



Summary of Fishery Surveys Big Dardis Lake, Price County, 2008-2009 and 2014-2015

WDNR's Fisheries Management Team from Park Falls completed fyke netting and electrofishing surveys in 2008, 2009, 2014, and 2015 to assess the status of important fish populations in Big Dardis Lake. Fyke netting in October yielded useful information on black crappies. Fyke nets deployed again shortly after the 2009 spring thaw targeted walleye, muskellunge, northern pike and yellow perch. A late-spring electrofishing survey documented the abundance and size structure of largemouth bass and bluegill populations. Annual fall electrofishing surveys began in 2014 to evaluate the contributions of natural recruitment and stocking to the walleye and muskellunge 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 October 14th, 2008 with water temperature 55°F, we set four fyke nets for one night (4 net-nights) to intercept fall movements of black crappies. On April 25th, 2009 we set four fyke nets at locations chosen to intercept early-spring spawning species and fished them overnight for one night (4 net-nights) when water temperature averaged 49°F. Comparing measured water temperature with the optimal spawning temperature range of the targeted species, our spring fyke netting seemed well-timed to represent muskellunge, walleye and yellow perch population status. With water temperatures at 61°F our May 20th electrofishing survey should have coincided with the pre-spawn activities of largemouth bass and bluegills. We sampled the entire 2.94 miles of shoreline in 1.68 hours, including 1.39 miles sub-sampled for all species in 0.80 hour. In our fall recruitment surveys we completed entire shoreline electrofishing circuits, sampling 2.76 miles in 1.02 hours on September 18, 2014 and 2.67 miles in 1.3 hours on September 20, 2015. We dipped gamefish of all sizes while giving priority to capturing juveniles. In fall 2014 water temperature (58°F) was within the optimal range (50 – 60°F) for juvenile assessments. By contrast, water temperature was 67.5°F in our fall 2015 survey, remaining above the optimal range through September in regional surveys.

Habitat Characteristics

Big Dardis Lake is a 144-acre drainage lake located about 5 miles east of Phillips, WI. The average depth is 11 feet, and maximum depth is 23 feet. The water is lightly stained (Secchi depth = 7 feet) and the substrate is 60% sand, 25% muck, 10% rock, and 5% gravel, supporting a moderate density of submergent and emergent vegetation. An unnamed stream discharges about 0.5 cubic feet per second from the northeast corner to Hoffman Creek. The surrounding shoreland is 16% bog, and the rest is mixed hardwoods and pine. Worcester Township maintains a public boat landing near the outlet.

Summary of Results

Largemouth bass was the dominant predator, and bluegills were the most common panfish. We documented 15 fish species in our fall and spring surveys. A variety of forage was present, including golden shiners, common shiners, and white suckers. In five combined samples we captured 16 northern pike 14-31 inches long, hinting toward low abundance that should foster satisfactory growth and size structure in the pike population.

Walleye



Early Spring 2009 Fyke Nets

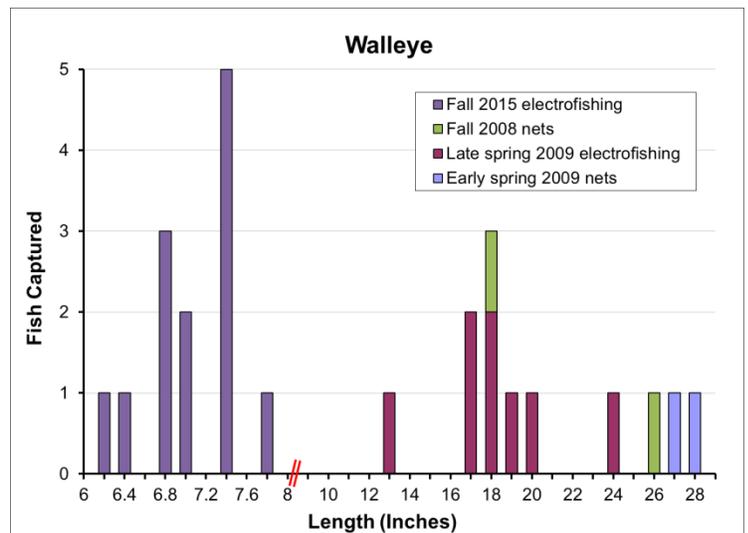
| | |
|--|------|
| Captured 0.5 per net-night $\geq 10''$ | |
| Quality Size $\geq 15''$ | 100% |
| Preferred Size $\geq 20''$ | 100% |
| Memorable Size $\geq 25''$ | 100% |

