

## **Alberta Conservation Association 2011/12 Project Summary Report**

**Project Name:** *Sport Fisheries Surveys: Haig, Figure Eight and Sulphur Lakes, Alberta, 2011*

**Fisheries Program Manager:** Peter Aku

**Project Leader:** Clayton James

**Primary ACA staff on project:**

Melissa Buskas, Clayton James, Kelsey Morin and Carl Steenbergen

### **Partnerships**

Alberta Sustainable Resource Development

### **Key Findings**

- Anglers made 887 trips to Haig Lake and fished for 2,554 hours resulting in fishing pressure of 2.8 hours/hectare.
- Documented higher harvest and release rates for walleye than for northern pike at Haig Lake.
- For the stocked trout fisheries, angling pressure was twice as high at Figure Eight Lake (105.0 hours/hectare) as at Sulphur Lake (51.0 hours/hectare).
- Catch rates were 0.60 fish/hour and 0.66 fish/hour for rainbow trout in Figure Eight and Sulphur lakes, respectively, and 0.18 fish/hour for brook trout in Sulphur 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. During the summer of 2011, we conducted a creel survey at Haig Lake to collect information that will assist in the management of these sport fisheries. In addition, we collected similar information to assist with the management of stocked rainbow trout (*Oncorhynchus mykiss*) and brook trout (*Salvelinus fontinalis*; Sulphur Lake only) fisheries at Figure Eight and Sulphur lakes. The rainbow trout are managed as quality rainbow trout fisheries, where the goal for each fishery is to produce at least 10% of fish greater than 50 cm total length.

### **Methods**

Following methods described in Pollock et al. (1994), we conducted single access angler surveys at Haig, Figure Eight and Sulphur lakes from May 20 to August 31, 2011. During each survey, we interviewed anglers at the end of their fishing trips and recorded hours spent fishing, number

of each fish species harvested and released, and collected biological data from their catch. To supplement the sport harvest data, we test-angled fish throughout the survey period, recording the number of hours fished, fish species, fork length and total length caught. We used a bootstrap technique to calculate 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

Estimated angling pressure for Haig Lake was 2.8 h/ha (95% CI = 2.3 – 3.4), with anglers making 887 trips (95% CI = 750 – 1,033) and fishing for 2,554 h (95% CI = 2,078 – 3,068). Harvest and release rates were higher for walleye than for northern pike (Table 1), with associated catch rates of 0.52 fish/h and 0.48 fish/h, respectively.

For the stocked trout fisheries, angling pressure was twice as high at Figure Eight Lake as at Sulphur Lake. Estimated angling pressure at Figure Eight Lake was 105.0 h/ha (95% CI = 89.8 – 120.9), with anglers making 2,477 trips (95% CI = 2,185 – 2,786) and fishing for 4,095 h (95% CI = 3,501 – 4,717). Corresponding values at Sulphur Lake were 51.0 h/ha (95% CI = 42.2 – 60.2), 1,161 trips (95% CI = 962 – 1,365) and 2,703 h (95% CI = 2,237 – 3,189). The catch rate at Figure Eight Lake was 0.60 fish/h for rainbow trout and at Sulphur Lake was 0.66 fish/h for rainbow trout and 0.18 fish/h for brook trout. The number of rainbow trout harvested at each lake was about half of the number released (Table 1). Based on all fish sampled, 2.4% (2 out of 84) were of quality size at Figure Eight Lake and 3.2% (5 out of 155) were of quality size at Sulphur Lake.

Table 1. Summary of estimated sport fish harvested and released from Haig, Figure Eight and Sulphur lakes, Alberta, 2011.

| Lake         | Species       | Fish Harvested |           | Fish Released |               |
|--------------|---------------|----------------|-----------|---------------|---------------|
|              |               | Mean           | 95% CI    | Mean          | 95% CI        |
| Haig         | Walleye       | 169            | 137 – 202 | 1,164         | 946 – 1,398   |
|              | Northern pike | 74             | 60 – 88   | 1,148         | 934 – 1,379   |
| Figure Eight | Rainbow trout | 722            | 617 – 831 | 1,722         | 1,473 – 1,984 |
| Sulphur      | Rainbow trout | 660            | 546 – 778 | 1,120         | 927 – 1,321   |
|              | Brook trout   | 253            | 209 – 298 | 232           | 192 – 274     |

## Conclusions

We found higher harvest and release rates for walleye than for northern pike at Haig Lake. Although angling pressure was twice as much at Figure Eight Lake versus Sulphur Lake, overall trout harvest was higher at Sulphur Lake.

## **Communications**

- ACA data report: Northern pike and walleye summer sport fishery at Haig Lake, Alberta, 2011 (in preparation).
- ACA data report: Summer sport fisheries at Figure Eight and Sulphur lakes, Alberta, 2011 (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.

## **Pictures**



Alberta Conservation Association staff member, Melissa Buskas, samples a walleye she caught at Haig Lake, 2011. (Photo: Carl Steenberg)





Alberta Conservation Association seasonal staff members, Kelsey Morin (left) and Cali Seater (right), test angle at Figure Eight Lake, 2011. (Photo: Carl Steenbergen)



Alberta Conservation Association seasonal staff member, Carl Steenberg, with a rainbow trout he caught at Sulphur Lake, 2011. (Photo: Kelsey Morin)