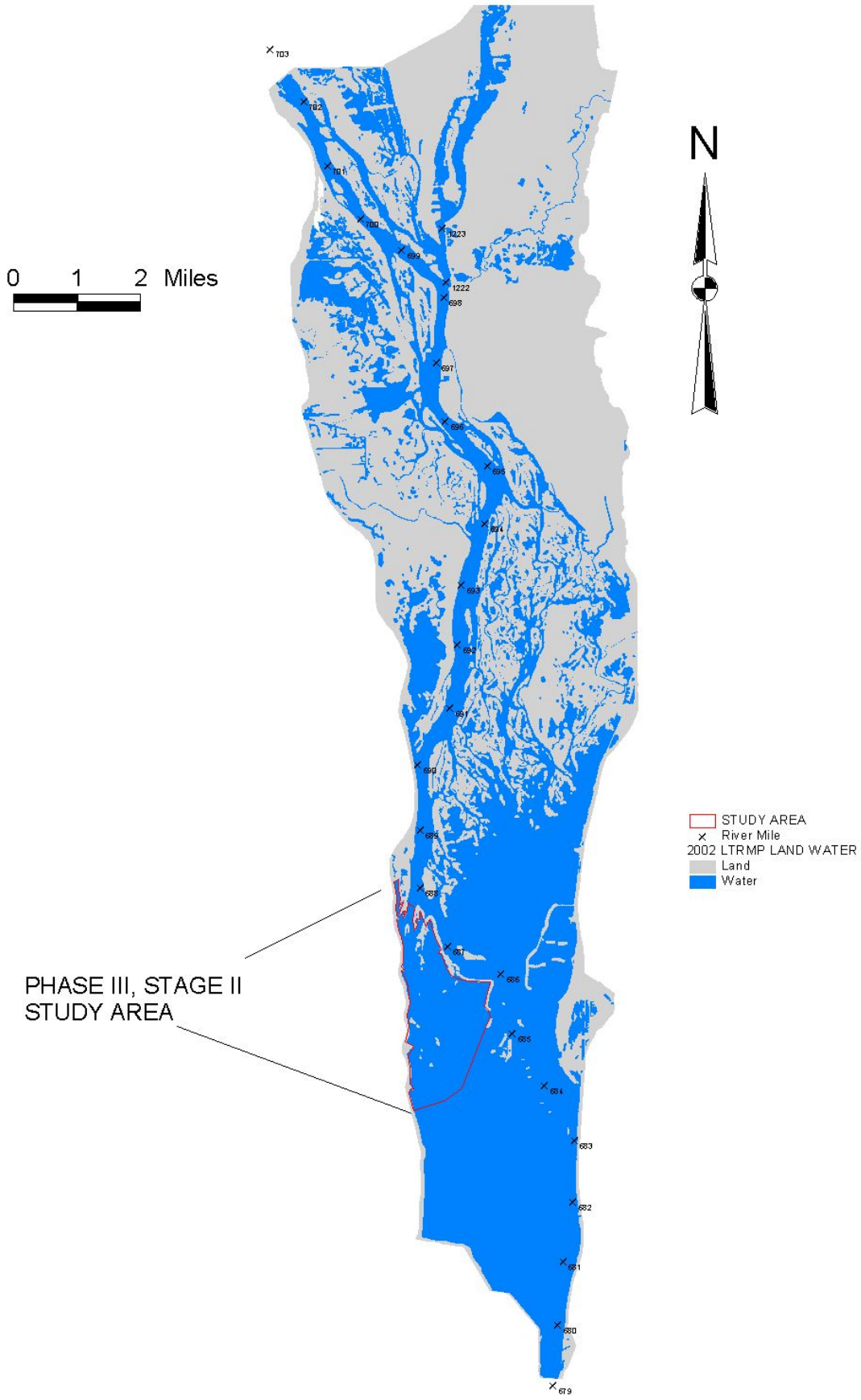
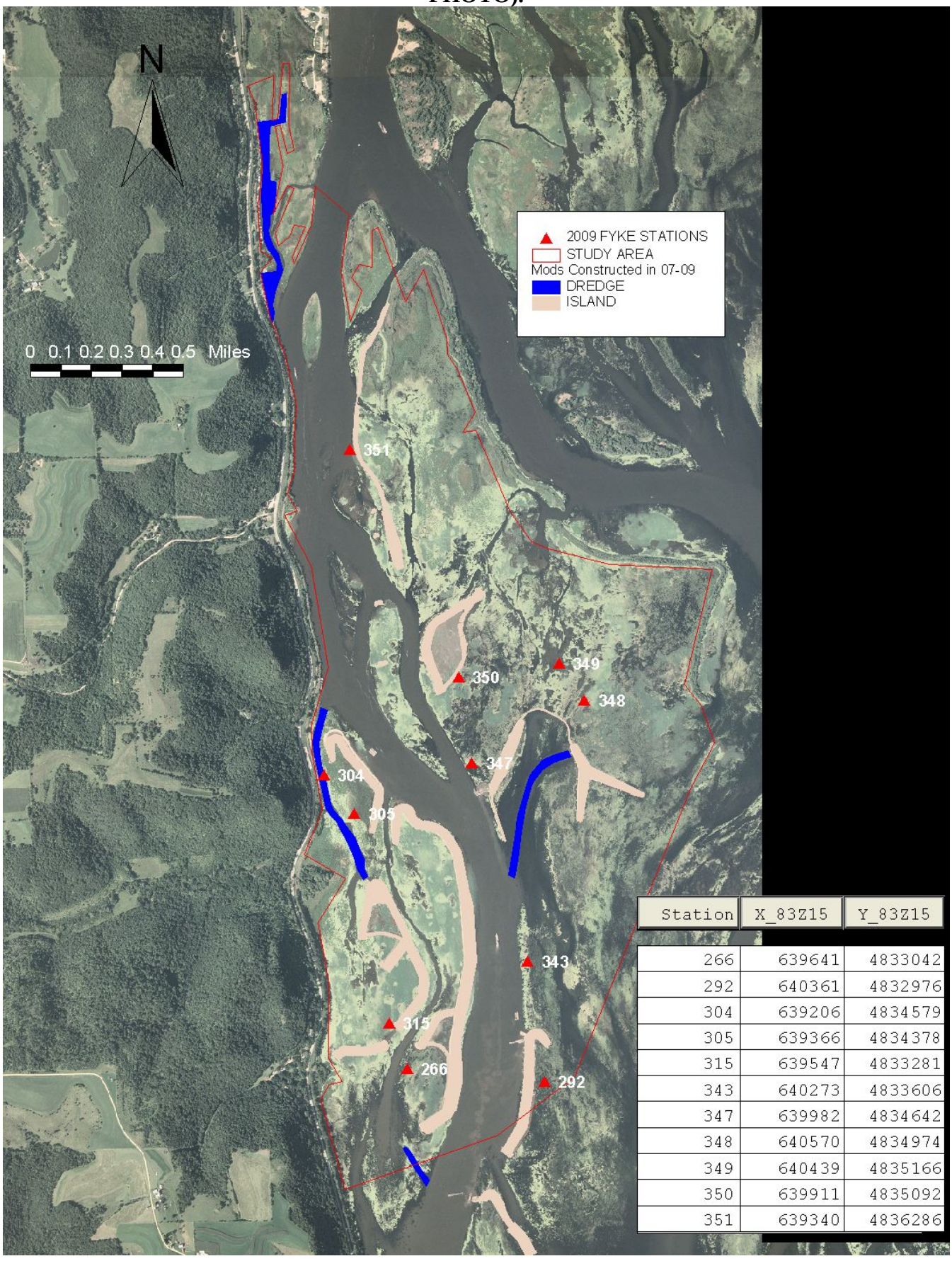


FIGURE 2. LOCATION OF 2009 RAFT CHANNEL FYKE NETTING STATIONS. (2009 NAIP PHOTO).



