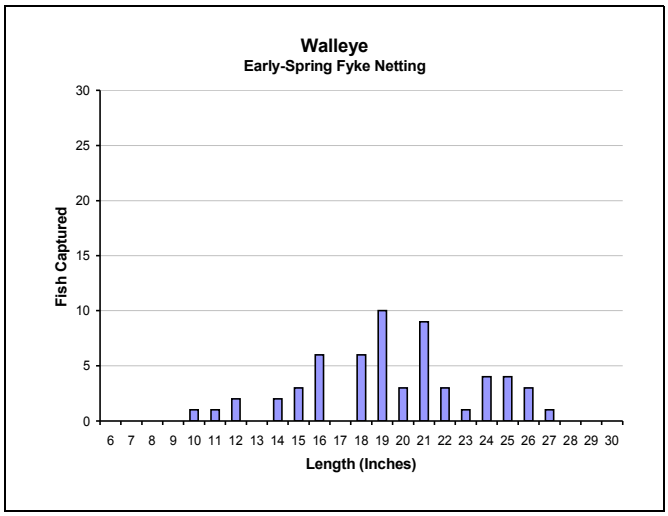
Early-Spring Fyke Netting Survey Summary
Nelson Lake, Sawyer County, 2011

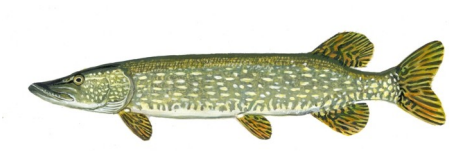
The Hayward DNR Fisheries Management Team conducted a fyke netting survey on Nelson Lake during April 23-25, 2011 as part of our baseline monitoring program. Eight nets were set overnight for two nights, resulting in 16 net-nights of effort. Primary target species were walleye, northern pike and yellow perch, but we also obtained useful data on the status of black crappie. An electrofishing survey conducted by our team in early June documented the status of largemouth bass, bluegill and other species. Those results are presented in a separate survey summary. Quality, preferred, and memorable sizes referenced in this summary are based on standard proportions of world record lengths developed for each species by the American Fisheries Society.

Walleye

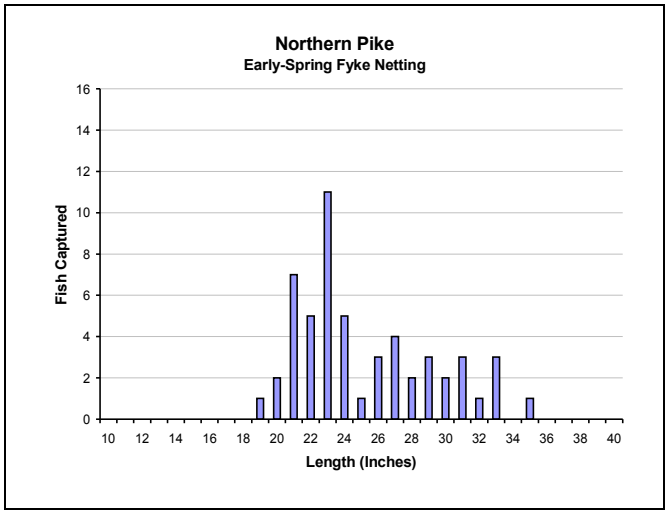
Captured 3.7 per net-night ≥ 10”	
Quality Size ≥ 15”	90%
Preferred Size ≥ 20”	47%



Northern Pike

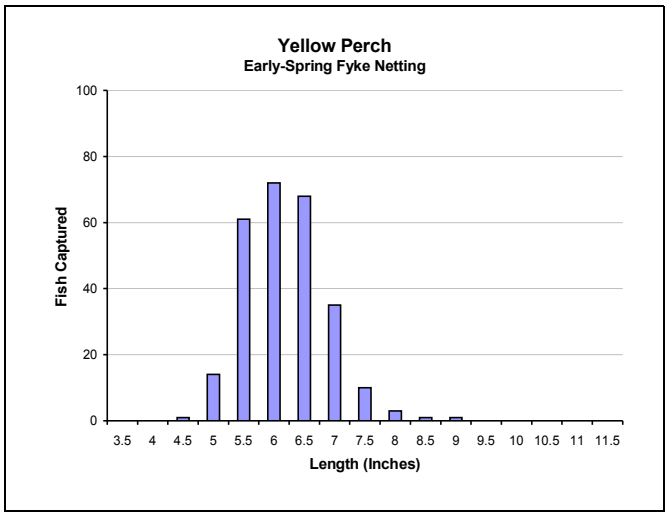


Captured 3.4 per net-night ≥ 14”	
Quality Size ≥ 21”	94%
Preferred Size ≥ 28”	28%



