MICHIGAN DEPARTMENT OF NATURAL RESOURCES

CREEL SURVEY PERFORMANCE AND SUMMARY REPORT

LAC VIEUX DESERT

(Vilas County WI and Gogebic County MI)

2012 – 2013

Performance and Summary Report written by Tracy Kolb

Revised July 2014

INTRODUCTION

The U.S. Forest Service (USFS) and Michigan Department of Natural Resources (MDNR) are obligatory partners as described in the "Lac Vieux Desert Wild Rice Enhancement Plan" with a joint goal to restore wild rice on Lac Vieux Desert (LVD). As a requirement under the FERC Order, a suite of monitoring goals is to be implemented including conducting a fish creel census in 2012-2013. This data is a critical element to the FERC Order and mutually beneficial to U.S. Forest Service and MDNR as well as the other partners.

Lac Vieux Desert is located four miles north of the town of Phelps in Vilas County, Wisconsin. This lake is boundary water with the State of Michigan. Of the 4,300 total lake acres 1,520 are in Michigan. It is also the headwater of the Wisconsin River. Water levels are regulated by a dam at the outlet that is owned by the Wisconsin Valley Improvement Company.

GOAL

The goal of the project is to complete a creel census to determine the status of the fishery on Lac Vieux Desert using estimates of harvest, catch and angler effort, during both the summer and winter fishing seasons.

OBJECTIVES

A. Conduct creel census per MDNR protocol during designated dates.

B. Analyze collected data to determine harvest, catch, harvest rates, catch rates and angler effort.

C. Develop a summary report of creel results.

U.S. FOREST SERVICE CONTRIBUTIONS

1. Provide a safely equipped boat with motor in which to conduct the open-water creel survey.
2. Provide periodic oversight of the creel clerk and document presence on the lake.
3. Provide a snowmobile for conducting winter (frozen water) creel survey.
4. Provide a vehicle to travel to and from Lac Vieux Desert for the purpose of conducting the survey.
5. Provide housing for the creel period.
6. Provide necessary safety training to operate vehicles such as watercraft and snowmobile.

MICHIGAN DNR CONTRIBUTIONS

1. Hire, train, and supervise a creel clerk as necessary to conduct the Lac Vieux Desert creel survey.
2. Provide equipment necessary to conduct the creel survey other than vehicles as identified above.
3. Invoice the USFS contact for expenditures as described in the Challenge Cost Share Agreement.
4. Collect and analyze the creel census data, per standard MDNR/WDNR protocol.
5. Provide data to USFS upon completion of the creel census.

OBJECTIVE A - Conduct creel census per MDNR protocol during designated dates.

STATUS: COMPLETE

SURVEY PREPERATION

MDNR hired one clerk, Thomas Lima, to conduct the Lac Vieux Desert Creel Survey (Appendix 1). Prior to deployment, Lima was trained by MDNR creel personnel on proper protocol for operating survey equipment, operating creel data-entry devices and conducting a creel survey.

The USFS provided Lima with housing, a vehicle, a boat and snowmobile. MDNR staff provided Lima with survey gear, uniform components, schedules and a data-entry device. Tom used an USFS fuel card to purchase gas for his vehicle, boat and sled and to purchase oil for the boat. All invoicing of reimbursable expenses was done by MDNR staff and billed to the US Forest Service monthly. In the case of boat, sled or vehicle break-down, US Forest Service provided field support and replacement. In the case of lost or broken gear, MDNR provided support and replacement. MDNR staff also provided all technical support (maintenance, upgrades, and trouble shooting) for data-entry software.

Throughout the season, Lima was supervised by MDNR employee, Mark Mylchreest. Mylchreest met with Lima at least once per month, in the field, to ensure Lima was performing his job duties appropriately and to rectify any issues that arose with scheduling, equipment, etc. If Lima was unable to report to work, Mylchreest scheduled another MDNR employee to fill the shift so that no shifts were missed during the survey.

CONDUCTING THE SURVEY

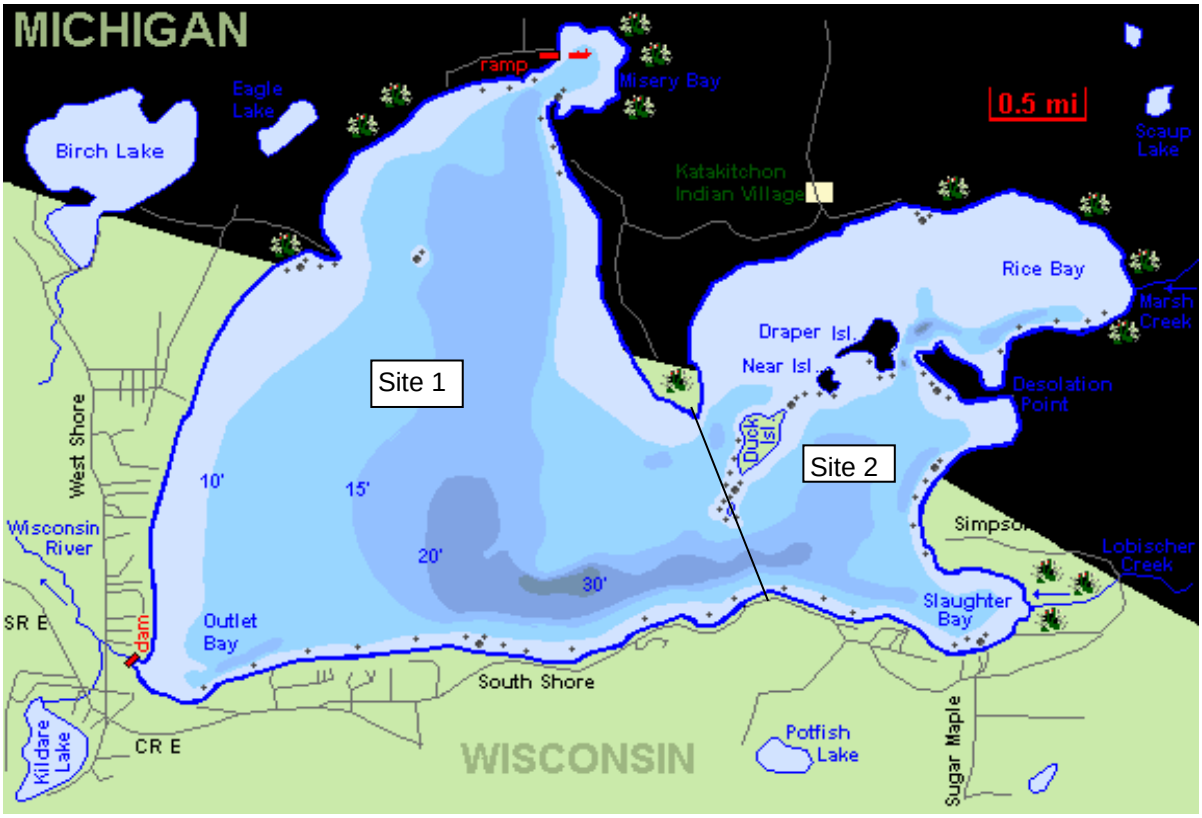
The Lac Vieux Desert open-water creel survey ran from May 2 through October 31, 2012 and the ice-fishing creel survey ran from December 1, 2012 through March 31, 2013.

The creel covered the entire lake which was subdivided into two sites (Figure 1). The survey itself was a stratified design using three-stage sampling (i.e. the stages are days, shifts and count times) within strata. Strata included site fished by month (Site 1 or Site 2), by day-type (weekday-weekend/holiday), and by mode (method) of fishing. The mode sampled during the open-water season was boat and the modes sampled during the ice fishery were open-ice and shanty.

Both weekend days and three randomly selected weekdays were sampled each week (Appendix 2). The entire angling day from dawn to dusk was covered each month surveyed. This was accomplished by breaking each day into two 8-hour work shifts, then randomly selecting one shift to be worked. Monthly shift start and end times could vary due to varying length of daylight among months, but generally the first shift began at daylight and ended in the afternoon; the

second shift began in mid-morning and ended at sunset. As daylight hours decreased in winter, it was no longer necessary to have two shifts to cover all the daylight hours, so the clerk was scheduled for only one shift, and as daylight increased again in the spring, the clerk transitioned back to two shifts.

Figure 1: Map of Lac Vieux Desert – note the lake was subdivided into Site 1 and Site 2, to obtain adequate daily creel coverage.



The clerk was instructed to interview all anglers or angling parties he encountered. An angler party was defined as one or more anglers who fished together. The number of interviews varied as a product of the amount of fishing effort taking place during each shift and site during the season.

Date, time, location (site numbers where both the fishing and the interview took place), and mode were recorded for all interviews. Anglers were queried as to how long they fished, what species were targeted, the numbers (by species) of fish they caught and numbers kept, and the number of fishing trips they made or intended to make that day. Additional data were collected for one member of each party such as age and gender, zip code or county of residence, and the types of angling method used (casting, still fishing, trolling, etc.). Fishing effort was determined through counts of boats (open-ice anglers or shanties) made by the clerk as he navigated around the lake at specified count times. Two counts were scheduled per day.

Lima also collected lengths from walleye, northern pike, yellow perch, bluegill, black crappie and musky.

All data were recorded using a portable electronic device (PDA). In total, Tom sampled 125 days during the open-water season and 64 days during the winter season. Tom took a total of 1,158 interviews during the open-water season and 389 interviews during the winter season.

