



Farm Adaptation Innovator Program Research Factsheet

Social Costs and Benefits of a Group Environmental Farm Plan: Alderson Creek, BC

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Geographic Applicability

Alderson Creek drains a small watershed east of Armstrong, BC. Specific results apply only to Alderson Creek. Results are applicable in similar situations elsewhere in BC and throughout the world.

Commodity Relevance

Methods and results are applicable to any situation where agricultural activities have environmental impacts.

Timeline

2015-2018

Purpose

Public funds are sometimes available to rural land owners to offset costs for environmental projects. This can be justified if the value society gains from these projects exceeds the cost. The costs are often easy to measure. However, benefits, such as enhanced habitat quality, improved water quality, better drainage during extreme weather events, and aesthetic improvements are more difficult to attach a monetary value too. This project's purpose is to estimate monetary values for the costs and benefits of the planned works in the Alderson Creek Group Environmental Farm Plan (GEFP).

Study Objectives

- Identify the impacts of the Alderson GEFP planned works that will generate costs or benefits to the land owners and/or to the larger community.
- Identify previous research that estimated values for impacts similar to the Alderson Creek project, and scale those values to appropriately represent Alderson Creek.
- Estimate the range of possible net benefit values for this project using the variation in the similar research studies consulted.

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Design

- Direct project costs were based on a budget estimating costs for implementing works proposed in the Group EFP.
- Literature and experts were consulted to identify important project impacts.
- Distribution of benefits over a twenty year planning horizon was based on project timeline and anticipated plant growth.
- Previous results for similar studies that reported impacts per unit land area per household per year were collected.
- The value ranges from the similar studies were scaled to Alderson Creek using project area, watershed area, and affected population, as appropriate to the impact.
- 10,000 random sets of impact values from the scaled value ranges were created.
- The project net present values (NPV) were calculated for 3m and 5m creek buffers, and with 3% and 5% discount rates for each set of values. Figure 1 shows distribution of these NPV estimates.

Key Findings

- Some project impacts affect the land owners directly while others primarily impact the larger community.
- Most existing research does not report willingness-to-pay (WTP) values per unit area per household per year. Therefore, little existing research supports analysing small projects.
- Project net present value highly sensitive to *who cares*. Relatively slow decay in household WTP for project benefits results in negative NPV.
- Project more likely to have a positive NPV when (1) 5m buffer used, (2) 3% discount rate used, making future benefits more prominent, and (3) benefits are not distance scaled, so people far away care about the project.

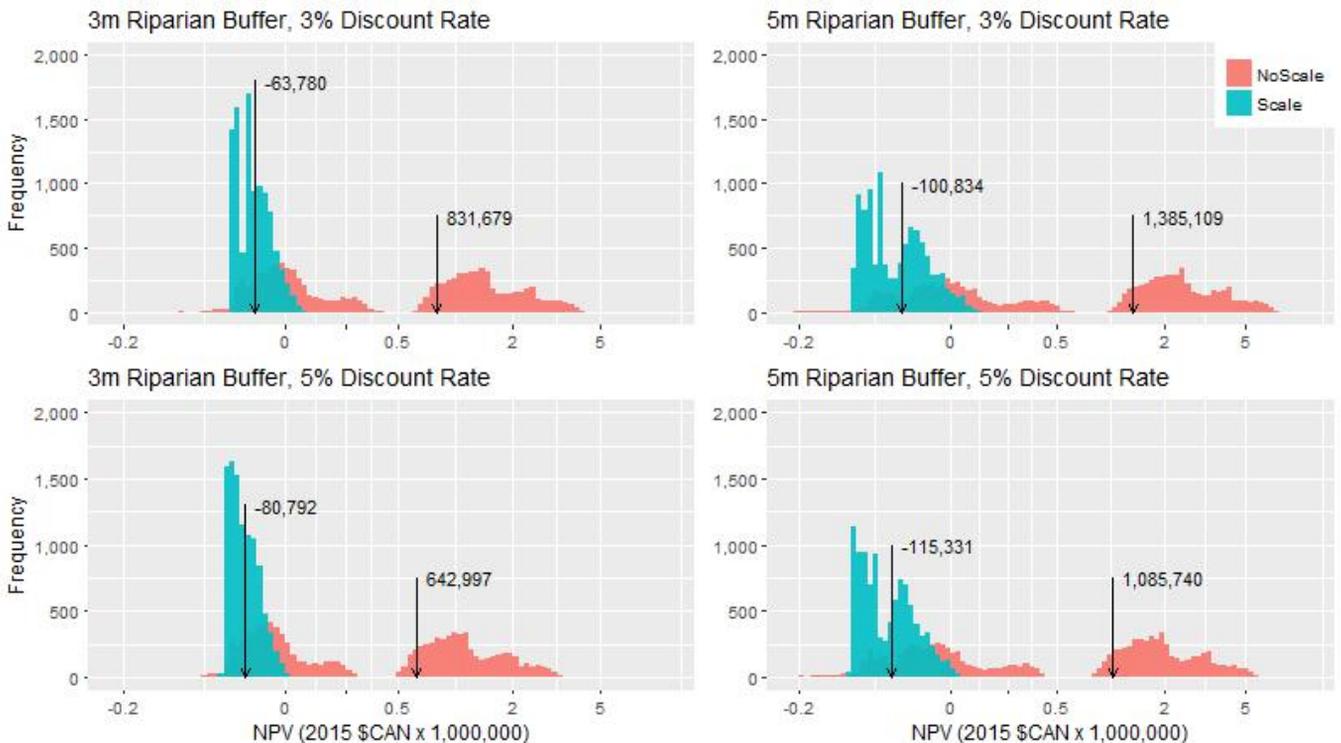


Figure 1. Net present value for four combinations of discount rate and fenced riparian buffer width. NoScale results for case where all residents within 100 km of project have same value, while Scale results are for values decaying with distance from project. Arrows mark averages.

Climate Change Adaptation Implications

Stream rehabilitation projects, such as the Alderson Creek project, can mitigate the impacts of extreme weather events, provide some carbon storage and offer habitat, which is necessary as natural species respond to climate change.

The full benefit of such mitigation projects may be much larger than those enjoyed by the participating owners. Accounting for these additional benefits can strengthen the economic case for supporting such projects.

Limitations

The results (Figure 1) are specific to this project, limiting their general application. The lack of many comparable studies results in imprecise NPV estimates.

Some impacts, such as increasing social connections between neighbours and changes in attitudes and knowledge have not been included with a monetary value. These impacts may be important.

Definitions

Willingness to pay (WTP): The maximum amount a person or household would pay for one more unit of a good or service.

Discounting: Expressing future costs and benefits in current (present value) terms, usually as compound interest.

Net Present Value: Sum of the present value of all costs and benefits of the project.

Next steps

Small scale environmental projects, such as proposed in the Alderson Creek Group EFP, will be central to climate adaptation efforts in agriculture. There is little current work about how the societal benefits from such projects relate to their spatial distribution. Economic valuation research should address this gap.

Few research results exist to help funders of small environmental projects with guidance for evaluating the economic return from their funding decisions. The usefulness of economic criteria for improving their choices could be enhanced through working with researchers on this topic.

For more information:

More information about the British Columbia Agriculture and Food Climate Action Initiative can be found at this link:

<http://www.bcagclimateaction.ca/>

Follow these links for additional information on related topics:

Economic valuation methods and applications

<http://www.ecosystemvaluation.org/>

Database of economic valuation studies

<http://www.evri.ca/>

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