

Results of Lake Assessment in the Trempealeau Lakes Lake Unit, Navigation Pool 7 of the upper Mississippi River, Fall 2013

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Purpose

The purpose of this work is to monitor the fall population length frequency and catch per unit effort of game fishes in the approximately 1452 acres Trempealeau Lakes Lake Unit, located in Navigation Pool 7 of the upper Mississippi River length and size distributions of other fishes are also included the analysis.

Introduction

The Wisconsin Department of Natural Resources' Mississippi River Fisheries Team (MRFT) conducts annual fall fish surveys using electro fishing. The river bordering Wisconsin was divided into 34 "lake units", which included all waters except the main channel (Figure 1). Each fall, at least three lake units are sampled, and the highest priority lake units are sampled approximately every four years. During 2013, Trempealeau Lakes was one of the Lake Units sampled.

Methods

Sampling was done using an 18 foot-long welded aluminum flat-bottomed maxi-boom electro fishing boat using a two-anode-one-cathode system with a Wisconsin Control Box. Two booms extended 8 feet from the bow. Each boom was terminated with an anode which consisted of two stainless steel rings, 1m in diameter, equipped with eight 15cm by 1.6cm dropper cables. We used pulsed direct current at 16 amps while volts varied from 130 to 300.

A total of 34 randomly selected ~10 minute day-time runs were done during 5.68 hours of electro fishing (Figure 2 and Table 1) between October 1, 2, 4, 7 and 8, 2013. Starting points of random runs 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). Runs were randomly chosen from available aquatic locations that were between 0.6 and 2.5m deep. Once in the field, randomly selected runs that were too shallow or too deep or otherwise adverse to electro fishing were not done and replaced with another randomly selected run, or done within 50m of the initial run where there were suitable conditions.

In addition to randomly selected runs, we electro fished 14 spatially fixed ~10 minute day-time runs done over 2.25 hours during the same dates. Spatially fixed stations were chosen in a biased manner where we had an interest in fish populations or fish habitat. Spatially fixed stations are periodically re-sampled among years. All fish were counted, identified to species, measured by total length and returned to the river.

We calculated Proportional Size Structures (Guy, et al., 2006; Gabelhouse, 1984; Anderson and Gutreuter, 1983) for quality (PSS_Q) and preferred (PSS_P) selected game fishes as well as catch per effort for these size categories. PSS is a measure, expressed as percentage, of the proportion of the number of fish greater than or equal to a "quality" or "preferred" length divided by the number of fish greater than or equal to the stock length. "Quality" and "preferred" lengths vary by species, and are determined by what most anglers consider quality or preferred fish sizes. Stock lengths also vary by species and are determined by recommendations in the literature.

Statistical tests were done using SAS® (2002-2003) software for Windows version 9.'s General linear models (ANOVA) and were done at the alpha=0.05 level. For catch per effort calculations, tests were done on geometric means.

Findings

During the 2013 sampling, daily mean water temperature ranged from 16.0 to 18.6°C. The mean water temperature was 17.4°C and generally decreased over the five days of sampling. Water surface elevation measured at the Lock and Dam 6 tailwater gage ranged from 639.38 to 639.74ft (average 639.50ft), changed as much as 0.36ft, and generally increased over the sampling period (Table 2). This elevation was 0.32ft lower than the mean for this month and days during the period of record from 1934 through 2013

(639.82 ft). The mean daily flow in cubic feet per second taken from Dam 7 was 17,406 and ranged from 14,100 to 21,400 (Table 2). Flow fluctuated as much as 7300cfs. This 2013 mean daily flow was less than the mean flow on these months and days (27,862 cfs) for the period of record of 1959 through 2013.

Electro Fishing Catch per Effort

A total of at least 24 species were recorded from 360 fish captured during the 34 random electro fishing runs (Table 3). The three most common species were gizzard shad, largemouth bass and yellow perch. Mean catch rates for these three species was 26.24, 4.23 and 3.87 fish per hour, respectively. Bluegill was the fourth most common species captured, with a mean catch rate of 3.70. The mean catch rates for the remaining 20 species ranged 3.35 to 0.18 per hour. The mean catch per hour for all species combined was 63.40 (standard deviation = 89.83).

A total of at least 26 species were recorded from 662 fish captured during the 14 fixed electro fishing runs (Table 4). Unlike random runs, the three most common species were bluegill, gizzard shad and yellow perch. Mean catch rates for these three species were 85.98, 54.03 and 37.22 fish per hour, respectively. The catch rates for the remaining 23 taxa ranged from 0.43 to 35.08. The mean catch per hour for all species combined was 305.22 (standard deviation = 165.43).

We tested for differences in catch rates for common species between random and fixed samples. Fixed samples were significantly higher for bluegill, largemouth bass, yellow perch, spotted sucker, bowfin, but not for gizzard shad and freshwater drum. This is not surprising since the bias in fixed stations was toward locations that are known to have more game fish.

Length Distribution

We tested the difference in mean lengths of the most common game fishes between random and fixed sampling runs. There was no difference ($p=0.05$) for bluegill, walleye, sauger, smallmouth bass and largemouth bass. There was a difference for yellow perch and black crappie. Therefore, we combined summaries of mean lengths and length distributions from both sampling methods for bluegill, walleye, sauger, smallmouth bass and largemouth bass but kept them separate for yellow perch and black crappie. The mean lengths of selected game fish species where there were more than 5 individuals are given in Table 5. A total of 10.5 percent of the largemouth bass was larger than 14 inches. A total of 23.08 percent of bluegill was greater than 7 inches. A total of 68.18 percent of yellow perch was larger than 7 inches from random electro fishing; and 18.18 percent were larger than 8 inches. The frequency distribution for total length in inches for the most common game fish species (bluegill, largemouth bass, yellow perch, sauger, walleye), are given in Figures 3 through 8.

Total length values for quality, preferred and stock sizes used to calculate Proportional Size Structures (PSS) are given in Table 6. The PSS_Q and PSS_P by species are presented in Table 7. In 2013, bluegill PSS_Q was 52.27, within the “acceptable” range. Also, bluegill (4.55) nearly met the acceptable PSS_P standard. The “acceptable” value of PSS_Q for bluegill is 40 to 60 and the “acceptable value of PSS_P is a minimum of 5 (Wisconsin Department of Natural Resources, 2010).

Yellow perch PSS_Q was 41.03, within the “acceptable” range. Also, yellow perch ($PSS_P=2.56$) was below the acceptable PSS_P standard. The “acceptable” value of PSS_Q for yellow perch is 40 and the “acceptable value of PSS_P is a minimum of 5 (Wisconsin Department of Natural Resources, 2010).

No guidance is provided for other fish species where we calculated PSS_Q and PSS_P . The PSS_Q and PSS_P for largemouth bass (41.89 and 8.11), were relatively high.

A comparison between values from 2008 and 2013 showed that the proportion of quality sized fish increased for bluegill and yellow perch. It decreased for largemouth bass. The proportion of preferred sized fish increased for bluegill, decreased for yellow perch and was the same for largemouth bass.

We tested the mean size of fish greater than or equal to the stock size among years. Bluegill (5.94 and 5.17, respectively) was significantly larger in 2013 than 2008 and largemouth bass and yellow perch (fixed samples only) were the same. This suggests that bluegill size has increased since 2008 while we found no difference in largemouth bass and yellow perch.

Comparisons of Random Electro Fishing Runs with Other Lake Units

Catch per effort data collected from randomly selected fall electro fishing runs are available for the years 2011 through 2013, from a total of seventeen lake units. Six lake units were sampled in 2011, three were sampled in 2012, and eight were sampled in 2013. Catch per hour for all target fish combined (bluegill, black crappie, largemouth bass, northern pike, smallmouth bass, pumpkinseed, rock bass, white crappie and yellow perch) in Trempealeau Lakes (16.03) ranked in the lower tier amongst values for all other units (Table 8). This suggests that there is a low population density of target fishes in Trempealeau Lakes.

We also tested mean catch per hour for selected individual species among nine 2011 through 2013 lake units (Table 9). Trempealeau Lakes Lake Unit bluegill catch rate (3.70) was lower than nine other lake units, and higher than none. The catch rate for largemouth bass (4.23) was lower than ten other lake units and higher than none. Black crappie (0.70) was the same as twelve other lake units, and lower than three. Yellow perch catch rate (3.87) was lower than three other lake units and the same as the remaining sixteen lake units.

We did a similar test of mean catch per hour for selected individual species among the seventeen 2011 through 2013 lake units except we excluded any presumed young-of-the-year fish (i.e., age zero). Ranks of catch per effort were identical or similar to those found using all sizes. This suggests that excluding putative age zero fish from this catch per effort analysis did not have an overwhelming effect on comparisons.

We compared mean total length of selected individual species caught with electro fishing among seventeen 2011 through 2013 lake units (Table 10). For most of the four selected species, the 2013 Trempealeau Lakes mean total lengths ranked in the top

half of all lake units. Trempealeau Lakes bluegill (5.11 inches) was larger than five lake units and smaller than none. Largemouth bass from Trempealeau Lakes (9.46 inches) were larger than four lake units and smaller than four. Yellow perch from random samples (7.42 inches) were larger than three lake units and smaller than none.