OBJECTIVE B - Analyze collected data to estimate catch, harvest, catch rates, harvest rates and angler effort.

STATUS: COMPLETE

Data collected by Lima were sent monthly to MDNR personnel for review, error-checking and analysis. Estimates were made for each site by month for all fish species observed in the harvest and reported as released. Effort estimates were also made for each site by month. Two measures of fishing effort were calculated: angler hours and angler trips. An angler trip was one completed fishing excursion. Standard mathematical formulas for creel survey (Lockwood et al. 1997; Su and Clapp 2013) were used to calculate all estimates. Uncertainty estimates for all catch and effort estimates in this report are defined as two standard errors of their mean (2 times the square root of the variance divided by the sample size for an estimate).

OBJECTIVE C - Develop summary report of creel results.

STATUS: COMPLETE

The following table and summary reports the results of the open-water creel survey. Two standard errors are given in parentheses.

Species	C/H	May	June	July	August	Sept	October	Season
HARVEST								
Walleye	0.0036	369	87	0	0	29	0	485
	(0.0020)	(228)	(121)	(0)	(0)	(59)	(0)	(265)
Northern pike	0.0317	2,920	538	394	287	158	10	4,307
	(0.0113)	(1,379)	(261)	(249)	(214)	(136)	(21)	(1,447)
Largemouth bass	0.0021	0	38	53	99	82	9	282
	(0.0016)	(0)	(45)	(50)	(155)	(139)	(19)	(220)
Smallmouth bass	0.0001	0	0	0	14	0	0	14
	(0.0002)	(0)	(0)	(0)	(29)	(0)	(0)	(29)
Yellow Perch	0.1758	11,774	3,700	2,867	3,046	2,380	135	23,902
	(0.0477)	(4,557)	(1,473)	(1,524)	(2,313)	(1,618)	(200)	(5,768)
Bluegill	0.2555	11,136	10,088	6,492	5,765	1,254	0	34,736
	(0.0642)	(4,881)	(4,045)	(2,499)	(3,151)	(1,108)	(0)	(7,588)
Pumpkinseed	0.0602	1,610	2,846	1,147	1,918	657	0	8,178
	(0.0246)	(1,169)	(2,571)	(618)	(1,204)	(585)	(0)	(3,186)
Rock bass	0.0112	807	438	85	79	113	0	1,523
	(0.0057)	(602)	(399)	(67)	(84)	(179)	(0)	(752)
Black crappie	0.2253	24,913	3,184	745	979	580	227	30,627
	(0.0770)	(9,552)	(1,631)	(455)	(805)	(450)	(464)	(9,756)
TOTAL HARVEST	0.7654	53,529	20,920	11,783	12,187	5,254	381	104,054
	(0.1405)	(11,811)	(5,296)	(3,037)	(4,178)	(2,112)	(506)	(14,105)
RELEASED								
Walleye	0.0018	141	57	0	14	14	21	246
	(0.0014)	(159)	(70)	(0)	(29)	(27)	(43)	(183)
Northern pike	0.2178	18,283	5,691	2,229	2,097	1,170	141	29,612
	(0.0573)	(6,328)	(2,297)	(851)	(942)	(588)	(115)	(6,877)
Largemouth bass	0.0281	1,269	882	402	934	314	18	3,818
	(0.0108)	(1,151)	(520)	(231)	(494)	(215)	(22)	(1,393)
Smallmouth bass	0.0072	19	60	184	344	376	0	983
	(0.0049)	(38)	(66)	(144)	(463)	(428)	(0)	(651)
Yellow Perch	0.6473	27,037	19,955	15,512	19,107	6,121	266	87,997
	(0.1416)	(9,562)	(7,758)	(5,151)	(8,056)	(2,951)	(275)	(15,869)
Bluegill	0.6750	21,761	23,228	18,691	23,131	4,895	55	91,761
	(0.1656)	(12,631)	(8,143)	(7,754)	(9,045)	(3,182)	(95)	(19,440)
Pumpkinseed	0.2041	3,176	8,327	6,058	8,190	1,992	5	27,748
	(0.0534)	(1,983)	(3,957)	(2,581)	(3,560)	(1,442)	(9)	(6,404)
Rock bass	0.0662	4,658	2,406	1,058	541	331	0	8,993
	(0.0233)	(2,289)	(1,661)	(747)	(289)	(379)	(0)	(2,964)
Black crappie	0.1074	6,242	1,492	1,864	2,973	1,817	218	14,604
	(0.0374)	(2,816)	(882)	(1,363)	(2,490)	(2,370)	(446)	(4,752)
Muskellunge	0.0087	277	194	149	315	125	120	1,181
	(0.0034)	(335)	(165)	(104)	(175)	(78)	(86)	(441)
TOTAL RELEASED	1.9636	82,862	62,292	46,147	57,646	17,153	843	266,944
	(0.3158)	(17,595)	(12,299)	(9,826)	(12,924)	(5,221)	(553)	(27,422)
TOTAL CATCH	2.7290	136,391	83,212	57,930	69,833	22,407	1,224	370,998
	(0.4068)	(21,192)	(13,390)	(10,284)	(13,583)	(5,632)	(750)	(30,837)
ANGLER HOURS		43,893	31,063	23,343	19,955	11,998	5,695	135,947
		(12,459)	(8,115)	(4,576)	(3,877)	(4,417)	(2,549)	(16,825)
ANGLER TRIPS		9,916	8,234	7,132	5,943	3,475	1,380	36,080
		(2,891)	(2,323)	(1,492)	(1,275)	(1,277)	(653)	(4,434)

The following table and summary reports the results of the winter creel survey. Two standard errors are given in parentheses. NAN indicates not enough data to make an estimate.

Species	C/H	Dec.	January	February	March	Season
HARVEST						
Walleye	0.0039	5	109	68	0	181
	(0.0031)	(10)	(124)	(63)	(0)	(139)
Northern pike	0.1312	1,002	2,445	2,514	85	6,046
	(0.0357)	(714)	(1,097)	NAN	(147)	(1,317)
Largemouth bass	0.0002	8	0	0	0	8
	(0.0003)	(16)	(0)	(0)	(0)	(16)
Yellow Perch	0.0908	258	1,197	944	1,787	4,185
	(0.0474)	(252)	(704)	(1,103)	(1,592)	(2,076)
Bluegill	0.9609	2,844	17,091	11,885	12,452	44,272
	(0.3418)	(2,588)	(10,853)	(5,915)	(6,016)	(13,988)
Pumpkinseed	0.0155	15	330	82	288	716
	(0.0088)	(25)	(317)	(96)	(200)	(388)
Black crappie	0.1610	42	2,707	2,273	2,397	7,419
	(0.0660)	(50)	(1,844)	(1,387)	(1,567)	(2,790)
TOTAL HARVEST	1.3637	4,174	23,879	17,765	17,009	62,827
	(0.3611)	(2,697)	(11,091)	NAN	(6,422)	(13,097)
RELEASED						
Walleye	0.0012	4	51	0	0	55
	(0.0017)	(8)	(79)	(0)	(0)	(79)
Northern pike	0.2173	1,346	5,972	2,411	281	10,010
	(0.0844)	(1,028)	(3,030)	(1,490)	NAN	(3,530)
Largemouth bass	0.0053	23	65	23	134	245
	(0.0032)	(25)	(70)	(36)	(117)	(143)
Yellow Perch	0.3721	1,251	5,740	3,102	7,050	17,142
	(0.1040)	(1,500)	(3,586)	NAN	NAN	(3,887)
Bluegill	1.3816	2,183	18,830	15,986	26,654	63,654
	(0.4018)	(2,138)	(12,263)	(8,927)	NAN	(15,318)
Pumpkinseed	0.0084	25	31	26	306	388
	(0.0113)	(46)	(41)	(62)	(509)	(517)
Rock bass	0.0006	0	0	0	29	29
	(0.0008)	(0)	(0)	(0)	(36)	(36)
Black crappie	0.2237	54	1,605	4,066	4,580	10,305
	(0.0961)	(100)	(1,632)	(2,948)	(2,329)	(4,097)
Muskellunge	0.0007	0	25	8	0	32
	(0.0008)	(0)	(33)	(16)	(0)	(36)
TOTAL RELEASED	2.2109	4,885	32,320	25,622	39,035	101,861
	(0.4653)	(2,809)	(13,232)	NAN	NAN	(13,527)
TOTAL CATCH	3.5746	9,059	56,199	43,387	56,044	164,689
	(0.7125)	(3,894)	(17,266)	NAN	NAN	(18,828)
ANGLER HOURS		4,077	16,716	17,211	8,068	46,072
		(2,569)	(7,071)	NAN	NAN	(7,523)
ANGLER TRIPS		992	3,435	3,524	1,999	9,951
		(641)	(1,370)	NAN	NAN	(1,513)

EFFORT

MDNR estimates that anglers spent 135,947 hours fishing Lac Vieux Desert during the open-water season and 46,072 hours during the winter season. MDNR also estimates that anglers took 36,080 fishing trips on Lac Vieux Desert during the open-water season and 9,951 trips during the winter season. In total, MDNR estimates that 370,998 fish were caught during the open-water season and 164,689 fish were caught during the winter season.

Sport-fishing effort summary, Lac Vieux Desert Lake, 2012-2012 season.