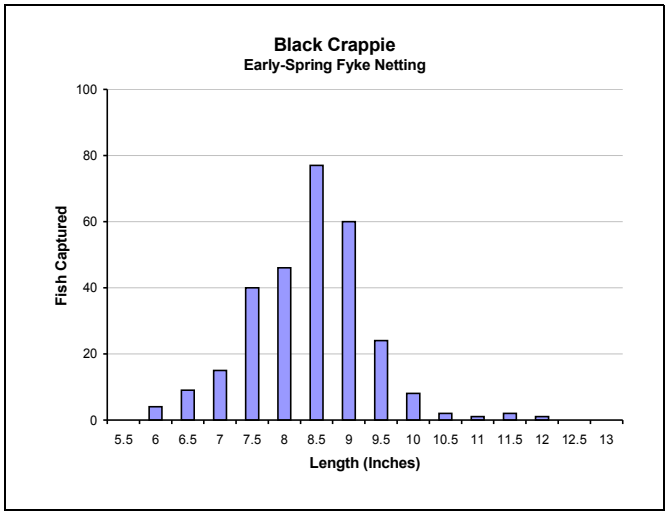
Yellow Perch

Captured 17 per net-night ≥ 5”	
Quality Size ≥ 8”	1.9%
Preferred Size ≥ 10”	0%



Black Crappie

Captured 18 per net-night ≥ 5”	
Quality Size ≥ 8”	76%
Preferred Size ≥ 10”	4.8%



Summary of Results

In early spring of 2011 the water level in Nelson Lake was normal (full pool), and walleye spawning habitat (clean gravel and cobble) was abundant. With water temperatures in the mid-40s, our survey was well-timed for purposes of obtaining a representative sample of target species adults in likely near-shore spawning areas. Walleyes were captured at the peak of spawning activity (eggs easily released, with some females already spent). However, the few females captured near the mouth of the Totagatic River were all spent, indicating perhaps a significant portion of the remaining adult walleye population had migrated upstream to spawn (a historically documented behavior).

Our capture rate of walleye ≥ 10 inches in Nelson Lake was low in 2011 (3.7 per net-night) and was similar to the 2008 survey (4.9 per net-night) by DNR’s Treaty Fisheries Assessment Team The proportion of quality-size fish ≥ 15 inches was much too high in 2008 (97%) and was still too high in 2011 (90%) -- well above the 2004 Nelson Lake Fishery Management Plan* target

range of 40-60%. This reflects insufficient recruitment of young walleyes in recent years. Preliminary analysis of the 2011 late-spring electrofishing survey suggests that Nelson Lake still holds high numbers of largemouth bass. Because largemouth bass are thought to be effective predators on young walleyes and competitors with adult walleyes for food, largemouth bass abundance is the likely cause of low walleye recruitment. Despite some survival of large stocked walleyes (6-8 inches) over the past few years, largemouth bass density remains much too high; and we strongly encourage anglers to harvest largemouth bass of all sizes. To help restore walleye as the dominant sport fish in Nelson Lake, the minimum length limit for walleye was increased to 18 inches, effective May 7, 2011. The daily bag limit is 3 unless otherwise posted.

Capture rate of northern pike ≥ 14 inches was moderate (3.4 per net-night) in 2011 and was similar to the 2008 survey by DNR's Treaty Fisheries Assessment Team (4.0 per net-night). The proportion of northern pike of preferred-size ≥ 28 inches was up slightly in 2011 (28%) when compared to 2008 (17%) and has slightly exceeded the 2004 Nelson Lake Fishery Management Plan target range of 10-20%. It seems that angler compliance with the special northern pike regulation (32-inch minimum length limit, daily bag 1) may be allowing the development of the desired size composition, making Nelson Lake one of the better places in the Hayward area to fish for large pike.

Yellow perch capture rates were moderate in 2011 (17 per net-night). Although yellow perch were not a major concern of the 2004 Nelson Lake Fishery Management Plan, they do play a vital role in lake communities of the North. Young perch are extremely important as food for young walleye. Low walleye density has likely led to the moderately high number of 5- to 7-inch yellow perch we observed. We do not know if the scarcity of quality-size perch ≥ 8 inches is due to slow growth rate of perch or size-selective predation on large perch by large pike.

Black crappie capture rates were moderate in spring of 2011 (18 per net-night) and similar to the fall of 2010 (14 per net-night), but have increased since the fall of 2007 (7 per net-night). Anglers also report catching more crappies now than in previous years. This is consistent with the reduced walleye density in Nelson Lake. Walleye is the only species of predator known to effectively limit populations of black crappie in large northern Wisconsin lakes. The proportion of black crappie of preferred-size ≥ 10 inches was only 4.8% and may reflect slow growth (due to increased density), high size-selective harvest by anglers, or both. Although our 2011 black crappie capture rate was in accordance with the 2004 Nelson Lake Fishery Management Plan; high size-selective harvest of larger crappies by anglers may pose a challenge to achieving our size-structure objective of 40-60% ≥ 10 inches. But any consideration of further restricting angler harvest should await an assessment of black crappie growth and natural mortality rates. We do not want to protect high numbers of fish to a size that they are not capable of achieving before dying of natural causes.

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July 25, 2011

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July 28, 2011

*Available online at: http://dnr.wi.gov/water/basin/upchip/documents/nelson.pdf