We compared PSS from Trempealeau Lakes to other lake units from 2007 through 2013 where the number of stock sized game fish was greater than or equal to 29 in the Trempealeau Lakes lake unit during 2013 (Table 11). Trempealeau Lakes 2013 bluegill ranked high - 4th for quality fish and 2nd in preferred sized fish in 37 comparisons. For quality largemouth bass, 2013 Trempealeau Lakes ranked 23rd in 35 comparisons and 32nd for preferred sized fish. For yellow perch, 2013 Trempealeau Lakes ranked 6th for quality and 12th in preferred sized fish in 16 comparisons.

Comparisons of Electro Fishing Runs among Years

We compared mean total length among years within the Trempealeau Lakes lake unit. Mean total length of 2008 bluegill greater than 3 inches (non young-of-the-year) was 5.2 inches and was significantly different from 2013 (5.9 inches) ($p < 0.0001$). Largemouth bass mean length for those greater than 5.4 inches in 2008 was 10.3 inches, and was significantly different from 2013 (11.6 inches) ($p = 0.0007$). Non young-of-the-year yellow perch from fixed runs (> 4.7 inches) had a mean of 7.8 inches in 2013 and 7.2 inches in 2008. These were the same.

Comparisons using Fixed Electro Fishing Runs, 2008 and 2013

Spatially fixed electro fishing runs were done in the Trempealeau Lakes lake unit each year during 2008 and 2013. Mean daily water temperatures were higher in 2013 (17.6°C) compared to 2008 (14.2°C), and the flows and water surface elevations were similar. A total of 34 kinds of fish were caught among both years totaling 1661 fish (Table 12). Bluegill was the most common followed by largemouth bass, spotted sucker and yellow perch.

Catch per hour for all target fish combined in Trempealeau Lakes was 165.1 in 2013 and was 330.6 in 2008. These means differed statistically ($p = 0.0005$). Target species included black crappie, bluegill, largemouth bass, northern pike, smallmouth bass, pumpkinseed, white crappie, rock bass and yellow perch. In addition, when all game and non-game fish species were combined, these means between years differed as well ($p = 0.0254$). This suggests that catch rates were significantly lower in 2013 than 2008.

Conclusions

Sizes of Trempealeau Lakes common game fish species captured in 2013 were relatively large. Most fish ranked on the larger halves of rankings when compared to other lake units. Most measurements for “quality” and “preferred”-sized fish were categorized as acceptable using WDNR guidelines. Not only were these fish large compared to other lake units, two fishes had increased in size through time. Within the Trempealeau Lake Unit, “quality”-sized bluegill and yellow perch increased from 2008 to 2013 while largemouth bass decreased.

Although 2013 size of fish appears good in Trempealeau Lakes, abundance appears to be relatively low. Game fish catch rates from our samples suggest a low abundance compared to sixteen other lake units. In addition to having relatively lower catch rates on a spatial scale, fish abundance may be lower through time. Combined game fish catch rates were significantly lower in 2013 than in 2008 within Trempealeau Lakes.

In general, our samples suggest that Trempealeau Lakes has a relatively low abundance of game fish that are relatively large. This may suggest recent lower than average recruitment of young individuals.

In Navigation Pool 7 of the Mississippi River bordering Minnesota, Wisconsin fishing regulations limit harvest to 25 each of yellow perch, rock bass and crappie, with no size limit. Bluegill and pumpkinseed are limited to 25 in total with no size limit. White bass and yellow bass are limited to 25 in total with no size limit. Largemouth bass and smallmouth bass are limited to 5 in total with a 14 inch minimum size limit. Northern pike have a bag limit of 5 and no size limit. All these fish species have continuous open seasons.

Recommendations

1. Continue to monitoring backwater fish in Pool 7 and other pools to determine any trends.
2. Using additional data explore any longitudinal trends in mean total length or catch per effort along the Mississippi River bordering Wisconsin.

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FIGURE 1. LOCATION OF 34 WDNR LAKE UNITS, UPPER MISSISSIPPI RIVER.
 (based on 1989 Long Term Resource Monitoring Program Land/Water and Aquatic Area Coverage)

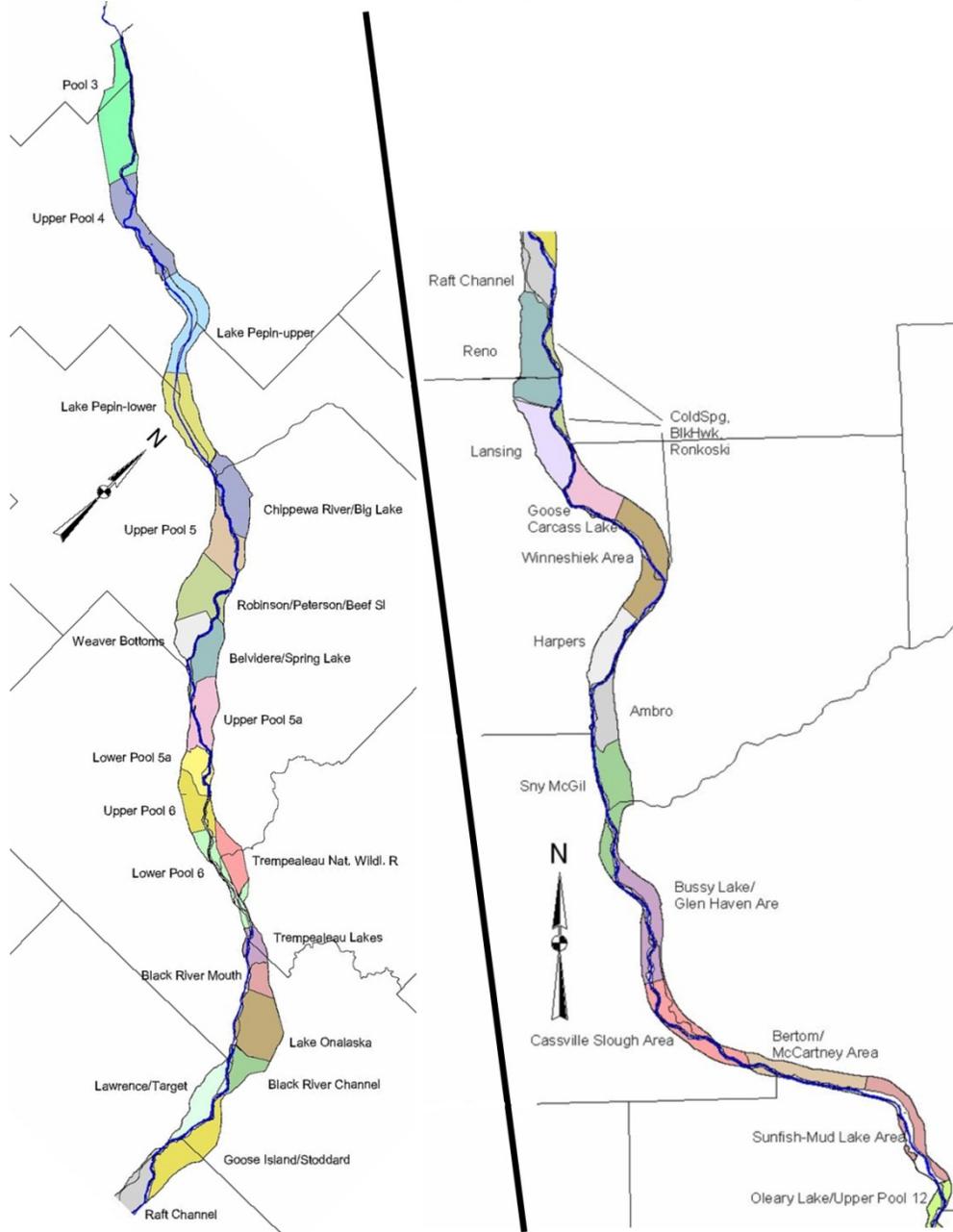


FIGURE 2. LOCATIONS OF FALL 2013 ELECTRO FISHING RUNS, THE TREMPEALEAU LAKES LAKE UNIT. 2013 NAIP photo.