Year	Month	Effort	Effort/Acre*
2012	May	43,893	10.2
2012	June	31,063	7.2
2012	July	23,343	5.4
2012	August	19,955	4.6
2012	September	11,998	2.8
2012	October	5,695	1.3
2012	December	4,077	0.9
2013	January	16,716	3.9
2013	February	17,211	4.0
2013	March	8,068	1.9
2012	Summer**	135,947	31.6
2013	Winter**	46,072	10.7
2012-2013	Grand Total	182,019	42.3

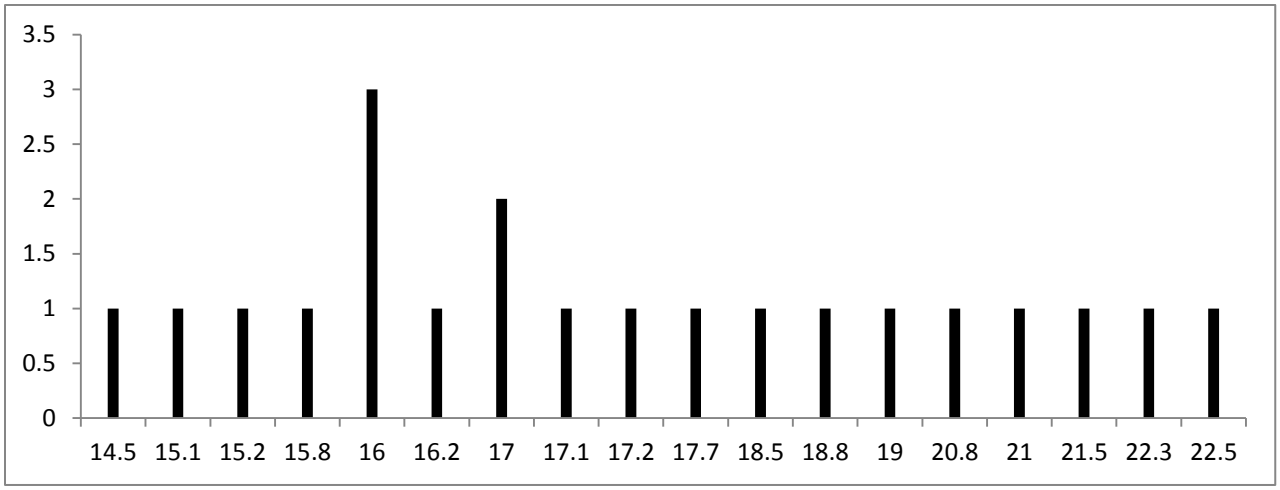
*Using 4,300 acres

** Summer is May – October, Winter is December - March

WALLEYE

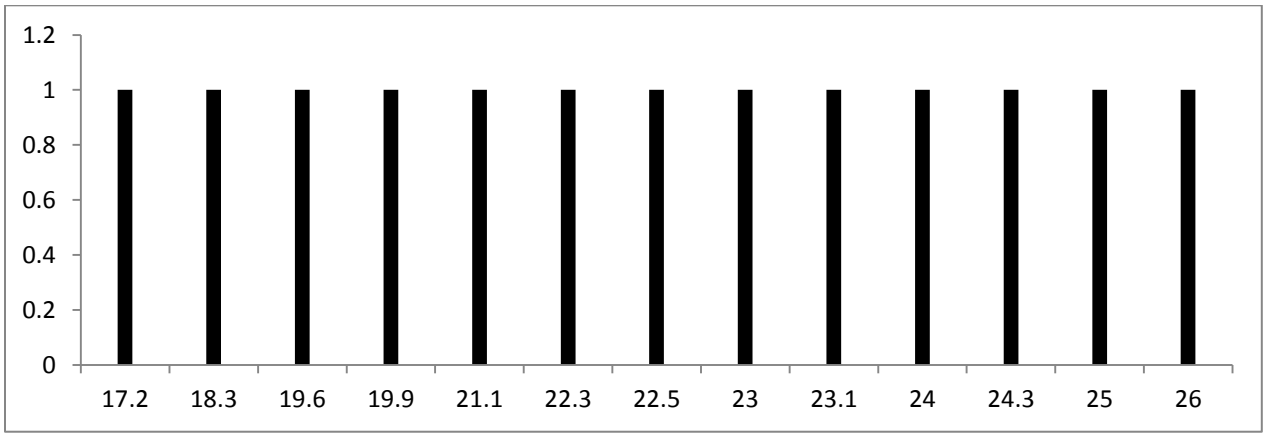
Open-water: The MDNR creel program estimates that during the open-water season 485 walleye were harvested and another 246 were released. Lima bio-sampled 21 walleye, the smallest at 14.5 inches, the greatest at 22.5 inches, average length 17.9 inches. Six percent of anglers targeted walleye (11,692 hours). Anglers that targeted walleye fished mostly by still and drift fishing using natural and artificial baits. The average trip length for fishing walleye was 4.3 hours. Anglers fishing walleye started their fishing trips generally before 8:00 am or after 7:00 pm. May was the most heavily fished month for walleye. Open-water walleye targeted catch rates were approximately 16.0 hours/fish and targeted harvest rates were approximately 24.1 hours/fish.

Open-water season walleye length frequency (y-axis) plotted against length (x-axis, in inches).



Winter: The MDNR creel program estimates that during the winter season 181 walleye were harvested and another 55 were released. Lima bio-sampled 13 walleye, the smallest at 17.2 inches, the greatest at 26 inches, average length 22 inches. Two percent of anglers targeted walleye (853 hours). Anglers that targeted walleye fished mostly by still fishing or jigging using natural baits. The average trip length for fishing walleye was 4.3 hours. Anglers fishing walleye started their fishing trips generally before 12 pm. January was the most heavily fished winter month for walleye. Winter walleye targeted catch rates were approximately 3.6 hours/fish and walleye targeted harvest rates were approximately 4.7 hours/fish.

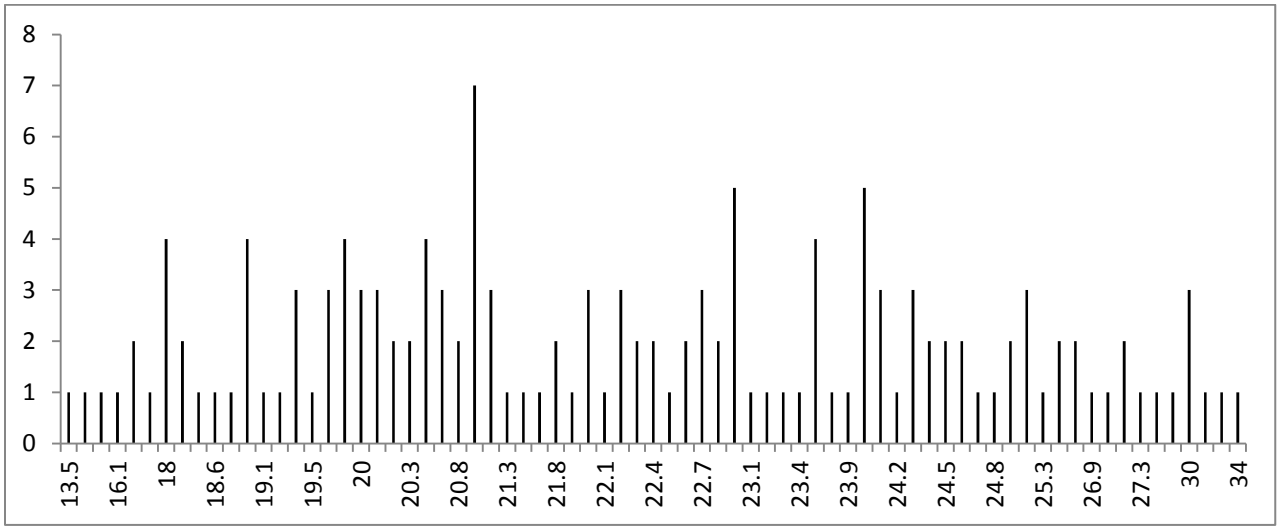
Winter season walleye length frequency (y-axis) plotted against length (x-axis, in inches).



NORTHERN PIKE

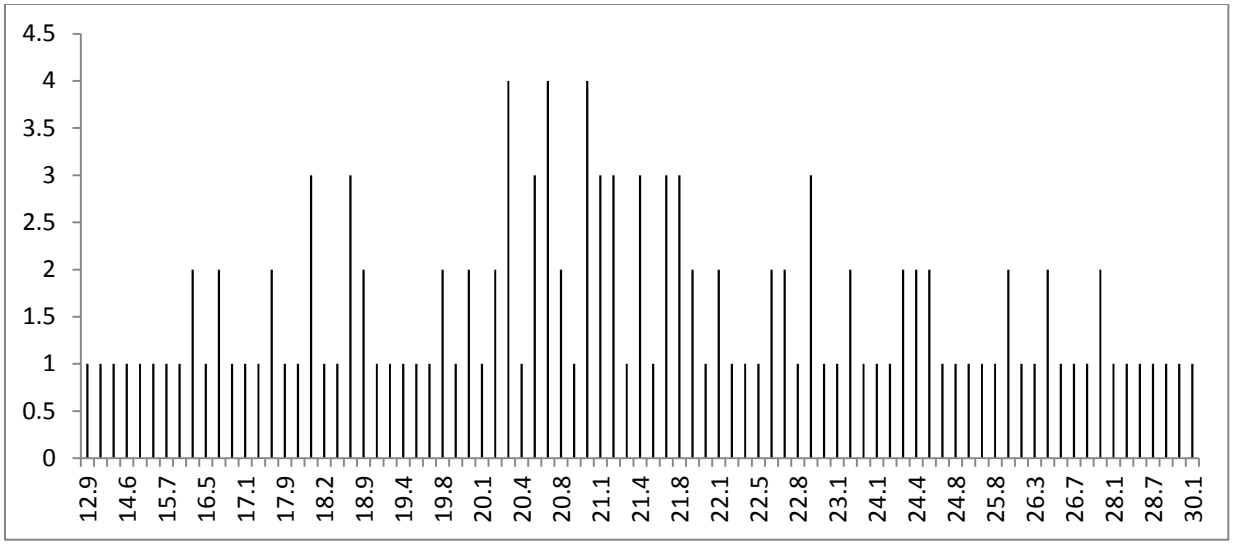
Open-water: The MDNR creel program estimates that 4,307 northern pike were harvested during the open-water season and another 29,612 were released. Lima sampled 145 northern pike, the smallest at 13.5 inches and the greatest at 34 inches, average length 22.3 inches. Eight percent of anglers targeted northern pike (15,412 hours). Anglers that targeted northern pike fished mostly by still fishing and casting using artificial baits. The average trip length for fishing northern pike was 3.3 hours. Anglers fishing northern pike started their fishing trips generally between 5:00 and 9:00 am. May and June were the most heavily fished months for northern pike. Northern pike targeted catch rates were approximately 0.6 of an hour/fish and targeted harvest rates were approximately 3.6 hours/fish.

