

**Alberta Conservation Association
2021/22 Project Summary Report**

Project Name: Effectiveness of Walleye-Pike Fishing Regulations

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Partnerships

Alberta Environment and Parks

Government of Canada: Service Canada, Canada Summer Jobs

Key Findings

- Between May 15 and August 31, 2021, we surveyed four central Alberta waterbodies: Lac Ste. Anne, Gull Lake, Buck Lake, and Pigeon Lake.
- Lac Ste. Anne angler effort was 23,888.17 hours or 4.22 h/ha.
- Gull Lake angler effort was 38,551.75 hours or 4.70 h/ha.
- Buck Lake angler effort was 47,057.37 hours or 18.53 h/ha.
- Pigeon Lake angler effort was 32,323.76 hours or 3.32 h/ha.

Abstract

High fishing pressure, coupled with slow-growing and late-maturing populations have previously resulted in the over-harvest of many of Alberta's sport fish populations highlighting the need to regularly monitor fishing pressure and populations. To aid in achieving management objectives, angler surveys provide fisheries managers with information about fishing pressure on waterbodies. Between May 15 and August 31, 2021, we performed angler surveys on Lac Ste. Anne, Gull, Buck, and Pigeon lakes. These angler surveys followed an instantaneous count methodology completed using boats or from shore during unsafe weather conditions. Estimated

angler effort was 23,888.17 hours (4.22 h/ha) at Lac Ste. Anne, 38,551.75 hours (4.70 h/ha) at Gull Lake, 47,057.37 hours (18.53 h/ha) at Buck Lake, and 32,323.76 hours (3.32 h/ha) at Pigeon Lake.

Introduction

High fishing pressure, coupled with slow-growing and late-maturing populations have previously resulted in the over-harvest of many of Alberta's sport fish populations (Sullivan 2003), highlighting the need to regularly monitor fishing pressure and populations. In 2018, Alberta Environment and Parks (AEP) released updated management objectives for walleye and northern pike in Alberta (GoA 2018a, 2018b). Angler surveys provide fisheries managers with information about fishing pressure in the form of angler hours on waterbodies. In 2021, we performed instantaneous count angler surveys on Lac Ste. Anne, Gull, Buck, and Pigeon lakes to allow for the estimation of angler effort.

Methods

We used instantaneous angler counts to estimate angler effort (hours) on Lac Ste. Anne, Gull, Buck, and Pigeon lakes following the Sullivan and Patterson (2020) methodology. This method breaks days into 1-hour increments with hours divided into a.m. (0800 – 1200) and p.m. (1200 – 2200) and weekday and weekend/holiday strata (Sullivan and Patterson 2020). During surveys, staff used a boat to travel around the waterbody recording the number of angling boats, anglers per boat, and shore anglers (Sullivan and Patterson 2020). If unsafe weather limited boating access, counts were completed from shore at multiple viewpoints (Sullivan and Patterson 2020). The counts were then recorded within the appropriate 1-hour time slot.

Count data for each waterbody and strata were bootstrapped to produce a distribution of average anglers per hour for early (May and June) and late (July and August) summer following Haddon (2001). These distributions were then multiplied by the average daylight angling hours and days per month to produce angler effort estimates for each waterbody in the form of maximum likelihood distributions (Sullivan and Patterson 2020). These distributions provide a mean estimated angler effort and 95% confidence intervals (CI) for each waterbody.

Results

Estimated angler effort at Lac Ste. Anne was 23,888.17 hours (95% CI = 17,964.13 – 29,452.43) or 4.22 h/ha. Estimated angler effort at Gull Lake was 38,551.75 hours (95% CI = 31,359.63 – 45,159.34) or 4.70 h/ha. Estimated angler effort at Buck Lake was 47,057.37 hours (95% CI = 39,322.53 – 55,721.28) or 18.53 h/ha. Estimated angler effort at Pigeon Lake was 32,323.76 hours (95% CI = 23,512.47 – 42,078.49) or 3.32 h/ha.

Conclusions

Angler surveys were completed at Lac Ste. Anne, Gull, Buck, and Pigeon lakes between May 15 and August 31, 2021. Buck Lake exhibited a much higher angler effort of 18.53 h/ha than the other three lakes, which ranged from 3.32 h/ha to 4.70 h/ha.

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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- Haddon M. 2011. *Modelling and Quantitative Methods in Fisheries*. 2nd Edition. CRP Press, New York. 465 pp.
- Sullivan M.G. 2003. Active management of walleye fisheries in Alberta: dilemmas of managing recovering fisheries. *North America Journal of Fisheries Management* 23(4): 1343–1358.
- Sullivan M.G. and B.P. Patterson. 2020. Angler effort surveys on sport fisheries in central Alberta during summer angling season 2020 - In draft. Alberta Environment and Parks. 59 pp.

Photos



Photo 1. View from the water of the boat launch within the town of Buck Lake, Alberta.

Photo: Nikita Lebedynski