

Alberta Conservation Association
2022/23 Project Summary Report

Project Name: Fish Stocking Evaluation

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Partnerships

Alberta Environment and Protected Areas

City of St. Albert

Key Findings

- Estimated summer angler use was 185 hours/ha at Shell True North Pond, 375 hours/ha at County Sportsplex Pond, and 611 hours/ha at Lacombe Park Pond.
- In-person angler interview data reported higher catch rates, higher estimated fish harvest, and fewer zero catches than online reported angler data.
- Angler use of fall-stocked fish at Mirror Reservoir (2 hours/ha) and Windsor Lake (1 hour/ha) was extremely low.
- Overwintering of fish was poor in Windsor Lake and did not occur in Mirror Reservoir.

Abstract

Evaluation of our Fish Stocking Project suggests that poor water quality (high temperatures and low dissolved oxygen) and avian predation at some of our ponds may limit their ability to support stocked trout throughout the summer months. In 2022/23, we estimated summer angler use was 185 hours/ha at Shell True North Pond, 375 hours/ha at County Sportsplex, and 611 hours/ha at Lacombe Park Pond, indicating that these ponds are receiving low to moderate angler use. We used a citizen science approach to collect angler catch and trip length data at

Lacombe Park Pond and found in-person data reported more fish per hour (1.40 fish per hour) and fewer zero catches than online reported data (0.24 fish per hour). Further evaluation of citizen science data collection is required to evaluate the discrepancy between in-person and angler submitted data. Mirror Reservoir and Windsor Lake both experience avian predation, typically peaking in spring. To mitigate this, we stocked additional trout in the fall of 2021 creating late-season angling opportunities. We evaluated these opportunities by estimating angler use from fall to end of March. We found angler use to be very low at 1 and 2 hours/ha at Windsor Lake and Mirror Reservoir, respectively. All brown trout captured at Mirror Reservoir were from spring 2023 stocking, indicating fish stocked in the fall did not overwinter. Similarly, overwintering appears to be poor in Windsor Lake as very few 2022 fall-stocked fish were captured in the spring of 2023.

Introduction

The goal of Alberta Conservation Association's (ACA) Fish Stocking Project is to provide increased angling opportunities to Albertans by stocking catchable-sized trout in small put-and-take ponds. Our evaluations suggest that some ponds may not support stocked trout throughout the summer months due to poor water quality (high temperatures and low dissolved oxygen) and avian predation. As a continuation of our evaluations, in 2022/23, we estimated summer angler use at Lacombe Park Pond (LPP), County Sportsplex Pond, and Shell True North Pond; we used a citizen science approach to collect angler data at LPP. Mirror Reservoir and Windsor Lake both experience avian predation that peaks in spring. To mitigate this avian predation, we stocked additional trout into both waterbodies in the fall of 2021 to create late season angling opportunities, and monitored angler use from fall 2021 through spring 2022. We also conducted surveys to determine if fish stocked in the fall overwintered in these waterbodies.

Methods

We used trail cameras (1–3 per lake) to collect instantaneous angler count data (vanPoorten et al. 2015), and bootstrapping methods to estimate angler use at study lakes. Between May 4 and August 24, 2022, angler trip length and catch data was collected opportunistically at LPP by in-person interviews conducted by City of St. Albert staff, and from online data submission. Anglers were informed of the online data submission request through signage at LPP.

Between May 16–18, 2022, we used overnight sets of standard fyke nets (n=4), and minnow traps (n=3) to determine abundance and size distribution of fish in Mirror Reservoir and Windsor Lake.

Results

Estimated summer angler use ranged from 126 hour/ha at Shell True North Pond to 611 hours/ha at LPP (Table 1). Fall/winter angler use estimates were much lower at Windsor Lake and Mirror Reservoir with 1 hour/ha and 2 hours/ha, respectively.

Between May 4 and August 24, 2022, 50 angling parties submitted online surveys from angling trips at LPP. Parties ranged from one to eight anglers, with a total of 94 individuals in the data. Parties reported 148 hours of angling and 35 fish caught (23 harvested, 12 released), with 39 parties (78%) reporting no fish caught. Total online catch rate was 0.24 fish per hour. Between May 9 and August 14, 11 anglers from seven angling parties were interviewed in person where anglers reported 20 hours of angling, 28 fish caught (eight harvested and 20 released), with seven parties (57%) reporting no fish captured. In-person interview catch rate was 1.40 fish per hour. Estimated fish harvested and released (Table 2) indicates online reported catch rates were lower than in-person catch rates, and that rainbow trout catch was 1.5 times higher than for brook trout.

Table 1. Estimated angler effort at Mirror Reservoir, Windsor Lake, and Lacombe Park, Shell True North, and County Sportsplex ponds.

Sample Period	Waterbody	Estimated Total Angler Effort		Estimated Fishing Pressure	
		Hours	95% CI	Hours/ha	95% CI
Summer	Lacombe Park Pond	989	912–1,067	611	564–658
	County Sportsplex Pond	1,088	985–1,193	375	340–411
	Shell True North Pond	153	126–182	185	153–220
Fall/Winter	Mirror Reservoir	7	2–14	2	0–3
	Windsor Lake	13	0–33	1	0–3

Table 2. Rainbow and brook trout catch rates and estimated fish harvest, from in-person and online anglers at Lacombe Park Pond.

Species ¹	Catch Rates		Estimated # of Fish	
	In-person	Online	In-person	Online
Rainbow trout harvest	0.25	0.11	247 (227–269)	107 (98–116)
Rainbow trout release	0.60	0.05	594 (544–646)	54 (49–58)
Rainbow trout total	0.85	0.16	841 (770–915)	160 (147–175)
Brook trout harvest	0.15	0.05	148 (134–161)	47 (43–51)
Brook trout release	0.40	0.03	396 (363–431)	27 (25–29)
Brook trout total	0.55	0.07	544 (499–592)	74 (67–80)

We captured a total of 90 brown trout at Mirror Reservoir and three rainbow trout at Windsor Lake. Fork length of brown trout ranged from 110–228 mm and fork length for rainbow trout ranged from 230–240 mm (mean = 235 mm). All brown trout captured were from the spring 2022 stocking event. Other fish captured included brook stickleback (Mirror Reservoir n=9; Windsor Lake n=3), fathead minnow (Mirror Reservoir n=525; Windsor Lake n=189) and yellow perch (Windsor Lake n=9).

Conclusion

Estimated summer angler use at County Sportsplex Pond and LPP indicate that these ponds are receiving low to moderate angler use. Our fish capture and angler use results from Windsor Lake and Mirror Reservoir indicate that fish are not overwintering and fall stocking did not lead to an increase in angler use of these waterbodies. Further evaluation of citizen science data collection is required to evaluate the discrepancy between in-person and angler submitted data.

Communications

Not applicable

Literature Cited

van Poorten, B.T., T.R. Carruthers, H.G. Ward, and D.A. Varkey. 2015. Imputing recreational angling effort from time-lapse cameras using an hierarchical Bayesian model. *Fisheries Research* 172: 265-273.

Photos



Photo 1. ACA staff installing angler online data submission signage at Lacombe Park Pond.

Photo: Kevin Fitzsimmons



Photo 2. Anglers at Lacombe Park Pond. Photo: ACA trail camera