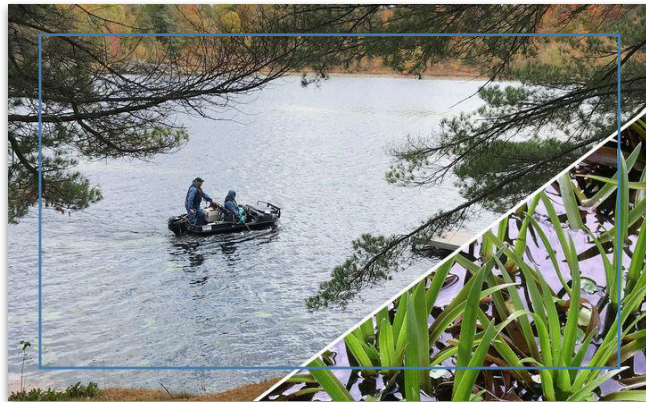
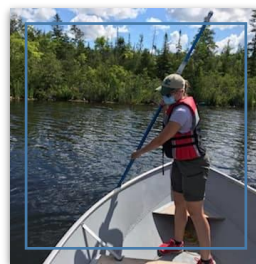


Promoting Awareness and Habitat Recovery through the Eradication of Water Soldier

Final Report

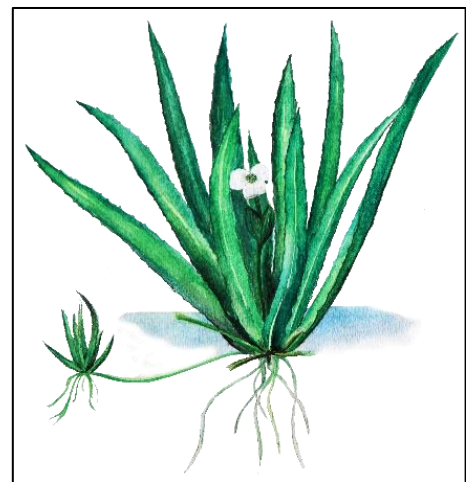


Ontario Federation of Anglers and Hunters
02/28/2022

Project Background

Invasive species are a growing environmental and economic threat to Ontario. Invasive species are plants, animals, and micro-organisms introduced by human action outside their natural past or present distribution whose introduction or spread threatens the environment, the economy, or society, including human health (Government of Canada, 2004). Once established, invasive species are extremely difficult and costly to control and eradicate, and their ecological effects are often irreversible. For example, invasive species management and control in Canada has an approximate annual cost to be as much as \$20 billion to the forest sector, \$7 billion for aquatic invasive species in the Great Lakes and \$2.2 billion in the agricultural sector (Environment Canada, 2010).

Water soldier (*Stratiotes aloides*) is an invasive perennial aquatic plant that is native to Europe and northwest Asia. It forms dense mats of floating vegetation and aggressively outcompetes native vegetation, threatens the diversity of aquatic ecosystems, and can significantly impede recreational activities. In 2008, the first known wild population of water soldier in North America was found in the Trent-Severn Waterway (TSW) near the Hamlet of Trent River, ON. Since then, it has spread nearly 50km downstream in the TSW, and unrelated occurrences have been discovered in a tributary of Lake Simcoe, Red Horse Lake, the Bay of Quinte, and numerous private ponds. The ISAP continued to have a lead role in coordinating a response to existing and new populations in order to prevent new introductions and address existing populations that threaten to invade provincial, national, and international waters.



Staff continued to work as part of a multi-year control plan to eradicate water soldier from Ontario and have seen a significant reduction of water soldier after multiple years of wide-scale treatment. In 2021, staff continued to conduct monitoring and surveillance of water soldier populations in Ontario to determine the efficacy of the treatments in 2020, as well as support planning and preparation for treatments in 2021. In addition to monitoring and surveillance, program staff continued to engage the public on water soldier, including the deliberate actions people can take to prevent the introduction and/or spread of invasive species.

Project Achievements

This project progressed as planned with respect to surveillance, control, and engagement activities. Achievements are summarized below.

Outreach and Awareness

ISAP staff hosted two workshops targeting Woodstock, Gananoque, and Havelock-Belmont-Methuen areas. In total, 16 participants tuned in to learn about how to safely remove water soldier from their waterfront while following the rules outlined in the Water Soldier Prevention and Response Plan. The workshops were recorded and posted to our social media pages, receiving an additional 19 views. Two removal events stemmed from these workshops, resulting in 12 bags of water soldier being removed; 8 of these bags were removed from Red Horse Lake in Gananoque and 4 bags removed from the Trent-Severn Waterway. In 2021, our annual “Water Soldier Wednesday” campaign had 14 posts and two videos, achieving a reach of 53,308 impressions and 3,867 engagements.

