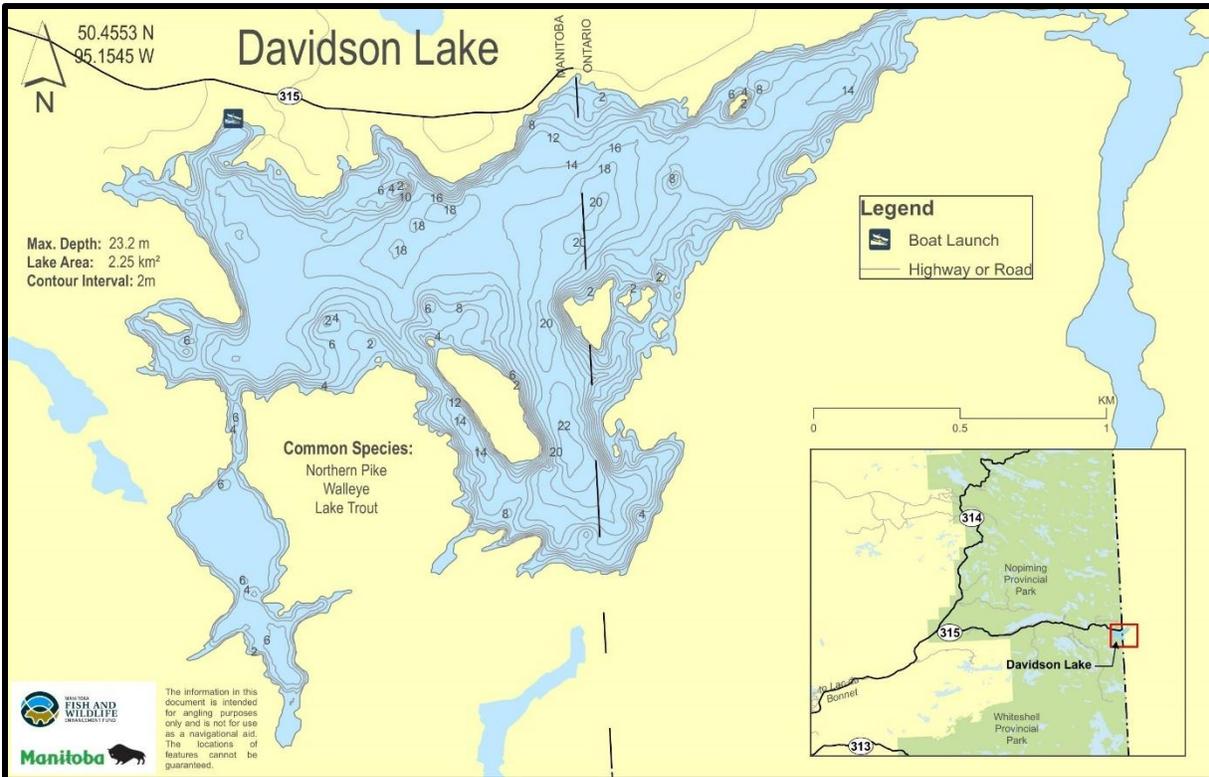


Davidson Lake, Nopiming Provincial Park, Manitoba

2024 Fisheries Assessment Report



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Introduction

Davidson Lake is located along the Manitoba and Ontario border east of Bird Lake in Nopiming Provincial Park (Figure 1). It is approximately 5 km long with a surface area of 2.25 km², an average depth of 9.1 m, and a maximum depth of 23.2 m. Davidson Lake can be accessed via Provincial Road 315 or by portage from Marijane Lake or Reynar Lake, Ontario. The lake is often used as the drop-in site for the popular Tulabi Falls canoe loop. Davidson Lake has been stocked twice with Walleye (*Sander vitreus*) and Lake Trout (*Salvelinus namaycush*) since 2000 (see Appendices for a complete stocking history) and also contains Northern Pike (*Esox lucius*), Smallmouth Bass (*Micropterus dolomieu*), and White Suckers (*Catostomus commersonii*). Trophy Northern Pike and Walleye have been documented in the lake, but Master Angler submissions are pooled with submissions from another lake in northwest Manitoba by the same name.

