

A STRATEGIC APPROACH FOR IMPROVING ECOSYSTEM HEALTH IN ELK /BEAVER LAKE CAPITAL REGIONAL DISTRICT PARK by Mick Collins and Robert McConnell, Co-Chairs Elk/Beaver Lake Initiative, Victoria Golden Rods and Reels Fishing and Social Club [www.goldenrodsandreels.com](http://www.goldenrodsandreels.com) — March 2016

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## INTRODUCTION

On October 29, 2015 over 200 people attended a public forum at the University of Victoria co-hosted by Victoria Golden Rods and Reels and the UVic Environmental Law Centre (ELC). The purpose was to update participants on water quality issues in Elk/Beaver Lake and discuss potential remediation measures. Ten stakeholder organizations set up booths to highlight their activities and three speakers gave presentations and fielded questions, moderated by Calvin Sanborn, ELC Legal Director.

This event marked the culmination of two years of collaborative scientific research between governments, academic and non-profit organizations. A video of the event, speaker PowerPoint presentations, and recent reports are located at <http://colquitzcoalition.com/publications-and-data>

The purpose of this brief report is to contribute to the ongoing process of comprehensively addressing how the health of the Elk/Beaver Lake ecosystem and its watershed can be improved.

**The report is designed to outline and facilitate discussion on science based steps which can be taken in both the short and longer term.**

## **The Five Elements of Ecosystem Health for Elk/Beaver Lake**

There is now a general consensus that a holistic, integrated approach should focus on five **inter-linked** topics. We are advocating increased, collaborative, **ENVIRONMENTAL MANAGEMENT**. Before a problem can be effectively managed it must be understood to the fullest extent possible by qualified scientists, engineers, etc., bearing in mind that lake ecosystems are inherently complex and can be unpredictable.

### 1. WATERSHED MANAGEMENT

Numerous studies and projects around the world demonstrate that controlling nutrient inputs to eutrophic (enriched) lakes is beneficial. Although annual external nutrient loadings to Elk/Beaver Lake are estimated to be no more than 15% of total loading, reducing these loadings is important. They are concentrated in the winter months and contribute to seasonal blue-green, toxic algae blooms and the instability of the unbalanced lake ecosystem.

A relatively inexpensive practical project which could be undertaken immediately is to inspect and upgrade (as necessary) culverts carrying storm water from the Pat Bay Highway and elsewhere into the lake. Even directing storm water through buried metal containers of porous material can be effective in reducing nutrient inflows. Other measures can be identified when producing a **WATERSHED MANAGEMENT PLAN for its incoming streams, O'Donnel, Haliburton, Hamsterly, and Linnet.**

[http://www.seattletimes.com/seattle-news/environment/whats-killing-coho-study-points-to-urban-road-runoff/?utm\\_content=buffer54337&utm\\_medium=social&utm\\_source=facebook.com&utm\\_campaign=buffer](http://www.seattletimes.com/seattle-news/environment/whats-killing-coho-study-points-to-urban-road-runoff/?utm_content=buffer54337&utm_medium=social&utm_source=facebook.com&utm_campaign=buffer)

## 2. WATER QUALITY REMEDIATION

A recent report by Freshwater Research [www.fwr.ca](http://www.fwr.ca) recommends that an application of Phoslock costing \$1.7 million be utilized to control phosphorus. Eighty five percent of the annual phosphorous load is from internal loading, released from sediments under low oxygen conditions. Updated Provincial lake water quality objectives are currently being formulated.

[http://colquitzcoalition.com/wp-content/uploads/2015/06/Nurnberg-Elk-Lake-Remediation-Report-2016\\_03\\_01.pdf](http://colquitzcoalition.com/wp-content/uploads/2015/06/Nurnberg-Elk-Lake-Remediation-Report-2016_03_01.pdf)

## 3. AQUATIC WEED MANAGEMENT

Large scale removal of aquatic weeds using a new weed harvester will have many ecological and recreational benefits. Removal reduces rotting biomass which contributes to serious summer oxygen depletion. Removing excessive weeds from the lake is imperative.

Conducting an annual weed inventory/ mapping project will assist in determining priority areas and impacts. The heaviest weed concentrations are currently south of the Rowing Centre, through “the narrows” and into Beaver Lake.

Victoria Golden Rods and Reels will continue to study the feasibility of installing boat washing facilities at the two boat launch sites to reduce transfer of weeds, etc. between lakes.

## 4. FISHERIES MANAGEMENT

The World Fisheries Trust [www.worldfish.org](http://www.worldfish.org) has offered to work with Victoria Golden Rods and Reels and other partners to secure funding and conduct a scientific study to gain a clearer understanding of the current fish population and its role in the water quality /lake ecosystem health. The concern is that invasive species such as carp, yellow perch and pumpkinseed sunfish are taking over and having deleterious impacts. Information from this study will determine what, if any, management steps should be taken. Given that carp are now established in two major Vancouver Island habitats ((Elk/Beaver and Sproat Lakes), greater knowledge of this species and its effects is important.

## 5. PUBLIC INVOLVEMENT IN STEWARDSHIP

There will be a continuing need for environmental monitoring and public education and involvement as further investments are made to improve the condition of the lake ecosystem. This monitoring/management should include not only the watershed, aquatic weeds, fisheries, and water quality, but also the overall environment. Bullfrogs, geese, invasive terrestrial plants, etc. may also pose threats to the Elk/Beaver Lake Regional Park and require science-based management.

A stewardship group (Friends of Elk/Beaver Lake Regional Park?) should be established to work with the various government organizations that share jurisdiction of the lake and its watershed.

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## **Acknowledgements**

The Elk/Beaver Lake Stewardship Initiative is a multi-jurisdictional venture involving the Province of BC, Capital Regional District, and District of Saanich, in cooperation with non profit organizations, to improve water quality for all recreational users. Funding and/or volunteer resources and in-kind contributions provided by:

- Canadian Wildlife Federation
- BC Wildlife Federation
- BC Lake Stewardship Society
- Habitat Conservation Trust Foundation
- Freshwater Fisheries Society of BC
- Peninsula Streams Society
- Colquitz Watershed Stewardship Coalition
- Victoria Rowing Society, Rowing Canada, & Victoria City Rowing Club
- Victoria Fish & Game Protective Association
- Environmental Law Centre University of Victoria
- Victoria Golden Rods and Reels Fishing and Social Club

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