Summary of Fishery Surveys
Audie Lake, Rusk County, 2014

WDNR's Fisheries Management Team from Park Falls completed fyke netting and electrofishing surveys in 2014 to assess the status of important fish populations in Audie Lake. Fyke nets set in May targeted muskellunge. An electrofishing survey in June documented the abundance and size structure of largemouth bass and bluegill populations. 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. "Keeper size" is based on known angler behavior.

Survey Effort

On May 12th, 2014, about two weeks after the spring thaw with water temperatures 57 – 58°F, we set four fyke nets and fished them overnight for two nights (eight net-nights). Effort was directed primarily toward spawning muskellunge, but our spring netting survey also yielded useful information about northern pike, yellow perch, black crappies, and bluegills. With water temperature at 76°F our nighttime electrofishing survey on June 11, 2014 was a little late to document the status of largemouth bass and bluegill populations during their peak spawning activities. We sampled 2.00 shoreline miles in 0.80 hour, including 1.00 mile sub-sampled for panfish in 0.40 hour. Low conductivity reduced our electrofishing capture efficiency.

Habitat Characteristics

Audie Lake is a 128-acre impoundment located in the Blue Hills region of Rusk County about 9½ miles southeast of Birchwood, WI. It has a maximum depth of 32 feet and an average depth of 6 feet. The water is moderately clear (Secchi depth=5 feet), and substrate is 30% sand, 15% gravel, 15% rock, and 40% muck. Several floating bogs and many submerged stumps and logs are scattered throughout the lake. Shoreland vegetation is mainly hardwoods and conifers. The entire lake is surrounded by public land in Rusk County Forest, and there is no private development on the shoreline. On the southeast shore Rusk County Forestry Department maintains a boat landing, campground, and a lake aeration system, which operates every year to reduce the risk of severe "winter-kill" (high fish mortality) when dissolved oxygen levels become depleted in the ice-covered season.

In 2006 and 2007 WDNR stocked catchable-size rainbow trout to offer a temporary put-and-take fishery.

Summary of Results

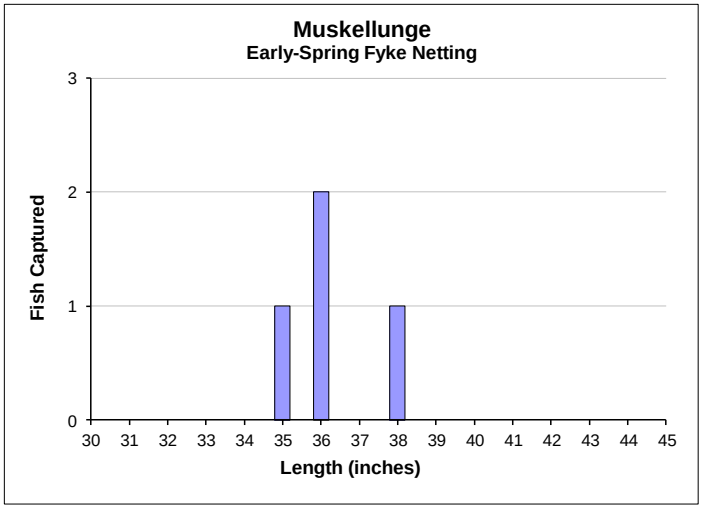
We captured nine fish species in our netting and electrofishing surveys. Northern pike and largemouth bass were the principal predators, and crappies and bluegills were the predominant panfish. We found

only three yellow perch in both surveys. Several northern pike and black crappie were kept for mercury contaminant and age analysis.