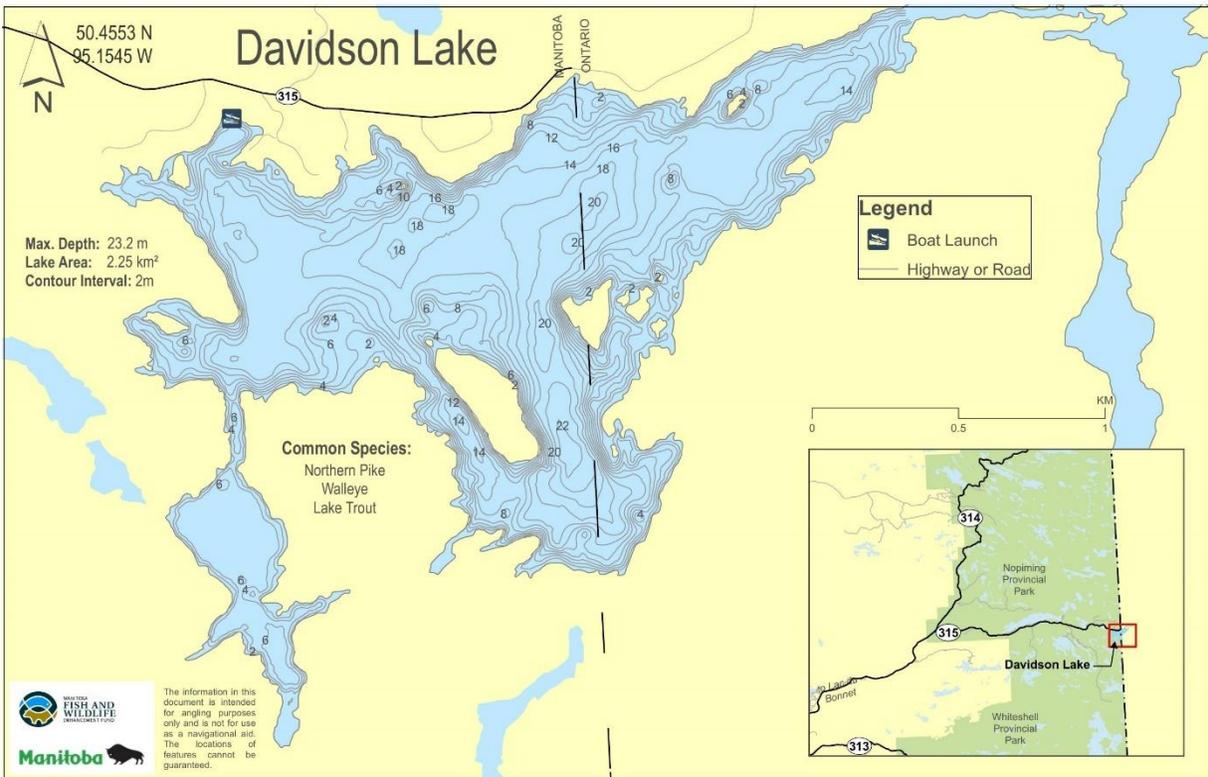


Figure 1. Bathymetry and location of Davidson Lake, Manitoba.

Methods

Summer Gillnet Survey, 2021

Davidson Lake was surveyed by University of Winnipeg graduate students between May 11 and June 11, 2021, using the Province of Ontario's Summer Profundal index Netting (SPIN) protocol (Sandstrom and Lester 2009). Fish were captured using 64 m long by 1.8 m deep monofilament gillnets consisting of 8 m panels of 57 mm, 64 mm, 70 mm, 76 mm, 89 mm, 102 mm, 114 mm, 127 mm mesh arranged in random order. Nets were set below the thermocline depth, which was determined using a dissolved oxygen (DO) and temperature depth profile collected in-field with a YSI Pro20 meter (YSI Inc., Yellow Springs, OH, USA). SPIN nets were set on the lake bottom at two-hour intervals.

