

COST-BENEFIT ANALYSIS OF BEAVER COEXISTENCE TOOLS

1. WHAT IS THE PROBLEM?

While beavers and the wetlands their dams create play an important role in our ecosystem (biodiversity, water storage, resiliency to flood and drought), beaver dams can create considerable damage to human infrastructure (fell trees and shrubs, impound waters that flood agricultural lands, timberlands, buildings and roads). To reduce this damage, municipalities and land managers manage beavers through traditional means of lethal trapping, shooting, dam removal (manually, backhoe, or with explosives), bounty hunting, relocation, nuisance permits and poisoning.

These management approaches are costly, often do not permanently solve the problem as dams are quickly rebuilt as beavers recolonize and they limit the ability to realize the environmental benefits afforded by having beavers present on the landscape.

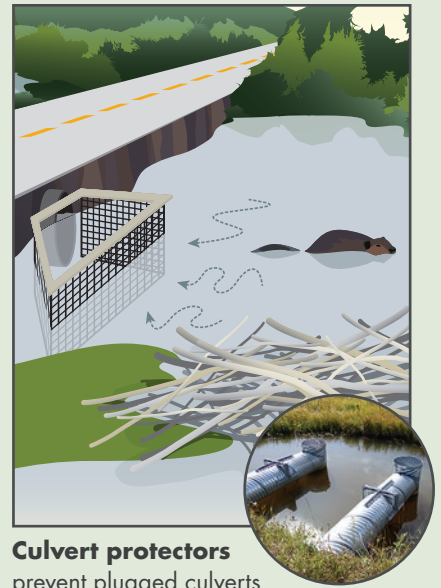


2. WHAT IS THE SOLUTION?

Coexistence tools, such as pond levellers or culvert protectors, are water control devices that are designed to prevent problems associated with beaver damming activity and present an alternative that is more efficient and cost-effective to managing beaver conflict compared to expensive annual beaver population control, repeated road maintenance and repairs, and damage to infrastructure due to flooding.



Pond levellers mitigate flooding by acting as an overflow valve through a beaver dam, allowing for the pond level to be maintained at a level that prevents flooding but allows beavers to maintain their pond and habitat.



Culvert protectors prevent plugged culverts that can cause flooding of roads and other areas.

3. ARE THESE TOOLS COST EFFECTIVE?

Yes, these tools save money because *Traditional Beaver Management is costly!*

A survey of 52 municipalities in Alberta found that the most common methods for managing beaver problems are removing dams with explosives or backhoes and trapping or shooting beavers.

The survey also showed that on average, annual municipal costs for traditional beaver management include:

Beaver control
\$21,933

Maintenance and repairing damage
\$108,615

(Hood, Manaloor, & Dzioba, 2018)

Examples of cost effectiveness

COOKING LAKE/BLACKFOOT PROVINCIAL RECREATION AREA, ALBERTA

TRADITIONAL MANAGEMENT

Dam removal (manually, backhoe, or explosives) lethal trapping, shooting, bounty hunting, poisoning.

VS

COEXISTENCE TOOLS

Includes monitoring, maintenance, and installation costs.

Pond levellers: installed 12 pond levellers over 3 years (calculated over expectant 7-year life span for pond leveller)

Total cost per site

\$19,624

Total cost all sites **\$235,488**

Total cost per site

\$1,934

Total cost all sites **\$23,208**

COST SAVINGS 90%

(Hood, Manaloor, & Dzioba, 2018)

ELK ISLAND NATIONAL PARK, ALBERTA

TRADITIONAL MANAGEMENT

Dam removal (manually, backhoe, or explosives) lethal trapping, shooting, bounty hunting, poisoning.

VS

COEXISTENCE TOOLS

Includes monitoring, maintenance, and installation costs.

Pond levellers: installed 4 pond levellers in 2019 (calculated over expectant 5-year life span for pond leveller)

Total cost per site

\$2,841

Total cost all sites **\$11,363**

Total cost per site

\$1,075

Total cost all sites **\$4,300**

COST SAVINGS 62%

(Bruinsma, 2020)

ADDITIONAL CASE STUDIES

Case studies from other jurisdictions show variability in the amount of cost savings, however a consistent result of significant savings.

Billerica MA installed 43 pond levellers from 2000-2019 resulting in a 44% cost savings annually*.

*over expectant 10-year life span for pond leveller

(Callahan, Berube, & Tourkantonis, 2019)

Coastal Plain VA installed 33 coexistence devices at 14 sites from 2004-2006* resulting in an 85% cost savings.

*costs for first year

(Boyles, Stephanie & Savitzky, Barbara, 2008)

Foothills County AB installed two beaver-proof culverts at a site in 2012, costing \$35,000 but requiring no further maintenance. Installation costs recouped, now saving \$5,000-\$10,000 annually.

(Oel & Gallant, 2019)

ADDITIONAL BENEFITS

Cost savings outlined in this fact sheet are conservative. They do not factor in the other benefits that coexistence tools allow:

- **Worker safety.** Repairing blocked culverts manually, or by using heavy equipment is an expensive, arduous, and potentially dangerous task compared to the routine maintenance required with coexistence tools.
- **Ecological services.** One study quantified the value of wetlands created by beaver activity to be \$7000 per acre per year. Combined, the value derived from water storage, erosion control, reduction in turbidity, flow and flood control and habitat creation is invaluable.
- **Coexistence with wildlife.** These tools offer a humane management solution to beaver related challenges, addressing the public movement toward coexistence with wildlife.

SUMMARY

The costs to install and maintain coexistence tools were significantly lower compared to traditional beaver maintenance approaches. Given the demonstrated low costs to build and maintain flow devices, municipalities and transportation agencies may substantially reduce costs by installing and maintaining flow devices at chronic beaver damage sites.

Reference list can be viewed at www.workingwithbeavers.ca



FUNDERS
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