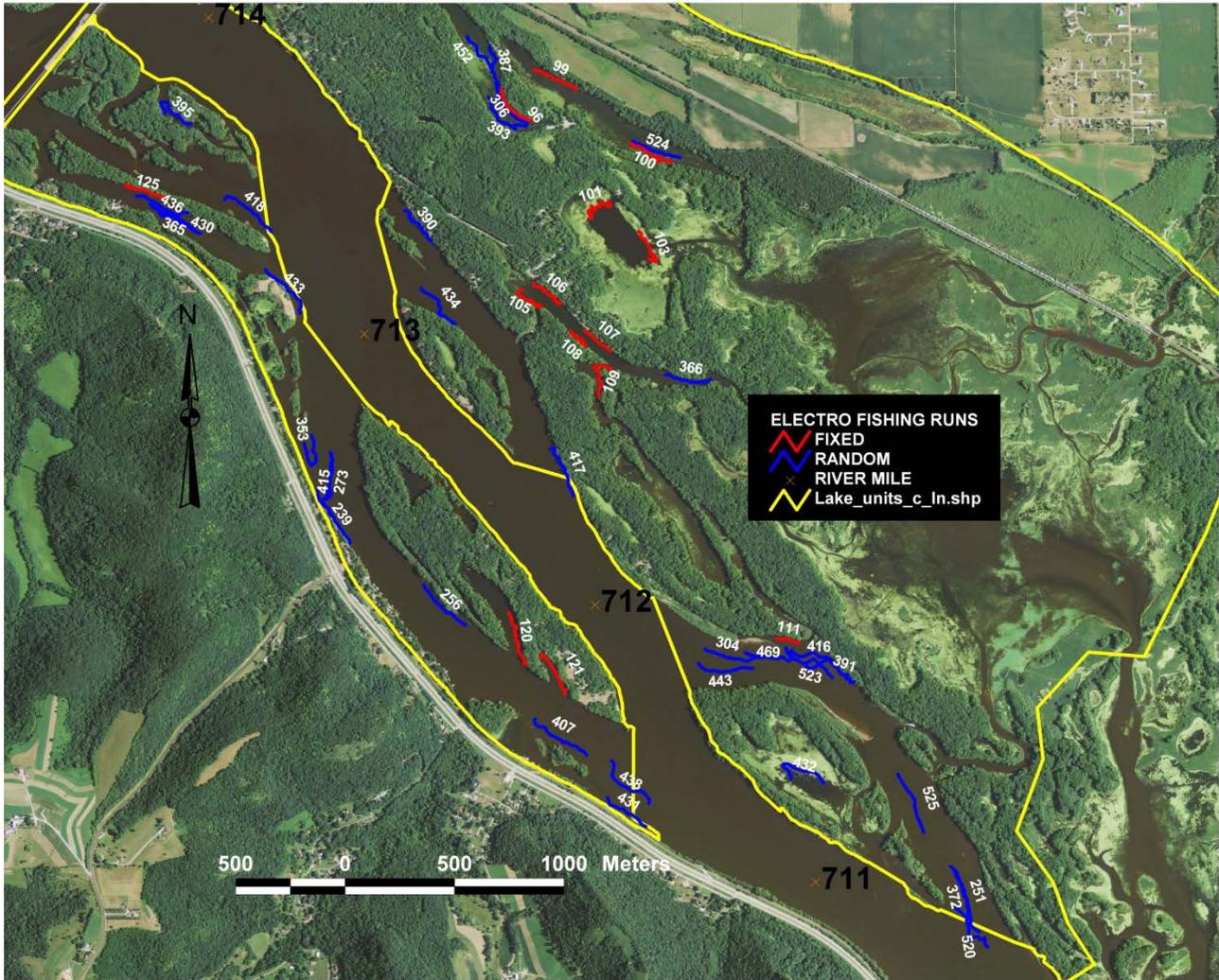


TABLE 1. LOCATIONS OF FALL 2013 ELECTRO FISHING RUNS, THE TREMPPEALEAU LAKES LAKE UNIT INCLUDING STATION LENGTHS IN METERS AND STARTING AND ENDING COORDINATES (Z15N UTM NAD83.)

STATION	STATION LENGTH (M)	UTM_START_X	UTM_START_Y	UTM_END_X	UTM_END_Y	RANDOM OR FIXED
96	240	627090	4872299	626951	4872441	FIXED
99	226	627099	4872532	627294	4872443	FIXED
100	290	627728	4872113	627540	4872197	FIXED
101	254	627439	4871929	627348	4871849	FIXED
103	245	627624	4871668	627578	4871792	FIXED
105	205	627049	4871526	627134	4871450	FIXED
106	205	627101	4871556	627222	4871462	FIXED
107	159	627331	4871340	627449	4871245	FIXED
108	192	627273	4871331	627334	4871271	FIXED
109	238	627454	4871164	627396	4871039	FIXED
111	113	628209	4869932	628312	4869912	FIXED
120	288	627055	4869812	626984	4870050	FIXED
121	240	627244	4869678	627135	4869841	FIXED
125	232	625233	4872005	625426	4871938	FIXED
239	294	626112	4870605	626259	4870367	RANDOM
251	370	629003	4868890	629134	4868590	RANDOM
256	277	626595	4870177	626788	4869994	RANDOM
273	382	626174	4870778	626193	4870468	RANDOM
304	272	627881	4869882	628132	4869846	RANDOM
306	257	627071	4872284	626926	4872473	RANDOM
353	301	626084	4870859	626050	4870822	RANDOM
365	280	625347	4871915	625578	4871785	RANDOM
366	218	627701	4871136	627907	4871116	RANDOM
372	257	629028	4868869	629095	4868634	RANDOM
387	256	626936	4872431	626898	4872633	RANDOM
390	239	626513	4871888	626632	4871750	RANDOM
391	335	628339	4869817	628563	4869733	RANDOM
393	292	627063	4872272	626892	4872405	RANDOM
395	271	625412	4872329	625532	4872284	RANDOM
407	315	627106	4869563	627340	4869398	RANDOM
415	316	626169	4870781	626167	4870509	RANDOM
416	225	628276	4869877	628463	4869820	RANDOM
417	270	627182	4870802	627279	4870582	RANDOM
418	289	625688	4871939	625899	4871793	RANDOM
430	243	625363	4871899	625554	4871790	RANDOM
431	241	627436	4869204	627611	4869072	RANDOM
432	300	628275	4869291	628424	4869272	RANDOM
433	287	625874	4871617	626031	4871418	RANDOM
434	266	626584	4871530	626741	4871369	RANDOM
436	265	625286	4871955	625519	4871878	RANDOM
438	311	627454	4869373	627624	4869177	RANDOM
443	271	627852	4869820	628100	4869794	RANDOM
452	219	626906	4872536	626797	4872683	RANDOM
469	294	628065	4869867	628251	4869890	RANDOM
520	321	629027	4868707	629174	4868520	RANDOM
523	270	628263	4869870	628463	4869753	RANDOM
524	239	627553	4872205	627768	4872129	RANDOM

TABLE 2. MEAN WATER TEMPERATURE, WATER SURFACE ELEVATION AND FLOW DURING FALL 2013 TREMPEALEAU LAKES LAKE UNIT SAMPLING.

DATE	MEAN DAILY TEMPERATURE °C	WATER SURFACE ELEVATION (ft), DAM 6-TAIL	FLOW (cfs) DAM 7
10/1/2013	18.6	639.45	14,100
10/2/2013	17.9	639.38	15,300
10/4/2013	17.8	639.38	17,300
10/7/2013	16	639.74	21,400
10/8/2013	16	639.66	19,900
MEAN (by date, station)	17.4	639.5	17,406

TABLE 3. RELATIVE ABUNDANCE, MEAN CATCH PER HR, ELECTRO FISHING, FALL 2013, TREMPEALEAU LAKES LAKE UNIT. RANDOM RUNS.

	SPECIES	FREQ.	PERCENT	MEAN PER HR	STANDARD DEV.	MIN.	MAX.	NO. OF RUNS	TOTAL HRS
1	black crappie	4	1.11	0.70	2.45	0	11.98	34	5.678
2	bluegill	21	5.83	3.70	6.92	0	23.95	34	5.678
3	bowfin	19	5.28	3.35	19.52	0	113.77	34	5.678
4	brook silverside	2	0.56	0.35	2.05	0	11.98	34	5.678
5	common carp	9	2.50	1.59	4.50	0	17.96	34	5.678
6	emerald shiner	14	3.89	2.47	5.92	0	23.95	34	5.678
7	freshwater drum	7	1.94	1.23	2.46	0	5.99	34	5.678
8	gizzard shad	149	41.39	26.24	67.60	0	299.40	34	5.678
9	golden redhorse	8	2.22	1.41	3.32	0	11.98	34	5.678
10	largemouth bass	24	6.67	4.23	8.28	0	29.94	34	5.678
11	northern pike	2	0.56	0.35	2.05	0	11.98	34	5.678
12	quillback	1	0.28	0.18	1.03	0	5.99	34	5.678
13	river redhorse	12	3.33	2.11	8.71	0	41.92	34	5.678
14	rock bass	1	0.28	0.18	1.03	0	5.99	34	5.678
15	sauger	3	0.83	0.53	1.72	0	5.99	34	5.678
16	shiners m20-29 m31-33 m35-40	9	2.50	1.59	6.48	0	35.93	34	5.678
17	shorthead redhorse	17	4.72	2.99	8.75	0	35.93	34	5.678
18	silver redhorse	8	2.22	1.41	3.63	0	11.98	34	5.678
19	smallmouth bass	17	4.72	2.99	7.11	0	23.95	34	5.678
20	spotted sucker	4	1.11	0.70	2.45	0	11.98	34	5.678
21	walleye	2	0.56	0.35	1.43	0	5.99	34	5.678
22	white bass	4	1.11	0.70	3.22	0	17.96	34	5.678
23	white sucker	1	0.28	0.18	1.03	0	5.99	34	5.678
24	yellow perch	22	6.11	3.87	7.35	0	23.95	34	5.678
	ALL SPECIES	360	100.00	63.40	89.83	0	443.11	34	5.678

TABLE 4. RELATIVE ABUNDANCE, MEAN CATCH PER HR, ELECTRO FISHING, FALL 2013, TREMPEALEAU LAKES LAKE UNIT. FIXED RUNS.