Station	X_83Z15	Y_83Z15
266	639641	4833042
292	640361	4832976
304	639206	4834579
305	639366	4834378
315	639547	4833281
343	640273	4833606
347	639982	4834642
348	640570	4834974
349	640439	4835166
350	639911	4835092
351	639340	4836286

FIGURE 3. LOCATION OF 2009 RAFT CHANNEL ELECTRO SHOCKING STATIONS. (2009 NAIP PHOTO).

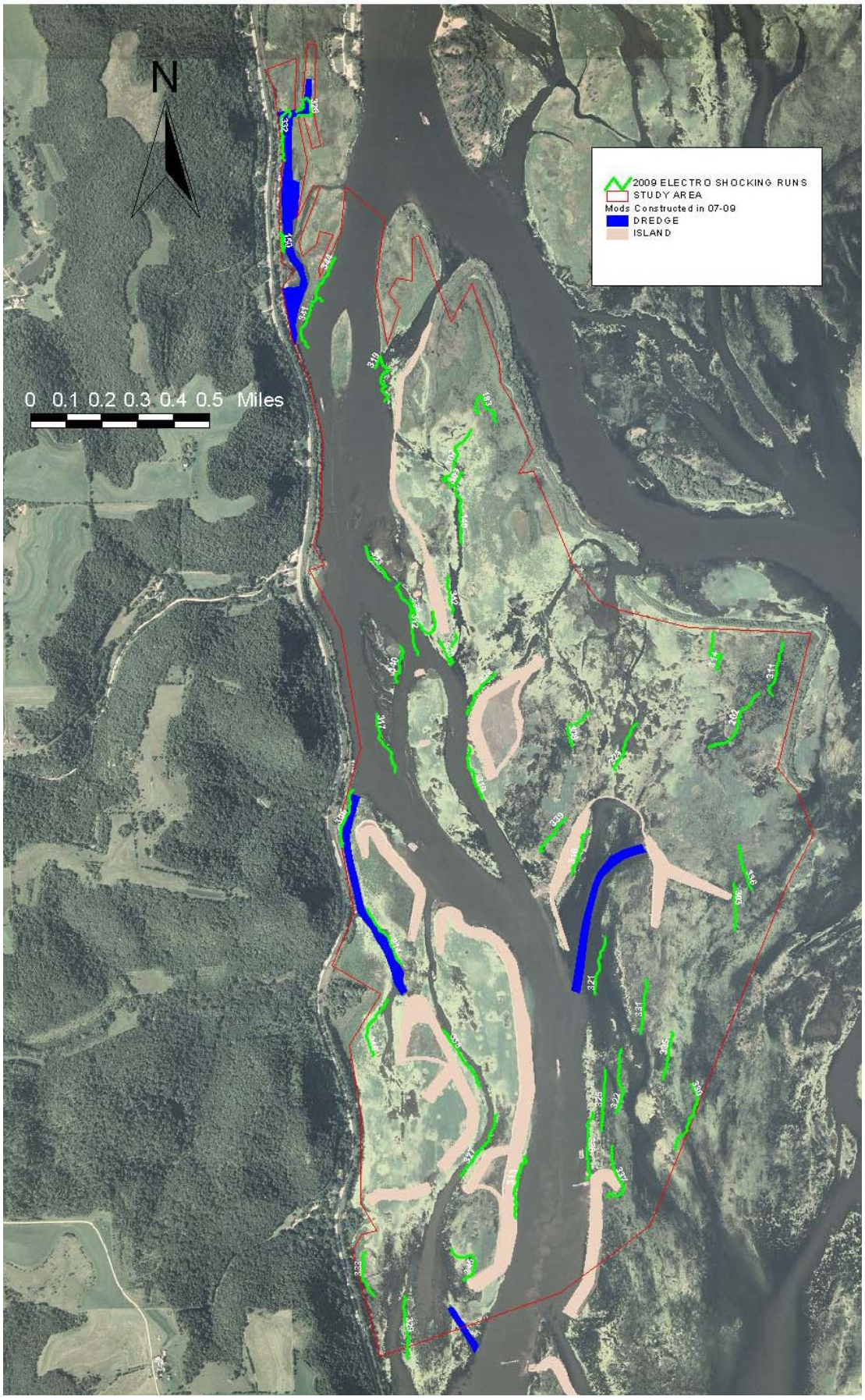


TABLE 1. ELECTRO SHOCKING STATION LOCATIONS, 2009 RAFT CHANNEL AREA.

STATION	LENGTH (M)	UTM15STX	UTM15STY	UTM15EDX	UTM15EDY
149	267	639651	4836306	639674	4836062
150	211	638880	4837376	638869	4837455
183	251	639828	4836605	639751	4836648
202	364	641007	4835389	640782	4835145
214	304	639254	4834420	639410	4834168
303	216	640891	4834536	640897	4834323
306	275	639191	4834957	639143	4834698
307	203	639717	4836572	639641	4836409
308	216	640173	4835152	640246	4835303
309	238	639647	4836412	639678	4836382
310	263	639706	4835147	639770	4834912
311	263	641112	4835616	641069	4835378
312	357	639398	4835884	639480	4835561
313	328	639962	4833303	639922	4833026
314	255	640817	4835496	640804	4835663
316	228	640241	4834773	640170	4834574
317	293	639297	4835297	639376	4835034
318	236	639826	4835479	639700	4835291
319	344	639287	4836849	639331	4836702
320	268	639576	4835623	639652	4835652
321	266	640320	4834290	640275	4834036
322	307	640392	4833789	640365	4833499
323	226	639246	4836050	639351	4835896
324	251	640365	4835043	640462	4835255
325	279	640318	4833698	640300	4833420
326	253	638939	4837977	638935	4838005
327	338	639838	4833497	639671	4833222
328	315	640264	4833503	640235	4833202
329	285	639421	4832678	639432	4832399
330	342	640702	4833632	640631	4833339
331	247	640503	4834102	640475	4833858
332	309	638905	4837976	638883	4837782
333	228	639247	4832880	639287	4832678
334	310	639445	4835805	639546	4835755
335	221	640618	4833866	640575	4833652
336	214	640914	4834706	640974	4834506
337	305	640352	4833355	640328	4833123
338	313	639597	4833877	639761	4833618
339	212	640041	4834678	640142	4834825
340	202	639401	4835602	639381	4835436
341	337	638991	4836945	639053	4837150
342	181	639618	4835913	639633	4835746
344	211	639109	4837348	639025	4837182
345	263	639632	4832894	639688	4832747
346	298	639282	4833761	639348	4834009

TABLE 2. MEAN TEMPERATURE, WATER SURFACE ELEVATION AND FLOW DURING FALL 2009 RAFT CHANNEL AREA.

DATE	MEAN DAILY TEMPERA-TURE ºC	WATER SURFACE ELEVATION (ft), BROWNS-VILLE	FLOW (cfs) DAM 8
10/13/2009	8.8	631.17	26700
10/14/2009	7.2	631.08	26600
10/16/2009	6.4	631.14	26700
10/19/2009	9.4	631.13	23600
10/20/2009	9.3	631.06	23800
10/21/2009	10.1	631.06	22200
10/22/2009	9.1	631.25	22600
10/23/2009	8.3	631.4	28500
MEAN	**8.7**	**631.17**	**24637**

TABLE 3. FALL 2009 RAFT CHANNEL AREA RELATIVE ABUNDANCE, MEAN CATCH PER NET-DAY, FYKE NETS.

