

# European Frogbit Spread Prevention Pilot Project – Year Three

## Final Report

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Lewis Creek Association

442 Lewis Creek Rd., Charlotte, VT 05445

### Executive Summary:

With support from the Lake Champlain Basin Program, The Kelsey Trust, U.S. Fish and Wildlife Service and Point Bay Marina; Lewis Creek Association completed a third year study to investigate the feasibility of removing European frogbit (*Hydrocharis morsus-ranae*) from a ~ 45 acre wetland complex and to restore this state-significant habitat area of Lake Champlain's Town Farm Bay in Charlotte, Vermont. 2011 partnership roles included technical support from Ann Bove of VTDEC, GIS support from Ryan Crehan of US Fish and Wildlife Service, and field work support from Point Bay Marina. Point Bay Marina also donated two frogbit holding scows, a plant composting area and off season boat storage.

Objectives for the third year of this project were to complete a sweep of the wetland area, finalize a removal methodology and management plan, identify costs, continue education outreach and volunteer recruitment, and facilitate frogbit removal initiatives in neighboring lake edge areas.

In year 3, the wetland area was swept using 1825 hours of labor from June through July (paid crew -1,630 hours, volunteer crew - 195 hours). Seven and one half tons of frogbit were removed. In study years 2 and 3, removal of frogbit plants was monitored by work zones with target percent frogbit covers ranging from 15% to 30%. In year 3, nearly all work zones were reswept to their percent cover targets. Of the eighteen zones, five were recorded as having a percent cover no more than 10% above target percents.

Record of Removal Hours and Tons Removed

Year	Labor hrs	Paid hrs	Volunteer hrs	Tons Removed
1	1146	975	171	7
2	2497	2242	253	28
3	1825	1630	195	7.5
Total	5468	4847	619	42.5

Removal costs, a hand harvesting methodology and a long term management plan were identified and finalized. Due to flooding in the spring, the management plan was adapted to fit the dramatic high water levels (103' - 96.5') and impacts to native and non-native plant community presence and densities. Areas that had previously been inaccessible were now accessible, and areas recommended to be worked in first had almost no frogbit present. This

experience allowed for additional management plan refinements and continual application of the adaptive management strategy which is an important aspect of invasive plant removal projects.

Education outreach included an April call for volunteers in newsletters of The Nature Conservancy, Lewis Creek Association and VTDEC. An article was released in the Charlotte News in June and September highlighting the significance of the shoreline area, the results from this season and the need for an ongoing town involved volunteer caretaking program.

In July the Lewis Creek Association had a booth at the Charlotte town party with educational materials about invasive plants and the frogbit removal project. A survey was completed of the extent of the frogbit infestation in the lower LaPlatte River and a report and map was produced and presented to the Town of Shelburne. An intertown shoreline caretaking program is being proposed to nearby towns.

### **Project History:**

European frogbit, a non-native, invasive aquatic plant, is known to decrease native vegetation populations and diversity in wetland habitats and is suspected of decreasing oxygen levels, which may directly impact habitat for spawning fish and benthic organisms. Though frogbit is known to occur throughout the greater St. Lawrence watershed, in Quebec, Vermont and New York, little is known about congestion levels or costs and best management practices for harvesting frogbit.

Frogbit was first observed and documented at low levels in a Natural Heritage site in Town Farm Bay in 2007. By 2009, the percent frogbit cover was estimated at 50%. Therefore, approximately \$80,000 was spent from 2009 to 2011 to reduce the frogbit population to low levels to allow for the possibility of a manageable long term volunteer removal program.

### **Results:**

#### **Season Preparation**

A field season plan and hiring of the crew occurred from March to April, 2011. Year 3 utilized five paid field crew workers, two project coordinators and many volunteers on a weekly basis. All field crew members were experienced, had previously worked on this project, and were contacted through e-mail notification for rehiring. Memorandums of Agreement were prepared and signed for all paid workers. A call for volunteers was sent out through state and private conservation newsletters. Town Farm Road LLC provided site access and a storage/meeting place barn, and an adjoining Kimball Brook riparian landowner offered a second access site for additional site access.

Equipment was purchased and the site was prepared for the field season. Record keeping materials were updated (Appendix A- Daily Collection Log). GIS worksite management zone maps were created by Ryan Crehan of US Fish and Wildlife Services (Appendix B- Worksite Map).