	SPECIES	FREQ.	PERCENT	MEAN PER HR	STANDARD DEV.	MIN.	MAX.	NO. OF RUNS	TOTAL HRS
1	black crappie	9	1.36	3.85	5.04	0.00	11.98	14	2.254
2	bluegill	200	30.21	85.98	76.30	11.98	233.53	14	2.254
3	bowfin	42	6.34	18.40	20.94	0.00	71.86	14	2.254
4	bullhead minnow	1	0.15	0.43	1.60	0.00	5.99	14	2.254
5	chestnut lamprey	1	0.15	0.43	1.60	0.00	5.99	14	2.254
6	common carp	4	0.60	1.71	3.66	0.00	11.98	14	2.254
7	emerald shiner	6	0.91	3.43	6.56	0.00	24.10	14	2.254
8	freshwater drum	21	3.17	11.58	22.67	0.00	72.29	14	2.254
9	gizzard shad	100	15.11	54.03	120.30	0.00	359.28	14	2.254
10	golden redborse	2	0.30	0.86	2.17	0.00	5.99	14	2.254
11	golden shiner	2	0.30	0.86	2.17	0.00	5.99	14	2.254
12	largemouth bass	81	12.24	35.08	23.35	5.99	89.82	14	2.254
13	logperch	2	0.30	0.86	3.20	0.00	11.98	14	2.254
14	northern pike	3	0.45	1.28	2.55	0.00	5.99	14	2.254
15	pirate perch	1	0.15	0.43	1.60	0.00	5.99	14	2.254
16	pumpkinseed	2	0.30	0.86	3.20	0.00	11.98	14	2.254
17	rock bass	1	0.15	0.43	1.60	0.00	5.99	14	2.254
18	sauger	7	1.06	4.73	12.98	0.00	48.19	14	2.254
19	shiners m20-29 m31-33 m35-40	3	0.45	1.28	4.80	0.00	17.96	14	2.254
20	smallmouth bass	1	0.15	0.43	1.60	0.00	5.99	14	2.254
21	spottail shiner	3	0.45	2.15	6.52	0.00	24.10	14	2.254
22	spotted sucker	64	9.67	28.67	30.10	0.00	101.80	14	2.254
23	walleye	12	1.81	5.13	8.42	0.00	23.95	14	2.254
24	white bass	6	0.91	4.30	12.82	0.00	48.19	14	2.254
25	white sucker	2	0.30	0.86	2.17	0.00	5.99	14	2.254
26	yellow perch	86	12.99	37.22	31.87	0.00	95.81	14	2.254
	ALL SPECIES	662	100.00	305.22	165.43	95.81	614.46	14	2.254

TABLE 5. MEAN LENGTH IN INCHES FOR SELECTED GAME FISH SPECIES, FALL 2013, TREMPEALEAU LAKES LAKE UNIT, FROM ELECTRO FISHING AT RANDOM AND FIXED STATIONS.

SPECIES	MEAN LENGTH	STANDARD DEV.	MIN.	MAX.	N
bluegill	5.11	2.13	1.1	8.9	221
largemouth bass	9.46	3.98	2.4	16.2	105
sauger	9.01	3.67	5.3	13.1	10
smallmouth bass	8.76	2.63	3.2	12.6	18
walleye	9.24	4.01	5	16.2	14
black crappie (fixed)	3.63	2.4	2.2	9.6	9
yellow perch (fixed)	4.16	2.05	2.4	11.4	86
yellow perch (random)	7.42	1.49	3.8	9.4	22

FIGURE 3. FALL 2013 BLUEGILL LENGTH DISTRIBUTION (INCHES), TREMPEALEAU LAKES LAKE UNIT, ELECTRO FISHING. RANDOM AND FIXED RUNS.

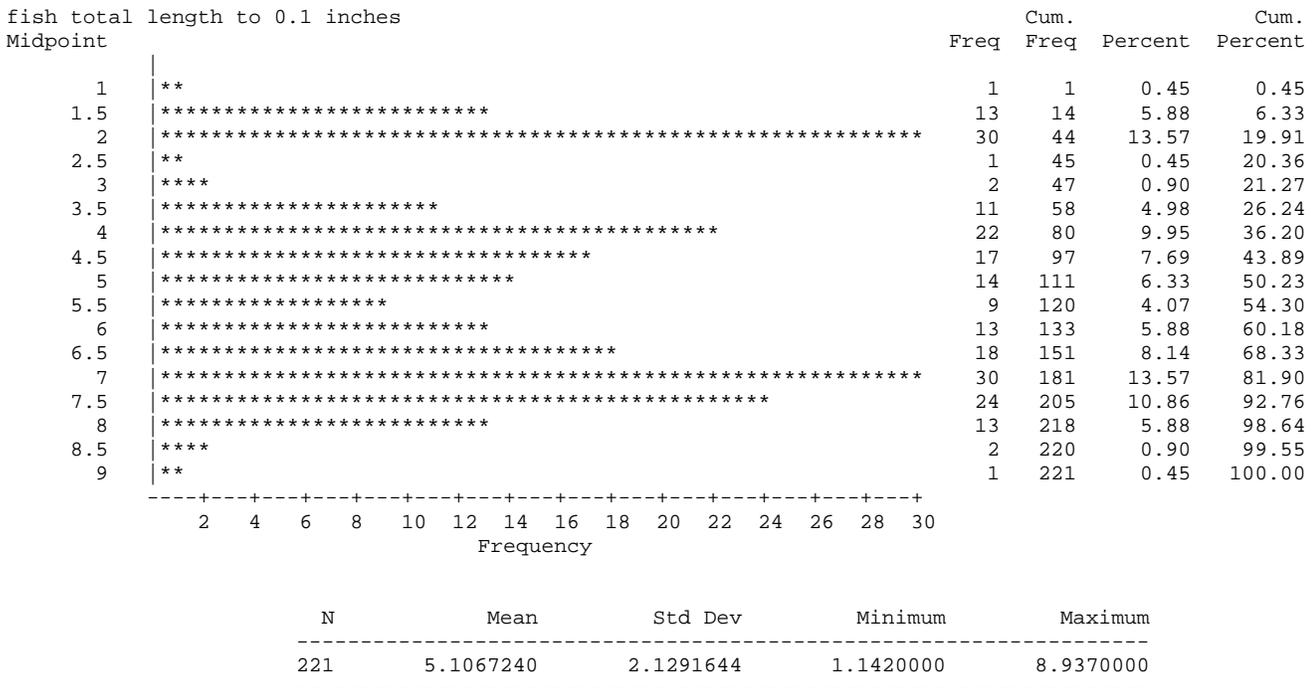


FIGURE 6. FALL 2013 WALLEYE LENGTH DISTRIBUTION (INCHES), TREMPEALEAU LAKES LAKE UNIT, ELECTRO FISHING. RANDOM AND FIXED RUNS.

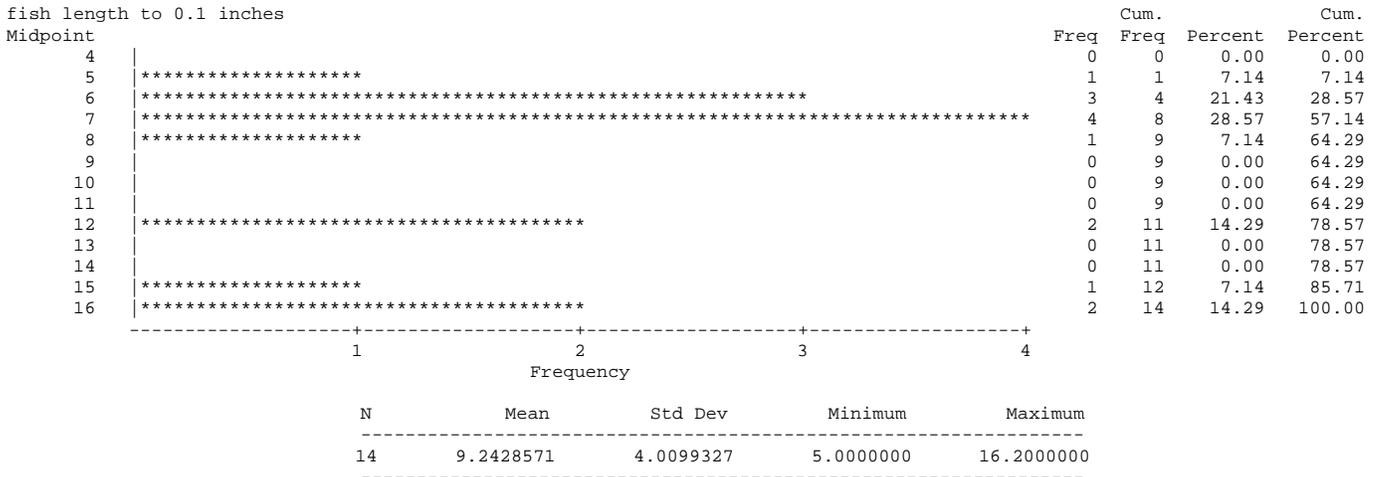


FIGURE 7. FALL 2013 YELLOW PERCH LENGTH DISTRIBUTION (INCHES), TREMPEALEAU LAKES LAKE UNIT, ELECTRO FISHING. FIXED RUNS ONLY.