	SPECIES	FREQUENCY	PERCENT	MEAN	STANDARD DEV.	MIN.	MAX.	NET-DAYS
1	black crappie	5	1.33	0.13	0.34	0	1.17	40.309
2	bluegill	52	13.87	1.28	2.47	0	10.27	40.309
3	bowfin	1	0.27	0.02	0.15	0	0.98	40.309
4	brown bullhead	1	0.27	0.03	0.16	0	1.00	40.309
5	carpsucker	1	0.27	0.02	0.14	0	0.88	40.309
6	common carp	71	18.93	1.79	3.56	0	16.13	40.309
7	freshwater drum	3	0.80	0.07	0.26	0	0.99	40.309
8	gizzard shad	3	0.80	0.07	0.25	0	0.99	40.309
9	golden shiner	2	0.53	0.05	0.22	0	0.99	40.309
10	largemouth bass	122	32.53	2.93	5.94	0	29.96	40.309
11	northern pike	9	2.40	0.24	0.53	0	2.40	40.309
12	pumpkinseed	14	3.73	0.34	0.76	0	3.52	40.309
13	pumpkinseed x bluegill	2	0.53	0.06	0.36	0	2.28	40.309
14	rock bass	19	5.07	0.48	1.07	0	4.41	40.309
15	shiners	1	0.27	0.02	0.16	0	0.99	40.309
16	shorthead redhorse	11	2.93	0.27	0.55	0	2.02	40.309
17	silver redhorse	32	8.53	0.80	1.12	0	5.16	40.309
18	spotted sucker	2	0.53	0.05	0.24	0	1.14	40.309
19	walleye	2	0.53	0.05	0.23	0	1.08	40.309
20	white bass	1	0.27	0.02	0.15	0	0.95	40.309
21	yellow bullhead	3	0.80	0.07	0.26	0	1.02	40.309
22	yellow perch	18	4.80	0.44	1.59	0	9.86	40.309
	ALL SPECIES	**375**	**99.99**	**9.25**	**10.44**	**0**	**51.98**	**40.309**

TABLE 4. COMPARISON OF MEAN RAFT CHANNEL CATCH PER NET-DAY BETWEEN 2007, 2008 AND 2009 FOR ALL SPECIES COMBINED, FYKE NETTING.

YEAR	MEAN	STD. DEV.	N	NET DAYS	DIFFERENT (means with the same letter are not Sign. Different)
2007	71.26	59.35	27	27.503	A
2008	41.10	47.63	36	35.799	B
2009	9.25	10.44	40	40.309	C
ALL YEARS	**36.63**	**48.34**	**103**	**103.61**	

TABLE 5. COMPARISON OF MEAN RAFT CHANNEL CATCH PER NET-DAY BETWEEN 2007, 2008 AND 2009 FOR ALL SPECIES COMBINED EXCLUDING GIZZARD SHAD, FYKE NETTING.

YEAR	MEAN	STD. DEV.	N	NET DAYS	DIFFERENT (means with the same letter are not Sign. Different)
2007 WITHOUT GIZZARD SHAD	44.05	41.68	27	27.503	A
2008 WITHOUT GIZZARD SHAD	40.37	47.43	36	35.799	A
2009 WITHOUT GIZZARD SHAD	9.18	10.44	40	40.309	B
ALL YEARS WITHOUT GIZZARD SHAD	**29.22**	**38.93**	**103**	**103.61**	

TABLE 6. FALL 2009 RAFT CHANNEL AREA RELATIVE ABUNDANCE, MEAN CATCH PER HOUR, ELECTRO SHOCKING.

	SPECIES	FREQUENCY	PERCENT	MEAN	STANDARD DEV.	MIN.	MAX.	RUNS	TOTAL HOURS
1	black crappie	14	1.51	1.863	6.10	0	35.93	45	7.515
2	bluegill	128	13.76	17.03	73.99	0	497.01	45	7.515
3	bowfin	6	0.65	0.80	2.06	0	5.99	45	7.515
4	channel catfish	1	0.11	0.13	0.89	0	5.99	45	7.515
5	common carp	5	0.54	0.67	3.66	0	23.95	45	7.515
6	common shiner	7	0.75	0.93	2.54	0	11.98	45	7.515
7	emerald shiner	91	9.78	12.11	46.09	0	299.40	45	7.515
8	freshwater drum	1	0.11	0.13	0.89	0	5.99	45	7.515
9	gizzard shad	7	0.75	0.93	5.41	0	35.93	45	7.515
10	golden shiner	4	0.43	0.53	2.15	0	11.98	45	7.515
11	green sunfish	3	0.32	0.40	1.51	0	5.99	45	7.515
12	largemouth bass	414	44.52	55.09	68.52	0	305.39	45	7.515
13	logperch	5	0.54	0.67	2.29	0	11.98	45	7.515
14	northern pike	55	5.91	7.32	12.82	0	53.89	45	7.515
15	pumpkinseed	5	0.54	0.67	2.29	0	11.98	45	7.515
16	quillback	1	0.11	0.13	0.89	0	5.99	45	7.515
17	river redhorse	1	0.11	0.13	0.89	0	5.99	45	7.515
18	rock bass	2	0.22	0.27	1.25	0	5.99	45	7.515
19	sauger	1	0.11	0.13	0.89	0	5.99	45	7.515
20	shorthead redhorse	32	3.44	4.26	9.35	0	53.89	45	7.515
21	shortnose gar	1	0.11	0.13	0.89	0	5.99	45	7.515
22	silver redhorse	8	0.86	1.07	4.65	0	29.94	45	7.515
23	smallmouth bass	1	0.11	0.13	0.89	0	5.99	45	7.515
24	spottail shiner	3	0.32	0.40	1.98	0	11.98	45	7.515
25	spotted sucker	13	1.40	1.73	4.54	0	17.96	45	7.515
26	walleye	9	0.97	1.20	3.52	0	17.96	45	7.515
27	yellow perch	112	12.04	14.90	18.40	0	95.81	45	7.515
	ALL SPECIES	**930**	**100.02**	**123.75**	**142.38**	**0**	**700.60**	**45**	**7.515**

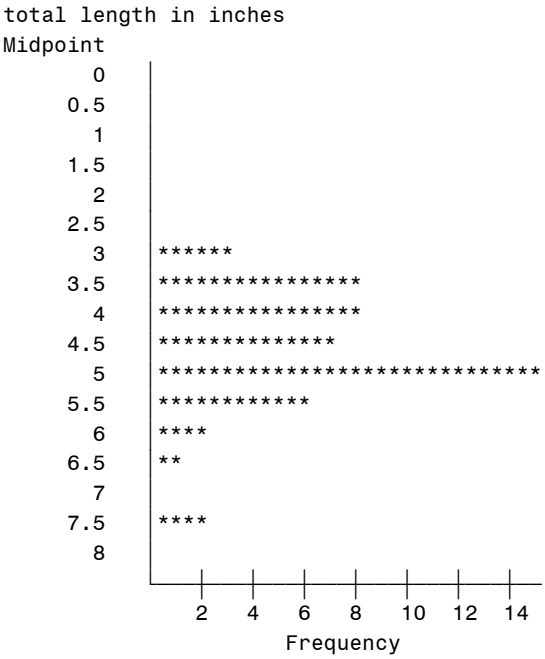
TABLE 7. COMPARISON OF MEAN RAFT CHANNEL CATCH PER HOUR BETWEEN 2007, 2008 AND 2009 FOR ALL SPECIES COMBINED, ELECTRO SHOCKING.