Muskellunge

Early Spring Fyke Nets

Captured 0.5 per net-night ≥ 20"	
Quality Size ≥ 30"	100%
Preferred Size ≥ 38"	25%
Memorable Size ≥ 42"	0%

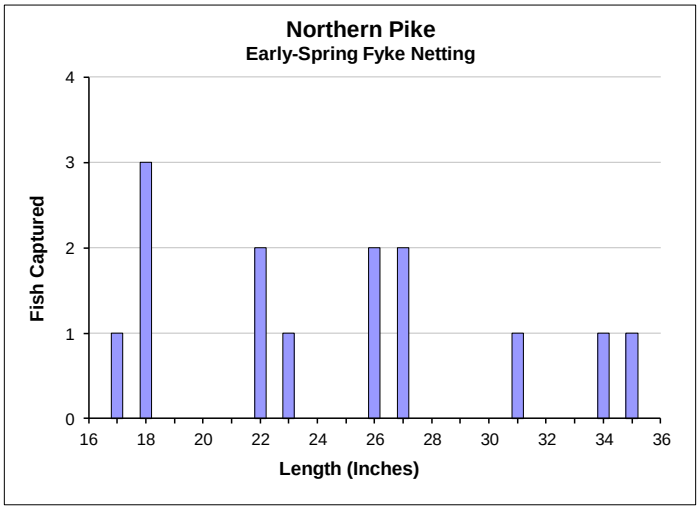


After a decade of regular stocking, early spring nets captured muskellunge at a low rate, indicating low population abundance. Ten- to twelve-inch muskies stocked every other year from 2001 – 2011 at a rate of 0.5 fingerling per acre maintain a fishable (Class C) population. Low forage availability is the main factor limiting muskellunge survival and growth in this system. We found very few large perch and no suckers that could provide an efficient ration.

Northern Pike

Early Spring Fyke Nets

Captured 1.8 per net-night ≥ 14"	
Quality Size ≥ 21"	71%
Preferred Size ≥ 28"	21%
Memorable Size ≥ 34"	14%

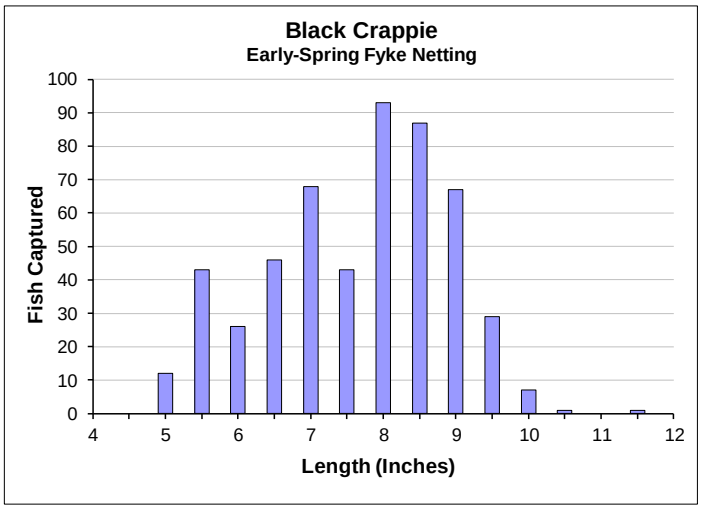


Our low capture rate of northern pike in early spring fyke nets indicates low to moderate density. Low density and less competition allow northern pike to reach preferred and memorable sizes. Age analysis using cleithra (a major bone in the pectoral girdle) showed that pike in Audie Lake were 1.0 and 0.4 inch longer than the regional average length at ages 3 and 5. Cleithra, collected from the fish we used for mercury analysis, are the preferred bony structure for estimating northern pike and muskellunge age. Like muskellunge, suitable forage in short supply may also be limiting the pike population's potential. Here their diet is primarily bluegills, crappies, and small largemouth bass. However, northern pike prefer to eat perch whose cylindrical body shape is easier to swallow and digest.