Open-water season northern pike length frequency (y-axis) plotted against length (x-axis, in inches).



Winter – The MDNR creel program estimates that 6,046 northern pike were harvested during the winter season and another 10,010 were released. Lima sampled 131 northern pike, the smallest at 12.9 inches and the greatest at 30.1 inches, average length 21.5 inches. Eight percent of anglers targeted northern pike (6,511 hours). Anglers that targeted northern pike fished mostly by still fishing using natural baits. The average trip length for fishing northern pike was 4.6 hours. Anglers fishing northern pike started their fishing trips generally before 12pm and January was the most heavily fished month for northern pike. Winter Northern pike targeted catch rates were approximately 0.4 of an hour/fish, and targeted harvest rates were approximately 1 hour/fish.

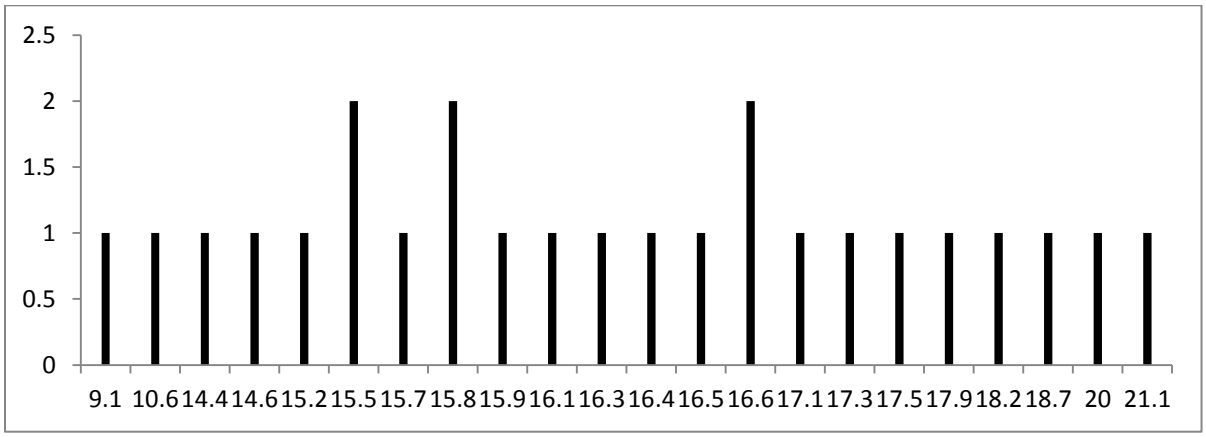
Winter season northern pike length frequency (y-axis) plotted against length (x-axis, in inches).



BASS

Open-water: The MDNR creel program estimates that during the open-water season 296 bass (smallmouth and largemouth) were harvested and another 4,801 were released. Lima sampled 25 bass, the smallest at 9.1 inches and the greatest at 21.1 inches, average length 15.7 inches). Less than one percent of anglers targeted bass (1,270 hours). Anglers that targeted bass fished mostly by casting using artificial baits. The average trip length for fishing bass was 3 hours. Anglers fishing bass started their fishing trips evenly throughout the day. Anglers fished for bass in all months. Bass targeted catch rates were approximately 0.2 of an hour/fish and targeted harvest rates were approximately 4.3 hours/fish.

Open-water season bass length frequency (y-axis) plotted against length (x-axis, in inches).

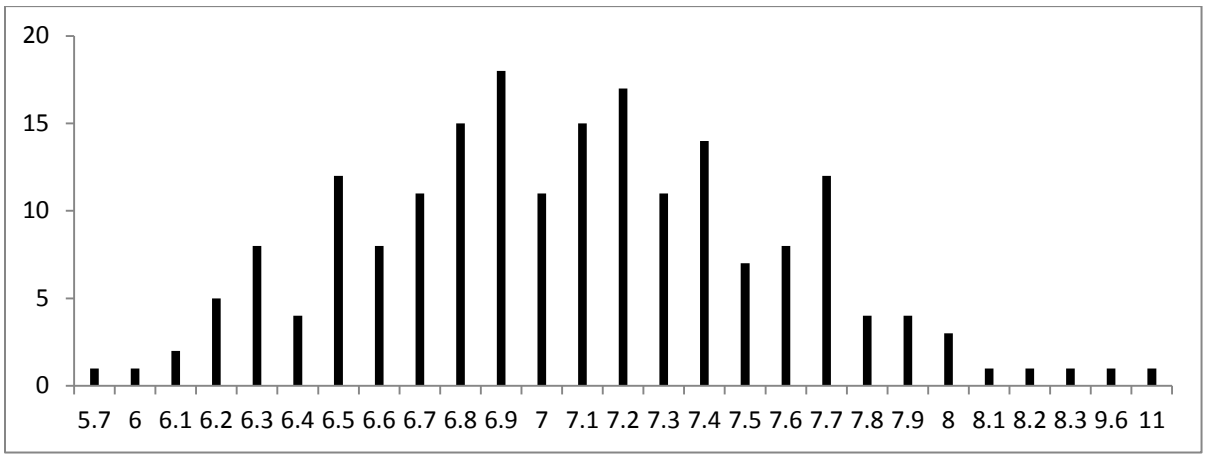


Winter – The MDNR creel program estimates that during the winter season 8 bass (largemouth only) were harvested and another 245 were released. Lima sampled 2 bass, (at 16.2 inches and 16.4 inches). No anglers indicated to the clerk that they targeted bass only.

BLUEGILL

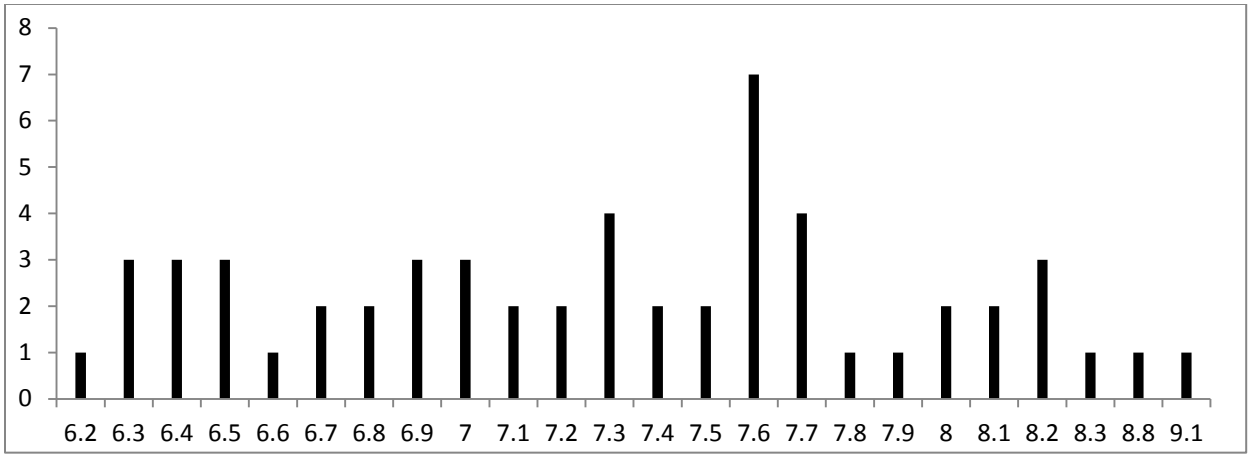
Open-water: The MDNR creel program estimates that 34,736 bluegill were harvested during the open-water season and another 91,761 were released. Lima sampled 196 bluegill, the smallest at 5.7 inches and the greatest at 11 inches, average length 7 inches. Thirty-nine percent of anglers targeted panfish. Anglers that targeted panfish fished mostly by still fishing or casting using natural baits. The average trip length for fishing panfish was under 3 hours. Anglers fishing panfish started their fishing trips all throughout the day. Anglers fished for panfish in all months.

Open-water season bluegill length frequency (y-axis) plotted against length (x-axis, in inches).