Monitoring and Eradication

Trent-Severn Waterway

Program staff continued to work with Parks Canada to complete monitoring and surveillance for the presence/absence of water soldier on the Trent-Severn Waterway (TSW). Staff conducted monitoring at 5,506 point intercepts within Percy Reach, Glen Ross, Crowe Bay, and Lake Seymour. Staff also conducted surveillance beyond the known distribution on the TSW in the Bay of Quinte, and unfortunately discovered a small population of water soldier. Solitude Lake Management was contracted to treat the water soldier populations on the Trent-Severn Waterway in October 2021. The treatment began on Monday October 11, 2021 and was completed on Thursday October 14. The area of that treatment are as follows:

Water Soldier Control: 2021-2022	
Area Treated:	Total Hectares:
Lake Seymour	22.07 hectares
Crowe Bay	2.4 hectares
Percy Reach	21.87 hectares
Hickory Island	41.25 hectares
Wilson Island (main)	20.73 hectares
Wilson Island (back channel)	14.60 hectares
Glen Ross	12.38 hectares
TOTAL:	135.57 hectares

Red Horse Lake

Program staff conducted monitoring and surveillance for water soldier in Red Horse Lake, with a focus on the area where the herbicide treatment was performed in 2020. In addition to visual surveillance, OFAH staff collected eDNA samples that have been provided to the Invasive Species Centre (ISC) to coordinate lab processing. Staff found that the main population that was reported and treated in 2020 is still present; the population is the same size, but less dense than the previous year. During additional reconnaissance, three satellite populations were found and removed. This population of water soldier was treated on October 14, 2021. Moving forward, program staff are recommending that Red Horse Lake be systematically sampled in 2022 (using the water soldier monitoring protocol) to accurately determine the extent and size of the water soldier populations, determine the appropriate treatment method for eradication, and monitor the efficacy of any treatments.

Private Ponds

There was an effort to connect Solitude Lake Management with the owner of Foster's Pond with the goal of coordinating an herbicide treatment with ProcellaCOR. Unfortunately, the private pond owner did not apply for the permits, however there are plans to reconnect in the spring of 2022.

ProcellaCOR Pre/Post Treatment Assessments

The ISAP Management Technician supported efforts to trial the use of ProcellaCOR on select invasive plants in Canada. Staff sampled three test sites, as follows:

- The Mill Golf Course, pre-treatment assessment, 8 plots (August 17, 2021)
- CFB Trenton, pre-treatment assessment, 5 plots, (August 17, 2021)
- CFB Trenton, pre-treatment assessment, 10 plots (August 17, 2021)
- The Mil Golf Course, post-treatment assessment, 8 plots, (October 12, 2021)
- The CFB post-treatment assessments were conducted by staff at CFB Trenton.
 - The ISAP Management Technician will be meeting with staff from CFB Trenton to discuss management options for 2022.

eDNA Monitoring

ISAP staff have conducted eDNA monitoring for water soldier at multiple sites in Ontario, including the Trent-Severn Waterway, Black River, Red Horse Lake, and the Bay of Quinte. In total, 190 eDNA samples were collected. A breakdown of sampling is as follows:

- April 2021 – Black River (9 sites sampled)
- June 2021 – Trent-Severn Waterway (13 sites sampled)
- August 2021 –Red Horse Lake (5 sites sampled)
- September 2021 –Trent-Severn Waterway and Bay of Quinte (12 sites sampled)

Project Budget

<i>Expenditure</i>	<i>Requested from OWF</i>	<i>Other Support</i>		<i>Total Expenditures</i>
		<i>Cash</i>	<i>In-Kind</i>	
<i>Human Resources</i>	\$0.00	\$27,002.50	\$0.00	\$27,002.50
<i>Outreach and Awareness</i>	\$500.00	\$0.00	\$0.00	\$500.00
<i>Travel</i>	\$4,500.00	\$0.00	\$12,000.00	\$17,668.54
<i>Administration</i>	\$500.00	\$0.00	\$0.00	\$500.00
<i>TOTAL:</i>	\$5,500.00	\$ 27,002.50	\$ 12,000.00	\$ 45,671.04

Conclusion

The achievements of this project would not have been possible without the funding provided by the Ontario Wildlife Foundation. The success of water soldier eradication depends on consistent monitoring and treatment of the entire infestation. With funding provided by the OWF, the ISAP was able to continue to respond to water soldier in the TSW, with a focus on community engagement, monitoring and surveillance, as well as build internal capacity to continue to work towards the goal of eradicating water soldier from Ontario.

