

Alberta Conservation Association 2011/12 Project Summary Report

Project Name: *Stream Crossing Remediation*

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Primary ACA staff on project:

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Partnerships

None

Key Findings

- Reviewed all ACA stream crossing information collected to date and developed a prioritized list of problem culverts to be targeted for remediation.
- Stream crossings in the Swan River watershed show the greatest failure rate (74%, n = 351).
- 574 kilometres of linear stream habitat is inaccessible to fish in the Swan River watershed due to hanging culverts.

Introduction

Arctic grayling (*Thymallus arcticus*) populations in Alberta have been severely declining since the 1950s, primarily due to habitat fragmentation resulting from improperly installed or hanging culverts (Alberta Sustainable Resource Development 2005). To generate information that will aid in mitigating these declines, Alberta Conservation Association (ACA) has conducted stream crossing inventory surveys on several watersheds. To date, we have conducted inventories in five northern watersheds (Simonette, Kakwa, Notikewin, Swan and Upper Athabasca rivers). Our data on the Simonette and Kakwa watersheds has proven valuable to both industry and regulatory agencies in raising awareness about the potential impact culverts have on fish passage, improving in-house monitoring and capitalizing on remediation opportunities. However, overall remediation activities to mitigate fish habitat fragmentation are either minimal or non-existent in some watersheds. Our goal is to review all ACA stream crossing information collected to date and develop a prioritized list of problem culverts to be targeted for remediation, and to use this information to actively solicit funding from crossing owners or other interested stakeholders. This report summarizes our prioritization process for five watersheds.

Methods

We analyzed stream crossing inventory data from five northern watersheds that shared similar crossing inventory data-collection protocols and data formats. We standardized the crossing

inventory data and developed a site prioritization process based on the following ranking criteria: stream order, fish presence at crossing, proximity to fish-bearing water and quantity of upstream habitat above barrier. We excluded sites with low to no water flow and crossings that contained barriers to fish passage (e.g., beaver dams) other than hanging outlets during the time of the field assessment. Lastly, we generated a final prioritized crossing remediation list and identified crossing ownership.

Results

Of the five watersheds assessed, the Swan River had the greatest number of stream crossings with potential fish passage barriers followed by Notikewin, Kakwa, Athabasca and Simonette, respectively (Table 1). We calculated that 574 km of linear stream habitat is inaccessible to fish in the Swan River watershed due to hanging culverts. The remediation ranking process identified key problem crossings to target for remediation (Table 2). If fixed, these crossings will have the greatest impact on fish passage and watershed connectivity.

Table 1. Percentage of stream crossings inventoried in five watersheds that are potential fish barriers.

Watershed	Potential fish barriers (%)	n
Swan	74	351
Notikewin	61	413
Kakwa	57	75
Upper Athabasca	34	397
Simonette	33	406

Table 2. Top two problem stream crossings in five watersheds to be targeted for remediation.

Watershed	Culvert #	Stream Order	Fish presence at crossing	Upstream habitat above barrier (km)
Swan	275	4	No	27.8
	447	4	No	23.0
Notikewin	18	3	No	16.3
	51	3	No	15.2
Kakwa	28	3	No	13.6
	93	3	No	4.7
Upper Athabasca	330	5	Yes	140.1
	73	4	Yes	30.6
Simonette	379	3	No	19.6
	271	2	No	6.9

Conclusions

We identified critical crossing sites to improve fish passage and watershed connectivity. With this information, crossing owners can develop remediation plans within their active areas.

Communications

- Presentation to the Foothills Stream Crossing Program and potential partners.
- Distributed prioritized list of stream crossings (with ownership removed) to the Department of Fisheries and Oceans Canada and Alberta Sustainable Resource Development.

Literature Cited

Alberta Sustainable Resource Development. 2005. Status of Arctic grayling (*Thymallus arcticus*) in Alberta. Alberta Sustainable Resource Development Fish and Wildlife Division, and Alberta Conservation Association. Wildlife Status Report No. 57, Edmonton, Alberta. 41 pp.