Winter – The MDNR creel program estimates that 44,272 bluegill were harvested during the winter season and another 63,654 were released. Lima sampled 56 harvested bluegill, the smallest at 6.2 inches and the greatest at 9.1 inches, average length 7.3 inches. Thirty-two percent of anglers targeted panfish. Anglers that targeted panfish fished mostly by jigging fishing using natural baits. The average trip length for fishing panfish was 3.5 hours. Anglers fishing panfish started generally fished between 10am and 12pm. Anglers fished for most frequently in March.

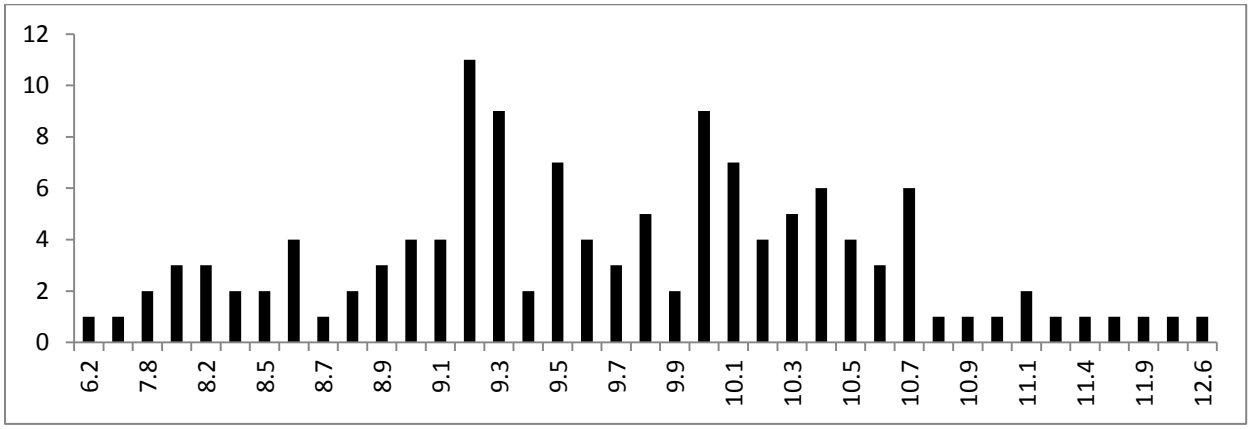
Winter season bluegill length frequency (y-axis) plotted against length (x-axis, in inches).



BLACK CRAPPIE

Open-water: The MDNR creel program estimates that 30,627 black crappie were harvested during the open-water season and another 14,604 were released. Lima sampled 130 harvested black crappie, the smallest at 6.2 inches and the greatest at 12.6 inches, average length 9.7 inches. Thirty-nine percent of anglers targeted panfish. Anglers that targeted panfish fished mostly by still fishing or casting using natural baits. The average trip length for fishing panfish was under 3 hours. Anglers fishing panfish started their fishing trips all throughout the day. Anglers fished for panfish in all months.

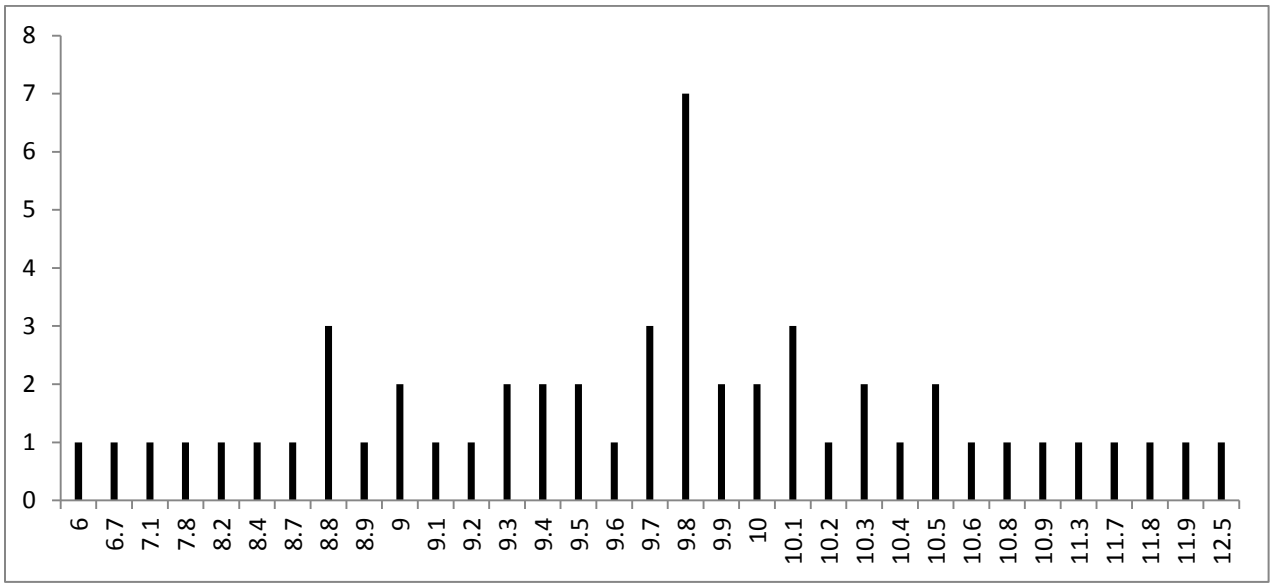
Open-water season black crappie length frequency (y-axis) plotted against length (x-axis, in inches).



Winter – The MDNR creel program estimates that 7,419 black crappie were harvested during the winter season and another 10,305 were released. Lima sampled 53 harvested black crappie, the smallest at 6 inches and the greatest at 12.5 inches, average length 9.8 inches. Two percent of

anglers targeted black crappie. Anglers that targeted black crappie fished mostly by jigging using natural baits. The average trip length for fishing black crappie was 4.7 hours. Anglers fishing black crappie started their fishing trips all at 10am. Anglers fished for black crappie most heavily in March.

Winter season black crappie length frequency (y-axis) plotted against length (x-axis, in inches)



ROCK BASS

Open-water: The MDNR creel program estimates that 1,523 rock bass were harvested during the open-water season and another 8,993 were released. Lima did not bio-sample rock bass. Thirty-nine percent of anglers targeted panfish. Anglers that targeted panfish fished mostly by still fishing or casting using natural baits. The average trip length for fishing panfish was under 3 hours. Anglers fishing panfish started their fishing trips all throughout the day. Anglers fished for panfish in all months.

Winter - The MDNR creel program did not encounter a harvested rock bass so we estimate that no rock bass were harvested during the winter season but that 29 were caught and released. There were no biosamples of rock bass taken during the winter season. Thirty-two percent of anglers targeted panfish. Anglers that targeted panfish fished mostly by jigging fishing using natural baits. The average trip length for fishing panfish was 3.5 hours. Anglers fishing panfish started generally fished between 10am and 12pm. Anglers fished for most frequently in March.

PUMPKINSEED

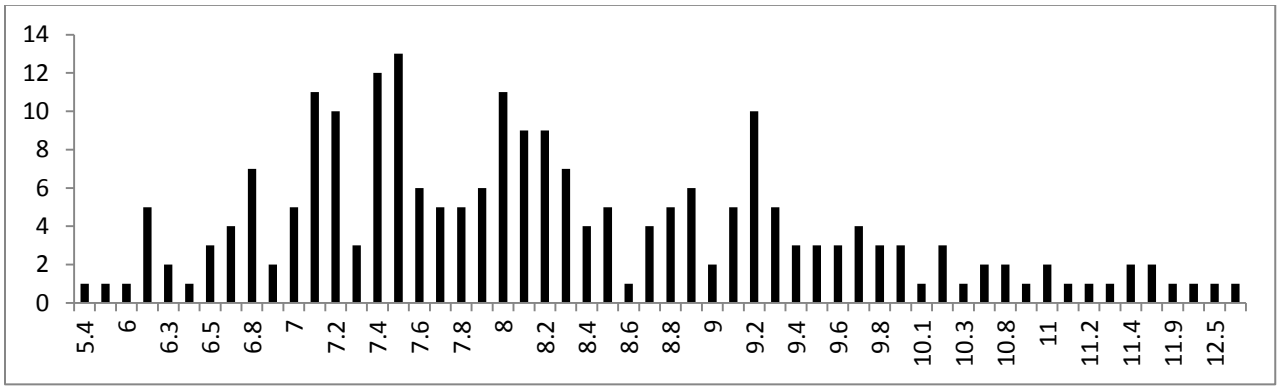
Open-water: The MDNR creel program estimates that 8,178 pumpkinseed were harvested during the open-water season and another 27,748 were released. Lima did not bio-sample pumpkinseed. Thirty-nine percent of anglers targeted panfish. Anglers that targeted panfish fished mostly by still fishing or casting using natural baits. The average trip length for fishing panfish was under 3 hours. Anglers fishing panfish started their fishing trips all throughout the day. Anglers fished for panfish in all months.

Winter – The MDNR creel program estimates that 716 pumpkinseed were harvested during the winter season and another 388 were released. Lima did not bio-sample pumpkinseed. Thirty-two percent of anglers targeted panfish. Anglers that targeted panfish fished mostly by jigging fishing using natural baits. The average trip length for fishing panfish was 3.5 hours. Anglers fishing panfish started generally fished between 10am and 12pm. Anglers fished for most frequently in March.