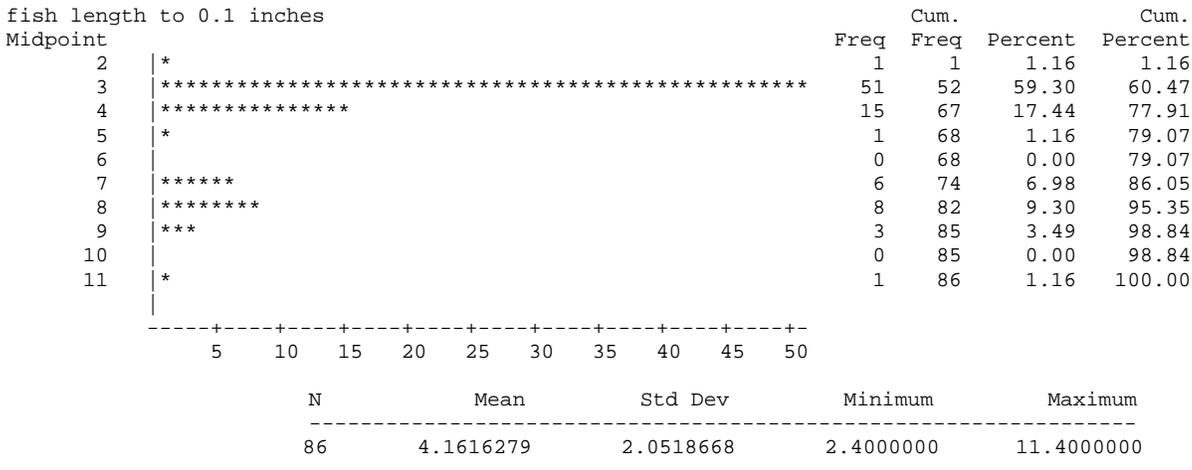


FIGURE 8. FALL 2013 YELLOW PERCH LENGTH DISTRIBUTION (INCHES), TREMPEALEAU LAKES LAKE UNIT, ELECTRO FISHING. RANDOM RUNS ONLY.

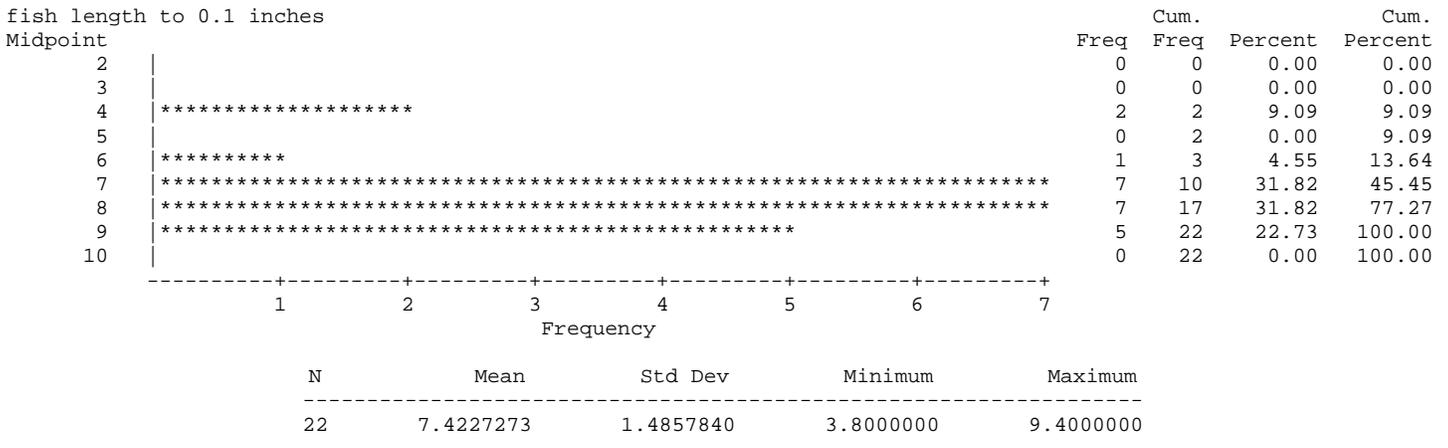


TABLE 6. LIST OF STOCK SIZE, QUALITY SIZE (PSS_Q) AND PREFERRED SIZE (PSS_P) IN INCHES FOR SELECTED FISH SPECIES.

FISH SPECIES	PSS SOURCE	STOCK	QUALITY	PREFERRED
bluegill	Gabelhouse (1984)	3.0	6.0	8.0
largemouth bass	Gabelhouse (1984)	8.0	12.0	15.0
yellow perch	Gabelhouse (1984)	5.0	8.0	10.0

TABLE 7. COMPARISON OF PSS FOR SELECTED SPECIES IN TREMPLEALEAU LAKES LAKE UNIT. ELECTRO FISHING, FALL 2008 AND 2013, RANDOM AND FIXED RUNS.

SPECIES	2008			2013		
	# OF STOCK	PSS _Q	PSS _P	# OF STOCK	PSS _Q	PSS _P
bluegill	580	28.45	0.00	176	52.27	4.55
largemouth bass	133	51.13	8.27	74	41.89	8.11
yellow perch (fixed)	12	8.33	8.33	39	41.03	2.56

TABLE 8. COMPARISON OF MEAN CATCH PER HOUR FROM ELECTRO FISHING AT RANDOMLY SELECTED LOCATIONS FOR ALL TARGET SPECIES* COMBINED AMONG SEVENTEEN FALL 2011 THROUGH 2013 LAKE UNITS.

MEAN	STD. DEV.	N	LAKE UNIT			
189.18	149.98	86	2011 GOOSE ISLAND/STODDARD	A		
228.48	215.69	23	2012 UPPER POOL 5	A	B	
151.21	142.39	63	2011 COLD SPRG/BLKHWK/RONK	A	B	
124.75	114.05	30	2011 CHIPPEWA RIVER/BIG LK	A	B	
129.36	121.86	63	2011 AMBRO	A	C	B
85.11	95.71	42	2011 HARPERS	A	C	B
84.99	91.52	40	2013 LAWRENCE/TARGET			C B
86.69	109.44	44	2013 UPPER POOL 5A			C B
48.68	49.32	39	2012 GOOSE CARCASS LAKE			C B
70.26	70.62	30	2013 UPPER POOL 6			C B
39.12	38.96	30	2011 WEAVER BOTTOMS	D	C	B
73.12	116.56	52	2013 SNY MCGIL	D	C	E
33.33	76.03	53	2013 BERTOM/MCCARTNEY AREA	D	F	E
21.96	30.63	60	2012 LAKE ONALASKA			F E
16.03	18.80	34	2013 TREMPLEALEAU LAKES			F E
12.80	20.48	29	2013 RENO			F
3.88	6.50	37	2013 WINNESHIEK AREA			F
90.20	123.12	764	ALL			

- Target species include: bluegill, black crappie, largemouth bass, northern pike, smallmouth bass, pumpkinseed, rock bass, white crappie and yellow perch.

TABLE 9. COMPARISON OF MEAN CATCH PER HOUR FROM ELECTRO SHOCKED RANDOMLY SELECTED STATIONS FOR SELECTED INDIVIDUAL SPECIES, AMONG SEVENTEEN FALL 2011 THROUGH 2013 LAKE UNITS. ALL FISH SIZES.

