

**Alberta Conservation Association**  
**2022/23 Project Summary Report**

**Project Name:** Effectiveness of Walleye-Pike Fishing Regulations

**Fisheries Program Manager:** Peter Aku

**Project Leader:** Nikita Lebedynski

**Primary ACA Staff on Project:** Shayla Bolan, Isabelle Crawford, Nikita Lebedynski, Alexa MacDonald, and Ariel Schlereth

**Partnerships**

Alberta Environment and Protected Areas

Government of Canada: Service Canada, Canada Summer Jobs

**Key Findings**

- Between May 15 and August 31, 2022, we surveyed four central Alberta waterbodies: Lac Ste. Anne, Gull Lake, Buck Lake, and Pigeon Lake.
- Buck Lake angler effort (11.30 h/ha) was much higher than the other waterbodies, which ranged from 2.08 h/ha to 3.03 h/ha.
- Pigeon Lake had the highest walleye catch rate of 3.68 walleye/h, over twice as high as the other lakes, which ranged from 1.02 walleye/h to 1.70 walleye/h.
- All four waterbodies had northern pike catch rates below 0.30 northern pike/h.

**Abstract**

In 2018, Alberta Environment and Protected Areas released updated management objectives for walleye and northern pike fisheries that included manipulations with different harvest regimes at select lakes (GoA 2018a, 2018b). To aid in evaluating the impact of these manipulations, we conducted angler surveys on four impacted fisheries (Lac Ste. Anne, Gull, Buck, and Pigeon lakes) during the summer angling seasons of 2022. These angler surveys followed an instantaneous count methodology completed using boats or from shore during unsafe weather

conditions. They were accompanied by angler interviews on shore. Estimated angler effort was 2.08 h/ha at Lac Ste. Anne, 3.03 h/ha at Gull Lake, 11.30 h/ha at Buck Lake, and 2.09 h/ha at Pigeon Lake. Mean catch rates were 0.92 walleye/h and 0.22 northern pike/h at Lac Ste. Anne, 3.41 walleye/h and 0.29 northern pike/h at Pigeon Lake, 1.25 walleye/h and 0.19 northern pike/h at Gull Lake, and 1.09 walleye/h and 0.29 northern pike/h at Buck Lake. Mean walleye harvest rates were 0.07 walleye/h at Gull Lake and 0.13 walleye/h at Buck Lake. We did not calculate walleye harvest at Lac Ste. Anne or Pigeon Lake as they are regulated by a specific number of tags.

## **Introduction**

In 2018, Alberta Environment and Protected Areas released updated management objectives for walleye and northern pike fisheries that included manipulations with different harvest regimes at select lakes (GoA 2018a, 2018b). To aid in evaluating the impact of these manipulations, we conducted angler surveys on four impacted fisheries (Lac Ste. Anne, Gull, Buck, and Pigeon lakes) during the summer angling seasons of 2020, 2021, and 2022. Here, we report on the 2022 survey only. A more comprehensive report, including all years and assessment of manipulations, will be completed by the Government of Alberta.

## **Methods**

We used instantaneous angler counts to estimate angler effort (Pollock et al. 1994, Sullivan and Patterson unpublished report) on Lac Ste. Anne, Pigeon, Gull, and Buck lakes from May 15 to August 31, 2022. Sampling days were systematically selected from available working days within the survey period and stratified by weekdays and weekends/holidays. One instantaneous count time was selected for each survey day using stratified random sampling of 1-hour periods between 8 a.m. and 9 p.m.

We used a boat to travel around the lake recording the number of angling boats, anglers per boat, and shore anglers. Shore and boat angler counts were combined for a total angler count. If unsafe weather limited boating, we completed counts from shore, with binoculars, by strategically accessing multiple viewpoints to obtain the most thorough count in the shortest period of time. Counts were recorded within the appropriate 1-hour time slot. During working hours when

instantaneous counts were not being completed, survey attendants interviewed anglers on shore to gather information on angler catch, harvest, and trip length.

We used bootstrap techniques to calculate estimates and 95% confidence intervals (Haddon 2011) for angler effort, angler trips, fish caught, and walleye harvested at Gull and Buck lakes. We did not estimate walleye harvest at Lac Ste Anne and Pigeon Lake where harvest is regulated by special walleye licence tags.