Fish were measured for fork length, total length, and weight. Lake Trout, Lake Whitefish, and Northern Pike were sacrificed to determine sex and maturity, and otoliths were collected from Lake Trout for ageing.

Fall Electrofishing and Trap Net Survey, 2022

Davidson Lake was surveyed by a third-party consultant from October 5 to October 6, 2022, as part of the province's non-lethal sampling program (NLSP). Fish were captured with an electrofishing boat operated after dusk across eight 100 m electrofishing transects (total electrofishing time 32.37 minutes). Electrofishing efforts were supplemented with three 3.45 m long by 1.83 m wide by 1.83 m deep trap nets with a 45.7 m leader wall (64 mm polypropylene mesh), which were set perpendicular to shore in the evening and pulled the following afternoon.

All fish were measured for fork length and weight, and non-lethal ageing structures were collected from Walleye, Northern Pike, and Smallmouth Bass. All fish were released after processing.

Results

In total, 142 fish were captured across 26 nets during the 2021 gillnet survey, and 168 fish were caught during the 2022 electrofishing and trap net survey. Lake Whitefish were the most prevalent species in the 2021 survey with Smallmouth Bass, Walleye, White Suckers, and Northern Pike rounding out the remaining catch (Figure 3). Of the five Eastern Region waterbodies sampled using SPIN protocols in 2021, Davidson Lake ranked last in Lake Trout density (0.04 fish/net) and second-last in Lake Whitefish density (3.92 fish/net).

Smallmouth Bass and Blacknose Shiners (*Notropis heterolepis*) dominated the 2022 electrofishing and trap net survey, with small numbers of Yellow Perch, Pumpkinseeds (*Lepomis gibbosus*), Lake Whitefish, Burbot (*Lota lota*) and Johnny Darters (*Etheostoma nigrum*) also being caught. Of the 11 Nopiming waterbodies sampled during the 2022 NLSP sampling program, Davidson Lake had the highest density of Smallmouth Bass caught while electrofishing (2.63 fish/minute).

