

Alberta Conservation Association 2010/11 Project Summary Report

Project Name: *Lentic Sport Fishery Surveys: Floatingstone, Garner, Snipe and Winagami Lakes, Alberta, 2010*

Fisheries Program Manager: Peter Aku

Project Leader: Brendan Ganton

Primary ACA staff on project:

Melissa Buskas, Nathan Carruthers, Troy Furukawa, Brendan Ganton, Clayton James, Mike Merriam and Emily Turton

Partnerships

Alberta Sustainable Resource Development

Key Findings

- Angling pressure was 5.2 h/ha at Garner Lake, 4.4 h/ha at Snipe Lake, 3.8 h/ha at Floatingstone Lake and 1.63 h/ha at Winagami Lake.
- Catch rate of walleye was 0.62 fish/h at Garner Lake and less than 0.1 fish/h at Floatingstone, Snipe and Winagami lakes.
- Catch rate of northern pike was 1.29 fish/h at Snipe Lake, 0.86 fish/h at Winagami Lake, 0.35 fish/h at Garner Lake and 0.26 fish/h at Floatingstone Lake.
- Anglers harvested 210 walleye at Garner Lake, 205 at Snipe Lake and 30 at Winagami Lake.
- Anglers harvested 1,994 northern pike at Snipe Lake, 1,403 at Winagami Lake, 399 at Garner Lake and 39 at Floatingstone Lake.

Introduction

High fishing pressure, coupled with slow-growing and late-maturing populations, have resulted in the over-harvest of many Alberta sport fish populations (Sullivan 2003), including walleye (*Sander vitreus*) and northern pike (*Esox lucius*). To guide the recovery of these two species, Alberta Sustainable Resource Development (ASRD) developed management plans in 1995 and 1999 for walleye and northern pike, respectively. To generate the information required for effective management of these species, we conducted creel surveys on four priority lakes (Floatingstone, Garner, Snipe and Winagami) during the summer of 2010. Additionally, at Floatingstone and Garner lakes, we continued to develop camera-based methods of estimating angling effort on small lakes (<1,000 ha) using programmed trail cameras to reduce the amount of staffing effort required relative to traditional access methods.

Methods

Following methods described in Pollock et al. (1994), we conducted multiple and single access angler surveys at Snipe and Winagami lakes, respectively. We completed surveys between May 16 and August 28, 2010. During each survey, we interviewed anglers at the end of their fishing trips, recording hours spent fishing, number of each fish species harvested and released, and we collected biological data from their catch.

At Floatingstone and Garner lakes, we conducted low effort, camera-based surveys adapting procedures from van Poorten et al. (unpublished). Between May 22 and August 29, 2010, we maintained two cameras at each lake which recorded (photographs) the number of anglers on the lake, within the camera's view, each hour from 8 am – 10 pm. We examined camera efficiency by comparing on-the-ground counts of anglers to the number of anglers observed in corresponding photographs using paired *t*-tests. We then randomly selected 200 photos from each camera, stratified by weekend and weekday, from which we estimated the total number of angler trips completed during the survey period. We also conducted roving angler creel surveys recording hours spent fishing, number of each fish species harvested and released.

For each lake, we calculated estimates and associated 95% confidence intervals (95% CI) for the total number of angler trips, hours fished, angling pressure (h/ha), number of fish harvested, and number of fish released. We calculated angler catch rates as total ratio estimators following Malvestuto (1993).

Results

Access Surveys

Estimated angling pressure for Snipe Lake was 4.4 h/ha (95% CI = 3.6 – 5.5), with anglers making 8,458 trips (95% CI = 6,873 – 10,370) and fishing for 18,635 h (95% CI = 14,942 – 23,139). Corresponding values at Winagami Lake were 1.6 h/ha (95% CI = 1.4 – 1.9), 4,716 trips (95% CI = 4,160 – 5,281) and 7,462 h (95% CI = 6,387 – 8,585).

Catch rates were higher at Snipe Lake with 0.07 fish/h for walleye and 1.29 fish/h for northern pike, than at Winagami Lake with 0.03 fish/h and 0.86 fish/h for walleye and northern pike, respectively. Similarly, the number of fish harvested and released was higher at Snipe Lake for both walleye and northern pike than at Winagami Lake (Table 1).

