

Swan Lake Citizen Science Lab (2025)

The Swan Lake Citizen Science Lab (“SLCS Lab”) is a new partnership between Friends of Swan Lake Park and leading researchers at York University. The York initiative is led by Dr. Ali Asgary, Director of CIFAL York and Dr. Satinder Kaur Brar, Director of York’s One Water Institute.

On March 27th, the Swan Lake Citizen Science Lab launched at York University’s new Markham campus where York University researchers hosted Friends of Swan Lake Park (“FOSLP”) for a Design Workshop that outlined the scope of the program and the capabilities of the York team. On May 5th, project leader Dr. Ali Asgary outlined the scope of the program to over 70 Swan Lake Village residents at an information session held at the Swan Club in Swan Lake Village.

Community Event, Swan Club, May 5, 2025

Mahbod Aarabi explaining the drone controls to local residents



Fred Peters, DR. Ali Asgary,
Regional Councillor Alan Ho (l to r)



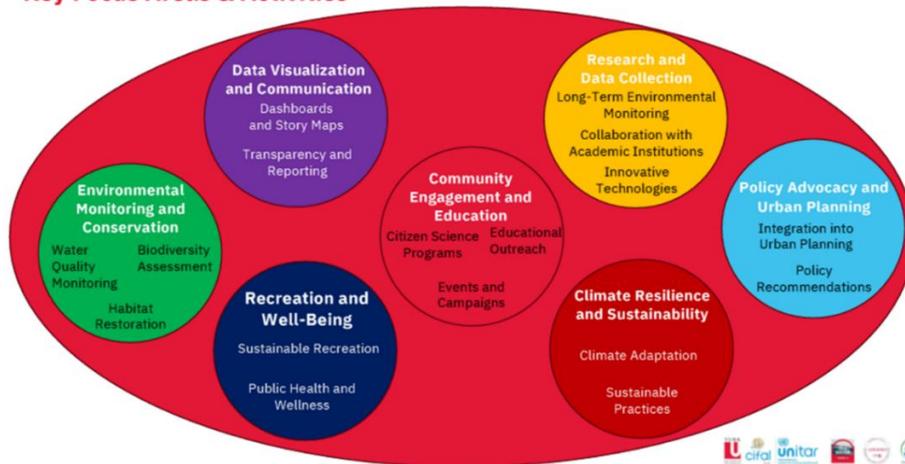
The Swan Lake Citizen Science Lab is a pilot program that will involve environmental monitoring of both water quality and the invasive plant species using four advanced technologies: Drone Monitoring, Artificial Intelligence, Virtual Reality and Simulation.

One of FOSLP’s objectives is to develop a program that will be beneficial for monitoring environmentally sensitive areas throughout Markham. The York team has a more ambitious goal, namely, to use a citizen science lab approach to foster collaboration among scientists, engineers and citizens in the hope of successfully addressing local environmental challenges.

The project leader, Dr. Ali Asgary, is the Director of CIFAL York, which is affiliated with the United Nations Institute of Training and Research (UNITAR). As educators, one of York’s long-term goals is to develop the program into a format that can be adopted by other community-based environmental groups through the UNITAR and CIFAL Global Network.

The following chart outlines the seven key focus areas of York’s program, but the essential underlying element is the “citizen” component. Success is tied to the ability to engage community participants in both data gathering and educational outreach.

**Swan Lake Citizen Science Lab
Key Focus Areas & Activities**



SLCS Lab’s Workshops

Working with FOSLP members, Peyman Naeemi, a PhD student at York, organized five “workshops” in the park that included bird walks, nature journaling, nature photography, and drone monitoring. Sami Khalil Moradkhanloo, a Master’s student at York, led a workshop at the lake on the techniques for analysing physical water samples.

On June 7th, over 100 area residents participated in a fun day in the park celebrating the Biodiversity of Swan Lake Park. FOSLP members Sheniz Janmohamed and Kathleen Elizabeth Noel led birding, journaling and nature walks while FOSLP’s York University partners in the Swan Lake Citizen Science Lab displayed drones and Virtual Reality simulation of the features in Swan Lake Park.



Water Quality Monitoring

Dr. Ali Asgary and Mahbod Aarabi undertook a comprehensive drone monitoring program of the water quality in Swan Lake that involved nine different drone flights over the lake throughout the year. The results were then analysed and submitted to Markham as part of the Phase 2 water quality review. Dr. Asgary's preliminary report is available at [SwanLakeWaterQualitywith-Drone-V4-Final-for-Submission.pdf](#)

Drone Monitoring Workshop, Swan Lake Park, September 14, 2025



Documentary Film

To support CIFAL York's goal of teaching others on the development of citizen science labs, Peyman Naeemi initiated work on a documentary film featuring the development and activities of the Swan Lake Citizen Science Lab.