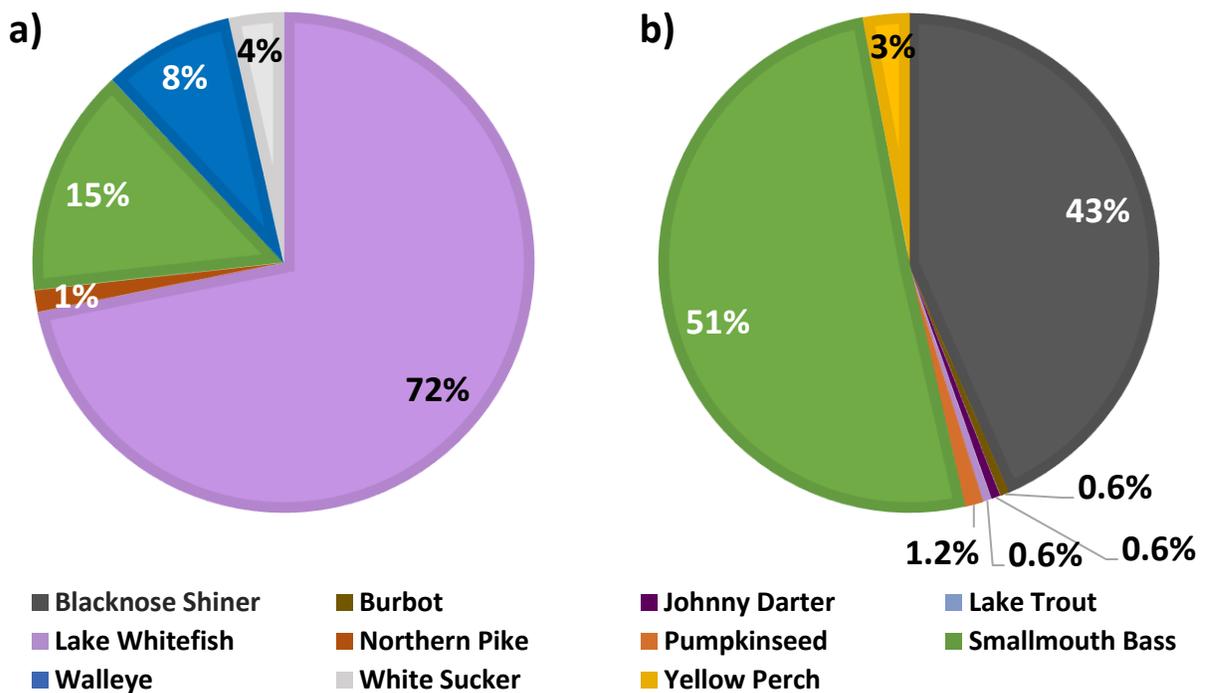


Figure 2. Composition of fish species caught in Davidson Lake during **a)** a 2021 gillnet survey and **b)** a 2022 electrofishing and trap net survey.

Lake Trout

A single 44.7 cm long Lake Trout was caught during the 2021 gillnet survey that was determined to be 6 years old. Weight, sex, and maturity data were not recorded for this individual.

Lake Whitefish

A total of 102 Lake Whitefish were caught during the 2021 gillnet survey at depths between 4.5 m and 20.5 m (average depth 12.1 m). Fish averaged 49.9 cm long (total length; range 28.1 cm to 57.0 cm; Figure 3) and 1227 g (range 672 g to 1765 g). Body condition was average to above average relative to other whitefish populations in North America (Rennie and Verdon 2008; Figure 4). Two Lake Whitefish caught during the survey would have qualified for Master Angler status. All but two fish were sexually mature.

A single Lake Whitefish was caught in a trap net during the 2022 survey that was 27.0 cm long (fork length), 242 g, and 3 years old. Body condition was comparable to the fish sampled in 2021.

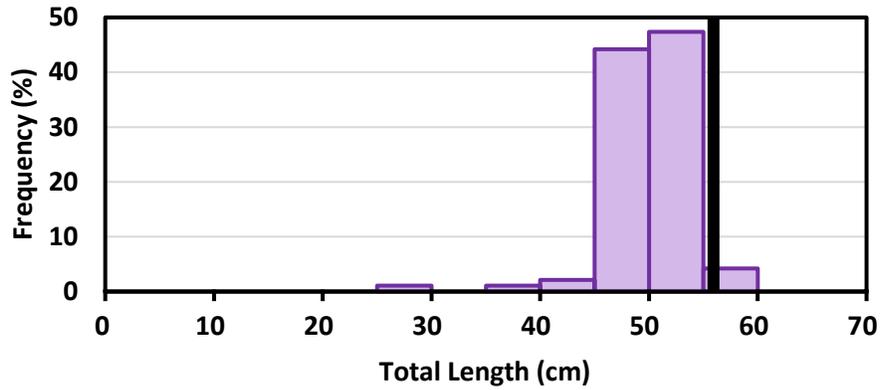


Figure 3. Size class distributions of Lake Whitefish caught in Davidson Lake in 2021. The vertical black bar denotes the benchmark for a trophy fish under Travel Manitoba’s Master Angler program.

