

Project Completion Report

Project Name: 2017 Spartina Control - Lower Mainland

Technical Advisor: Matt Christensen

Supervisor: Lauryn Williams

Project Number: 441825

Start Date: May 24 2017

End Date: August 29 2017

Project Partners: Ducks Unlimited Canada/ BC Spartina Working Group

Name of BCCF employees: Emma Cunningham, Lisa Horton, Lauryn Williams, Vinson Yau

Project Description

Spartina spp., commonly known as cordgrass, are invasive aquatic grasses found along the Pacific Coast of BC. Spartina is an aggressive, salt-tolerant grass that can dominate intertidal zones and modify natural mudflats. Due to its dense root system, Spartina traps sediment, raises vegetation elevations, and creates “meadows” which are dense patches of Spartina with a steep seaward edge. These meadows alter water circulation patterns (which increases the risk of flooding), reshape navigation channels, and create monotype “Spartina meadows” which result in a loss of habitat for birds, fish, and shellfish species. There are four species of Spartina, three of which are presently found within BC: saltmeadow cordgrass (*Spartina patens*), denseflower cordgrass (*Spartina densiflora*), and English cordgrass (*Spartina anglica*). The Lower Mainland Spartina Control program is part of the annual efforts of the BC Spartina Working Group (BC SWG), working towards the continued monitoring and control of these noxious grasses along BC’s shores.

Objectives:

The primary objective of the project is to inventory all Spartina plants located within the Lower Mainland and implement the procedures necessary to control their spread. Control measure options include a combination of hand removal and herbicide application treatments. The purpose of GPS and iPhone mapping techniques are to distinguish areas of high and low Spartina concentrations. Collected data is then compared to previous years to determine areas where progress has been made, and highlight areas of high priority within the Lower Mainland. With the continued monitoring efforts of Spartina, survey data is compared to previous years to develop trends and provide insight on control methods against the aggressive plant species threatening British Columbia’s coastal ecosystems.

Training Received:

At the beginning of the work term, each crew member received training in vegetation identification, monitoring methods, and mapping with both GPS units and iPhone apps. The Collector app was used to record track logs, while the Survey123 app was used to map plants according to their size class. Our technical supervisor, Matt Christensen, provided support and guidance to accomplish project goals.

Ducks Unlimited Canada provided a single day workshop on Vancouver Island at the Best Western Hotel in Courtenay. The workshop involved plant identification as well as techniques on

how to perform a vegetation survey, including setting sample plots and estimating percent area coverage along the Courtenay River Estuary.

The Spartina crew participated in a two-day, swift water rescue course led by Raven Rescue. The course highlighted the basics of water safety and common risks associated with moving water, and were able to simulate a rescue situation along the Coquitlam River. Through this training the team received the “Rescue From Water: Basic and Moving” Certificate. Additionally, crew members were updated with WHMIS training and Occupational First Aid level 1.

Methods:

Monitoring

Following previous years, the 2017 Spartina crew focused on the mapping and removal of *S. anglica* within Boundary Bay and Robert’s Bank. The crew initially mapped using GPS units while trialing iPhones, and transitioned entirely to using iPhones half way through the work term. Each member was equipped with an iPhone 4 and utilized Survey123 for ArcGIS and ArcGIS Collector apps which allowed plants to be classified based on their size according to the BC SWG (Table #). The crew also worked in collaboration with other BC Spartina Working group member agencies including: The Corporation of Delta’s Invasive Management Crew, Squamish Valley Watershed volunteers, and the Salmon Habitat Restoration Program (SHaRP). Each volunteer member was equipped with a Garmin GPS unit to map all *S. anglica* plants found, certain exceptions were made where volunteer members used iPhones. Each plant was flagged with a GPS waypoint and classified based on its size according to the BC SWG. Mapping based on its size class allows the BC SWG to track population trends and prioritize areas for manual removal and herbicide treatment.

Control:

Manual removal was conducted for some single (size class S) plants. Plants were dug out by hand and the entire root system was removed from the sediment. They were then transported out of the field and disposed of in the garbage.

Chemical removal was the primary treatment method applied to *S. anglica*. A herbicide crew was contracted by Ducks Unlimited to prepare and apply the herbicide *Habitat*. Plants were treated directly with herbicide to minimize waste and unnecessary application. Herbicide application was conducted around the tides. Plants were treated 4 hours before and after tides reached 3 m to allow the herbicide to dry.

Recommendations and Feedback:

For further progression of this project, we recommend that all crew members utilize the same mapping software. Though the GPS units were easy to use, when training volunteers, it proved difficult to implement uniform mapping procedures, resulting in a loss of data. Homogeneity across devices would decrease the chance of errors. Additionally, a different GPS device would increase the coordinate accuracy of the iPhone apps, as opposed to the Bad Elf GPS device. Survey123 required 10 seconds to obtain accurate coordinates, which proved inefficient in regards to time management.

Crew members should obtain their Industrial Vegetation and Noxious Weeds herbicide Certificate to further promote time management and efficiency. Receiving certification would increase productivity as the Spartina Working crew could map and treat plants simultaneously. A key component in obtaining certification requires booking the examination well in advance to set a deadline, and to help with scheduling study time.

A time management schedule of the entire season should be planned near the beginning of the work season. This would allow the crew to plan site routines, determine how much time should be allocated to map certain , as well as what special equipment is required.