Black Crappie

Early Spring Fyke Nets

Captured 65 per net-night ≥ 5"	
Quality Size ≥ 8"	54%
Preferred Size ≥ 10"	2%
Memorable Size ≥ 12"	0%

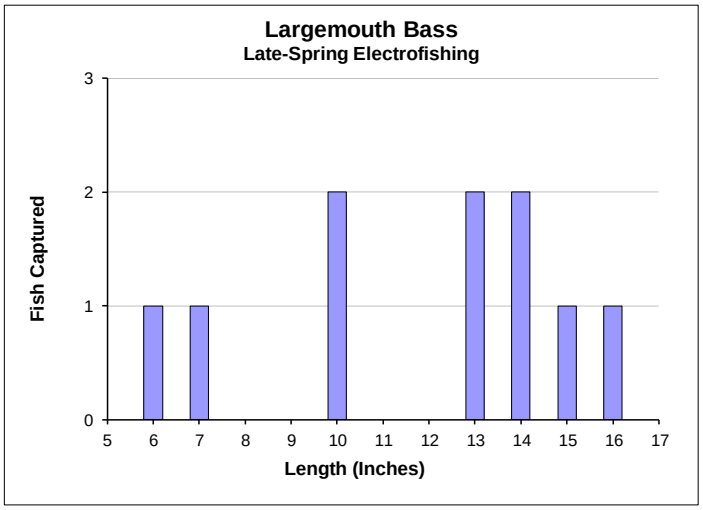


Black crappies offered the best opportunity for anglers wanting to harvest fish in Audie Lake. Early spring fyke nets captured crappies at a rate indicative of high population density. It appears that their growth rate is slow and under intense competition few crappies will live long enough to exceed 9 – 10 inches long. Age estimates would be needed to confirm this suspicion. Over half of the crappies in our sample were of quality size, but only a low proportion is reaching preferred size, probably because predation by pike, muskellunge, and largemouth does not control crappie abundance. Habitat is very favorable for black crappies in Audie Lake with deep holes and plentiful woody structure.

Largemouth Bass

Late Spring Electrofishing

Captured 4.0 per mile or 10 per hour ≥ 8"	
Quality Size ≥ 12"	75%
Legal Size ≥ 14"	50%
Preferred Size ≥ 15"	25%

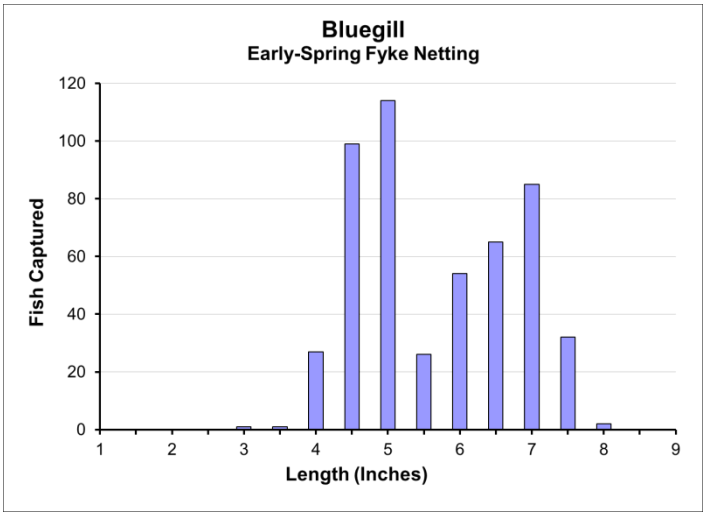


Largemouth bass captured by late spring electrofishing indicated low population abundance. Low abundance could be attributed to mortality and stressors associated with low dissolved oxygen concentrations in winter. Habitat and forage should not be a limiting factor as Audie Lake has woody structure and small panfish in abundance, though largemouth bass generally prefer to eat perch over bluegills and crappies for the same reasons that pike and muskies do. Our sample was too small for us to confidently assess the size distribution of the largemouth bass population.

