Alberta Conservation Association
2016/17 Project Summary Report

Project Name: Fish Stocking Expansion – New Species and Strains

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Partnerships

Alberta Environment and Parks
Cabela's Canada Inc.
Lacombe County
Town of Beaumont
Town of High River

Key Findings

- We assessed field performance of Troutlodge Silver and Lyndon strains of rainbow trout at three Enhanced Fish Stocking fisheries.
- Fish condition was good overall and typically comparable between strains; both strains tended to lose condition over the summer.
- Of the 2,600 trout we tagged (1,300 of each strain), anglers reported catching 278 Lyndon and 402 Silver trout. Of these, 142 Lyndons and 222 Silvers were kept.
- Estimates indicated a large proportion of both strains were harvested from most ponds. The Silver strain was more likely to be harvested than the Lyndon strain at any given pond.

Introduction

The Government of Alberta currently stocks several strains of rainbow trout, including both in-house and commercially produced strains. Of the commercially produced strains, Troutlodge Silver Steelhead and Lyndon strains both show promise. Silver Steelhead trout are specially bred by Troutlodge to have a distinctive silver colour and excellent growth. The Lyndon strain is believed to be derived from both steelhead and inland forms of rainbow trout and is bred by Lyndon Fish Hatcheries for favourable growth rate, late maturation, disease resistance and egg quality. Both strains are delivered to provincial and private fish hatcheries as eyed eggs and are routinely stocked by Alberta Conservation Association (ACA) through its Enhanced Fish Stocking (EFS) project. Different strains may vary widely in their hatchery and field performance, so we partnered with the provincial government to compare angler harvest and condition of the Silver Steelhead and Lyndon strains in EFS fisheries.

Methods

Study trout were reared under comparable conditions at the Cold Lake Fish Hatchery. Trout were marked with a combination of anchor tag and/or fin clip at the hatchery in mid-April. Marking allowed trout strain to be identified and tag loss to be estimated. Equal numbers of each strain with approximate fork length of 270 mm were stocked into Beaumont Pond, Ray's Pond and Emerson Pond in early May. Stocking density at the ponds ranged between 550 and 1,100 trout per hectare. All ponds are managed as put-and-take fisheries with a five trout limit. Condition and relative abundance of each strain was assessed periodically from May to September using standardized gill net sets designed to minimize trout mortality. Anglers who harvested a tagged trout were encouraged to report their catch online or by telephone, and this information was used to estimate angler harvest of each strain at each pond (Pine et al. 2012). Survey cards, distributed to anglers throughout the summer at the study ponds, were used to estimate anglers' tag reporting rate (Zale and Bain 1994).

Results

Relative weight (W_r) of each strain, a measure of fish condition, was good overall and typically comparable between the strains, although the Lyndon strain exhibited greater variation in condition (Figure 1). Both strains tended to lose condition over the summer.

