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Long Island Nitrogen Action Plan (LINAP)- Newsletter

The New York State Department of Environmental Conservation sent this bulletin on 06/26/2023 09:00 AM EDT



Long Island Nitrogen Action Plan (LINAP)- Newsletter Nutrient Bioextraction Initiative Update

In this edition of the LINAP Newsletter, we highlight the Nutrient Bioextraction Initiative.

- Sugar Kelp Fertilizer Amendment Pilot Study
- Ribbed Mussel Pilot Study
- Marine Shellfish Permitting Guide
- Funding Opportunity- Clean Water State Revolving Fund

If you are a reader of this newsletter, then you probably know that there is excess amounts of nitrogen in the ground and surface water of Long Island. LINAP is looking at a wide variety of measures to abate nitrogen pollution. Bioextraction, removing excess nitrogen through the cultivation and harvest of seaweed and shellfish, is a large initiative the New York State Department of Environmental Conservation (NYSDEC) is spearheading to improve water quality.

The [Nutrient Bioextraction Initiative](#) seeks to define and address the technical, regulatory, and economic considerations needed for the development of a bioextraction industry. This is achieved through research, facilitating conversations, and providing science-backed information to decision makers. Bioextraction is an important part of comprehensive nitrogen-reduction programs, like LINAP.

Unlike strategies such as wastewater treatment plant upgrades and limiting fertilizer use, that try to reduce the nitrogen currently coming from the land, bioextraction addresses and removes the excess nitrogen that is already present in coastal surface waters. Bioextraction also has the added benefit of resulting in materials after harvest that can be sold and used for other purposes. One of the Initiative's goals is to make bioextraction a self-sustaining industry, where water quality improvements can be incentivized.

Sugar Kelp Fertilizer Amendment Pilot Study

Numerous kelp and seaweed fertilizer products are currently available on the market, but if kelp can be grown, harvested, processed, and utilized locally, it would improve the sustainability of both the marine and agricultural industries on Long Island. By using locally sourced kelp instead of imported products, Long Island farms could create a market to support nitrogen reduction efforts in local waters through seaweed bioextraction.

To capitalize on this idea, a series of pilot projects have been conducted to assess the bioextractive capacity of sugar kelp and evaluate the potential for using the harvested sugar kelp as an amendment for local agricultural crops. This year, [Cornell Cooperative Extension of Suffolk County](#) will turn locally grown sugar kelp into fertilizer amendments and test their use on commercial farms on Long Island. Plants grown with the addition of this kelp fertilizer amendment will be directly compared to those grown without it to see if there are any benefits from the amendments. Greenhouse and field work for this project began last month, and results are expected later this year. Click [here](#) for access to the Final Report from the previous year's study.



Commercial tomato plants four weeks after kelp amendment application during the on-farm trial, May 2023. Photo Credit: Sandy Menasha

Ribbed Mussel Pilot Study

Ribbed mussels present an exciting opportunity for bioextraction: they are native to the coastal waters of New York, can thrive in less-than-ideal conditions, and are known to reduce nutrients in the water. They are currently a non-commercial species because of their bad taste, which gives them the added benefit of being able to be grown in polluted waters without any danger of being poached, eaten, and making people sick. This is why species, such as oysters, are not commonly grown in impaired waterbodies. Ribbed mussels have the potential to be used for other non-food purposes.

To understand the nitrogen removal capacity of ribbed mussels, a two-year pilot project began in 2022. A few studies have looked at the nitrogen removal rates of ribbed mussels, so information from this study will be combined with the results from other studies to determine whether the mussels remove enough nitrogen from the water to make them a worthwhile species to continue to explore for commercial development as part of the Bioextraction Initiative. In the summer and fall of last year, Cornell Cooperative Extension of Suffolk County

staff monitored ribbed mussel growth and water quality at docks in Northport and Huntington Harbors. The staff collected samples to determine nitrogen content and contaminant uptake of the mussels. Mussels were also analyzed for their nutritive value for use as an animal feed. The second field season for this project will begin this month, and the final report is expected at the end of this year.

Since ribbed mussels are currently a non-commercial species, they are not grown in hatcheries, like other edible shellfish. To allow them to be grown on a commercial scale, without removing large numbers of adult mussels from their native habitats, hatchery methods need to be developed to produce large numbers of them. Experimental work has also begun this year with Cornell Cooperative Extension of Suffolk County to establish standardized methods for cultivating this species.



Ribbed mussel sample collection, September 2022, in Huntington Harbor. Photo Credit: Kristin Kraseski.

Marine Shellfish Permitting Guide

The DEC understands that navigating the permitting process for a shellfish aquaculture business can be complicated. To provide assistance, DEC, in conjunction with NEIWPC developed, *A Guide to Marine Shellfish Aquaculture Permitting in New York*. The Guide has been released through NEIWPC and provides current and prospective shellfish farmers with information regarding federal, state, and local roles in the permitting process, best management practices, relevant application forms, a roadmap describing the process, and more.

The document can be accessed [here](#), through the NEIWPC Resource Library.

Funding Opportunity - Clean Water State Revolving Fund

The Clean Water State Revolving Fund provides interest-free or low-interest rate financing for wastewater and sewer infrastructure projects to municipalities throughout New York State. A variety of projects are eligible for financing, including construction or restoration of sewers and wastewater treatment facilities, stormwater management, landfill closures, as well as habitat restoration and protection projects. EFC provides both short and long-term financing, interest-free or low interest to accommodate municipalities of all population sizes with varying financial needs. Click [here](#) to learn more!

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