## Results

We estimated angler effort and angler trips on Lac Ste. Anne, Pigeon, Gull, and Buck lakes between May 15 to August 31, 2022 (Table 1). Angler effort was much higher at Buck Lake with 11.30 h/ha compared to the rest which ranged from 2.08–3.03 h/ha. Angler trip length was relatively consistent with all lakes being between 3.14–3.57 h/trip. Anglers made the most trips to Buck Lake (8,788), followed by Gull Lake (7,951), Pigeon Lake (6,380), and Lac Ste. Anne (3,301).

Table 1. Summary of angler effort and trips at Lac Ste. Anne, Pigeon, Gull, and Buck lakes, May 15 to August 31, 2022.

Waterbody	Angler Effort (h)		Standardized Effort (h/ha)		Angler Trips		Angler Trip Length (h)	
	Mean	95% CI	Mean	95% CI	Mean	95% CI	Mean	95% CI
Lac Ste. Anne	11,743.76	8,085.37–15,672.1	2.08	1.43–2.77	3,301	2,221–4,519	3.57	3.15–4.00
Pigeon Lake	20,369.57	15,442.60–25,581.20	2.09	1.59–2.63	6,380	4,722–8,208	3.20	2.83–3.58
Gull Lake	24,821.73	18,266.70–31,436.60	3.03	2.23–3.83	7,951	5,728–10,412	3.14	2.73–3.55
Buck Lake	28,703.68	18,950.30–40,386.50	11.30	7.46–15.90	8,788	5,752–12,464	3.28	2.98–3.58

Walleye catch rates were 1.02 fish/h at Lac Ste. Anne, 3.68 fish/h at Pigeon Lake, 1.70 fish/h at Gull Lake, and 1.10 fish/h at Buck Lake. Northern pike catch rates were 0.24 fish/h at Lac Ste. Anne, 0.21 fish/h at Pigeon Lake, 0.20 fish/h at Gull Lake, and 0.29 fish/h at Buck Lake.

Walleye harvest rates were 0.06 fish/h at Gull Lake and 0.10 fish/h at Buck Lake. We estimated

total walleye and pike caught at each waterbody and walleye harvested at Gull and Buck lakes (Table 2). Walleye harvest rates and total estimates were not calculated for Lac Ste. Anne and Pigeon Lake as they are managed by special walleye licence tags. None of the lakes were open for northern pike harvest.

Table 2. Summary of estimated total catch and harvest of walleye and northern pike at Lac Ste. Anne, Pigeon, Gull, and Buck lakes between May 15 and August 31, 2022.

Waterbody	Walleye Catch		Northern Pike Catch		Walleye Harvest	
	Mean	95% CI	Mean	95% CI	Mean	95% CI
Lac Ste. Anne	11,979	8,247–15,986	2,819	1,940–3,761	-	-
Pigeon Lake	74,961	56,829–94,139	4,278	3,243–5,372	-	-
Gull Lake	42,197	31,053–53,442	4,964	3,653–6,287	1,489	1,096–1,886
Buck Lake	31,574	20,845–44,425	8,324	5,496–11,712	2,870	1,895–4,039

### Conclusions

Angler surveys were completed at Lac Ste. Anne, Gull, Buck, and Pigeon lakes between May 15 and August 31, 2022. Buck Lake exhibited a much higher angler effort of 11.30 h/ha than the other three lakes, which ranged from 2.08 h/ha to 3.03 h/ha. Pigeon Lake had the highest walleye catch rate of 3.68 walleye/h, while the others ranged from 1.02–1.70 walleye/h. All four waterbodies had northern pike catch rates below 0.30 northern pike/h.

### Communications

Not applicable

## Literature Cited

Government of Alberta (GoA). 2018a. *Northern Pike Recreational Fisheries Management Framework*. Fisheries Management Report. Alberta Environment and Parks. Edmonton, AB. 19 pp.

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## Photos



Photo 1. Two boats viewed through binoculars on Gull Lake, Alberta.

Photo: Nikita Lebedynski



Photo 2. Fisheries technician, Isabelle Crawford, operating a boat during an instantaneous count angler survey. Photo: Nikita Lebedynski



Photo 3. Fisheries technician, Shayla Bolan, using binoculars to observe boats from shore at Pigeon Lake, Alberta. Photo: Nikita Lebedynski