YEAR	MEAN	STD. DEV.	NUMBER OF RUNS	TOTAL HOURS	DIFFERENT (means with the same letter are not Sign. Different)
2007	669.99	1361.24	44	7.331	A
2008	107.64	112.33	42	7.014	B
2009	123.75	142.38	45	7.515	B
ALL YEARS	**302.06**	**832.34**	**131**	**21.860**	

TABLE 8. COMPARISON OF MEAN RAFT CHANNEL CATCH PER HOUR BETWEEN 2007, 2008 AND 2009 FOR ALL SPECIES COMBINED EXCLUDING GIZZARD SHAD, ELECTRO SHOCKING.

YEAR	MEAN	STD. DEV.	NUMBER OF RUNS	TOTAL HOURS	DIFFERENT (means with the same letter are not Sign. Different)
2007 WITHOUT GIZZARD SHAD	179.43	187.74	44	7.331	A
2008 WITHOUT GIZZARD SHAD	106.79	112.53	42	7.014	AB
2009 WITHOUT GIZZARD SHAD	122.82	142.01	45	7.515	B
ALL YEARS WITHOUT GIZZARD SHAD	**136.69**	**153.13**	**131**	**21.860**	

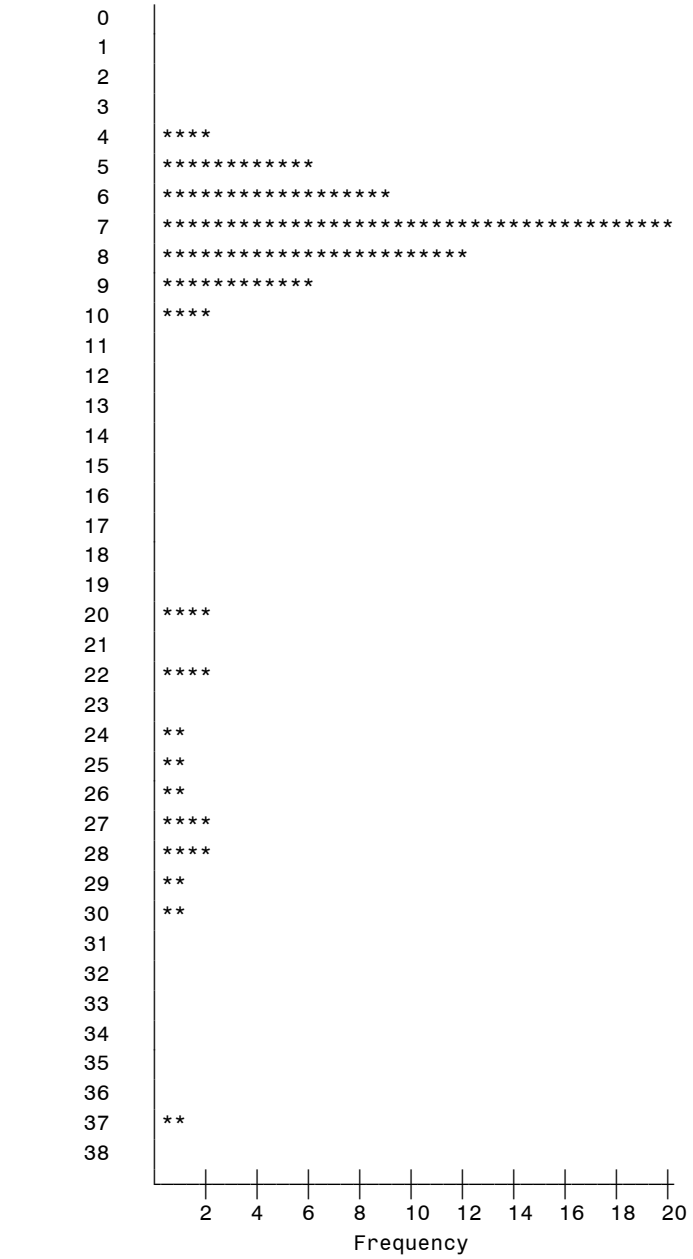
FIGURE 4. BLUEGILL LENGTH DISTRIBUTION, RAFT CHANNEL AREA, POOL 8, FYKE NETS, 2009.



Midpoint	Freq	Cum. Freq	Percent	Cum. Percent
0	0	0	0.00	0.00
0.5	0	0	0.00	0.00
1	0	0	0.00	0.00
1.5	0	0	0.00	0.00
2	0	0	0.00	0.00
2.5	0	0	0.00	0.00
3	3	3	5.77	5.77
3.5	8	11	15.38	21.15
4	8	19	15.38	36.54
4.5	7	26	13.46	50.00
5	15	41	28.85	78.85
5.5	6	47	11.54	90.38
6	2	49	3.85	94.23
6.5	1	50	1.92	96.15
7	0	50	0.00	96.15
7.5	2	52	3.85	100.00
8	0	52	0.00	100.00

N	Mean	Std Dev	Minimum	Maximum
52	4.6812500	1.0080730	2.8740000	7.5980000

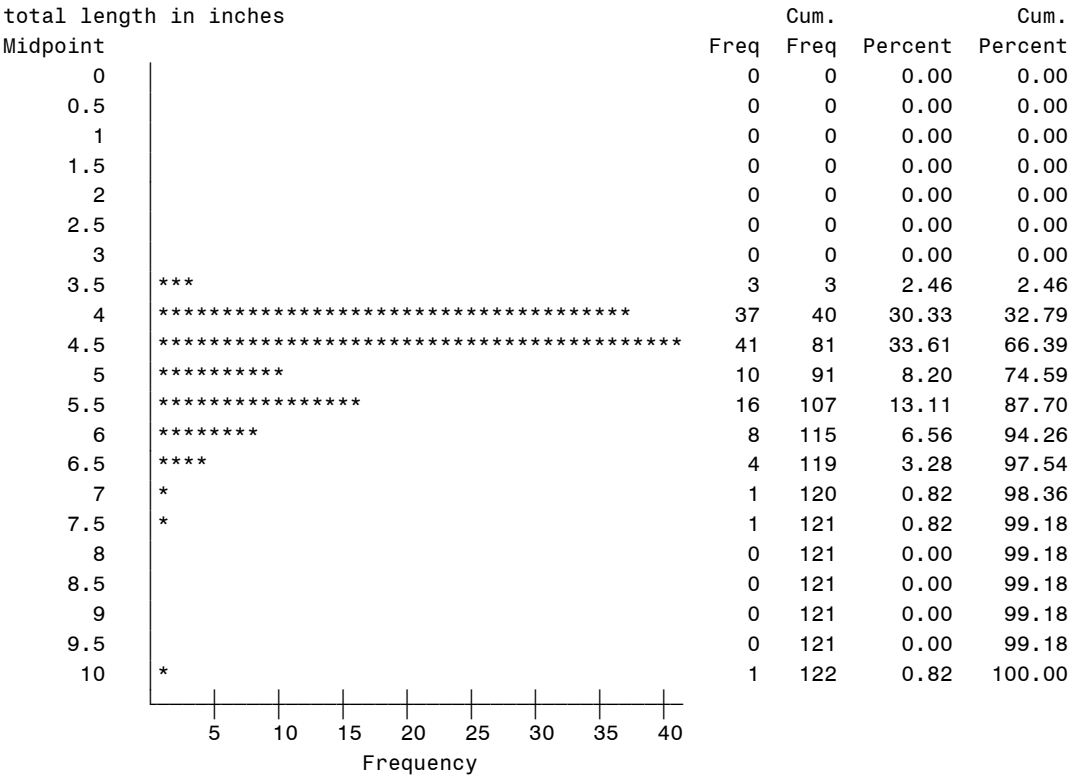
FIGURE 5. COMMON CARP LENGTH DISTRIBUTION, RAFT CHANNEL AREA, POOL 8, FYKE NETS, 2009.