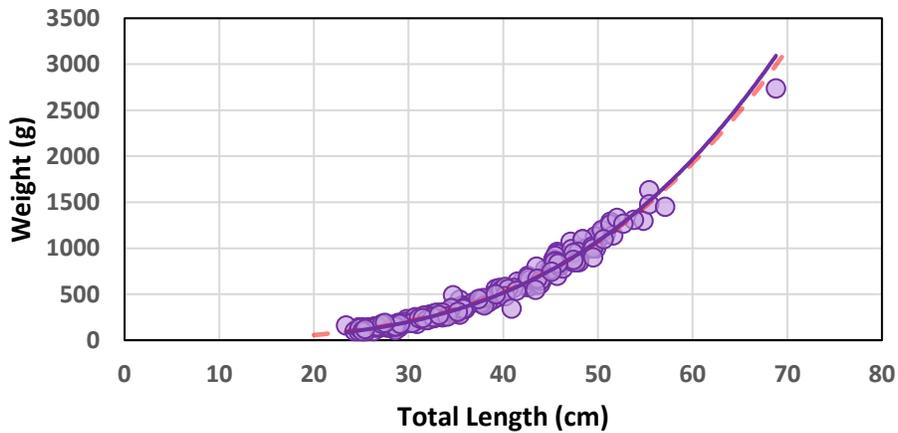


Figure 4. Weight-at-length of Lake Whitefish caught in Davidson Lake in 2021. The red dashed line represents the minimum expected weight of a healthy Lake Whitefish using a standard weight (W_s) equation (Rennie and Verdon 2008).

Walleye

Twelve Walleye were caught during the 2021 gillnet survey at depths ranging from 2.9 m to 20.5 m (average depth 7.0 m), with an average total length of 50.9 cm (range 43.0 cm to 63.6 cm; Figure 5) and a weight of 1014 g (range 662 g to 1328 g). Body condition was acceptable but unremarkable (Figure 6). Three of the fish sampled (25%) would have been eligible for harvest.

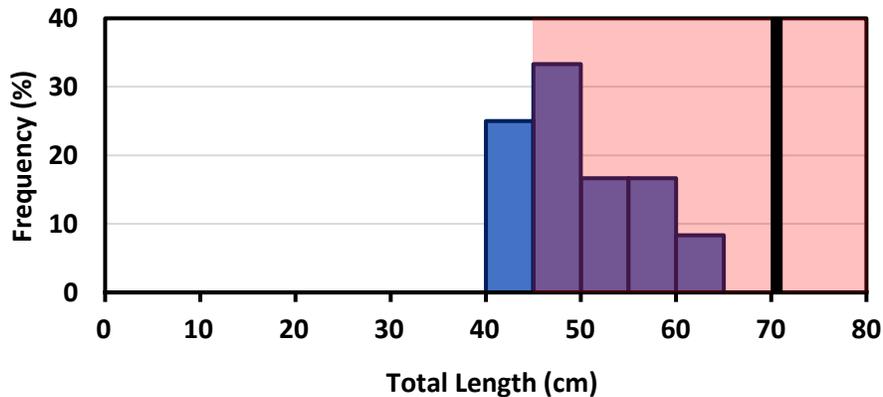


Figure 5. Size class distributions of Walleye caught in Davidson Lake in 2021. The vertical black bar denotes the benchmark for a trophy fish under Travel Manitoba's Master Angler program. Pink shading represents fish over 45 cm, which are protected from harvest as of 2024.

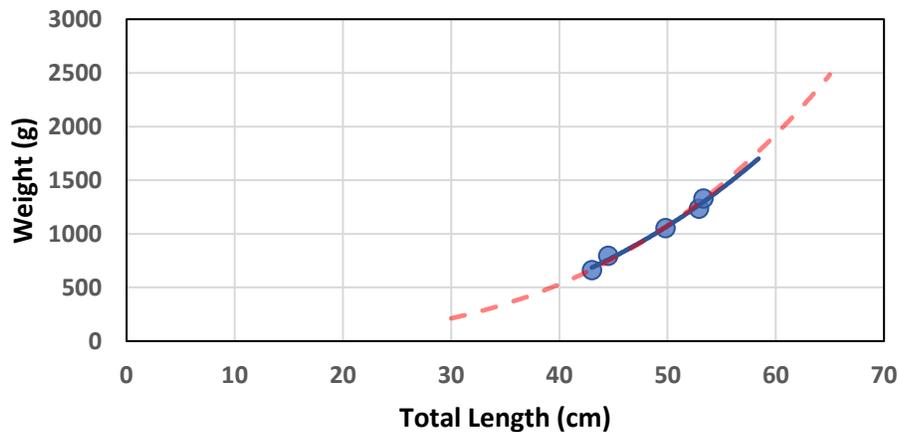


Figure 6. Weight-at-length of Walleye caught in Davidson Lake in 2021. The red dashed line represents the minimum expected weight of a healthy Walleye using a standard weight (W_s) equation (Murphy et al. 2000).

