FAIRBANKS SOIL & WATER
CONSERVATION DISTRICT

Chena Slough *Elodea* Control Trial Project: 2013 Overview

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For: The Residents of Fairbanks and North Pole

Background

During 2010 an aquatic invasive plant, *Elodea*, was discovered growing in the Chena Slough. The Chena Slough is a tributary of the Chena River east of Fairbanks in the town of North Pole. *Elodea* is abundant in the Slough and has been shown to degrade habitat in other areas and limit recreation opportunities. A survey conducted by the Fairbanks Soil and Water Conservation District (FSWCD) during 2011 determined that a 10-mile reach of the lower slough was infested with *Elodea*. Of the approximately 117 acres of slough in this ten mile reach, *Elodea* occupied 55 acres with coverage varying from 0% to nearly 100% coverage in some locations. In addition, *Elodea* has been found in the lower Chena River downstream of the mouth of the slough, as well as in the nearby Chena Lakes Recreation Area. The *Elodea* infestation in Chena Slough is a high priority management issue for residents in the Fairbanks area because of the coverage and density of the infestation, and the slough's connectivity to downstream waters. Those waters include important spawning and rearing habitat for Yukon River Chinook Salmon and other important subsistence and sport fish species. An *Elodea* control trial was initiated in 2013 to evaluate potential eradication methods.

Objective

The purpose of this control trial was to determine the feasibility of eradicating *Elodea* using a mechanical suction dredge system with a four inch diameter hose.

Procedure

Initial tasks included assembly of a kit pontoon boat and assembly of all dredge components. The sluice way box is a component and has three output terminals to collect Elodea in 2 ft^3 mesh bags. Staff at the Chena Lakes Recreation Area assisted by assembling the pontoon boat. A trial location was selected just upstream of Repp Road on the Chena Slough, which was chosen due to its proximity to the uppermost portion of the *Elodea* infestation, ease of access, and variability in water depth. After assembly, staff from the local dive shop 'Test the Waters' and the Fairbanks Soil and Water Conservation District worked together to get the dredge system functioning correctly. The suction dredge system did not work well in water less than three feet deep, due to water pressure issues and the intake hose length. Experimental approaches in these shallow areas included the use of pitchforks to remove *Elodea* which was then loaded onto an inflatable raft. From mid-July through mid-October, crews manually removed *Elodea* in shallow water and periodically used the suction dredge in deep water. Work crews included divers from Test the Waters, FSWCD employees, and other volunteers. Typically there were 4 people working each day for approximately 2-3 hours. To estimate the time required to remove *Elodea*, 20m x 20m quadrats were established and delineated with buoys. A 30ft-long *Elodea* fragment barrier was deployed downstream of work areas to collect *Elodea* fragments; it was constructed of an oil collection boom with a ¼ inch plastic mesh weighted by a metal chain. Staff then documented how many people were pitchforking or dredging and how long it took to remove the Elodea from the entire quadrat. Those numbers were then extrapolated and used to estimate the time required to suppress larger areas with various-sized crews.

Figure 1. SCUBA Diver feeding Elodea into the 4 inch dredge hose

Figure 2. FSWCD Employees on the pontoon boat

Figure 3. FSWCD and volunteer work crew pitchforking *Elodea*

Results and Conclusions

In 2013 we were able to remove the majority of the *Elodea* from a 0.59 acre area of the slough using the mechanical suction dredge and supplementing with manual pitchforking in shallow water. Hourly collection rates with the dredge system varied between 10-26 bags, each with the capacity of 2 ft^3. The combined person-hours spent removing *Elodea* by means of pitchforking and suction dredging, were 238.

The rate of removal with our trial method based on the 2013 trial was approximately 400 hours for 1 acre of *Elodea*. In one 4 month field season, an 8-person crew could remove about 13 acres. It would take roughly 5 years to complete an initial *Elodea* removal for the entire 55-acre infestation.

These numbers are estimates and would vary depending on the site. This was an experimental trial so work will be more efficient and take less person hours to complete in the future. However, additional time is needed to move the barge to different worksites and to remove *Elodea* material offsite. Crews would struggle to dredge underwater or pitchfork for more than 4 hours a day. The work done in the slough was very physically taxing.

It is still unclear how effective this combination of mechanical and manual control measures was. FSWCD will revisit the control site in 2014 to observe the amount of *Elodea* regrowth. However, after about a week of control at the trial site, water movement through the areas treated appeared to increase. An increase of Arctic grayling at the control site, under the pontoon boat was also observed. Walking through the areas where *Elodea* was removed became much easier after treatment. These observations, though not currently measured, do suggest that areas that are treated will likely see gains for both wildlife and recreational use.

Lessons Learned

Elodea removal is extremely difficult and slow with mechanical methods!
Possible future modifications and alternatives include:

- Modifying the dredge to work in shallower water
- Improving efficiency of plant material disposal
- Exploring cost and feasibility of herbicide control

Most importantly we recognize the need to gain as much community support and awareness in the hopes that we could increase volunteers and usage concerns over how control efforts could affect the slough.

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