total length in inches Midpoint	Freq	Cum. Freq	Percent	Cum. Percent
0	0	0	0.00	0.00
1	0	0	0.00	0.00
2	0	0	0.00	0.00
3	0	0	0.00	0.00
4	2	2	2.82	2.82
5	6	8	8.45	11.27
6	9	17	12.68	23.94
7	20	37	28.17	52.11
8	12	49	16.90	69.01
9	6	55	8.45	77.46
10	2	57	2.82	80.28
11	0	57	0.00	80.28
12	0	57	0.00	80.28
13	0	57	0.00	80.28
14	0	57	0.00	80.28
15	0	57	0.00	80.28
16	0	57	0.00	80.28
17	0	57	0.00	80.28
18	0	57	0.00	80.28
19	0	57	0.00	80.28
20	2	59	2.82	83.10
21	0	59	0.00	83.10
22	2	61	2.82	85.92
23	0	61	0.00	85.92
24	1	62	1.41	87.32
25	1	63	1.41	88.73
26	1	64	1.41	90.14
27	2	66	2.82	92.96
28	2	68	2.82	95.77
29	1	69	1.41	97.18
30	1	70	1.41	98.59
31	0	70	0.00	98.59
32	0	70	0.00	98.59
33	0	70	0.00	98.59
34	0	70	0.00	98.59
35	0	70	0.00	98.59
36	0	70	0.00	98.59
37	1	71	1.41	100.00
38	0	71	0.00	100.00

N	Mean	Std Dev	Minimum	Maximum
71	10.7790845	7.8962928	3.8190000	36.6140000

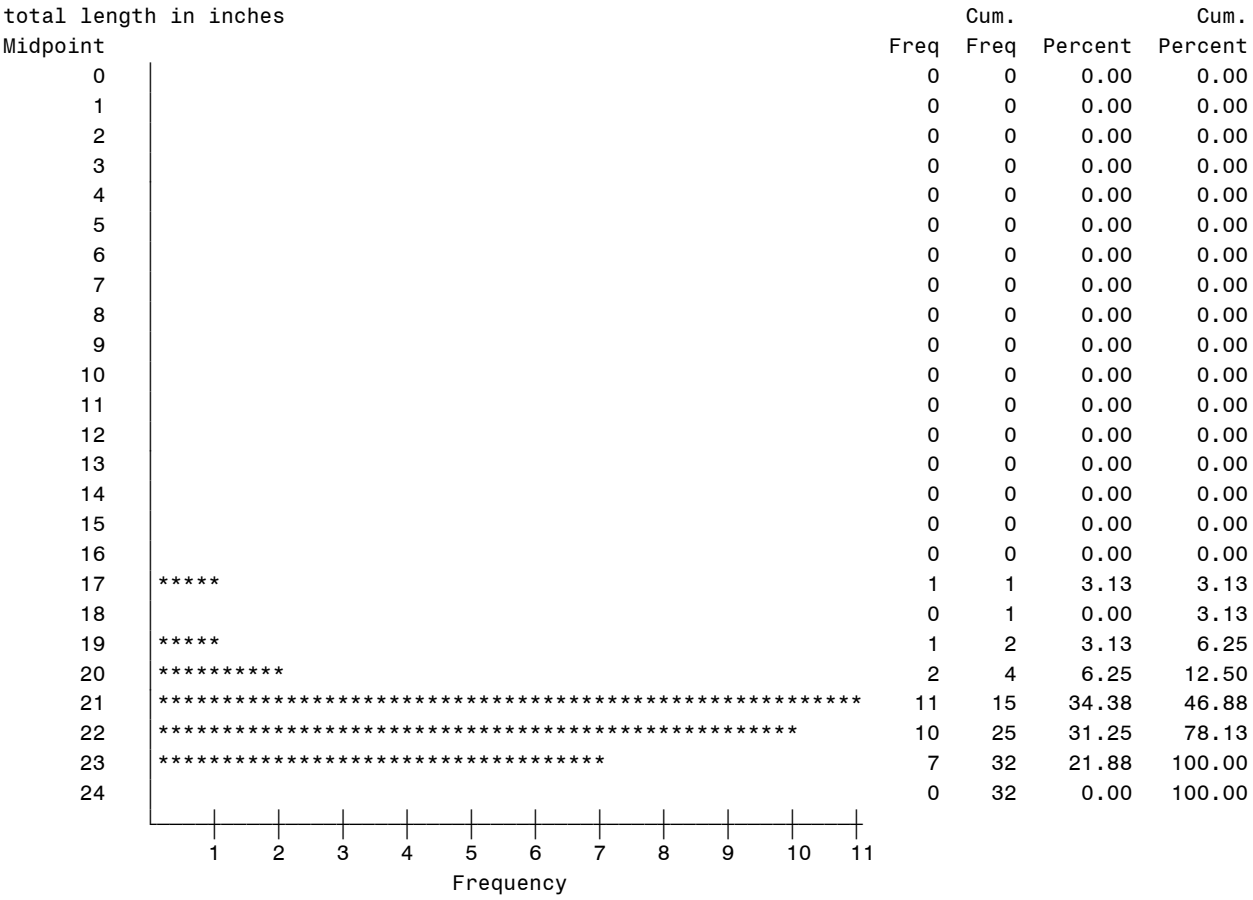
FIGURE 6. LARGEMOUTH BASS LENGTH DISTRIBUTION, RAFT CHANNEL AREA, POOL 8, FYKE NETS, 2009.



Midpoint	Freq	Cum. Freq	Percent	Cum. Percent
0	0	0	0.00	0.00
0.5	0	0	0.00	0.00
1	0	0	0.00	0.00
1.5	0	0	0.00	0.00
2	0	0	0.00	0.00
2.5	0	0	0.00	0.00
3	0	0	0.00	0.00
3.5	3	3	2.46	2.46
4	37	40	30.33	32.79
4.5	41	81	33.61	66.39
5	10	91	8.20	74.59
5.5	16	107	13.11	87.70
6	8	115	6.56	94.26
6.5	4	119	3.28	97.54
7	1	120	0.82	98.36
7.5	1	121	0.82	99.18
8	0	121	0.00	99.18
8.5	0	121	0.00	99.18
9	0	121	0.00	99.18
9.5	0	121	0.00	99.18
10	1	122	0.82	100.00

N	Mean	Std Dev	Minimum	Maximum
122	4.7247295	0.9107691	3.3460000	9.8030000

FIGURE 7. SILVER REDHORSE LENGTH DISTRIBUTION, RAFT CHANNEL AREA, POOL 8, FYKE NETS, 2009.



N	Mean	Std Dev	Minimum	Maximum
32	21.3964063	1.3420648	16.5750000	23.3460000

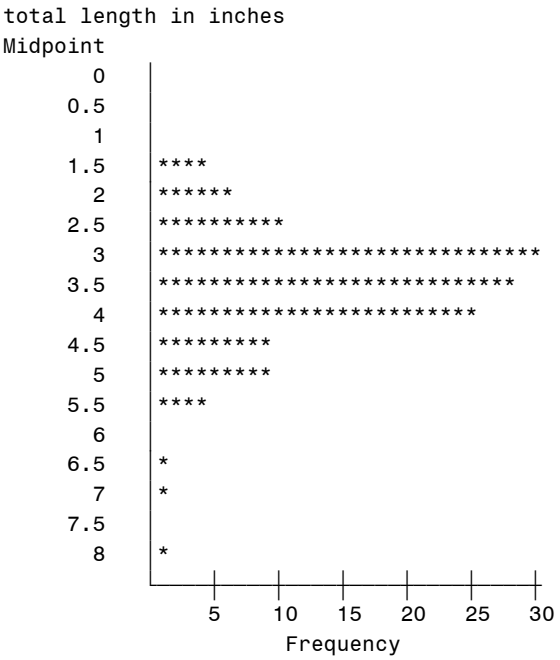
TABLE 9. COMPARISON OF MEAN TOTAL LENGTH FOR SELECTED INDIVIDUAL SPECIES, AMONG YEARS, RAFT CHANNEL, FYKE NETS, FALL 2007 - 2009.

