

**Alberta Conservation Association
2008/09 Project Summary Report**

Project name: *Trout Stocking Evaluation*

Fisheries and Aquatic Program Manager: Peter Aku

Project leader: Bill Patterson

Primary ACA staff on this project:

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Partnerships:

Alberta Sustainable Resource Development
Toronto Dominion Bank – Friends of the Environment Foundation
Alberta Student Temporary Employment Program
Alberta Fish and Game Association; Morinville and Onoway Chapters

Key findings

- Low effort angler surveys using effort cameras (e.g., programmable trail cameras) provided adequate results.
- The catch from Salter's and Star ponds included both ages 1 and 2, while those from Morinville pond were all age 1.
- The number of angling-trips at Salter's, Star and Morinville ponds were 1,387, 2,329, and 1,048. Corresponding fishing pressures were 195, 218, and 590 angling-hours per ha.
- Rainbow trout harvest at these ponds ranged from 55 – 560 fish, with a size range of 214 – 563 mm total length
- Generally, anglers were satisfied with their fishing experiences.

Abstract

Stocking fish to waterbodies can serve to maintain, establish or create fisheries and to provide angling opportunities. The Alberta Conservation Association and Alberta's Fish Culture Program stock over 266 ponds annually. The objective of the Trout Stocking Evaluation Project is to develop a tool to assess the associated sportfishery and the rainbow trout populations created through stocking. Salter's, Star and Morinville ponds were evaluated using of low effort summer angler surveys, a brief social questionnaire, and a gill netting protocol in the fall. Angling pressure at these stocked ponds was on average 334 angling hours/ha. This pressure is extremely high when compared to natural sport fisheries. The harvest per hour ranged from 0.03 to 0.09

fish per hour. Generally, anglers were satisfied with their experiences. The most frequent suggestions were to improve amenities, stock more and larger trout or change nothing. The initial results from the gillnetting protocol suggest it provides an estimate of abundance and population structure.

Introduction

Stocking fish to waterbodies is a common fisheries management technique used to maintain or create new fisheries that provide recreational angling opportunities. Annually, The Alberta Conservation Association and the Alberta Sustainable Resource Development (ASRD) Fish Culture Program jointly stock over 3,000,000 rainbow trout into over 266 waterbodies. However, the effectiveness of these stocking programs has yet to be evaluated. The aim of this study is to evaluate the efficacy of stocked trout fisheries at meeting management goals and recreational angler expectations. To this end, we conducted angler surveys to evaluate angler use, angler satisfaction, and fishing quality as well as abundance and population structure of stocked trout. This work included the development of assessment tools to evaluate stocked trout fisheries. This information will play a key role in optimizing our current stocking practices.

Methods

We surveyed Salter's, Star and Morinville ponds from mid-June to late August 2009 using programmable trail cameras to collect digital photographs of anglers daily from 0800 to 2100 hours. We verified the accuracy of trail cameras by conducting random angler counts (instantaneous counts) as photographs were taken and comparing the number of anglers counted to the number captured in photographs. Angling effort and harvest was estimated from these data using a binomial simulation (i.e., # photographed / # counted).

To evaluate angler use, angler satisfaction, and fishing quality, we conducted low effort roving angler surveys at each pond over the course of the summer. We surveyed anglers randomly and collected information including the date, time of day, trip length, number of fish caught, level of satisfaction, as well as the overall fishing experience. We estimated of the number of anglers, angling effort, harvest and yield from angler survey and effort camera data.

During the fall, we set three multi-mesh gillnets in each pond to estimate abundance and population structure of rainbow trout. Gillnets were soaked for approximately 24 h and catches were standardized to area of net and soak time. We used dissolved oxygen and temperature profiles to set nets in oxygenated water only. We measured lengths and weights of all fish caught and collected otoliths from each rainbow trout for determining age. We estimated density (fish/ha) using the gill net catch rates and a catchability coefficient (q) developed for cutthroat trout (G. Sterling, ASRD, unpubl. data); due to inadequate sample sizes, we were unable to generate q for rainbow trout from our study.

