Bringing Microplastic-Collecting Robots to Classrooms in NY

New York Sea Grant collaborated with Cornell researchers to engage teachers, educators, and communities in a unique way to protect local waterways.

New York Sea Grant (NYSG) is a collaborative program of the State University of New York, Cornell University, and NOAA (National Oceanic and Atmospheric Administration).

With 3,400 miles of coastlines, New York is the only U.S. state bordering both the Great Lakes and the Atlantic Ocean. More than 85% of NY's population lives in a coastal region.

NYSG provides research, education, and extension services enhancing coastal community economic vitality, environmental sustainability, and citizen awareness of NY's marine and Great Lakes resources.

New York Sea Grant
379 Roberts Hall
Cornell University
Ithaca, NY 14853
www.nyseagrant.org

NYSG Focus Area for this project:

Environmental Literacy and Workforce Development

Written by
Great Lakes Literacy Specialist
Nate Drag
716-270-2408
nwd4@cornell.edu

January 2026

Educators at a professional development workshop with New York Sea Grant built individual microplastics-collecting robots to use with their classes. Photo: New York Sea Grant

While ongoing research attempts to determine the impact of the microplastics in our environment, there is a need for solutions to prevent this pollution from increasing. Current technology struggles to effectively capture particles under 5 mm. Many community members, particularly youth, also lack awareness about the threat of microplastic pollution and the technological approaches available to address it.

In 2025, New York Sea Grant partnered with Cornell University researchers to engage teachers, schools, and communities in developing robots that can collect microplastics from surface water. The design of the robot, which is based on the feeding mechanism of aquatic snails, provides a teachable example of how design inspired by nature (biomimicry) can be used to solve real-world problems.

Twenty-five teachers and educators participated in a three-part spring webinar series and a two-day in-person workshop at Cornell's Biological Field Station on Oneida Lake. In these sessions, the teachers learned about the unique challenge of collecting microplastics in the environment and participated in the engineering and design process to propose their own solutions to this problem. At the workshop, they built and tested a classroom version of the robot and collected water samples to test for microplastics. Throughout the 2025-2026 school year, these workshop participants will work with an estimated 1,400 students and other learners in twenty-one schools, two BOCES districts, and with two nonprofit organizations to create projects that utilize technology and biomimicry to protect local waters.

This project demonstrates the value of New York Sea Grant's professional development training for teachers, informal program educators and their audiences. Learn more at nyseagrant.org/MOLLUSCA*.

Project Partners:

- Cornell University Biological Field Station
- Cornell University College of Agriculture and Life Sciences and College of Engineering

*Cornell University project is named MOLLUSCA: A Snail-Inspired Robot for Efficient Marine Microplastic Removal