SPECIES	MEAN	STD. DEV.	N	LAKE UNIT	DIFFERENT (means with the same letter are not Sign. Different)				
black crappie	10.29	19.37	32	2012 UPPER POOL 5	A				
	3.99	6.36	30	2011 CHIPPEWA RIVER/BIG LK	A		B		
	5.70	11.60	63	2011 AMBRO	C	A		B	
	2.99	4.23	42	2011 HARPERS	C	A	D	B	
	4.17	8.36	40	2013 LAWRENCE/TARGET	C	A	D	B	E
	2.19	4.60	52	2013 SNY MCGIL	C	F	D	B	E
	2.99	12.75	44	2013 UPPER POOL 5A	C	F	D	B	E
	1.25	2.92	86	2011 GOOSE ISLAND/STODDARD	C	F	D	B	E
	1.23	3.41	39	2012 GOOSE CARCASS LAKE	C	F	D	B	E
	1.14	3.01	63	2011 COLD SPRG/BLKHWK/RONK	C	F	D	B	E
	0.79	2.36	53	2013 BERTOM/MCCARTNEY AREA	C	F	D	B	E
	0.70	2.45	34	2013 TREMPLEALEAU LAKES	C	F	D	E	
	0.60	2.12	60	2012 LAKE ONALASKA	F		D	E	
	0.40	1.52	30	2013 UPPER POOL 6	F				
	0.40	1.52	30	2011 WEAVER BOTTOMS	F				
	0.00	0.00	29	2013 RENO	F				
0.00	0.00	37	2013 WINNESHIEK AREA	F					
bluegill	125.19	140.91	32	2012 UPPER POOL 5	A				
	74.71	93.49	42	2011 HARPERS	A		B		
	66.41	74.93	63	2011 COLD SPRG/BLKHWK/RONK	A		B		
	76.51	88.65	63	2011 AMBRO	C	A		B	
	44.91	68.54	86	2011 GOOSE ISLAND/STODDARD	C	A		B	
	42.46	54.19	40	2013 LAWRENCE/TARGET	C	A		B	
	28.74	41.29	30	2011 CHIPPEWA RIVER/BIG LK	C	A		B	
	43.69	81.89	44	2013 UPPER POOL 5A	C			B	D
	47.25	93.54	52	2013 SNY MCGIL	C			B	D
	30.74	49.72	30	2013 UPPER POOL 6	C	E	D		
	7.26	9.91	39	2012 GOOSE CARCASS LAKE	F	E		D	
	9.18	20.91	30	2011 WEAVER BOTTOMS	F	E		D	
	19.66	63.30	53	2013 BERTOM/MCCARTNEY AREA	F	E			
	6.19	16.28	29	2013 RENO	F	E			
	3.70	6.92	34	2013 TREMPLEALEAU LAKES	F	E			
	4.19	8.49	60	2012 LAKE ONALASKA	F	E			
1.30	1.50	37	2013 WINNESHIEK AREA	F					
largemouth bass	99.85	108.66	86	2011 GOOSE ISLAND/STODDARD	A				
	59.13	66.15	32	2012 UPPER POOL 5	A		B		
	52.19	66.13	63	2011 COLD SPRG/BLKHWK/RONK	A		B		
	37.92	45.12	30	2011 CHIPPEWA RIVER/BIG LK	A		B		
	32.67	41.45	39	2012 GOOSE CARCASS LAKE	B				
	33.46	46.89	63	2011 AMBRO	C	B			
	22.16	21.28	30	2011 WEAVER BOTTOMS	C				
	25.55	30.45	30	2013 UPPER POOL 6	C				
	31.30	41.36	44	2013 UPPER POOL 5A	C	D	B		
	22.03	26.52	40	2013 LAWRENCE/TARGET	C	D	B	E	

SPECIES	MEAN	STD. DEV.	N	LAKE UNIT	DIFFERENT (means with the same letter are not Sign. Different)					
northern pike	18.42	25.09	52	2013 SNY MCGIL	C	D	B	E	F	
	11.28	19.12	60	2012 LAKE ONALASKA	C	D	G	E	F	
	8.47	16.91	53	2013 BERTOM/MCCARTNEY AREA		D	G	E	F	
	4.54	7.45	29	2013 RENO			G	E	F	
	4.13	6.81	42	2011 HARPERS			G		F	
	4.23	8.28	34	2013 TREMPLEALEAU LAKES			G		F	
	1.13	2.77	37	2013 WINNESHIEK AREA			G			
	4.79	5.97	30	2011 CHIPPEWAS RIVER/BIG LK		A				
	3.44	4.69	63	2011 COLD SPRG/BLKHWK/RONK		A	B			
	3.40	6.11	44	2013 UPPER POOL 5A	C	A	B			
	3.59	6.78	30	2013 UPPER POOL 6	C	A	B			
	1.50	3.49	40	2013 LAWRENCE/TARGET	C		B	D		
	1.60	3.49	30	011 WEAVER BOTTOMS	C		B	D		
	1.39	3.40	86	2011 GOOSE ISLAND/STODDARD	C		B	D		
	1.33	3.31	63	2011 AMBRO	C		B	D		
	0.94	2.68	32	2012 UPPER POOL 5	C			D		
	0.81	2.38	52	2013 SNY MCGIL	C			D		
	0.57	1.78	42	2011 HARPERS	C			D		
	0.40	1.87	60	2012 LAKE ONALASKA				D		
0.35	2.05	34	2013 TREMPLEALEAU LAKES				D			
0.22	1.15	53	2013 BERTOM/MCCARTNEY AREA				D			
0.21	1.11	29	2013 RENO				D			
0.15	0.96	39	2012 GOOSE CARCASS LAKE				D			
0.00	0.00	37	2013 WINNESHIEK AREA				D			
rock bass	5.78	12.41	86	2011 GOOSE ISLAND/STODDARD		A				
	5.89	16.85	63	2011 COLD SPRG/BLKHWK/RONK		A	B			
	1.79	4.49	30	2013 UPPER POOL 6	C	A	B			
	0.61	1.84	39	2012 GOOSE CARCASS LAKE	C		B			
	0.60	1.83	30	2011 CHIPPEWA RIVER/BIG LK	C		B			
	1.04	4.55	52	2013 SNY MCGIL	C		B			
	1.91	11.75	44	2013 UPPER POOL 5A	C		B			
	0.40	1.87	60	2012 LAKE ONALASKA	C		B			
	0.21	1.11	29	2013 RENO	C					
	0.19	1.06	63	2011 AMBRO	C					
	0.19	1.06	32	2012 UPPER POOL 5	C					
	0.18	1.03	34	2013 TREMPLEALEAU LAKES	C					
	0.11	0.82	53	2013 BERTOM MCCARTNEY AREA	C					
	0.00	0.00	42	2011 HARPERS	C					
	0.00	0.00	40	2013 LAWRENCE/TARGET	C					
	0.00	0.00	30	2011 WEAVER BOTTOMS	C					
	0.00	0.00	37	2013 WINNESHIEK AREA	C					
	sauger	4.42	5.30	42	2011 HARPERS	A				
		4.85	6.79	63	2011 AMBRO	A				
6.00		10.20	63	2011 COLD SPRG/BLKHWK/RONK	A					
1.80		3.43	52	2013 SNY MCGIL	A	B				
2.20		5.77	30	2013 UPPER POOL 6		B				

SPECIES	MEAN	STD. DEV.	N	LAKE UNIT	DIFFERENT (means with the same letter are not Sign. Different)		
smallmouth bass	1.23	2.13	39	2012 GOOSE CARCASS LAKE	B		
	1.24	3.35	29	2013 RENO	B		
	1.69	6.47	53	2013 BERTOM/MCCARTNEY AREA	B		
	1.11	3.25	86	2011 GOOSE ISLAND/STODDARD	B		
	1.09	4.14	44	2013 UPPER POOL 5A	B		
	0.53	1.72	34	2013 TREMPPEALEAU LAKES	B		
	0.16	0.98	37	2013 WINNESHIEK AREA	B		
	0.10	0.77	60	2012 LAKE ONALASKA	B		
	0.00	0.00	30	2011 CHIPPEWA RIVER/BIG LK	B		
	0.00	0.00	40	2013 LAWRENCE/TARGET	B		
	0.00	0.00	30	2011 WEAVER BOTTOMS	B		
	0.00	0.00	32	2012 UPPER POOL 5	B		
	10.54	22.83	63	2011 COLD SPRG/BLKHWK/RONK	A		
	5.54	10.92	86	2011 GOOSE ISLAND/STODDARD	A	B	
	3.19	7.50	30	2013 UPPER POOL 6	A	C	B
	2.99	7.11	34	2013 TREMPPEALEAU LAKES	A	C	B
	2.82	12.63	53	2013 BERTOM/MCCARTNEY/AREA	C		B
	2.19	6.94	30	2011 CHIPPEWA RIVER/BIG LK	C		B
	1.34	3.64	52	2013 SNY MCGIL	C		
	1.12	3.20	32	2012 UPPER POOL 5	C		
	1.07	3.03	39	2012 GOOSE CARCASS LAKE	C		
	0.83	2.64	29	2013 RENO	C		
	0.45	1.60	40	2013 LAWRENCE/TARGET	C		
	0.38	1.47	63	2011 AMBRO	C		
	0.60	3.93	60	2012 LAKE ONALASKA	C		
	0.14	0.90	44	2013 UPPER POOL 5A	C		
	0.00	0.00	42	2011 HARPERS	C		
	0.00	0.00	30	2011 WEAVER BOTTOMS	C		
0.00	0.00	37	2013 WINNESHIEK AREA	C			
walleye	4.56	7.19	63	2011 AMBRO	A		
	3.39	5.14	30	2011 CHIPPEWA RIVER/BIG LK	A		
	2.48	5.12	63	2011 COLD SPRG/BLKHWK/RONK	A	B	
	2.16	4.68	86	2011 GOOSE ISLAND/STODDARD	A	B	
	1.45	3.10	29	2013 RENO	A	B	
	1.29	2.87	37	2013 WINNESHIEK AREA	A	B	
	1.57	2.13	39	2012 GOOSE CARCASS LAKE	A	B	
	2.00	7.76	30	2013 UPPER POOL 6	A	B	
	0.60	1.83	30	2011 WEAVER BOTTOMS	B		
	0.65	2.19	352	2013 SNY MCGIL	B		
	0.82	3.79	44	2013 UPPER POOL 5A	B		
	0.56	2.12	53	2013 BERTOM/MCCARTNEY AREA	B		
	0.50	2.00	60	2012 LAKE ONALASKA	B		
	0.43	1.56	42	2011 HARPERS	B		
	0.35	1.43	34	2013 TREMPPEALEAU LAKES	B		
	0.14	0.86	40	2013 LAWRENCE/TARGET	B		
	0.00	0.00	32	2012 UPPER POOL 5	B		