YELLOW PERCH

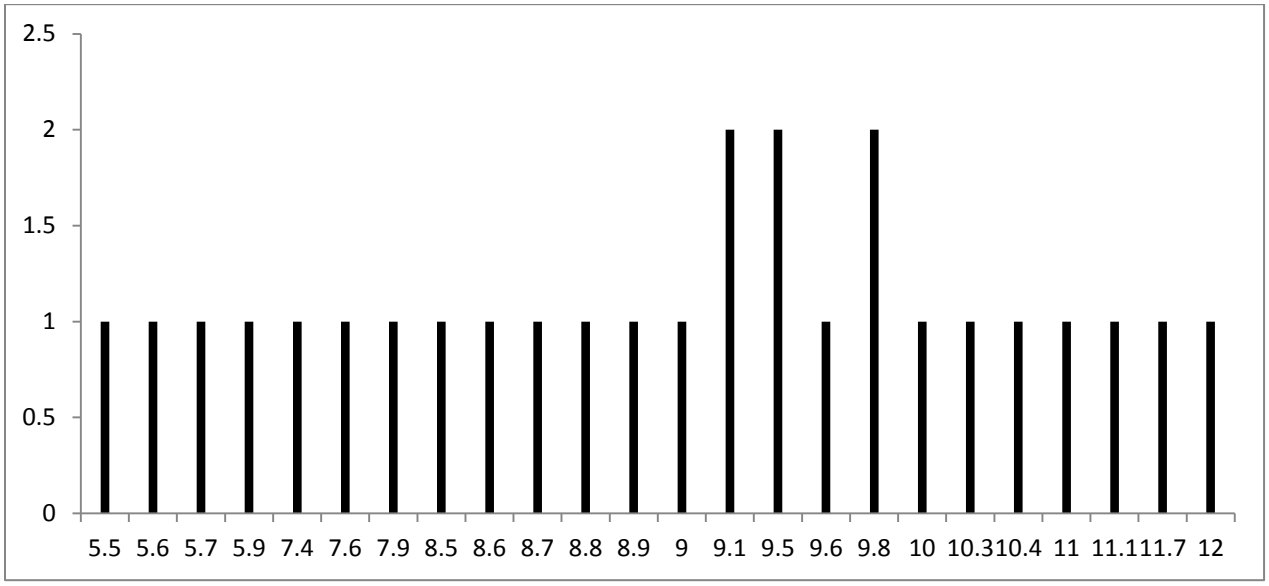
Open-water: The MDNR creel program estimates that 23,902 yellow perch were harvested during the open-water season and another 87,997 were released. Lima sampled 228 harvested yellow perch, the smallest at 5.4 inches and the greatest at 13 inches, average length 8.3 inches. Six percent of anglers targeted yellow perch (9,330 hours). Anglers that targeted yellow perch fished mostly by still fishing using natural baits. The average trip length for fishing yellow perch was 3.5 hours. Anglers fishing yellow perch started their fishing trips all throughout the day. Anglers fished for yellow perch most heavily in May. Anglers fished for bass in all months. Yellow perch targeted catch rates were less than 0.1 of an hour/fish and targeted harvest rates were approximately 0.4 hours/fish.

Open-water season yellow perch length frequency (y-axis) plotted against length (x-axis, in inches).



Winter – The MDNR creel program estimates that 4,185 yellow perch were harvested during the winter season and another 17,142 were released. Lima sampled 27 harvested yellow perch, the smallest at 5.5 inches and the greatest at 12 inches, average length 9.1 inches. Less than 1 percent of anglers targeted yellow perch (779 hours). Anglers that targeted yellow perch fished mostly by jigging, using natural and artificial baits. The average trip length for fishing yellow perch was 4 hours. Anglers fishing yellow perch generally started their fishing trips by 9am. Anglers fished for yellow perch in all winter months. Winter yellow perch targeted catch rates were less than 0.1 of an hour/fish and targeted harvest rates were approximately 0.2 hours/fish.

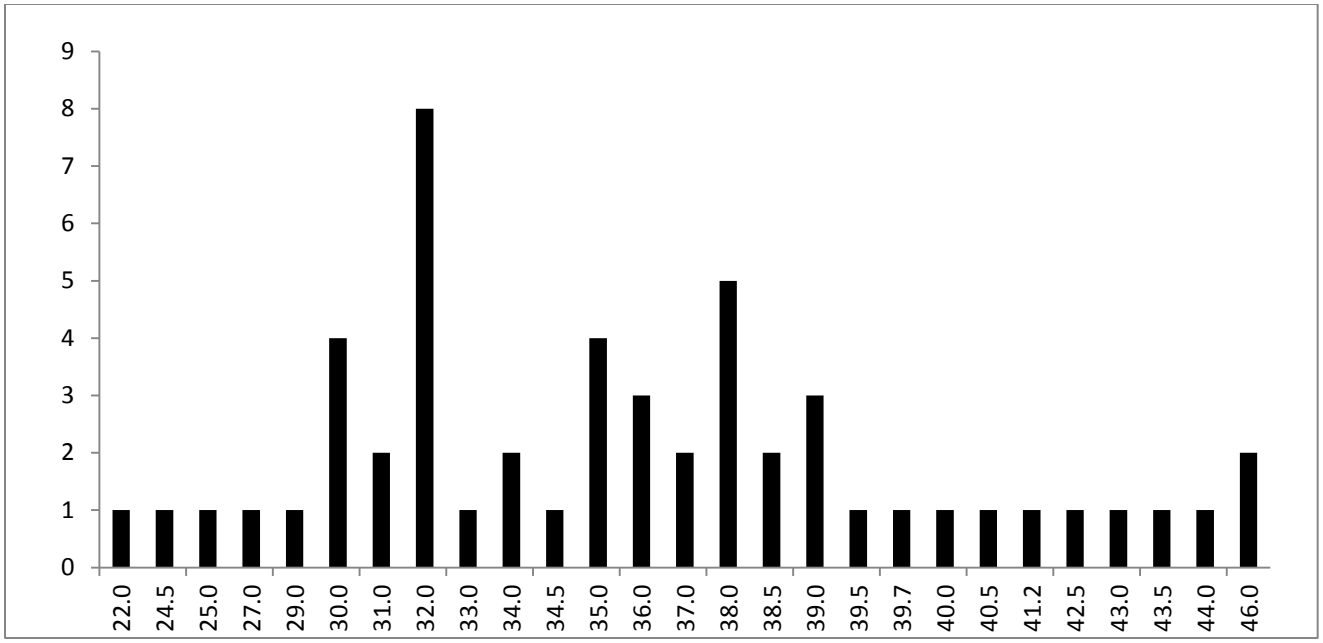
Winter season yellow perch length frequency (y-axis) plotted against length (x-axis, in inches).



MUSKY

Open-water: The MDNR creel program did not encounter a harvested musky so we estimate that no musky were harvested during the open-water season, but that 1,181 were caught and released. Lima sampled 53 released musky, the smallest at 22 inches and the greatest at 46 inches, average length 35.3 inches. Thirty-one percent of anglers targeted musky. Anglers that targeted musky fished mostly by drift fishing using artificial baits. The average trip length for fishing musky was 4.5 hours. Anglers fishing musky generally started their fishing trips before 8:00 am or after 7:00 pm. Anglers fished for musky in all months.

Open-water season musky length frequency (y-axis) plotted against length (x-axis, in inches).



Winter – The MDNR creel program did not encounter a harvested musky so we estimate that no musky were harvested during the winter season but that 32 were caught and released. Lima sampled 2 released muskies (30 and 31 inches). Five percent of anglers targeted musky. Anglers that targeted musky fished mostly by spear fishing. The average trip length for fishing musky was 7 hours. Anglers fishing musky generally started their fishing trips before 9am. Anglers fished for musky most heavily in January.

ANGLER DEMOGRAPHY

Open-water: Ninety-four percent of anglers fishing Lac Vieux Desert were male. Seven percent of anglers were under 21 years of age, 17% of anglers were between the ages of 22-39, 37% of anglers were between the ages of 50-55 and 38% of anglers were over 55. Fifty-six percent of anglers were residents of Wisconsin, 29% of anglers were residents of Illinois, 4% of anglers were residents of Michigan and 2% each of anglers were residents of Indiana and Minnesota. Anglers who were residents of other states hailed from Arizona, California, Colorado, Florida, Georgia, Iowa, North Carolina, Ohio, Oregon and West Virginia.

Winter – Ninety-seven percent of anglers fishing Lac Vieux Desert in winter were male. Six percent of anglers were under 21 years of age, 22% of anglers were between the ages of 22-39, 35% of anglers were between the ages of 50-55 and 37% of anglers were over 55. Seventy-six percent of anglers were residents of Wisconsin, 2% of anglers were residents of Illinois, 18% percent of anglers were residents of Michigan and 3% of anglers were residents of Indiana. We did not collect zip codes from other states.

BAG LIMITS

In Michigan, the daily/possession limit for walleye, Northern pike, smallmouth bass, largemouth bass, & flathead catfish is 5 total fish in any combination, but no more than 2 Northern pike. In Wisconsin, the daily/possession limit is 2 walleye and 5 Northern pike.

In Michigan, the daily/possession limit for yellow perch, bluegill, pumpkinseed, black crappie, and rock bass is 25 total in any combination. In Wisconsin, the daily/possession limit for yellow perch, bluegill, pumpkinseed, and black crappie is 25 total in any combination and for rock bass there is no daily/possession limit.

Open-water season percent of anglers reaching a range of daily/possession limits.