Late Spring 2009 Electrofishing

| | |
|---|-----|
| Captured 2.7 per mile or 4.8 per hour $\geq 10''$ | |
| Quality Size $\geq 15''$ | 88% |
| Preferred Size $\geq 20''$ | 25% |
| Memorable Size $\geq 25''$ | 0% |

Fall Electrofishing

| | Age-0 fish/mile (fingerlings) | Age-1 fish/mile (yearlings) |
|------|-------------------------------|-----------------------------|
| 2014 | 0 | 0 |
| 2015 | 2.6 | 2.2 |



Because late spring electrofishing incidentally captured four times as many walleyes as fyke nets set specifically for them, it is evident that our early spring 2009 netting survey missed the peak walleye spawning period and did not effectively sample the adult walleye population. Walleyes may have spawned before we set our nets, or spawned in locations where we did not have nets set. Nonetheless, our samples collectively reflect low population abundance. Walleye recruitment is maintained primarily by stocking, and the adults captured in our 2008 and 2009 surveys were probably the survivors of walleyes stocked at a rate of 50 small fingerlings per acre in 1999 and 2001 and 35 small fingerlings per acre in 2007. Since completing the 2008 and 2009 surveys, WDNR stocked about 35 small fingerlings per acre in 2009, 2011, and 2013 and large fingerlings at an experimental rate of 20 per acre in 2014. Our 2014 recruitment survey, completed before walleye were stocked that year, revealed no evidence that Big Dardis Lake produced a walleye cohort in 2013 or 2014. However, electrofishing in fall 2015 documented both in-lake production of a 2015 year class (6.2 – 7.0 inches) as well as survival and growth of stocked large fingerlings. Age estimation using scales from six walleyes 7.0 – 7.8 inches showed that yearlings gained on average 1.2 inches since they were stocked in October 2014. Stocking supported by the Wisconsin Walleye Initiative should continue in even-numbered years under the

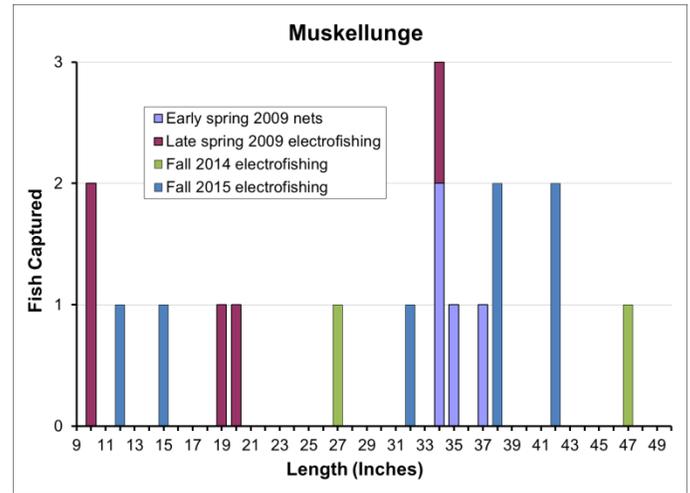
Wisconsin Walleye Initiative, and fall juvenile assessments should continue annually. We will assess our strategy and stocking rate in surveys next scheduled in 2017.

Muskellunge



Early Spring Fyke Nets

| | | |
|----------------|-------------------|-------|
| Captured | 1.0 per net-night | ≥ 20" |
| Quality Size | ≥ 30" | 100% |
| Preferred Size | ≥ 38" | 0% |
| Memorable Size | ≥ 42" | 0% |