Smallmouth Bass

Twenty-one Smallmouth Bass were captured during the 2021 gillnet survey at depths of 4.3 m to 7.0 m (average depth 4.8 m) and averaged 32.6 cm in total length (range 21.4 cm to 40.6 cm; Figure 7). Weights were not recorded for this species during the 2021 survey.

Eighty-five Smallmouth Bass were caught during 2022 electrofishing efforts and consisted mostly of young-of-year or 1 year old fish. Fish averaged 11.7 cm in length (range 5.5 cm to 39.3 cm; Figure 7). The average body condition was healthy but low compared to other North American populations (Kolander *et al.* 1993; Figure 8) and may have fallen below a healthy threshold had fish been sampled in early summer. Growth rates were consistent with other Smallmouth Bass populations in Nopiming Provincial Park (Figure 9).

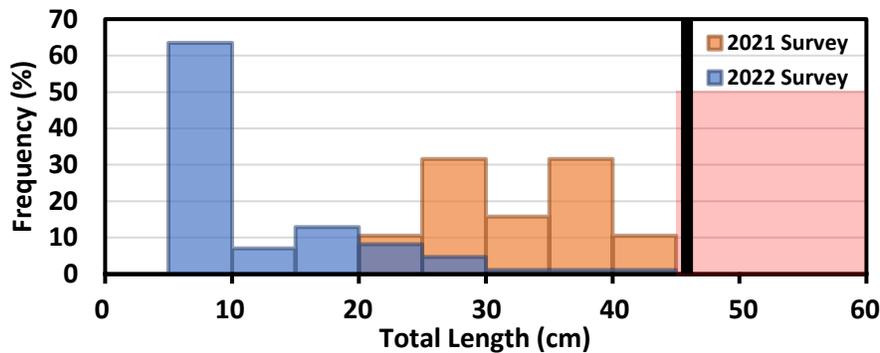


Figure 7. Size class distributions of Smallmouth Bass caught in Davidson Lake in the summer of 2021 and the fall of 2022. The vertical black bar denotes the benchmark for a trophy fish under Travel Manitoba’s Master Angler program. Pink shading represents fish over 45 cm, which are protected from harvest as of 2024.

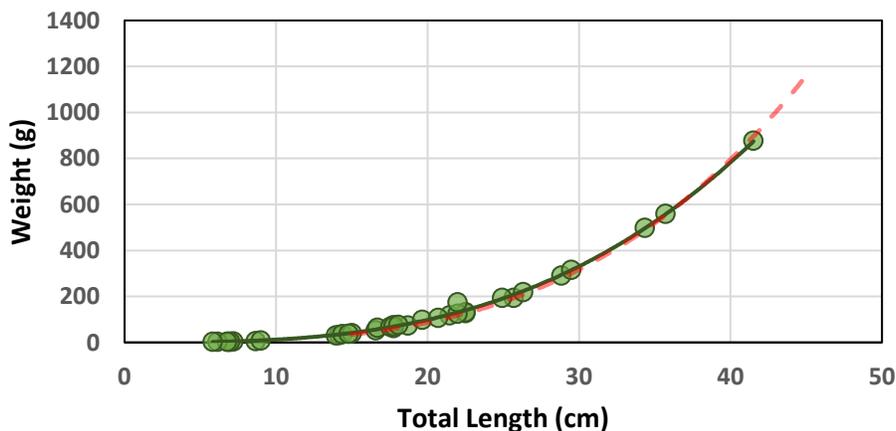


Figure 8. Weight-at-length of Smallmouth Bass caught in Davidson Lake in the fall of 2022. The red dashed line represents the minimum expected weight of a healthy Smallmouth Bass using a standard weight (W_s) equation (Kolander *et al.* 1993).