Bluegill

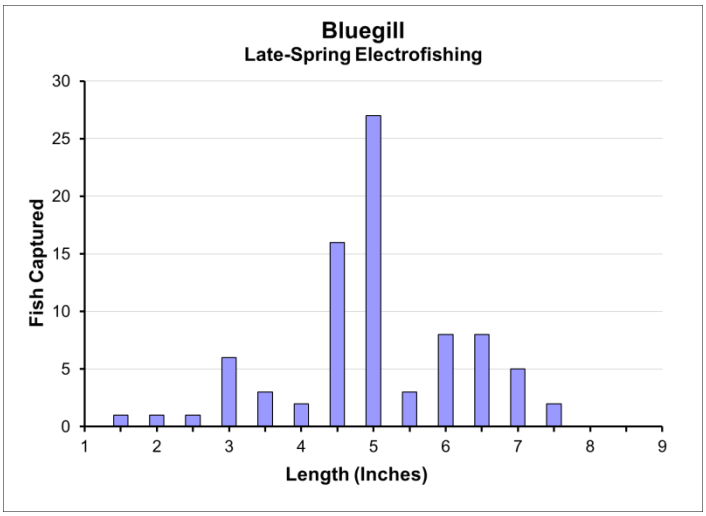
Early Spring Fyke Nets

Captured 63 per net-night ≥ 3"	
Quality Size ≥ 6"	47%
Keeper Size ≥ 7"	24%
Preferred Size ≥ 8"	0.4%



Late Spring Electrofishing

Captured 80 per mile or 200 per hour ≥ 3"	
Quality Size ≥ 6"	29%
Keeper Size ≥ 7"	9%
Preferred Size ≥ 8"	0%



Bluegills were captured in early-spring fyke nets and by late-spring electrofishing at rates that indicated a moderate to high abundance. The size structure of the bluegill population was rated as fair. Without effective predatory control of panfish abundance, high competition among bluegills for food and space may partially explain the absence of preferred-size bluegills. Anglers may be able to sort their catch for a decent meal of 7-inch fish, but the majority of the population was in the 4 – 6 inch range.

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Written by: Chad Leanna—Fishery Technician, January 2015.

Reviewed by: Jeff Scheirer—Fishery Biologist, January 2015.

