

MSc studentship: Helen Moran

Academic supervisors: Dr. Frances Lucy (ITSligo)

Room G2015, Centre for Environmental Research Innovation and Sustainability (CERIS), The Institute of Technology Sligo, Ash Lane, Sligo.

Mobile: +353(0)86 3755154

<https://www.linkedin.com/in/aquaticinvasives>



## **An investigation into acoustic detection of *Lagarosiphon major* (Ridley) in an Irish lake**

*Lagarosiphon major*, curly-leaved waterweed, is a high impact invasive species in freshwater systems known to reduce aquatic ecosystem biodiversity. A relatively new invader to Ireland, it was initially discovered in Lough Corrib, Co. Galway in 2005. Various management techniques have been researched and utilised to control *L. major* since its initial discovery. Devising an effective detection method is necessary to monitor the success of the control programme and also to investigate any further spread within Lough Corrib. In lakes, detection methods typically consist of snorkel and SCUBA diving surveys, bathyscope observations, grapnel sampling and local knowledge. In this research, an innovative acoustic detection method was utilised. Trials were carried out in Lough Corrib to determine the effectiveness of this alternative detection method for *Lagarosiphon*. A professional grade side scan sonar, the L-3 Klein hydroscan 3500, was deployed and acoustic imagery was recorded and processed using Sonarwiz software. Ground-truthing SCUBA sampling verified the sonar imagery as *Lagarosiphon major*. The results presented show the potential for assessing recovery of the aquatic habitat by using side scan sonar in an enhanced ecosystem management programme. This can be achieved through accurate geo-referencing, speed of results and by the creation of a data base of imagery for future comparison purposes. In addition, combining the sonar imagery with ArcGIS mapping has enabled a new approach to management of this invader in Lough Corrib.

### **The aim of my research is to:**

- Firstly establish if side scan sonar can be utilised to detect *Lagarosiphon major*?
- On success of this, determine the current status of *Lagarosiphon major* (curly leafed- pondweed), within selected weed infested bays in Lough Corrib.
- Using acoustic technologies develop and improve upon current *Lagarosiphon major* management techniques by providing control operatives with accurate GPS (Global positioning system) information and GIS (Geographic Information System) maps to guide the current management procedures.
- Using acoustic technologies and GIS mapping; survey the managed areas and establish if the approach used was successful.
- Investigate the application of acoustic technologies for assessing habitat recovery of native submersed aquatic vegetation subsequent control methodologies.
- Contribute to the development of management plans for *Lagarosiphon major* in other Lakes or Rivers, based on the success of the success of this research.
- Explore the methods used to detect *Lagarosiphon major* invasions in Lough Corrib.