	Species		
Limit	Walleye	Northern Pike	Mixed Panfish
2	0.4%	2.9%	NA
3	0.0%	0.4%	NA
4	0.0%	0.3%	NA
5	0.0%	0.6%	NA
25	NA	NA	0.3%

Winter season percent of anglers reaching a range of daily/possession limits.

	Species		
Limit	Walleye	Northern Pike	Mixed Panfish
2	0.0%	18.6%	NA
3	0.0%	5.1%	NA
4	0.0%	2.6%	NA
5	0.0%	3.2%	NA
25	NA	NA	2.3%

Works Cited

Lockwood. R. 1997. Evaluation of Catch Rate Estimators from Michigan Access Point Angler Surveys. North American Journal of Fisheries Management. 17:611-620.

Su, Z. and D. Clapp. 2013. Evaluation of Sample Design and Estimation Methods for Great Lakes Angler Surveys. Transactions of the American Fisheries Society. 142(1)234-246.

APPENDIX 1 – Lac Vieux Desert Creel Clerk Announcement

Michigan Department of Natural Resources Seasonal Fisheries Position

Position: Non-career (Limited-term) Creel Clerk (Fisheries) located at Lac Vieux Desert,

Wage: $5,000 stipend and free housing (US Forestry Service cabin) on Lac Vieux Desert.

Duration: May – October 2012, if interested, also Dec – March (2012, 2013).

Duties: Conduct interviews of anglers fishing at Lac Vieux Desert. Make counts of boats or anglers engaged in fishing according to random sampling work schedules. Identify anglers' catch as to species of fish, and collect such pertinent biological information from fish that may be required from time to time, such as, lengths, weights, fin clip, sex, state of maturity, and scale samples. The objective of these duties is to enable the Michigan Fisheries Division to estimate sport fishing catch and effort at Lac Vieux Desert.

Qualifications: Applicants should be self-starting, highly-motivated individuals interested in performing fisheries-related fieldwork. Preference will be given to applicants with knowledge of computers and experience operating boats. Work experience and other skills are also considered. Civil Service rules require all employees to submit to and pass a pre-employment drug test and criminal history check.

Housing: Housing will be available at Lac Vieux Desert and provided by the US Forest Service.

Closing date: Feb 15th, 2012, we will conduct interviews late February/early March.

Application: Email cover letter, resume, and contact information for three references to Tracy Kolb (kolbt@michigan.gov) 517-241-3623.

APPENDIX 2: LAC VIEUX DESERT DETAILED SAMPLING INFORMATION

Table 1: Summary of months and shifts

Month	Shift A	Shift B	Number of daylight hours covered
May	6am - 1:45pm	1:45pm – 9:30pm	15.5
June	6am - 2pm	2:00pm – 10pm	16
July	6am - 2pm	2:00pm – 10pm	16
August	6am - 1:45pm	1:45pm – 9:30pm	15.5
September	7am -1:45pm	1:45pm – 8:30pm	13.3
October[1]	7am - 4pm	10:30am – 7pm	12
December[2]	7:30am – 5:30pm	None	10
January[2]	7:30am – 5:30pm	None	10
February[3]	7:00am – 5:00pm	8:30pm – 6:30pm	11.5
March	7:00am – 5:00pm	8:30pm – 6:30pm	11.5

[1] Starting in October, due to decreased daylight, the clerk transitions from working five 8-hour days a week to four 10-hour days per week.

[2] Starting in December, due to decreased daylight, the clerk worked one shift rather than two shifts.

[3] Starting in February, due to increased daylight, the clerk worked two shifts rather than one shift**.**

Table 2: MAY (Shift A: 6:00 AM~1:45 PM and Shift B: 1:45 PM~9:30 PM, times listed correspond to count times)

		1	2 Shift: A Site 2 (7:50 AM, 1:36 PM)	3	4 Shift: B Site 1 (7:35 PM, 8:21 PM)	5 Shift: A Site 2 (7:41 AM, 1:13 PM)
6 Shift: B Site 1 (3:33 PM, 5:28 PM)	7	8	9 Shift: B Site 2 (3:03 PM, 5:38 PM)	10 Shift: A Site 1 (6:55 AM, 8:12 AM)	11 Shift: A Site 1 (8:12 AM, 12:14 PM)	12 Shift: B Site 1 (2:56 PM, 3:32 PM)
13 Shift: A Site 2 (9:07 AM, 9:40 AM)	14 Shift: A Site 2 (7:22 AM, 11:35 AM)	15	16	17 Shift: B Site 1 (4:56 PM, 7:06 PM)	18 Shift: A Site 2 (9:32 AM, 9:44 AM)	19 Shift: B Site 1 (8:46 PM, 8:53 PM)
20 Shift: A Site 2 (10:44 AM, 12:14 PM)	21	22 Shift: A Site 1 (7:23 AM, 10:24 AM)	23 Shift: B Site 2 (3:15 PM, 3:16 PM)	24 Shift: A Site 2 (7:39 AM, 1:38 PM)	25	26 Shift: A Site 2 (10:08 AM, 1:17 PM)
27 Shift: B Site 1 (7:31 PM, 8:40 PM)	**28** **Memorial Day**	29 Shift: B Site 2 (4:21 PM, 4:33 PM)	30	31		

Table 3: JUNE (Shift A: 6:00 AM~2:00 PM and Shift B: 2:00 PM~10:00 PM, times listed correspond to count times)

					1 Shift: A Site 1 (9:31 AM, 1:37 PM)	2 Shift: B Site 1 (4:10 PM, 4:56 PM)
3 Shift: A Site 2 (7:09 AM, 12:19 PM)	4 Shift: A Site 2 (10:26 AM, 12:52 PM)	5 Shift: B Site 1 (2:54 PM, 5:25 PM)	6	7	8 Shift: A Site 1 (8:17 AM, 1:29 PM)	9 Shift: B Site 2 (6:57 PM, 7:03 PM)
10 Shift: A Site 1 (9:36 AM, 10:14 AM)	11	12	13 Shift: B Site 1 (3:46 PM, 9:56 PM)	14 Shift: A Site 2 (7:08 AM, 12:10 PM)	15 Shift: A Site 2 (11:06 AM, 1:05 PM)	16 Shift: B Site 1 (4:27 PM, 9:50 PM)
17 Shift: A Site 2 (10:25 AM, 1:21 PM)	18 Shift: B Site 1 (6:54 PM, 9:39 PM)	19 Shift: A Site 2 (9:54 AM, 1:08 PM)	20 Shift: B Site 2 (5:39 PM, 7:19 PM)	21	22	23 Shift: A Site 2 (12:02 PM, 1:47 PM)
24 Shift: B Site 1 (4:08 PM, 6:16 PM)	25 Shift: A Site 1 (6:33 AM, 10:13 AM)	26	27	28 Shift: B Site 2 (7:31 PM, 8:34 PM)	29 Shift: A Site 1 (6:25 AM, 1:12 PM)	30 Shift: B Site 1 (5:59 PM, 7:29 PM)

Table 4: JULY (Shift A: 6:00 AM~2:00 PM and Shift B: 2:00 PM~10:00 PM, times listed correspond to count times)

1 Shift: A Site 2 (6:11 AM, 8:38 AM)	2 Shift: B Site 2 (4:20 PM, 6:10 PM)	3 Shift: A Site 1 (8:50 AM, 8:55 AM)	**4** **Independence Day**	5	6	7 Shift: A Site 2 (8:49 AM, 9:26 AM)
8 Shift: B Site 1 (4:27 PM, 8:28 PM)	9 Shift: B Site 2 (4:04 PM, 8:26 PM)	10	11	12 Shift: A Site 1 (10:26 AM, 1:45 PM)	13 Shift: B Site 2 (3:47 PM, 4:33 PM)	14 Shift: A Site 2 (8:06 AM, 9:50 AM)
15 Shift: B Site 1 (3:47 PM, 7:16 PM)	16	17 Shift: A Site 1 (8:15 AM, 8:22 AM)	18 Shift: B Site 2 (9:30 PM, 9:49 PM)	19 Shift: B Site 2 (5:19 PM, 8:58 PM)	20	21 Shift: A Site 1 (7:26 AM, 9:52 AM)
22 Shift: B Site 2 (3:37 PM, 7:56 PM)	23	24	25 Shift: B Site 2 (4:29 PM, 9:03 PM)	26 Shift: A Site 1 (8:18 AM, 9:12 AM)	27 Shift: B Site 1 (4:46 PM, 8:25 PM)	28 Shift: A Site 2 (9:05 AM, 9:58 AM)
29 Shift: B Site 1 (3:13 PM, 3:15 PM)	30 Shift: B Site 1 (4:52 PM, 8:52 PM)	31 Shift: A Site 2 (7:51 AM, 10:08 AM)				

Table 5: AUGUST (Shift A: 6:00 AM~1:45 PM and Shift B: 1:45 PM~9:30 PM, times listed correspond to count times)