Results

The effort cameras captured approximately 1,100 photographs at Salter's and Star ponds and 2,200 at Morinville Pond. Number of anglers counted from sub-sample photographs ranged 15 – 136. Corresponding instantaneous count ranged 34 – 244 anglers with resultant correction factors ranging from 1.8 to 4.14.

Table 1. Data collected with effort cameras from Salter's, Star and Morinville ponds during the summer of 2008.

| Pond | Effort cameras, # anglers | Instantaneous counts, # anglers | Ratio of camera count to instantaneous count | Spatial correction factor (95% CI) |
|------------|---------------------------|---------------------------------|--|------------------------------------|
| Salter's | 25 | 100 | 0.2500 | 4.14 (3.0 – 5.9) |
| Star | 136 | 244 | 0.5574 | 1.8 (1.6 – 2.0) |
| Morinville | 15 | 34 | 0.4412 | 2.4 (1.6 – 3.8) |

During the surveys period, we collected data from 51, 93, and 159 anglers at Salter's, Star and Morinville ponds, respectively with corresponding trip lengths of 93.5, 237.5, and 95.5 h. Number of fish harvested were 6 in Salter's, 23 in Star, and 3 in Morinville ponds; corresponding number released were 10, 44, and 6 fish.

Using correction factors from the effort cameras, estimated number of trips ranged from 1048 to 2329 and trip length ranged from 1771 to 5890. Average trip lengths were 1.8, 2.5, 1.7 h at Salter's, Star and Morinville ponds, respectively. Harvest rate was 0.06, 0.09, 0.03 fish/h at Salter's, Star and Morinville ponds, respectively; number released was substantially higher than number harvested; Fishing pressure was 195, 218, and 590 angling-hours/ha Salter's, Star and Morinville ponds, respectively. Estimated fish densities from Salter's, Star and Morinville ponds were 11.1, 18.9, and 0.6 fish/ha, respectively.

Table 3. Estimates from the angler surveys conducted at Salter's, Star and Morinville ponds.

| Pond | Angling trips (95% CI) | Angling hours (95% CI) | Harvest (95% CI) | Release (95% CI) |
|------------|------------------------|------------------------|------------------|------------------|
| Salter's | 1,387 (765-2,286) | 2,533 (1,444-4,093) | 162 (92-262) | 271 (155-438) |
| Star | 2,329 (1,628-3,944) | 5,890 (4,517-7,465) | 560 (189-1,048) | 859 (228-1,756) |
| Morinville | 1,048 (536-1,826) | 1,771 (933-3,055) | 55 (29-95) | 112 (59-192) |

In general, anglers were satisfied with their fishing experiences at these ponds. Of the 79 anglers surveyed regarding their angling experience, majority (84 %) indicated they were satisfied. On average, anglers were satisfied with both the size and number of rainbow trout they were catching. The most common response (47%) to the open-ended question “why come to this pond?” was “the pond is close”. When asked what they would change about the pond visited and its amenities, 25% suggested “improving services”, 25% said “change nothing, 14% said “increase size of fish”, and 18% said “increase number of fish”.

We captured 35 rainbow trout at Salter’s Pond, 59 at Star Pond, and 2 at Morinville Pond in gillnets. Overall size from 269 to 515 mm total length. Catch from Salter’s and Star ponds included both 1 and 2 y old fish, while those from Morinville pond were all 1 y old. .

Conclusions

The trail (effort) cameras and the low effort angler surveys provided adequate estimates of angling effort, harvest and yield at Salter’s, Star and Morinville ponds. All three ponds received substantial angling effort. The catch (harvest + release) of rainbow trout was minor. Anglers were generally satisfied with their angling experiences at these ponds including the sizes and number of fish being caught. Anglers primarily visited these ponds because they were close. The most common responses from anglers regarding the ponds were to improve services, change nothing, stock larger fish, and stock more fish.

Communications

Local newspapers were notified of these activities and local conservation clubs were involved with several aspects of the project.

Literature cited

Pictures



Staff downloading pictures from the effort camera at Star Pond. Left: Britt Keeling, right: Brendan Ganton. (Photo: Bill Patterson)



A picture taken by the effort camera at Star Pond. (Photo: Cuddeback Expert 3.0)



Picture of the effort cameras and the sign installed at each pond. (Photo: Brendan Ganton)