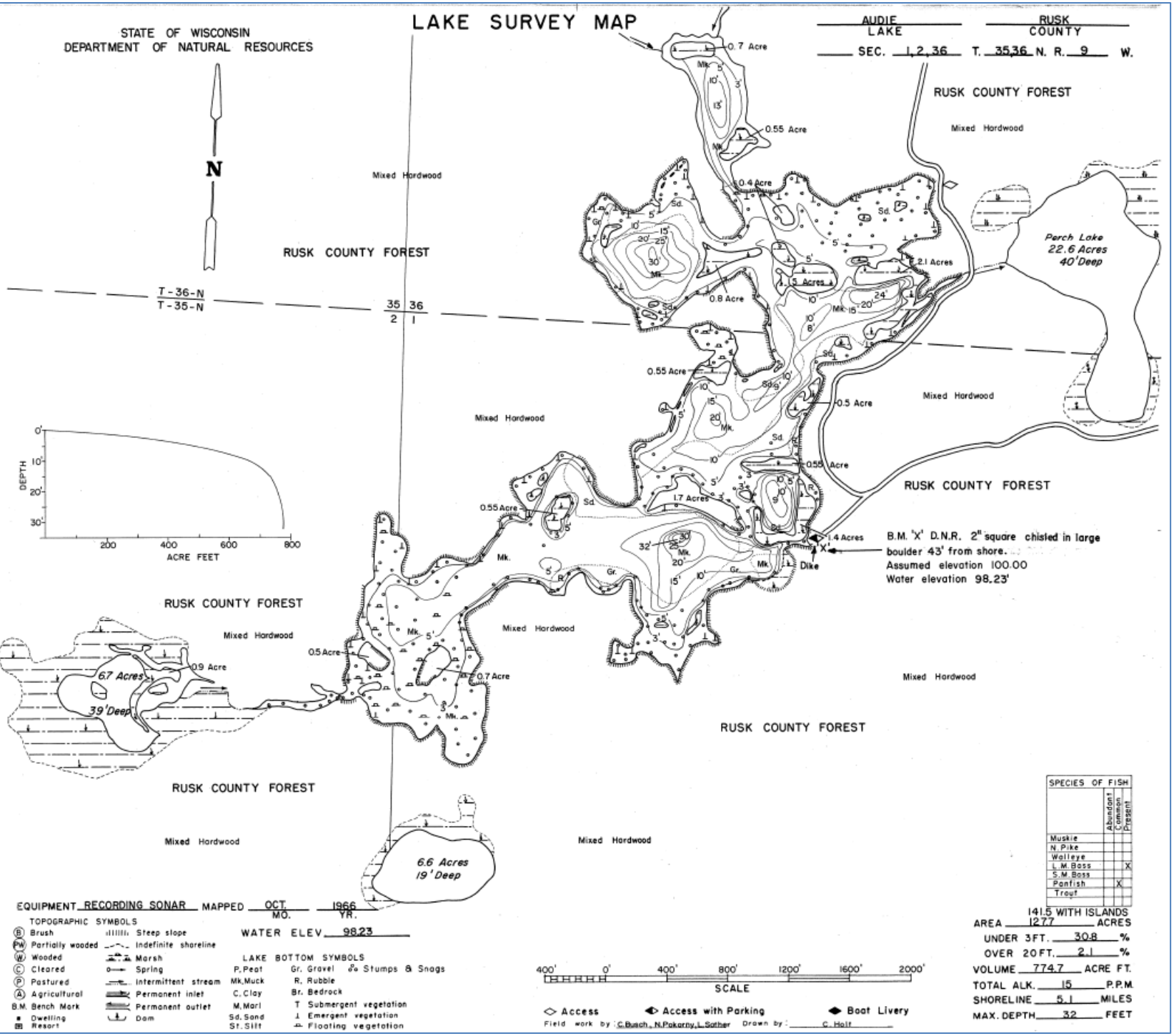
Approved for web posting by: Mike Vogelsang—acting Hayward Field Unit Supervisor, January 2015.

LAKE SURVEY MAP

STATE OF WISCONSIN
DEPARTMENT OF NATURAL RESOURCES

AUDIE LAKE — RUSK COUNTY

SEC. 1, 2, 36 T. 35, 36 N. R. 9 W.



EQUIPMENT RECORDING SONAR MAPPED OCT. (MO.) 1966 (YR.)

WATER ELEV. 98.23

TOPOGRAPHIC SYMBOLS

(B) Brush	Steep slope		
(PW) Partially wooded	Indefinite shoreline		
(W) Wooded	Marsh	LAKE BOTTOM SYMBOLS	
(C) Cleared	Spring	P. Peat	Gr. Gravel
(P) Pastured	Intermittent stream	Mk. Muck	R. Rubble
(A) Agricultural	Permanent inlet	C. Clay	Br. Bedrock
B.M. Bench Mark	Permanent outlet	M. Marl	T Submergent vegetation
Dwelling	Dam	Sd. Sand	⊥ Emergent vegetation
Resort		St. Silt	Floating vegetation

Stumps & Snags

400' 0' 400' 800' 1200' 1600' 2000'
SCALE

◇ Access ◆ Access with Parking ◆ Boat Livery

Field work by: C. Busch, N. Pokorny, L. Sather Drawn by: C. Holt

SPECIES OF FISH	Abundant	Common	Present
Muskie			
N. Pike			
Walleye			
L.M. Bass			X
S.M. Bass			
Panfish		X	
Trout			

141.5 WITH ISLANDS

AREA 127.7 ACRES
UNDER 3FT. 30.8 %
OVER 20FT. 2.1 %
VOLUME 774.7 ACRE FT.
TOTAL ALK. 15 P.P.M.
SHORELINE 5.1 MILES
MAX. DEPTH 32 FEET