If interested in participating in 2026, visit the Swan Lake Citizen Science Lab website to register as a volunteer at [Swan Lake Citizen Science Lab \(SLCS Lab\) - CIFAL](#)

Swan Lake Citizen Science Lab Partners

Friends of Swan Lake Park <https://friendsofswanlakepark.ca/>

The Friends of Swan Lake Park (“FOSLP”), founded in 2019, is a group of Markham citizens committed to saving Swan Lake and Swan Lake Park through environmental best practices.

The vision of the Friends of Swan Lake Park is to foster a sustainable level of biodiversity and public enjoyment of Swan Lake and Swan Lake Park, to facilitate public education opportunities and to encourage cooperation between the community, city leaders and staff.

Friends of Swan Lake Park will be responsible for:

- a) co-ordination of all community engagement elements
- b) Completion of field level surveys of plants and trees
- c) Identification of an environmental consulting group to provide the environmental assessment

CIFAL York <https://www.yorku.ca/cifal/>

CIFAL York is a UNITAR affiliated international training center, serving as a hub for knowledge exchange and capacity building among government officials, private sector, academia, and civil society. CIFAL York was established in 2020 by York University as part of the global collaborative network of CIFAL training centers, in partnership with the United Nations Institute for Training and Research (UNITAR) and York Region.

CIFAL York provides a range of training and research opportunities in key focus areas in alignment with the UN Sustainable Development Goals. CIFAL York’s office is located on York University’s Markham campus.

CIFAL York will be responsible for:

- a) Development of drone training framework and AI analysis in alignment the UN Sustainable Development Goals
- b) Development of citizen’s science environmental documentary filming
- c) Environmental communication and knowledge sharing events
- d) Presenting the project outcome to international audiences through UNITAR, CIFAL global network and future UN Climate Change Conferences (COP).

The ONE Water Institute <https://www.yorku.ca/research/onewater/>

One Water is a research centre at York University. One WATER aims to enhance our capacity to address the diverse aspects of the ongoing water sustainability crises, attract and train future leaders in the field, educate the public, innovate with industrial partners, and attract external competitive funding and endowments. One WATER engages in interdisciplinary world-class research on sourcing, Artificial Intelligence, Technologies, Education & Sustainability, Resource Recovery & Reuse as well as their environmental, educational, and societal implications.

ONE Water will be responsible for:

- a) Supporting water quality related analysis on data collected by drones.
- b) Training volunteers on how to analyse the impacts of invasive species on the water quality in Swan Lake.

ADERSIM <https://adersim.info.yorku.ca/>

The goal of ADERSIM (Advanced Disaster, Emergency and Rapid Response Simulation) is to evaluate and enhance disaster and emergency planning and rapid emergency response strategies by governmental, non-governmental and private sector organizations across Canada and around the world.

ADERSIM conducts research and training and provides support to its governmental, non-governmental and private sector partners through its state-of-the-art Emergency Operations Centre (EOC).

ADERSIM will support this project by:

- a) Providing drone pilot training to volunteers in collaboration with CIFAL York
- b) Providing advanced drones for more advanced environmental scanning
- c) Training on data analysis and visualization and communication to volunteers
- d) Developing a 3D virtual model of Swan Lake Park for simulation and risk analysis.

Meet the 2025 Swan Lake Citizen Science Lab Team

EXECUTIVE TEAM LEADERSHIP



Dr. Ali Asgary
Professor, York University,
Director, CIFAL York,
Executive Director, ADERSIM



Dr. Satinder Brar
Professor, York University,
Director, One Water



Dr. Maleknaz Nayebi
Associate Professor, York
University, Associate Director,
CIFAL York

Task Coordinators

Communications



Peyman Naeimi
PhD student, Humanities, SLCS
Lab Documentary Filming,
Environmental Communication
and Public Engagement Task
Force Coordinator

Virtual Reality



Elim Lemango
PhD Student, Electrical
Engineering and Computer
Science, York University, SLCS
VR Coordinator

Water Sampling



Mahbod Aarabi
ADERSIM Coordinator, SLCS
Lab, Drone Sensing and Water
Sampling Task Force
Coordinator

Water Quality



**Sama Khalili
Moradkhanloo**
Research Assistant, York
University, SLCS Lab Water
Quality and Biodiversity Task
Force Coordinator

RESEARCH

Artificial Intelligence



**Sharuka Promodya
Thirimanne**
Research Assistant, ADERSIM,
York University, SLCS Lab AI
specialist

Operations



Francesco del Carpio
Operations Coordinator, CIFAL
York

Team Members



Dr. Mahdi Najafabadi

Assistant Professor, Information
Systems, California State University,
Northridge



Mahta Nazari

Researcher, York University &
University of Tehran



Azam Asghari

Analytical Chemist, Swan Lake Citizen
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Zarrin Tasneem

Graduate Student



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Friends of Swan Lake Park

[Friends of Swan Lake Park – Save the Lake](#)