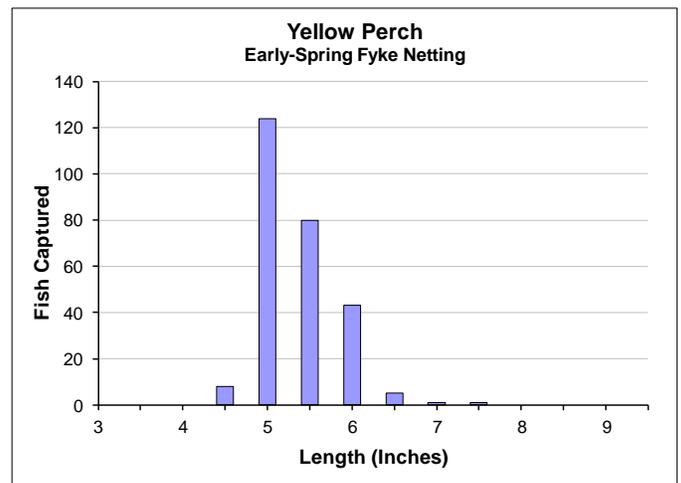
Our catch rate of muskellunge in early spring fyke nets was near the statewide average rate of 0.9 adults per net-night, pointing toward moderate population abundance. Because our short survey yielded a small sample, it is difficult to assess size structure based on spring fyke netting alone. By combining targeted catch in spring nets and incidental catch from spring and fall electrofishing we can piece together a composite length distribution, representing multiple size and age classes and having adequate survival and growth rates that allow individuals to reach 47 inches long. Muskies stocked at 1 – 4 large fingerling/acre in 1990 – 1993, 1996, and 1998 and 0.5 large fingerling/acre biennially since 2001 maintain moderate population abundance. PIT tags injected between the pelvic fins of juveniles and into the cheek of adults captured in 2015 may provide insight into growth and survival rates, if tagged fish are recaptured in subsequent surveys.

Yellow Perch



Early Spring Fyke Nets

| | | |
|----------------|-------------------|------|
| Captured | 120 per net-night | ≥ 5" |
| Quality Size | ≥ 8" | 0% |
| Preferred Size | ≥ 10" | 0% |
| Memorable Size | ≥ 12" | 0% |



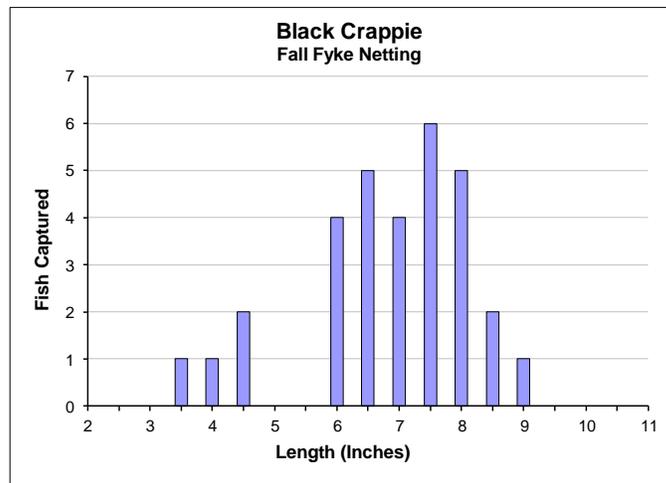
Our high catch rate of 5- to 6-inch perch in early spring nets indicates that small yellow perch were very abundant in Big Dardis Lake. Size structure was considered very poor with no quality-size perch ≥ 8 inches long. Small perch offer no angling opportunity, but they serve as important forage for gamefish.

Black Crappie



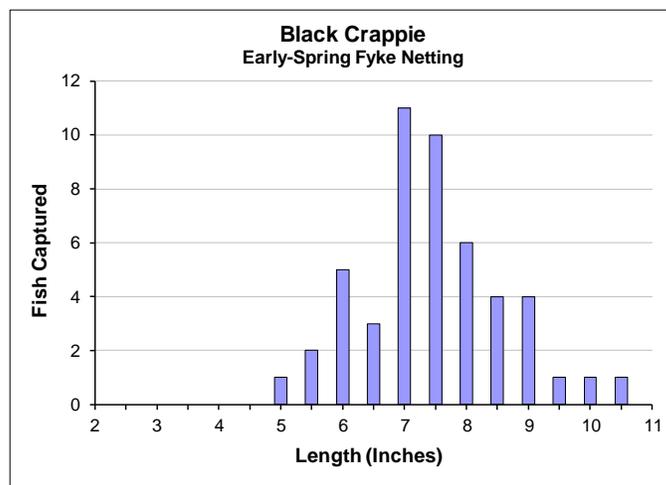
Fall Fyke Nets

| | |
|---------------------------------------|-----|
| Captured 7.0 per net-night ≥ 5 " | |
| Quality Size ≥ 8 " | 30% |
| Preferred Size ≥ 10 " | 0% |
| Memorable Size ≥ 12 " | 0% |