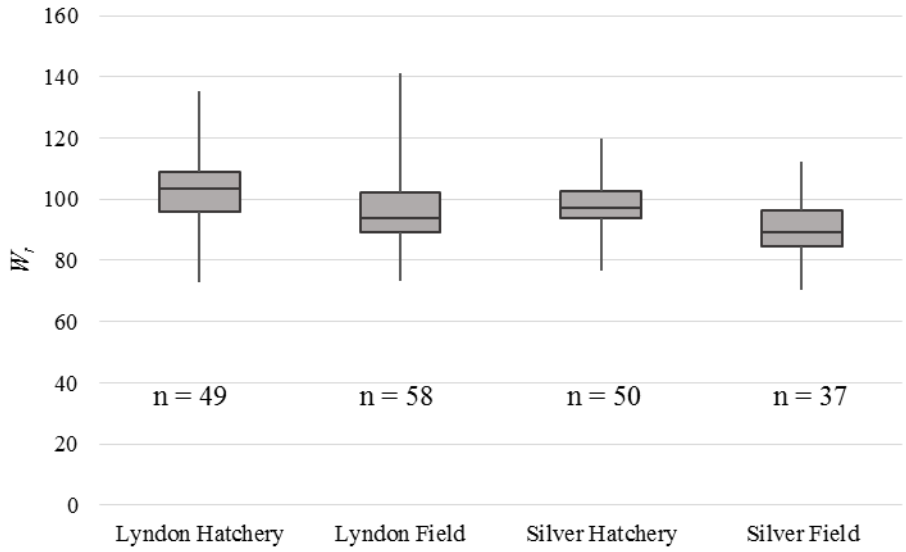

Figure 1. Relative weight (W_r) of two strains of rainbow trout estimated at the hatchery and post-stocking (May – September). Minimum and maximum, first- and third-quartile, and median values are represented by whiskers, boxes, and horizontal lines, respectively. A W_r of 100 describes a fish in good condition.

Of the 2,600 trout we tagged, anglers reported catching 680 (26%) trout, including 278 Lyndons and 402 Silvers. Of these, 142 (51%) Lyndons and 222 (55%) Silvers were kept (Table 1).

Table 1. Angler reporting rate of two strains of tagged trout stocked into three Enhanced Fish Stocking ponds during the summer of 2016.

EFS pond	Strain	Number tagged	Number reported	Number kept
Beaumont	Lyndon	500	80	38
	Silver	500	140	86
Emerson	Lyndon	500	118	57
	Silver	500	163	69
Ray's	Lyndon	300	80	47
	Silver	300	99	67

Most reports occurred within the first 70 days post-stocking. Our gill net catch of rainbow trout reflected this trend, becoming so low at Emerson and Beaumont ponds by July that netting was discontinued. Based on tag reporting information, and estimated tag loss and reporting rates of 0.24 and 0.21, respectively, we were able to estimate angler harvest rates of both strains at each study pond (Table 2).

Table 2. Estimates of angler harvest of two strains of rainbow trout stocked into Enhanced Fish Stocking ponds during the summer of 2016.

EFS pond	Lyndon		Silver	
	Median	95% CI	Median	95% CI
Beaumont	0.41	0.28 – 0.69	0.94	0.63 – 1.56
Emerson	0.62	0.42 – 1.04	0.76	0.51 – 1.26
Ray's	0.86	0.56 – 1.43	1.22	0.82 – 2.04
All ponds	0.59	0.40 – 1.00	0.92	0.63 – 1.56

Despite imprecision in our estimates, it is clear that a large proportion of both strains were harvested from most ponds. Interestingly, the Silver strain was more likely to be harvested than the Lyndon strain at any given pond, an observation corroborated by our gill net catch in which Lyndons outnumbered Silvers by a factor of 3:1.

Conclusions

Both the Lyndon and Troutlodge Silver strains of rainbow trout appear well-suited for stocking into EFS ponds. Both strains had good condition in a hatchery setting, and loss of condition post-stocking appeared modest. Both strains were readily harvested from our study ponds by anglers, although Silvers were consistently harvested at a greater rate than Lyndons at any given pond. In 2017/18, we will focus on replicating our results and reducing imprecision in our estimates of angler harvest.

Communications

- Catch information was submitted to the provincial Fisheries and Wildlife Management Information System database.
- Information signs were installed at study ponds.
- The study was featured on ACA's social media platforms.
- A website was developed for tag returns.

Literature Cited

Pine, W.E., J.E. Hightower, L.G. Coggins, M.V. Lauretta, and K.H. Pollock. 2012. Design and analysis of tagging studies. Pages 521–572. *In:* Fisheries techniques, 3rd edition. American Fisheries Society, Bethesda, Maryland.

Zale, A.V., and M.B. Bain. 1994. Management briefs: estimating tag-reporting rates with postcards as tag surrogates. North American Journal of Fisheries Management 14: 208-211.

Photos

An example of the information signs installed at study ponds. Photo: Andrew Clough

A large Lyndon strain rainbow trout captured at Ray’s Pond. Photo: Mandy Couve

Alberta Conservation Association employee Chad Judd checking a gill net at Ray's Pond.
Photo: Mike Rodtka