Table 1. Summary of sport fish harvested and released from Snipe and Winagami lakes, Alberta, 2010.

Species	Lake	Fish Harvested		Fish Released	
		Mean	95% CI	Mean	95% CI
Walleye	Winagami	30	26 – 34	187	160 – 215
	Snipe	205	164 – 255	1,081	867 – 1,342
Northern pike	Winagami	1,403	1,201 – 1,614	4,962	4,247 – 5,709

Camera Surveys

Estimated angling pressure for Garner Lake was 5.2 h/ha (95% CI = 3.9 – 6.7), with anglers making 1,360 trips (95% CI = 960 – 1,859) and fishing for 4,064 h (95% CI = 3,043 – 5,231). Angling pressure for Floatingstone Lake was 3.8 h/ha (95% CI = 2.1 – 6.1), with anglers making 1,093 trips (95% CI = 574 – 1,816) and fishing for 1,907 h (95% CI = 1,050 – 3,022).

Catch rates were higher at Garner Lake with 0.62 fish/h for walleye and 0.35 fish/h for northern pike, than at Floatingstone with 0.08 fish/h and 0.26 fish/h for walleye and northern pike, respectively. We estimated that anglers at Garner Lake harvested 210 walleye, while regulations at Floatingstone Lake prohibited the harvest of walleye. The number of fish released was higher at Garner Lake for both walleye and northern pike than at Floatingstone Lake (Table 2).

Table 2. Summary of sport fish harvested and released from Floatingstone and Garner lakes, Alberta, 2010.

Species	Lake	Fish Harvested		Fish Released	
		Mean	95% CI	Mean	95% CI
Walleye	Floatingstone	n/a	—	154	85 – 244
	Garner	210	157 – 270	2,310	1,730 – 2,974
Northern pike	Floatingstone	39	21 – 61	462	254 – 733
	Garner	399	299 – 514	1,029	771 – 1,325

Conclusions

We collected information necessary to support ongoing management of the sport fish populations at Floatingstone, Garner, Snipe and Winagami lakes. We generated an estimate of angling effort utilizing programmed trail cameras. Ongoing work will include an evaluation of camera-based creel methods to be presented in a 2010/11 Alberta Conservation Association (ACA) report series paper, alongside similar data collected from Ethel and Hilda lakes in 2009.

Communications

- ACA data report: Sport fishery surveys: Snipe and Winagami lakes, Alberta, 2010 (in preparation).
- ACA data report: An evaluation of camera-based creel methods: Ethel, Hilda, Floatingstone and Garner lakes (in preparation).

Literature Cited

- Malvestuto, S.P. 1983. Sampling the Recreational Fishery. Pages 397 – 419. *In*: L.A. Nielsen and D.L. Johnson, editors. Fisheries Techniques. American Fisheries Society, Bethesda, Maryland, USA. 468 pp.
- Pollock, K.H., C.M. Jones, and T.L. Brown. 1994. Angler survey methods and their applications in fisheries management. American Fisheries Society Special Publication 25. 371 pp.
- Sullivan, M.G. 2003. Active management of walleye fisheries in Alberta: dilemmas of managing recovering fisheries. North America Journal of Fisheries Management 23: 1343-1358.
- van Poorten, B.T., M.A. Hawkshaw, E.A. Parkinson, and C.J. Walters. Unpublished. Evaluation of commercially available cameras for use in monitoring recreational angling effort. Fisheries Centre, University of British Columbia, 2202 Main Hall, Vancouver, British Columbia, Canada, V6T 1Z4.

Pictures



Seasonal staff member, Mike Merriam, records angler information during a ratio-of-use survey of Snipe Lake, 2010. (Photo: Melissa Buskas)



Seasonal staff member, Melissa Buskas, test angling between ratio-of-use surveys of Snipe Lake, 2010. (Photo: Mike Merriam)



Forested lakeshore during a calm summer day at Garner Lake. (Photo: Troy Furukawa)



Alberta Conservation Association staff member, Troy Furukawa, maintaining programmed trail cameras at Floatingstone Lake. (Photo: Bill Patterson)