Early Spring Fyke Nets

| | |
|--------------------------------------|-----|
| Captured 12 per net-night ≥ 5 " | |
| Quality Size ≥ 8 " | 35% |
| Preferred Size ≥ 10 " | 4% |
| Memorable Size ≥ 12 " | 0% |



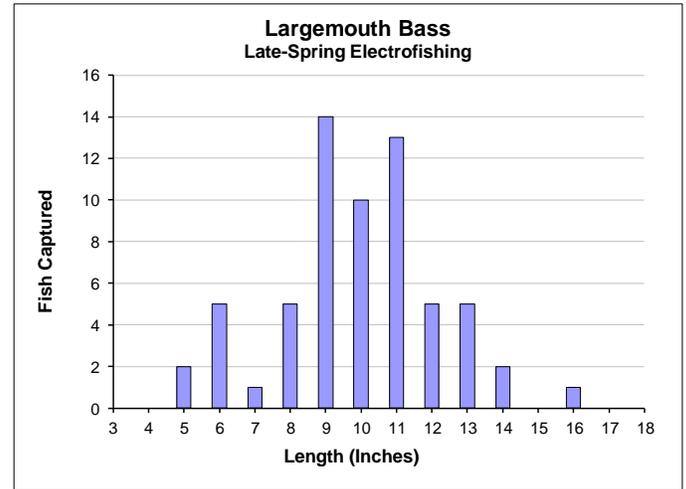
Black crappies captured in fall and early spring fyke nets indicated moderate population abundance and fair size structure. Age estimation using scales showed crappies have slower-than-average growth rates, reaching 7.6 inches after 4 years of growth (range 7.1 – 8.2 inches, n=11) and 8.8 inches after 8 years of growth (range 8.7 – 8.9, n=3) compared to the regional average of 8.3 inches and 11.3 inches at those ages. Although growth is slow, at least some crappies survive long enough to reach preferred size (≥ 10 inches). Based on their lengths and estimated ages, black crappies have produced successive year classes over 7 – 8 years, and we found no evidence of sporadic recruitment that commonly occurs in crappie populations. Low predatory pressure from walleyes in low abundance is probably the reason why crappies consistently produce year classes and grow slowly.

Largemouth Bass



Late Spring Electrofishing

| | |
|--|-----|
| Captured 19 per mile or 33 per hour $\geq 8''$ | |
| Quality Size $\geq 12''$ | 24% |
| Legal Size $\geq 14''$ | 5% |
| Preferred Size $\geq 15''$ | 2% |



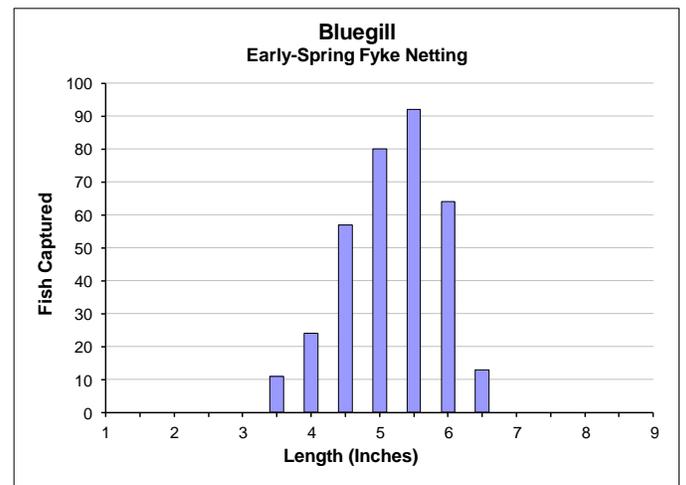
Our capture rate of largemouth bass by late-spring electrofishing indicates moderate population abundance. Despite relatively low density, size structure was poor with only 5% of the bass 8 inches or longer attaining legal size for harvest (≥ 14 inches). Although we did not take any structures for age estimation, we suspect that largemouth bass grow slowly and many die of natural causes before reaching legal size.