SPECIES	MEAN	STD. DEV.	N	LAKE UNIT	DIFFERENT (means with the same letter are not Sign. Different)	
yellow perch	43.31	39.37	30	2011 CHIPPEWA RIVER/BIG LK	A	
	28.55	45.08	86	2011 GOOSE ISLAND/STODDARD	A	B
	31.25	40.66	32	2012 UPPER POOL 5	A	B
	10.17	13.76	63	2011 AMBRO	C	B
	13.80	26.80	40	2013 LAWRENCE/TARGET	C	D
	11.32	28.02	63	20111 COLD SPRG/BLKHWK/RONK	C	D
	5.37	10.71	39	2012 GOOSE CARCASS LAKE	E	C
	4.39	8.09	60	2012 LAKE ONALASKA	E	C
	4.39	7.19	30	2011 WEAVER BOTTOMS	E	C
	3.87	7.35	34	2013 TREAMPEALEAU LAKES	E	C
	4.99	12.39	30	2013 UPPER POOL 6	E	C
	3.27	8.90	44	2013 UPPER POOL 5A	E	D
	1.85	3.32	42	2011 HARPERS	E	D
	1.24	3.19	53	2013 BERTOM/MCCARTNEY AREA	E	D
	0.83	2.10	29	2013 RENO	E	
	1.29	4.27	37	2013 WINNESHIEK AREA	E	
	0.92	3.22	52	2013 SNY MCGIL	E	

TABLE 10. COMPARISON OF MEAN TOTAL LENGTH FOR SELECTED INDIVIDUAL SPECIES, AMONG SEVENTEEN 2011-2013 LAKE UNITS, ELECTRO FISHING, FALL. RANDOM AND FIXED STATIONS.

SPECIES	MEAN	STD. DEV.	N	LAKE UNIT	DIFFERENT (means with the same letter are not Sign. Different)		
BLUEGILL	5.9	1.42	535	2013 SNY MCGIL			A
	5.74	1.85	51	2013 RENO			A
	5.64	1.52	383	2013 UPPER POOL 6	B		A
	5.62	1.47	386	2013 UPPER POOL 5A	B		A
	5.53	1.06	742	2011 COLD SPRG/BLKHWK/RONK	B		A C
	5.36	1.32	805	2011 AMBRO	B	D	A C
	5.32	1.33	13	2013 LOWER POOL 6	B	D	A C
	5.11	2.13	221	2013 TREMPLEALEU LAKES	B	D	A C
	5.09	1.25	524	2011 HARPERS	B	D	A C
	4.73	2.1	623	2013 BERTOM/MCCARTNEY AREA	B	D	C
	4.6	1.96	434	2011 CHIPPEWA RIVER/BIG LK		D	E C
	4.56	1.49	914	2012 UPPER POOL 5		D	E
	4.44	1.68	517	2011 WEAVER BOTTOMS		D	E
	3.72	1.91	144	2012 GOOSE CARCASS LAKE	F		E
	3.68	1.92	412	2013 LAWRENCE/TARGET	F		E
	3.44	1.72	643	2011 GOOSE ISLAND/STODDARD	F		
	2.9	1.63	410	2012 LAKE ONALASKA	F		G
	2.21	0.68	8	2013 WINNESHIEK AREA			G
	4.76	1.81	7765	ALL			
LARGEMOUTH BASS	12.87	3.08	274	2013 UPPER POOL 5A			A
	12.08	2.08	10	2013 LOWER POOL 6	B		A
	11.90	3.46	32	2013 RENO	B		A
	11.86	3.41	29	2011 HARPERS	B		A
	11.62	3.74	257	2013 UPPER POOL 6	B	A	C
	11.35	3.21	239	2013 SNY MCGIL	B	A	C
	11.12	3.49	352	2011 AMBRO	B	A	C
	10.47	4.84	7	2013 WINNESHIEK AREA	B	D	C
	10.30	2.58	595	2011 COLD SPRG/BLKHWK/RONK	B	D	C
	10.12	2.82	304	2013 BERTOM/MCCARTNEY AREA	B	D	C
	9.46	3.98	105	2013 TREMPLEALEU LAKES	E	D	C
	8.08	4.21	363	2012 GOOSE CARCASS LAKE	E	D	F
	7.56	4.35	413	2011 WEAVER BOTTOMS	E	G	F
	7.17	4.53	446	2012 UPPER POOL 5	E	G	F
	6.66	3.71	432	2012 LAKE ONALASKA	H	G	F
	5.46	3.8	250	2013 LAWRENCE/TARGET	H	G	
	5.27	3.27	673	2011 CHIPPEWA RIVER/BIG LK	H	G	
	4.36	2.94	1434	2011 GOOSE ISLAND/STODDARD	H		
	7.65	4.43	6215	ALL			
YELLOW PERCH (random only)	7.73	2.23	24	2013 UPPER POOL 5A			A
	7.50	1.89	8	2013 SNY MCGIL		B	A
	7.47	2.43	13	2011 HARPERS		B	A
	7.42	1.49	22	2013 TREMPLEALEU LAKES		B	A

SPECIES	MEAN	STD. DEV.	N	LAKE UNIT	DIFFERENT (means with the same letter are not Sign. Different)		
	7.27	1.87	107	2011 AMBRO	B	A	
	7.05	2.57	35	2012 GOOSE CARCASS LAKE	B	A	C
	6.92	2.64	25	2013 UPPER POOL 6	B	D	A C
	6.91	2.58	11	2013 BERTOM/MCCARTNEY AREA	B	D	A C
	6.86	1.45	119	2011 COLD SPRG/BLKHWK/RONK	B	D	A C
	6.67	1.86	44	2012 LAKE ONALASKA	B	D	A C
	6.58	1.93	22	2011 WEAVER BOTTOMS	B	D	A C
	6.39	1.99	410	2011 GOOSE ISLAND/STODDARD	E	B	D A C
	6.36	2.12	217	2011 CHIPPEWA RIVER/BIG LK	E	B	D A C
	5.36	1.97	167	2012 UPPER POOL 5	E	B	D C
	4.89	0.40	8	2013 WINNESHIEK AREA	E	D	C
	4.63	2.36	92	2013 LAWRENCE/TARGET	E	D	
	4.15	1.91	4	2013 RENO	E		
	6.33	2.13	1328	ALL			

TABLE 11. COMPARISON OF QUALITY AND PREFERRED PSS FOR SELECTED SPECIES FROM 2007-2013 LAKE UNITS WHERE COUNT OF STOCK WAS GREATER THAN 29 AND OCCURRED IN THE 2013 TREMPPEALEAU LAKES LAKE UNIT. FALL ELECTRO FISHING. RANDOM AND FIXED STATIONS.

Common Name	Lake Unit	PSS q	PSS p
bluegill	2007 AMBRO	39.76	0.89
bluegill	2007 COLD SPRG/BLKHWK/RONK	20.16	1.83
bluegill	2007 GOOSE ISLAND/STODDARD	16.57	0.45
bluegill	2007 HARPERS	1353	1.88
bluegill	2007 UPPER POOL 5	45.57	0.84
bluegill	2007 UPPER POOL 5A	38.42	1.58
bluegill	2008 BELVIDERE/SPRING LK	15.95	0.61
bluegill	2008 GOOSE CARCASS LAKE	20.59	1.68
bluegill	2008 LAKE ONALASKA	13.26	0
bluegill	2008 ROBINSON/PETERSON/BEE	18.01	0.31
bluegill	2008 SNY MCGIL	29.14	0
bluegill	2008 TREMPPEALEAU LAKES	28.45	0
bluegill	2009 BERTOM/MCCARTNEY AREA	16.79	0
bluegill	2009 LANSING	18.89	1.11
bluegill	2009 LAWRENCE/TARGET	27.76	1.67
bluegill	2009 UPPER POOL 6	40.91	3.03
bluegill	2010 BLACK RIVER CHANNEL	14.63	0.17
bluegill	2010 BLACK RIVER MOUTH	5.7	0
bluegill	2010 BUSSY LAKE/GLEN HAVEN	29.55	0
bluegill	2010 CASSVILLE SLOUGH AREA	20.77	0.77
bluegill	2010 LOWER POOL 5A	30.42	1.14
bluegill	2011 AMBRO	32.02	2.29
bluegill	2011 CHIPPEWA RIVER/BIG LK	36.72	2.3
bluegill	2011 COLD SPRG/BLKHWK/RONK	34.25	0.28
bluegill	2011 GOOSE ISLAND/STODDARD	21.71	0
bluegill	2011 HARPERS	24.02	0.59
bluegill	2011 WEAVER BOTTOMS	24.94	2.66
bluegill	2012 GOOSE CARCASS LAKE	27.06	4.71
bluegill	2012 LAKE ONALASKA	22.48	0.78