SPECIES	MEAN	STD. DEV.	N	YEAR	DIFFERENT (means with the same letter are not Sign. Different)
BLACK CRAPPIE	4.48	1.5	147	2007	A
	4.17	1.43	211	2008	A
BLUEGILL	4.68	1.01	52	2009	A
	4.44	0.85	653	2007	B
	4.39	0.8	742	2008	B
LARGEMOUTH BASS	5.44	1.38	55	2007	A
	4.96	1.93	139	2008	AB
	4.72	0.91	122	2009	B
ROCK BASS	5.96	1.12	59	2007	A
	5.66	1.58	29	2008	AB
	5.13	1.41	19	2009	B
YELLOW PERCH	8.67	1.93	26	2007	A
	6.88	2.59	17	2008	B
	6.38	2.11	18	2009	B

TABLE 10. COMPARISON OF MEAN CATCH PER DAY AND PSS (FOR STOCK > 30) FOR SELECTED SPECIES OF SELECTED SIZES IN RAFT CHANNEL, FYKE NETTING, FALL 2009.

SPECIES	MEAN CPD (n, standard deviation)			PSS_Q			PSS_P		
	2007	2008	2009	2007	2008	2009	2007	2008	2009
BLACK CRAPPIE									
QUALITY (≥ 8 INCHES)	0.07 (27, 0.23)	0.23 (36, 0.60)	0.00 (40, -----)	6.25	25.00				
PREFERRED (≥ 10 INCHES)	0.07 (27, 0.23)	0.03 (36, 0.17)	0.00 (40, -----)				6.25	3.13	
BLUEGILL									
QUALITY (≥ 6 INCHES)	0.96 (27, 1.37)	0.77 (36, 1.80)	0.10 (40, 0.30)	1.53	1.02	6.11			
PREFERRED (≥ 8 INCHES)	0.00 (27, -----)	0.09 (36, 0.38)	0.00 (40, -----)				0.00	0.04	0.00
PUMPKINSEED									
QUALITY (≥ 6 INCHES)	0.03 (27, 0.16)	0.05 (36, 0.23)	0.00 (40, -----)	0.00	0.00				
PREFERRED (≥ 8 INCHES)	0.00 (40, -----)	0.00 (40, -----)	0.00 (40, -----)				0.00	0.00	
ROCK BASS									
QUALITY (≥ 7 INCHES)	0.37 (27, 0.75)	0.139 (36, 0.42)	0.05 (40, 0.24)	18.52					
PREFERRED (≥ 9 INCHES)	0.00 (40, -----)	0.00 (40, -----)	0.00 (40, -----)				0.00		

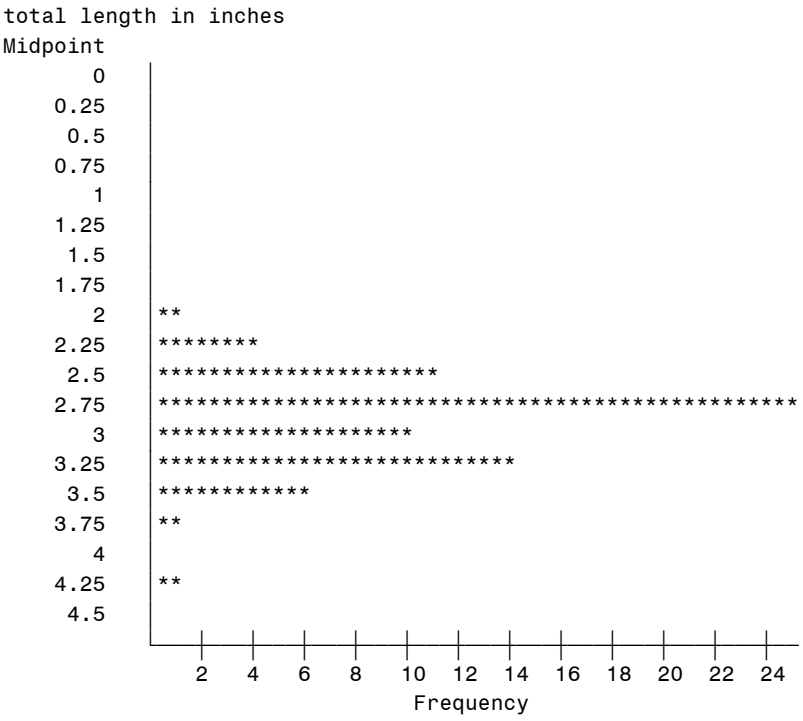
FIGURE 8. BLUEGILL LENGTH DISTRIBUTION, RAFT CHANNEL AREA, POOL 8, ELECTRO SHOCKING, 2009.



total length in inches Midpoint	Freq	Cum. Freq	Percent	Cum. Percent
0	0	0	0.00	0.00
0.5	0	0	0.00	0.00
1	0	0	0.00	0.00
1.5	4	4	3.13	3.13
2	6	10	4.69	7.81
2.5	10	20	7.81	15.63
3	30	50	23.44	39.06
3.5	28	78	21.88	60.94
4	25	103	19.53	80.47
4.5	9	112	7.03	87.50
5	9	121	7.03	94.53
5.5	4	125	3.13	97.66
6	0	125	0.00	97.66
6.5	1	126	0.78	98.44
7	1	127	0.78	99.22
7.5	0	127	0.00	99.22
8	1	128	0.78	100.00

N	Mean	Std Dev	Minimum	Maximum
128	3.5700859	1.0463475	1.2600000	7.7950000

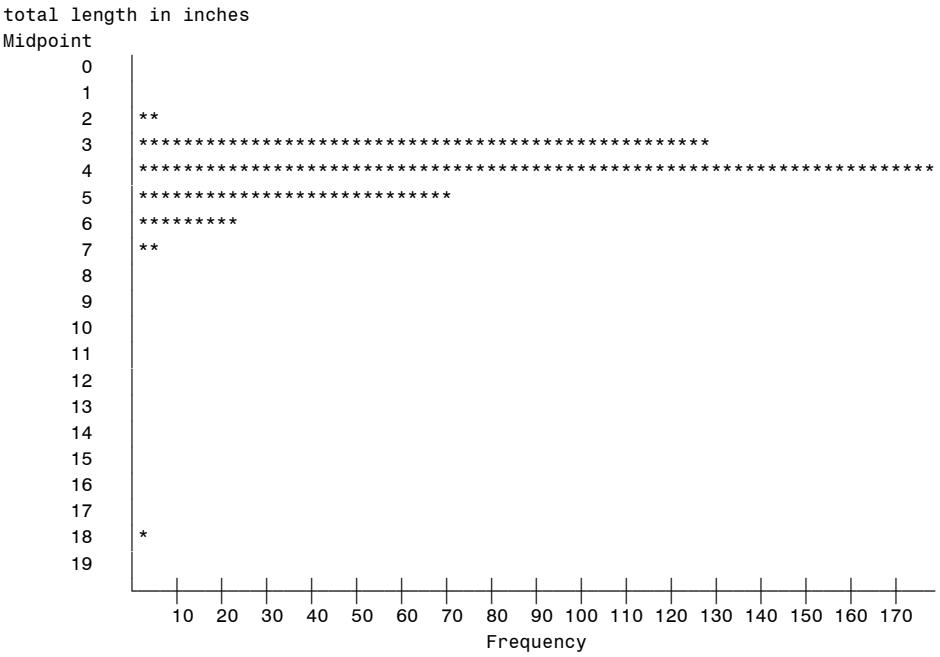
FIGURE 9. EMERALD SHINER LENGTH DISTRIBUTION, RAFT CHANNEL AREA, POOL 8, ELECTRO SHOCKING, 2009.