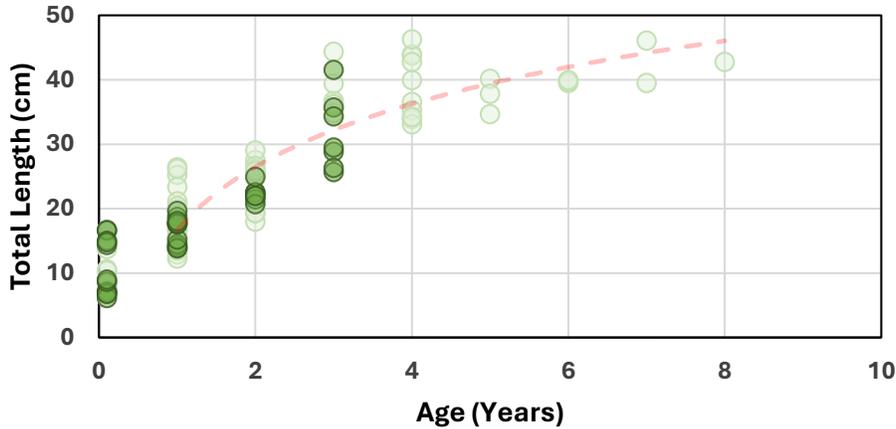


Figure 9. Length-at-age of Smallmouth Bass caught in Davidson Lake in the fall of 2022. The red dashed line represents the projected length-at-age of Smallmouth Bass across Nopiming Provincial Park (n = 10 waterbodies).

Other Species

Two Northern Pike (68.6 cm, 1485 g; 70.0 cm, no weight) were captured during the 2021 survey at an unspecified depth. Five White Suckers were also caught (average depth 7.4 m; range 4.3 m to 11.9 m), with an average total length of 48.6 cm (range 42.1 cm to 59.1 cm); two fish would have qualified for Master Angler status.

Two Pumpkinseeds (13.1 cm, 46 g; 11.8 cm, 37 g) were captured during 2022 electrofishing efforts. Pumpkinseeds were not previously known to occur in Davidson Lake and may be a recent introduction.

Conclusion

Davidson Lake is a diverse fishery with a variety of nearshore and offshore angling opportunities. Smallmouth Bass are abundant, and the Walleye population—while sparse—holds trophy potential. There are also good numbers of Lake Whitefish with some fish attaining Master Angler size. Lake Trout persist in Davidson Lake in small numbers, but targetability is limited and natural recruitment status is unknown.

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Appendix

Appendix A. Complete Provincial stocking history for Davidson Lake, Manitoba as of 2024.

<i>Year</i>	<i>Species</i>	<i>Number</i>	<i>Size</i>
2023	Walleye	300,000	Fry
2021	Walleye	300,000	Fry
2017	Lake Trout	9,500	18+ cm
2001	Lake Trout	50,000	Fingerling
1999	Lake Trout	15,000	12-15 cm
1997	Arctic Char	12,000	12-15 cm
1997	Arctic Char	4,000	Fry
1997	Sparr	5,000	12-15 cm
1997	Sparr	15,000	Fry
1996	Walleye	512,000	Fry
1995	Walleye	500,000	Fry
1994	Walleye	500,000	Fry
1993	Walleye	500,000	Fry
1992	Walleye	500,000	Fry
1991	Brown Trout	10,000	>1 year
1990	Brown Trout	300	>2 years
1990	Brown Trout	12,800	>1 year
1990	Lake Trout	270	>1 year
1985	Lake Trout	58,620	>1 year
1983	Rainbow Trout	32,829	>1 year
1982	Splake	36,000	Fingerling
1981	Splake	20,000	Fingerling
1968	Splake	3,000	>1 year
1967	Splake	3,000	>1 year
1966	Splake	3,000	>1 year
1963	Lake Trout	55,000	Fingerling