			1 Shift: A Site 2 (6:26 AM, 9:33 AM)	2	3	4 Shift: B Site 1 (3:33 PM, 4:13 PM)
5 Shift: A Site 2 (10:13 AM, 1:34 PM)	6 Shift: A Site 2 (10:16 AM, 1:16 PM)	7 Shift: B Site 1 (3:54 PM, 8:33 PM)	8	9	10 Shift: A Site 2 (10:08 AM, 12:59 PM)	11 Shift: B Site 2 (3:16 PM, 8:55 PM)
12 Shift: A Site 1 (10:07 AM, 12:36 PM)	13 Shift: A Site 1 (11:24 AM, 12:48 PM)	14 Shift: B Site 2 (3:42 PM, 6:05 PM)	15 Shift: A Site 2 (6:13 AM, 9:35 AM)	16	17	18 Shift: B Site 1 (4:54 PM, 8:47 PM)
19 Shift: A Site 2 (10:33 AM, 1:49 PM)	20 Shift: B Site 1 (5:13 PM, 6:10 PM)	21	22	23 Shift: A Site 2 (7:52 AM, 9:17 AM)	24 Shift: B Site 1 (4:07 PM, 6:13 PM)	25 Shift: A Site 2 (7:49 AM, 12:02 PM)
26 Shift: B Site 1 (3:49 PM, 5:36 PM)	27	28 Shift: A Site 2 (8:48 AM, 1:17 PM)	29 Shift: B Site 1 (4:42 PM, 7:38 PM)	30 Shift: A Site 1 (10:09 AM, 11:13 AM)	31	

Table 6: SEPTEMBER (Shift A: 7:00 AM~1:45 PM and Shift B: 1:45 PM~8:30 PM, times listed correspond to count times)

						1 Shift: B Site 1 (2:00 PM, 5:12 PM)
2 Shift: A Site 2 (7:16 AM, 10:54 AM)	**3** **Labor Day**	4	5	6 Shift: B Site 1 (3:16 PM, 6:16 PM)	7 Shift: A Site 2 (8:25 AM, 10:28 AM)	8 Shift: A Site 2 (7:11 AM, 10:47 AM)
9 Shift: B Site 1 (5:49 PM, 7:21 PM)	10	11	12 Shift: A Site 2 (12:02 PM, 1:09 PM)	13 Shift: B Site 1 (4:07 PM, 5:18 PM)	14 Shift: B Site 2 (4:11 PM, 6:25 PM)	15 Shift: B Site 2 (3:26 PM, 6:16 PM)
16 Shift: A Site 1 (9:08 AM, 11:18 AM)	17	18 Shift: B Site 2 (2:26 PM, 7:37 PM)	19 Shift: A Site 1 (8:56 AM, 11:37 AM)	20 Shift: B Site 2 (2:15 PM, 7:02 PM)	21	22 Shift: A Site 1 (7:53 AM, 9:27 AM)
23 Shift: B Site 2 (6:12 PM, 7:53 PM)	24 Shift: B Site 2 (2:46 PM, 5:05 PM)	25	26	27 Shift: A Site 1 (10:37 AM, 12:40 PM)	28 Shift: A Site 2 (8:17 AM, 12:45 PM)	29 Shift: B Site 2 (2:29 PM, 5:13 PM)
30 Pass day						

Table 7: *OCTOBER (Shift A: 7:30 AM~4:00 PM and Shift B: 10:30 AM~7:00 PM, times listed correspond to count times)

*Starting in October the clerk worked 4-10 hour shifts rather than 5-8 hour shifts.

	1	2	3 Shift: A Site 1 (8:01 AM, 11:17 AM)	4 Shift: B Site 1 (2:35 PM, 4:38 PM)	5 Shift: B Site 2 (3:48 PM, 4:44 PM)	6 Shift: B Site 1 (2:21 PM, 5:48 PM)
7 Shift: A Site 2 (10:02 AM, 12:21 PM)	8 Shift: B Site 2 (4:14 PM, 5:40 PM)	9	10	11	12 Shift: A Site 2 (8:54 AM, 1:33 PM)	13 Shift: B Site 2 (1:27 PM, 3:19 PM)
14 Shift: A Site 1 (10:14 AM, 12:09 PM)	15 Shift: B Site 1 (1:57 PM, 3:55 PM)	16 Shift: A Site 2 (9:58 AM, 12:25 PM)	17	18	19	20 Shift: B Site 1 (4:50 PM, 5:24 PM)
21 Shift: A Site 2 (7:58 AM, 10:39 AM)	22	23	24 Shift: B Site 1 (2:07 PM, 5:13 PM)	25 Shift: B Site 2 (5:05 PM, 6:48 PM)	26	27 Shift: A Site 1 (8:58 AM, 10:06 AM)
28 Shift: B Site 2 (1:16 PM, 6:42 PM)	29 Shift: A Site 2 (12:38 PM, 3:30 PM)	30 Shift: B Site 1 (1:08 PM, 2:15 PM)	31 Shift: A Site 2 (9:15 AM, 10:30 AM)			

Table 8: *DECEMBER (Shift A: 7:00 AM~5:30 PM, times listed correspond to count times)

*Starting in December, due to decreased daylight, the clerk worked one shift rather than two shifts.

						1 Site 1 7:11 AM, 12:36 PM
2 Site 2 10:50 AM, 2:21 PM	3 Site 2 1:52 PM, 4:42 PM	4	5	6	7 Site 2 12:50 PM, 4:07 PM	8 Site 2 8:11 AM, 4:22 PM
9 Site 1 9:03 AM, 2:15 PM	10 Site 2 8:46 AM, 11:09 AM	11 Site 1 8:14 AM, 3:07 PM	12	13	14	15 Site 1 11:29 AM, 2:36 PM
16 Site 2 9:15 AM, 1:46 PM	17	18 Site 2 7:29 AM, 1:50 PM	19 Site 1 9:08 AM, 11:56 AM	20	21	22 Site 1 10:27 AM, 3:33 PM
23 Site 2 11:35 AM, 4:33 PM	**24** **Christmas**	**25** **Christmas**	26	27	28	29 Site 2 8:53 AM, 2:15 PM
30 Site 1 8:42 AM, 10:00 AM	**31** **New Year**					

Table 9: JANUARY (Shift A: 7:00 AM ~ 5:30 PM, times listed correspond to count times)

		1 **New Year**	2	3	4	5 Site 1 8:52 AM, 3:48 PM
6 Site 2 9:20 AM, 1:17 PM	7 Site 2 1:16 PM, 3:10 PM	8 Site 1 8:09 AM, 12:24 PM	9	10	11	12 Site 1 9:09 AM, 12:49 PM
13 Site 2 1:04 PM, 4:42 PM	14	15	16	17 Site 2 10:55 AM, 3:15 PM	18 Site 1 1:26 PM, 3:05 PM	19 Site 2 9:04 AM, 10:51 AM
20 Site 1 11:23 AM, 2:50 PM	**21** **Martin Luther**	22 Site 1 9:11 AM, 12:55 PM	23	24	25	26 Site 2 1:22 PM, 2:51 PM
27 Site 1 2:52 PM, 3:43 PM	28	29	30 Site 2 10:39 AM, 3:06 PM	31		

Table 10: *FEBRUARY (Shift A: 7:00 AM~5:00 PM and Shift B: 8:30 AM~6:30 PM, times listed correspond to count times)

*Starting in February, due to increased daylight, the clerk worked two shifts rather than one shift.

					1 Shift: B Site 2 2:41 PM, 5:59 PM	2 Shift: A Site 2 8:31 AM, 10:48 AM
3 Shift: B Site 1 2:53 PM, 4:53 PM	4 Shift: A Site 1 10:55 AM, 12:26 PM	5	6 Shift: B Site 1 1:19 PM, 5:31 PM	7	8	9 Shift: A Site 1 8:44 AM, 11:57 AM
10 Shift: B Site 2 2:39 PM, 4:59 PM	11	12 Shift: A Site 2 12:03 PM, 3:46 PM	13	14 Shift: A Site 2 9:25 AM, 11:36 AM	15	16 Shift: B Site 1 3:00 PM, 4:21 PM
17 Shift: A Site 1 7:10 AM, 10:18 AM	**18** **Presidents' Day**	19 Shift: B Site 1 1:21 PM, 4:20 PM	20	21	22	23 Shift: B Site 2 3:34 PM, 5:34 PM
24 Shift: A Site 2 8:44 AM, 12:29 PM	25	26	27 Shift: A Site 1 7:00 AM, 9:15 AM	28		

Table 11: MARCH (Shift A: 7:00 AM~5:00 PM and Shift B: 8:30 AM~6:30 PM, times listed correspond to count times)

					1 Shift: B Site 1 1:29 PM, 4:13 PM	2 Shift: B Site 1 3:40 PM, 5:57 PM
3 Shift: A Site 2 7:07 AM, 11:28 AM	4 Shift: A Site 1 10:58 AM, 12:46 PM	5	6	7	8 Shift: A Site 2 7:16 AM, 10:31 AM	9 Shift: B Site 2 2:48 PM, 5:49 PM
10 Shift: A Site 1 12:00 PM, 2:27 PM	11	12 Shift: B Site 1 1:32 PM, 5:30 PM	13	14 Shift: B Site 2 2:14 PM, 4:42 PM	15	16 Shift: B Site 1 2:34 PM, 5:00 PM
17 Shift: A Site 2 9:22 AM, 11:36 AM	18	19	20 Shift: A Site 1 7:15 AM, 10:47 AM	21	22 Shift: A Site 2 7:08 AM, 11:47 AM	23 Shift: A Site 1 7:10 AM, 10:38 AM
24 Shift: B Site 2 3:14 PM, 5:29 PM	25	26 Shift: B Site 2 3:45 PM, 5:44 PM	27 Shift: B Site 2 12:39 PM, 3:00 PM	28	29	30 Shift: A Site 1 9:01 AM, 10:25 AM
31 Shift: B Site 2 1:17 PM, 4:51 PM						