Midpoint	Freq	Cum. Freq	Percent	Cum. Percent
0	0	0	0.00	0.00
0.25	0	0	0.00	0.00
0.5	0	0	0.00	0.00
0.75	0	0	0.00	0.00
1	0	0	0.00	0.00
1.25	0	0	0.00	0.00
1.5	0	0	0.00	0.00
1.75	0	0	0.00	0.00
2	1	1	1.37	1.37
2.25	4	5	5.48	6.85
2.5	11	16	15.07	21.92
2.75	25	41	34.25	56.16
3	10	51	13.70	69.86
3.25	14	65	19.18	89.04
3.5	6	71	8.22	97.26
3.75	1	72	1.37	98.63
4	0	72	0.00	98.63
4.25	1	73	1.37	100.00
4.5	0	73	0.00	100.00

N	Mean	Std Dev	Minimum	Maximum
73	2.8939589	0.3875766	2.0870000	4.2910000

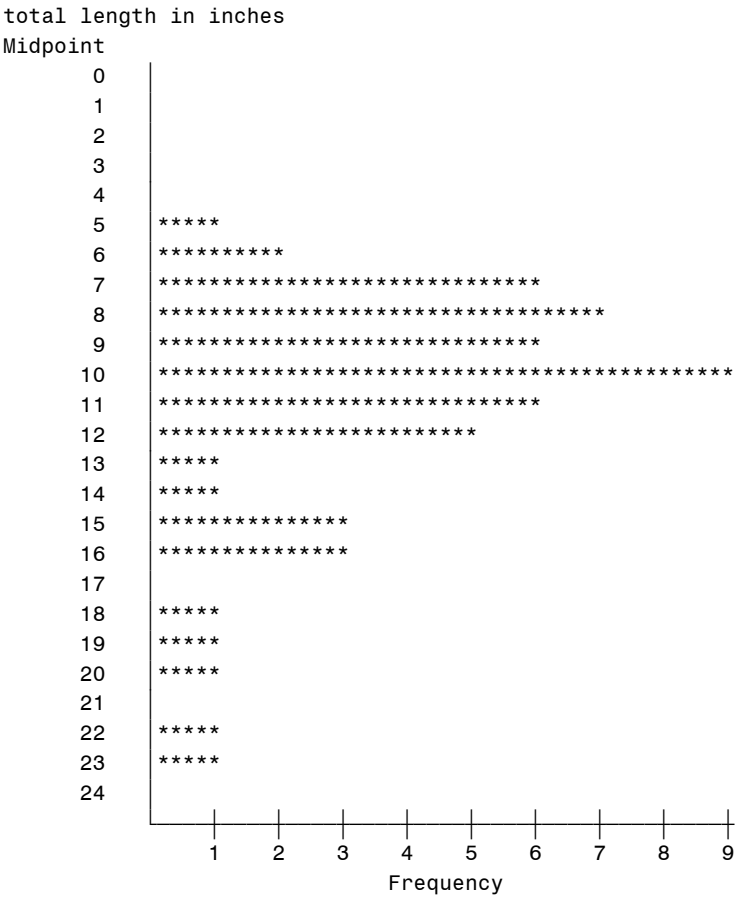
FIGURE 10. LARGEMOUTH BASS LENGTH DISTRIBUTION, RAFT CHANNEL AREA, POOL 8, ELECTRO SHOCKING, 2009.



Midpoint	Freq	Cum. Freq	Percent	Cum. Percent
0	0	0	0.00	0.00
1	0	0	0.00	0.00
2	5	5	1.21	1.21
3	127	132	30.68	31.88
4	178	310	43.00	74.88
5	69	379	16.67	91.55
6	23	402	5.56	97.10
7	6	408	1.45	98.55
8	1	409	0.24	98.79
9	0	409	0.00	98.79
10	0	409	0.00	98.79
11	0	409	0.00	98.79
12	0	409	0.00	98.79
13	0	409	0.00	98.79
14	0	409	0.00	98.79
15	1	410	0.24	99.03
16	1	411	0.24	99.28
17	0	411	0.00	99.28
18	2	413	0.48	99.76
19	1	414	0.24	100.00

N	Mean	Std Dev	Minimum	Maximum
414	4.1492343	1.6931813	2.2830000	18.5040000

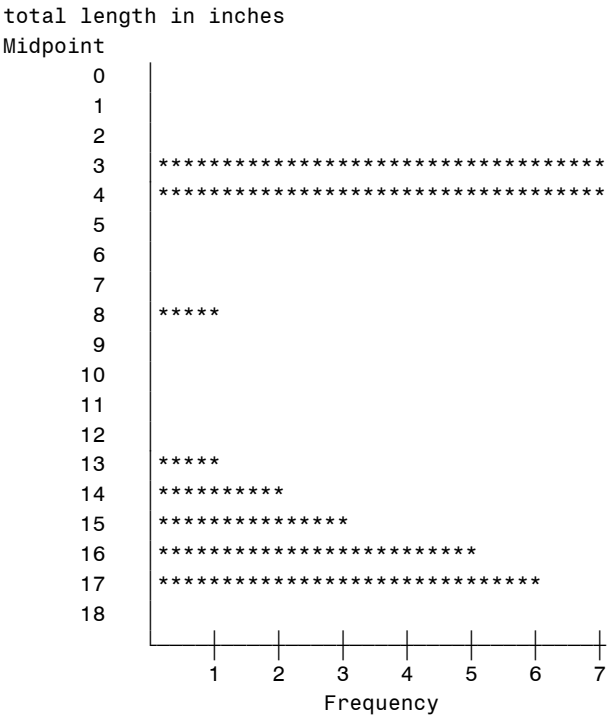
FIGURE 11. NORTHERN PIKE LENGTH DISTRIBUTION, RAFT CHANNEL AREA, POOL 8, ELECTRO SHOCKING, 2009.