Bluegill



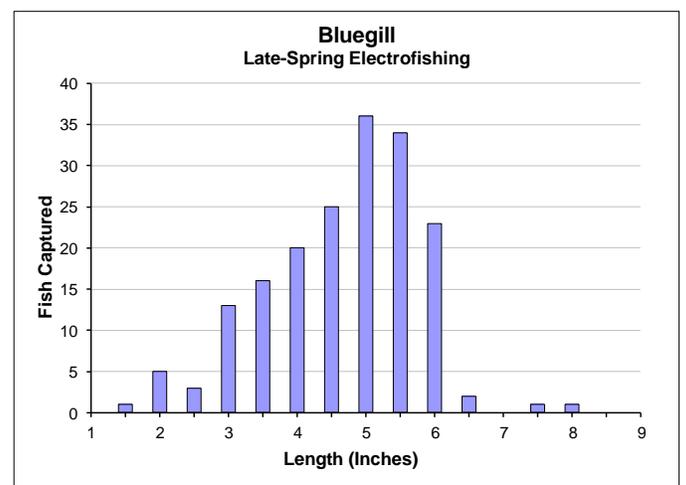
Early Spring Fyke Nets

| | |
|--------------------------------------|-----|
| Captured 85 per net-night $\geq 3''$ | |
| Quality Size $\geq 6''$ | 23% |
| Keeper Size $\geq 7''$ | 0% |
| Preferred Size $\geq 8''$ | 0% |



Late Spring Electrofishing

| | |
|--|------|
| Captured 123 per mile or 214 per hour $\geq 3''$ | |
| Quality Size $\geq 6''$ | 16% |
| Keeper Size $\geq 7''$ | 1% |
| Preferred Size $\geq 8''$ | 0.6% |



The electrofishing capture rate and length distribution of bluegills in spring 2009 represent a population in moderate abundance with poor size structure. Only 1% of bluegills ≥ 3 inches attained “keeper size” (≥ 7 inches). Early spring fyke nets portrayed a similar population status. Though our pooled sample does not reflect the various growth patterns exhibited between sexes and among reproductive strategies, age analysis using scales showed that bluegills grew to 5.5 inches in 4 years, nearly matching the regional average length at that age (5.6 inches). However, older bluegills in Big Dardis Lake grew substantially slower, reaching on average 6.1 inches at age 6 (range 6.0 – 6.4, n=7), compared to 6.9 inches region-wide. Continued stocking of large walleye fingerlings may increase predatory pressure sufficiently to control bluegill recruitment, eventually reducing bluegill abundance and food competition, improving their growth rate, and increasing the proportion of keeper- and preferred-size fish.

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

Reviewed and edited by: Jeff Scheirer—Fishery Biologist, December 2015.

Approved for web posting by: Mike Vogelsang—Northern Administrative District Supervisor, December, 2015.

