FRIENDS *of* CORTES ISLAND SOCIETY

FRIENDS OF CORTES ISLAND (FOCI)

HAGUE AND GUNFLINT LAKES BIOREMEDIATION RESEARCH PROJECT 2018

Introduction

This research project is to look into the feasibility of developing potential bioremediation* measures for Hague and Gunflint lakes on Cortes Island, BC. The results will inform the development of a bioremediation project to reduce nutrient input and mitigate the impact of algal blooms on these valuable water bodies.

* Bioremediation is the use of natural vegetation to uptake potentially harmful nutrients that can feed algae blooms – it includes shoreline planting and the use of floating vegetation rafts. It can both mitigate impacts and build up resilience to long-term change.

Background

In 2014, Hague and Gunflint Lakes experienced an historically large algae bloom, causing fish die off. Further blooms have occurred in subsequent years.

These blooms sparked widespread concern in our community, and it became clear that a coordinated response and research was needed. FOCI successfully established our citizen science based lake stewardship initiative, dedicated to the protection and stewardship of the lakes see www.friendsofcortes.org for more information.

We have subsequently undertaken extensive water quality monitoring of both lakes. This monitoring has helped us to better understand the ecology of the lakes and what is happening to them. We have also reviewed historical data, and recently produced a monitoring report that analyses all the data collected to date. The report is available on our website http://www.friendsofcortes.org/wp-content/uploads/2017/06/Hague-Gunflint-Lakes-Monitoring-Report-2017.pdf

Whilst monitoring is ongoing, the data collected so far indicates that human settlement around the lakes have contributed through land-use

changes, animal husbandry and septic flow to heightened nutrient and bacterial loading. These factors contribute to algae blooms.

Repeated blooms are likely accelerating the long-term transformation of the lakes toward a eutrophic state, with the very real risk of the lakes shifting towards permanent anaerobic conditions, as has happened with other lakes in the region.

It is clear that steps need to be taken now to reduce nutrient input into the lakes to help reverse the trend, and ensure that they stay healthy into the future.

We have recently received seed funding from the Habitat Conservation Trust Foundation to undertake research into possible bioremediation measures that could be used on the lakes to help mitigate nutrient input and reduce the blooms. We wish to appoint an experienced researcher to carry out this work for us. The work required is set out below:

Hague and Gunflint Lakes Bioremediation Research Project

Objective 1: Investigate different potential bioremediation measures and best practice.

Actions:

- Undertake web based research of potential bioremediation measures available
- Research and contact relevant conservation bodies and agencies, academic institutions, ecological consultancies and others to determine best practice and likelihood of success
- Review myco-remediation project at Linnaea Farm, and potential for development, including the potential provision of 'myco-remediation kits' to local people
- Research and compare the value and effectiveness of different measures and vegetation types to reduce nutrient levels sufficiently to influence the algal blooms, together with their likely conservation benefits to fish, wildlife and / or their habitats
- Determine which bioremediation measures are best suited to Hague and Gunflint Lakes including the appropriateness of different plant species

Objective 2: Research potential locations for introduction of bioremediation measures

Actions:

- Review landholdings and ownerships around both lakes and determine their suitability for the introduction of bioremediation measures
- Visit and determine priority locations for bioremediation, based on likelihood of success, physical characteristics, as well as potential need eg near to greatest runoff
- Contact lakeside landowners, and determine what permissions are required and likely to be forthcoming
- Review the potential options for introducing bioremediation measures at Linnaea Farm on Gunflint lake – this 314 Organic farm and land trust, provides one of the best potential opportunities for bioremediation in the watershed

Objective 3: Determine the feasibility of implementing different measures

Actions:

- Research the practicalities and resource implications for different measures in chosen locations, and feasibility of implementation.
- Determine long term maintenance requirements and their feasibility
- Determine costs / benefits for each measure to include any potential unforeseen adverse impacts

Objective 4: Prepare detailed project plan/s

Actions:

- Based on research outlined above, draw up detailed project plan/s with work plan and budget.

Timeline: This project needs to be completed by October 10th 2018

Experience:

You will need demonstrated experience in / knowledge of:

1. Lake ecology and conservation within British Columbia, Canada, including knowledge and ability to identify plant and animal species.
2. Research experience - either educational or professional
3. A degree in a relevant environmental subject

4. Experience of bioremediation techniques including practical application would be a significant advantage
5. Practical conservation and / ecological restoration techniques
6. Experience of report writing and preparing project plans
7. Ability to undertake quality work under a tight deadline

A canoe can be provided together with a volunteer assistant as needed.

How to apply

Please send your resume together with a cover letter explaining your relevant experience and knowledge by July 15 2018, together with a quote for carrying out this work. Please also send us an example of a relevant report that you have written.

Please send to friendsofcortes@gmail.com

Further information

Please contact Helen Hall, Executive Director, Friends of Cortes Island should you have any questions, or require any further information.

Email: friendsofcortes@gmail.com Tel: 250 935 0087