Midpoint	Freq	Cum. Freq	Percent	Cum. Percent
0	0	0	0.00	0.00
1	0	0	0.00	0.00
2	0	0	0.00	0.00
3	0	0	0.00	0.00
4	0	0	0.00	0.00
5	1	1	1.82	1.82
6	2	3	3.64	5.45
7	6	9	10.91	16.36
8	7	16	12.73	29.09
9	6	22	10.91	40.00
10	9	31	16.36	56.36
11	6	37	10.91	67.27
12	5	42	9.09	76.36
13	1	43	1.82	78.18
14	1	44	1.82	80.00
15	3	47	5.45	85.45
16	3	50	5.45	90.91
17	0	50	0.00	90.91
18	1	51	1.82	92.73
19	1	52	1.82	94.55
20	1	53	1.82	96.36
21	0	53	0.00	96.36
22	1	54	1.82	98.18
23	1	55	1.82	100.00
24	0	55	0.00	100.00

N	Mean	Std Dev	Minimum	Maximum
55	10.9677455	4.0727537	5.1180000	22.6380000

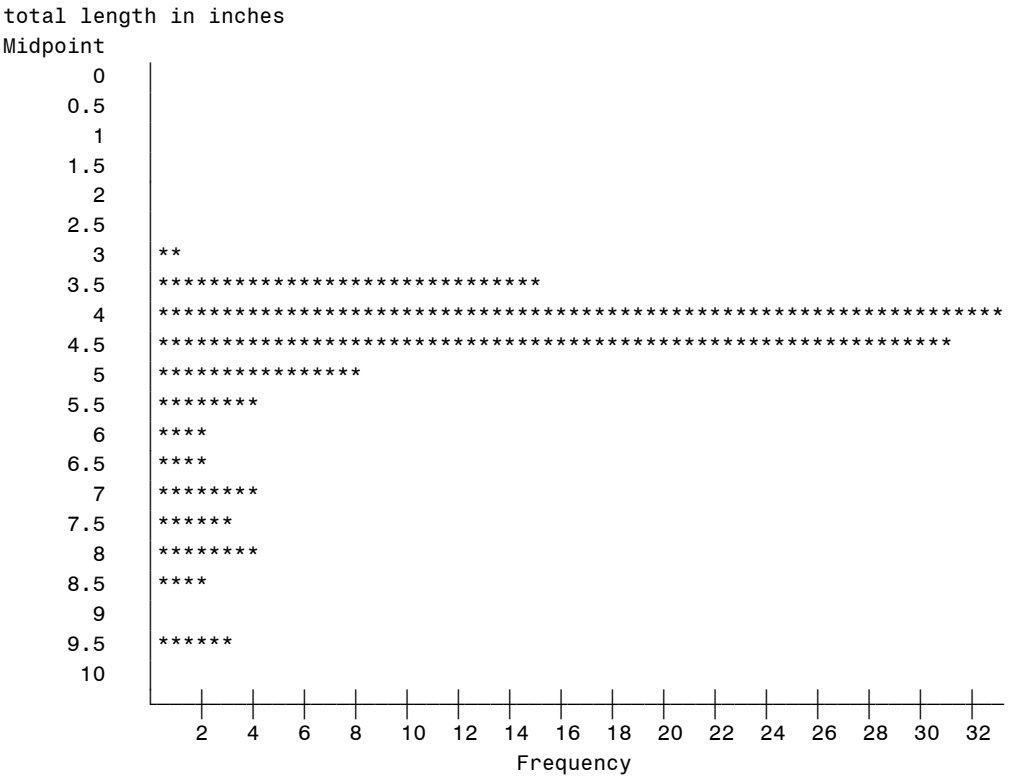
FIGURE 12. SHORTHEAD REDHORSE LENGTH DISTRIBUTION, RAFT CHANNEL AREA, POOL 8, ELECTRO SHOCKING, 2009.



Midpoint	Freq	Cum. Freq	Percent	Cum. Percent
0	0	0	0.00	0.00
1	0	0	0.00	0.00
2	0	0	0.00	0.00
3	7	7	21.88	21.88
4	7	14	21.88	43.75
5	0	14	0.00	43.75
6	0	14	0.00	43.75
7	0	14	0.00	43.75
8	1	15	3.13	46.88
9	0	15	0.00	46.88
10	0	15	0.00	46.88
11	0	15	0.00	46.88
12	0	15	0.00	46.88
13	1	16	3.13	50.00
14	2	18	6.25	56.25
15	3	21	9.38	65.63
16	5	26	15.63	81.25
17	6	32	18.75	100.00
18	0	32	0.00	100.00

N	Mean	Std Dev	Minimum	Maximum
32	10.1759688	6.2975256	2.7170000	17.2050000

FIGURE 13. YELLOW PERCH LENGTH DISTRIBUTION, RAFT CHANNEL AREA, POOL 8, ELECTRO SHOCKING, 2009.



Midpoint	Freq	Cum. Freq	Percent	Cum. Percent
0	0	0	0.00	0.00
0.5	0	0	0.00	0.00
1	0	0	0.00	0.00
1.5	0	0	0.00	0.00
2	0	0	0.00	0.00
2.5	0	0	0.00	0.00
3	1	1	0.89	0.89
3.5	15	16	13.39	14.29
4	33	49	29.46	43.75
4.5	31	80	27.68	71.43
5	8	88	7.14	78.57
5.5	4	92	3.57	82.14
6	2	94	1.79	83.93
6.5	2	96	1.79	85.71
7	4	100	3.57	89.29
7.5	3	103	2.68	91.96
8	4	107	3.57	95.54
8.5	2	109	1.79	97.32
9	0	109	0.00	97.32
9.5	3	112	2.68	100.00
10	0	112	0.00	100.00

N	Mean	Std Dev	Minimum	Maximum
112	4.8185804	1.4453215	2.9530000	9.6460000

TABLE 11. COMPARISON OF MEAN TOTAL LENGTH FOR SELECTED INDIVIDUAL SPECIES, AMONG YEARS, RAFT CHANNEL, ELECTRO SHOCKING, FALL 2007 - 2009.

SPECIES	MEAN	STD. DEV.	N	YEAR	DIFFERENT (means with the same letter are not Sign. Different)
BLACK CRAPPIE	5.03	1.62	14	2009	A
	3.8	1.29	16	2008	B
	3.33	0.78	78	2007	B
BLUEGILL	3.57	1.05	128	2009	A
	3.22	1.63	246	2008	B
	2.66	1.06	428	2007	C
LARGEMOUTH BASS	4.48	1.53	227	2007	A
	4.31	2.01	260	2008	A
	4.15	1.69	414	2009	A
YELLOW PERCH	5.19	2.34	56	2007	A
	4.94	1.91	51	2008	A
	4.82	1.45	112	2009	A

TABLE 12. COMPARISON OF MEAN CATCH PER HOUR AND PSS (FOR STOCK > 30) FOR SELECTED SPECIES OF SELECTED SIZES IN RAFT CHANNEL, ELECTRO SHOCKING, FALL 2009.

SPECIES	MEAN CPH (n, standard deviation)			PSS_Q			PSS_P		
	2007	2008	2009	2007	2008	2009	2007	2008	2009
BLACK CRAPPIE									
QUALITY (≥ 8 INCHES)	0.00 (44, -----)	0.00 (42, -----)	0.00 (45, -----)						
PREFERRED (≥ 10 INCHES)	0.00 (44, -----)	0.00 (42, -----)	0.00 (45, -----)						
BLUEGILL									
QUALITY (≥ 6 INCHES)	0.27 (44, 1.26)	2.7 (42, 11.92)	0.40 (45, 1.97)	1.94	17.43	3.33			
PREFERRED (≥ 8 INCHES)	0.00 (45, -----)	0.00 (45, -----)	0.00 (45, -----)				0.00	0.00	0.00
LARGEMOUTH BASS									
QUALITY (≥ 12 INCHES)	0.41 (44, 1.53)	0.86 (42, 3.12)	0.67 (45, 2.29)						
PREFERRED (≥ 15 INCHES)	0.14 (44, 0.90)	0.71 (42, 2.36)	0.67 (45, 2.29)						
PUMPKINSEED									
QUALITY (≥ 6 INCHES)				2.63					
PREFERRED (≥ 8 INCHES)							0.00		
YELLOW PERCH									
QUALITY (≥ 8 INCHES)	1.22 (44, 2.76)	0.86 (42, 2.50)	0.80 (45, 2.06)						
PREFERRED (≥ 10 INCHES)	0.54 (44, 1.74)	0.26 (42, 1.85)	0.00 (45, -----)						