A field supervisor coordinated an orientation day on the first day to familiarize the crew with the work plan, new record keeping forms and maps. A plan was made for daily schedules, equipment care and communication between all crew members. Daily hours worked, pounds of frogbit removed from each zone, weather conditions, air temperature, water temperature, and lake level were recorded on a “Daily Collection Log” form (Appendix A). Volunteer labor coordination was also completed at this time and led by the volunteer coordinator/field manager. Volunteer hours and removal amounts were also recorded on the “Daily Collection Log” form. Season summary data were recorded on the “Annual Frogbit Removal Log Results” form (Appendix C).

### **Field work and results**

From June to July the crew completed a full sweep of their designated work zones and the volunteers completed two full sweeps of the volunteer work zones. Utilizing experience from the three field seasons, it is estimated that when a field crew conducted a “sweep” of an area or zone, approximately 70-85% of all visible frogbit was able to be cleared from the wetland depending on the lake bottom substrate and plant community density of the zone. After completing the third year of frogbit monitoring and removal, it appeared that removal efforts of years one and two indeed resulted in a decline of frogbit growth in year three.

Due to the high water levels in 2011, field crew and volunteers worked the majority of time in canoes and kayaks and very little with chest or hip waders. The preferred method of removal is handharvesting by using metal gardening rakes and small long handled bamboo rakes to reach both individual plants and larger mats. To contain harvested frogbit, kayaks were fitted with plastic laundry baskets and bungee cords to the bow of the boats while canoes carried 5-gallon plastic buckets with holes drilled in the bottom to allow water to drain. The Town Farm Bay method of removing frogbit from the wetland area was by unloading drained buckets and laundry baskets onto a “scow,” or floating dock that was anchored in the wetland and had been prepared with 8-inch sides and lined with black felt landscaping fabric. The scows were introduced to the removal efforts in 2010. They were donated by Point Bay Marina in Charlotte, and were adapted with walls and fabric to hold a ~ week’s amount of hand harvested frogbit. Marina staff donated time in 2010 and 2011 to tow and empty the filled scows at the marina when they became full.

During the 2011 and 2010 seasons, the 2009 “Best Management Practice” guide for frogbit disposal was followed carefully to ensure that harvested frogbit was completely desiccated before removal from the marina site. Frogbit plants were stored on upslope land near the marina where it quickly decomposed. Composted frogbit was donated to local farmers in the area for use as mulch and compost for their fields and gardens. The “Best Management Practice” for frogbit disposal includes photographs of phases of decomposing material for future projects to match, and is available in the Management Plan and on the Lewis Creek Association website.

During the 2011 field season, three surveys to determine percent cover of frogbit were performed. The purpose of these surveys was to record and monitor the general percent cover of the wetland throughout the field season. Of the eighteen zones, five were recorded as having a percent cover no more than 10% above target percents, while remaining thirteen were successfully kept below the target percentages. A procedure for this % cover survey is located in Appendix D. Results of the surveys are found in the “Season Record Form” (Appendix E).

## **Education Outreach**

Local outreach was completed during the field season with two articles released in the Charlotte newspaper promoting the project and calling for volunteers (See Appendix F). A booth was reserved at the Charlotte town party. A poster with pictures and information about the wetland and project was created and informational pamphlets about frogbit and other invasive plants were handed out. A signup sheet for interested volunteers was provided. In order to continue education and outreach to neighboring areas, a survey was conducted in July in the lower LaPlatte River to understand and record the extent of the frogbit infestation in this area. A report and map of this survey was prepared to show the extent of the infestation to Shelburne (Appendix G).

## **Final Report, Management Plan and Recommendations**

A final report and updated management plan was prepared. This third year's field season, with the help of the work from the previous field seasons, has accomplished the research and restoration goals of this project.

Restoring very congested shorelines areas is expensive but possible. Early detection and prevention should be key goals for shoreline towns. To protect this \$80,000 investment and the lake shore public values, it is recommended to establish an inter town water quality monitoring and weed management initiatives from Shelburne to Ferrisburgh. This program would provide site level data and accomplish water quality improvement recommendations that are called for by the state and lake edge towns. To complement the LCBP boat launch steward program, this program could more greatly insure that frogbit populations do not reach congestion levels in key lake bay areas of high public value.

LCA is working with shoreline towns to pursue this goal in keeping with the Opportunities for Action Plan that calls for early detection and aquatic invasive plant prevention programs for Lake Champlain. LCA will continue efforts to advocate for a high level of water quality and aquatic resource management at the town level.

## **Appendices:**

Appendix A: Daily Collection Log

Appendix B: Worksite Map

Appendix C: 2011 Annual Frogbit Removal Results

Appendix D: 2011 Procedure for Percent Cover Survey

Appendix E: 2011 Season Records Form

Appendix F: Articles in Charlotte Citizen, June 2011, September 2011

Appendix G: LaPlatte River Survey Summary and Map, July 2011

Appendix H: Photos