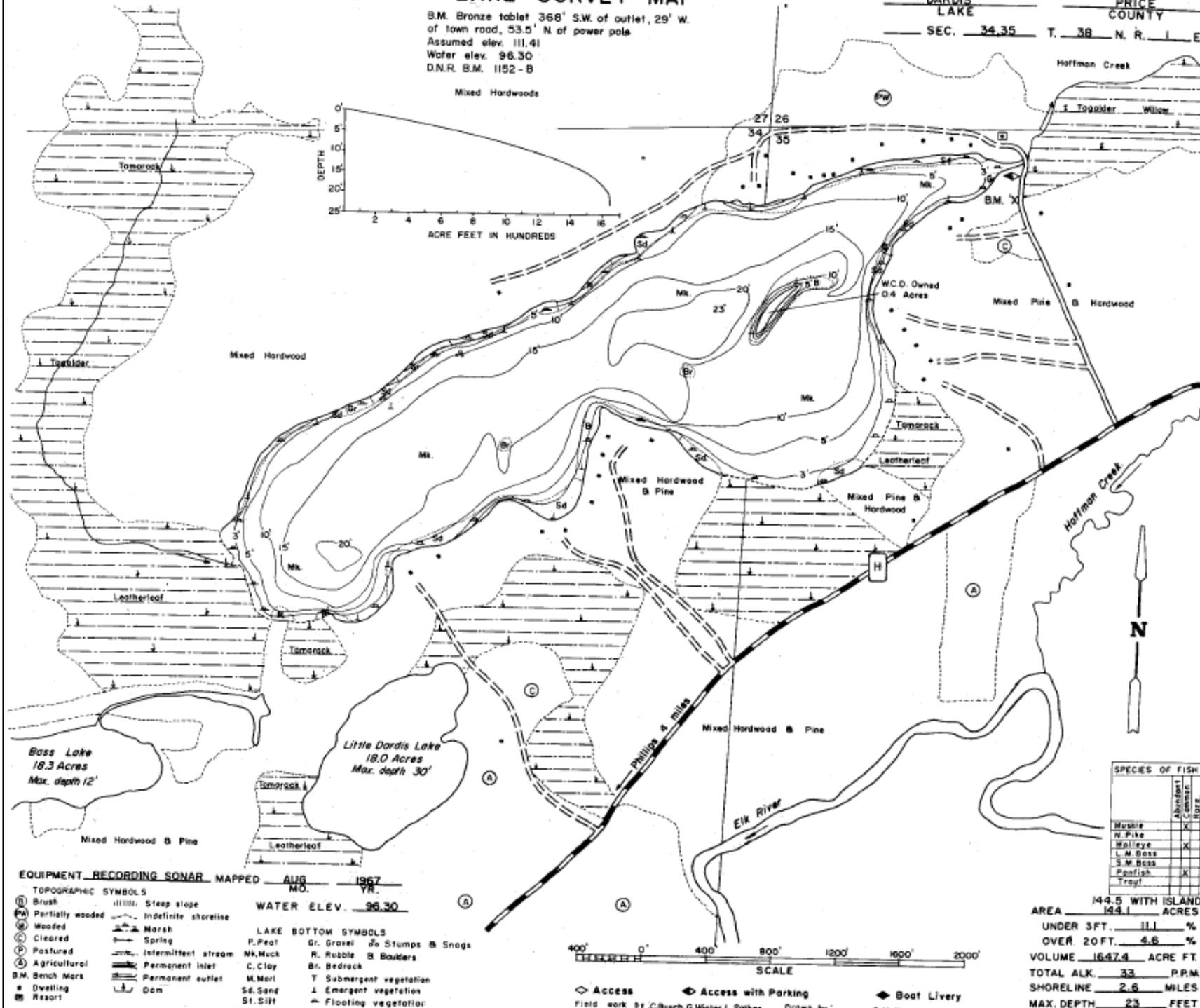
LAKE SURVEY MAP

B.M. Bronze tablet 368' S.W. of outlet, 29' W. of town road, 53.5' N. of power pole
 Assumed elev. 111.41
 Water elev. 96.30
 D.N.R. B.M. 1152-B

DARDIS LAKE

PRICE COUNTY

SEC. 34.35 T. 38 N. R. 1 E.



EQUIPMENT RECORDING SONAR MAPPED AUG. 1967
 MO. YR.
 WATER ELEV. 96.30

- TOPOGRAPHIC SYMBOLS**
- ① Brush
 - ⊙ Partially wooded
 - ⊙ Wooded
 - ⊙ Cleared
 - ⊙ Pastured
 - ⊙ Agricultural
 - B.M. Bench Mark
 - Dwelling
 - Resort
 - ||||| Steep slope
 - Indefinite shoreline
 - ⊙ Marsh
 - ⊙ Spring
 - ⊙ Intermittent stream
 - ⊙ Permanent inlet
 - ⊙ Permanent outlet
 - ⊙ Dam
- LAKE BOTTOM SYMBOLS**
- P. Peat
 - Mk. Muck
 - C. Clay
 - M. Marl
 - Sd. Sand
 - St. Silt
 - Gr. Gravel
 - R. Rubble
 - Bt. Bedrock
 - ⊙ Stumps & Snags
 - ⊙ Boulders
 - ⊙ Submergent vegetation
 - ⊙ Emergent vegetation
 - ⊙ Floating vegetation

SPECIES OF FISH

| Species | Abundant | Common | Rare |
|------------|----------|--------|------|
| Muskie | | | X |
| N. Pike | | | X |
| Walleye | | | X |
| L. W. Bass | | | X |
| S. W. Bass | | | X |
| Perch | | | X |
| Trotl | | | X |

AREA 144.5 WITH ISLAND
 144.1 ACRES
 UNDER 3FT. 11.1 %
 OVER 20FT. 4.6 %
 VOLUME 1647.4 ACRE FT.
 TOTAL ALK. 33 P.P.M.
 SHORELINE 2.6 MILES
 MAX. DEPTH 23 FEET

◇ Access ◀ Access with Parking ▶ Boat Livery
 Field work by C. Borch, G. Water, L. Sopher. Drawn by: C. Borch