Common Name	Lake Unit	PSS q	PSS p
bluegill	2012 UPPER POOL 5	21.88	0.64
bluegill	2013 BERTOM/MCCARTNEY AREA	45.87	0.43
bluegill	2013 LAWRENCE/TARGET	25.51	1.65
bluegill	2013 RENO	54.35	4.35
bluegill	2013 SNY MCGIL	58.41	1.35
bluegill	2013 TREMPEALEAU LAKES	52.27	4.55
bluegill	2013 UPPER POOL 5A	44.71	2.38
bluegill	2013 UPPER POOL 6	44.7	3.36
largemouth bass	2007 AMBRO	57.31	18.71
largemouth bass	2007 COLD SPRG/BLKHWK/RONK	35.19	5.57
largemouth bass	2007 GOOSE ISLAND/STODDARD	44.01	11.99
largemouth bass	2007 HARPERS	45.35	14.53
largemouth bass	2007 UPPER POOL 5	51.36	16.36
largemouth bass	2007 UPPER POOL 5A	58.3	22.88
largemouth bass	2008 BELVIDERE/SPRING LK	73.44	25.78
largemouth bass	2008 GOOSE CARCASS LAKE	79.02	20.98
largemouth bass	2008 LAKE ONALASKA	41.88	11.97
largemouth bass	2008 ROBINSON/PETERSON/BEE	71.35	25.73
largemouth bass	2008 SNY MCGIL	65.1	20.83
largemouth bass	2008 TREMPEALEAU LAKES	51.13	8.27
largemouth bass	2009 BERTOM/MCCARTNEY AREA	57.04	8.45
largemouth bass	2009 LANSING	83.33	22.22
largemouth bass	2009 LAWRENCE/TARGET	70.73	18.29
largemouth bass	2009 UPPER POOL 6	78.92	24.7
largemouth bass	2010 BLACK RIVER CHANNEL	45.85	17.94
largemouth bass	2010 BUSSY LAKE/GLEN HAVEN	48.39	29.03
largemouth bass	2010 CASSVILLE SLOUGH AREA	46.55	22.41
largemouth bass	2010 LOWER POOL 5A	63.37	35.64
largemouth bass	2011 AMBRO	57.53	21.62
largemouth bass	2011 CHIPPEWA RIVER/BIG LK	60.87	23.91
largemouth bass	2011 COLD SPRG/BLKHWK/RONK	22.51	7.86
largemouth bass	2011 GOOSE ISLAND/STODDARD	39.74	20.53
largemouth bass	2011 WEAVER BOTTOMS	37.5	17.39
largemouth bass	2012 GOOSE CARCASS LAKE	73.91	19.25
largemouth bass	2012 LAKE ONALASKA	51.92	21.15
largemouth bass	2012 UPPER POOL 5	64.81	16.05
largemouth bass	2013 BERTOM/MCCARTNEY AREA	34.39	5.14
largemouth bass	2013 LAWRENCE/TARGET	55.77	9.62
largemouth bass	2013 SNY MCGIL	51.2	11.48
largemouth bass	2013 TREMPEALEAU LAKES	41.89	8.11
largemouth bass	2013 UPPER POOL 5A	71.04	20.08
largemouth bass	2013 UPPER POOL 6	64.63	16.59
largemouth bass	2013 AMBRO	54.05	16.22
yellow perch	2008 LAKE ONALASKA	38.89	11.11
yellow perch	2009 LAWRENCE/TARGET	3.81	0.95
yellow perch	2009 UPPER POOL 6	9.38	0
yellow perch	2010 BLACK RIVER CHANNEL	14.59	2.16
yellow perch	2010 BUSSY LAKE/GLEN HAVEN	34.04	4.26
yellow perch	2011 AMBRO	40	5
yellow perch	2011 CHIPPEWA RIVER/BIG LK	24.41	6.3
yellow perch	2011 COLD SPRG/BLKHWK/RONK	26.13	1.8
yellow perch	2011 GOOSE ISLAND/STODDARD	28.34	4.89
yellow perch	2011 WEAVER BOTTOMS	47.62	9.52
yellow perch	2012 GOOSE CARCASS LAKE	53.85	20.51

Common Name	Lake Unit	PSS q	PSS p
yellow perch	2012 LAKE ONALASKA	22.62	8.33
yellow perch	2012 UPPER POOL 5	27.37	6.32
yellow perch	2013 LAWRENCE/TARGET	30.56	8.33
yellow perch	2013 TREMPEALEAU LAKES	35.9	2.56
yellow perch	2013 UPPER POOL 6	45.67	10

TABLE 12. RELATIVE ABUNDANCE, MEAN CATCH PER HR, ELECTRO FISHING, FALL 2013 AND 2008, TREMPEALEAU LAKES LAKE UNIT. FOR FIXED RUNS DONE BOTH IN 2008 AND 2013.

		2013						2008					
	SPECIES	FREQ.	PERCENT	MEAN PER HR	STND. DEV.	NO. OF RUNS	TOTAL HRS	FREQ.	PERCENT	MEAN PER HR	STND. DEV.	NO. OF RUNS	TOTAL HRS
1	black crappie	9	1.36	3.85	5.04	14	2.254	20	2.00	8.55	12.14	14	2.338
2	bluegill	200	30.21	85.98	76.30	14	2.254	534	53.45	228.40	109.61	14	2.338
3	bowfin	42	6.34	18.40	20.94	14	2.254	68	6.81	29.09	59.46	14	2.338
4	brown bullhead	0				14	2.254	3	0.30	1.28	3.47	14	2.338
5	bullhead minnow	1	0.15	0.43	1.60	14	2.254	0				14	2.338
6	channel catfish					14	2.254	1	0.10	0.43	1.60	14	2.338
7	chestnut lamprey	1	0.15	0.43	1.60	14	2.254	0				14	2.338
8	common carp	4	0.60	1.71	3.66	14	2.254	7	0.70	2.99	5.63	14	2.338
9	emerald shiner	6	0.91	3.43	6.56	14	2.254	0				14	2.338
10	freshwater drum	21	3.17	11.58	22.67	14	2.254	16	1.60	6.84	23.94	14	2.338
11	green sunfish x bluegill	0				14	2.254	1	0.10	0.43	1.60	14	2.338
12	green sunfish x pumpkinseed	0				14	2.254	1	0.10	0.43	1.60	14	2.338
13	gizzard shad	100	15.11	54.03	120.30	14	2.254	0				14	2.338
14	golden redhorse	2	0.30	0.86	2.17	14	2.254	0				14	2.338
15	golden shiner	2	0.30	0.86	2.17	14	2.254	0				14	2.338
16	largemouth bass	81	12.24	35.08	23.35	14	2.254	141	14.11	60.31	37.61	14	2.338
17	logperch	2	0.30	0.86	3.20	14	2.254	4	0.40	1.71	4.35	14	2.338
18	northern pike	3	0.45	1.28	2.55	14	2.254	7	0.70	2.99	4.55	14	2.338
19	pirate perch	1	0.15	0.43	1.60	14	2.254	2	0.20	0.86	3.20	14	2.338
20	pumpkinseed	2	0.30	0.86	3.20	14	2.254	11	1.10	4.71	11.79	14	2.338
21	pumpkinseed x bluegill	0				14	2.254	1	0.10	0.43	1.60	14	2.338
22	rock bass	1	0.15	0.43	1.60	14	2.254	3	0.30	1.28	2.55	14	2.338
23	sauger	7	1.06	4.73	12.98	14	2.254	9	0.90	3.85	8.98	14	2.338
24	shiners m20-29 m31-33 m35-40	3	0.45	1.28	4.80	14	2.254	2	0.20	0.86	3.20	14	2.338
25	silver redhorse	0				14	2.254	2	0.20	0.86	3.20	14	2.338
26	smallmouth bass	1	0.15	0.43	1.60	14	2.254	0				14	2.338
27	spottail shiner	3	0.45	2.15	6.52	14	2.254	1	0.10	0.43	1.60	14	2.338
28	spotted sucker	64	9.67	28.67	30.10	14	2.254	91	9.11	38.92	68.71	14	2.338
29	walleye	12	1.81	5.13	8.42	14	2.254	0				14	2.338
30	warmouth	0				14	2.254	17	1.70	7.27	10.81	14	2.338
31	white bass	6	0.91	4.30	12.82	14	2.254	0				14	2.338
32	white crappie	0				14	2.254	1	0.10	0.43	1.60	14	2.338
33	white sucker	2	0.30	0.86	2.17	14	2.254	0				14	2.338
34	yellow perch	86	12.99	37.22	31.87	14	2.254	56	5.61	23.95	41.22	14	2.338
	ALL SPECIES	662	100.00	5.22	165.43	14	2.254	999	100.00	427.29	142.38	14	2.338