2022

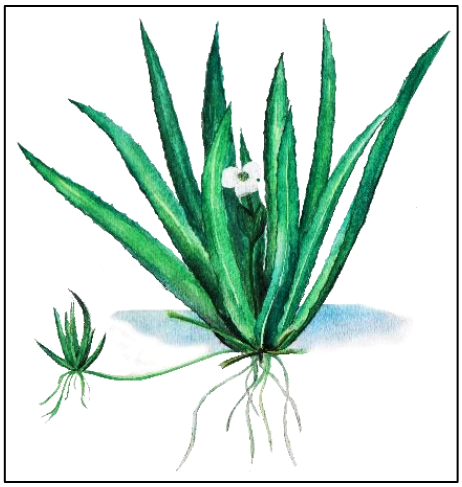
Responding to Water Soldier in Ontario

FINAL REPORT

ONTARIO FEDERATION OF ANGLERS AND HUNTERS

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 down 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 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 2022, staff continued to conduct monitoring and surveillance of water soldier populations in Ontario to determine the efficacy of the treatments in 2021, as well as support planning and preparation for treatments in 2022. 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, collection of eDNA and engagement activities. Achievements are summarized below.

Outreach and Awareness

Our annual "Water Soldier Wednesday" campaign had 13 posts and two videos, achieving a reach of 54,218 impressions and 6,016 engagements. Program staff also delivered several presentations on water soldier, including identification and monitoring and management updates in Ontario.

Date	*Presentation*
April 18, 2022	International Conference on Aquatic Invasive Species (ICAIS)
August 4, 2022	Ontario Vegetation Management Association AGM Tour
November 9, 2022	Ontario Vegetation Management Association
February 9, 2023	Annual Invasive Species Forum
March 1, 2023	Watershed Canada

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. 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. In October, Solitude Lake Management was contracted to treat the water soldier populations on the Trent-Severn Waterway and conducted the treatment between October 11-13, 2022. The area of that treatment are as follows:

Project Area 2022	Actual Treated Area (ha)	Amount of Herbicide Used (L)
Lake Seymour	24.40	541.30
Crowe Bay	2.00	53.00
Percy Reach	27.90	617.00
Hickory Island	82.40	1,680.00
Wilson Island Main Channel	14.30	314.20
Wilson Island Back Channel	12.10	280.10
Glen Ross	8.30	196.80
Total	171.40	3,682.40

Red Horse Lake

Program staff followed the Water Soldier Monitoring Protocol to systematically sample a 50 x 50 metre grid for the presence/absence of water soldier. Approximately 400-point intercepts were sampled over a three-day period. In addition to visual surveillance, staff collected eDNA samples that have been provided to the Invasive Species Centre to coordinate lab analysis. Staff found that the main population that was reported in 2020 is still present, but with only scattered plants within the same polygon as previous years. Staff worked with partners to coordinate a herbicide treatment on October 3, 2022, where a 0.5 hectare polygon was treated by Graham Agri Services.

Water Soldier: Private Ponds

Program staff have been assisting the company Sepro to treat 2 private ponds in the Trent River area. Each pond was treated with the herbicide ProcellaCOR; used under a research authorization granted by the Pest Management Regulatory Agency. Program staff also received a report of water soldier in a private pond in Alliston, ON and are working with the landowner on next steps for eradication.

eDNA Monitoring

ISAP staff have conducted eDNA monitoring for water soldier in the Black River and Red Horse Lake. A breakdown of sampling is as follows:

- April 2022 – Black River (48 samples)
- August 2022 – Black River (48 samples)
- August 2022 –Red Horse Lake (10 samples)

Project Budget

Expenditure	*OWF Expenditures*	*Other Support*		*Total Expenditures*
		Cash	*In-Kind*	
Human Resources	$0.00	$28,546.00	$0.00	$28,546.00
Outreach and Awareness	$506.59	$0.00	$0.00	$506.59
Travel & Field Equipment	$5,493.41	$0.00	$12,000.00	$17,493.41
Administration	$600.00	$0.00	$0.00	$600.00
TOTAL:	**$6,600.00**	**$ 28,546.00**	**$ 12,000.00**	**$ 47,146.00**

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 and Red Horse Lake with a focus on community engagement, eDNA, monitoring and surveillance, as well as build internal capacity to continue to work towards the goal of eradicating water soldier from Ontario.