

Connecting Communities Through Research on Vancouver Island

SEA CUCUMBERS TO CREATE MORE SUSTAINABILITY

Sea cucumbers could be sustainable aquaculture superheros because of their seabed-cleaning qualities.

Sea cucumbers are like the vacuum cleaners of the ocean floor they feed on organic materials in the sediment, said Emaline Montgomery, lead researcher on the \$25,000 project funded by NSERC.

The organic material tends to collect at aquaculture sites, where fish and shellfish are in a more enclosed space, she said.

"After all, everybody poops," Montgomery said.

But this can have negative impacts on the environment.

Montgomery, whose research focuses on the co-cultivation of species for sustainability in aquaculture, says this is where sea cucumbers come in handy.

"The sea cucumber ultimately acts like little garbage trucks or recycling facilities to help Hoover up and clean up the sediments that might be overly enriched near farm sites," she said.

Canada doesn't have a robust way of growing sea cucumbers from juveniles to adults in hatcheries like it does with geoducks, oysters and clams.

Montgomery is working with the aquaculture industry to find ways of using existing infrastructure as containment systems, like nets that can be suspended underneath rafts or on the ocean floor.



Emaline Montgomery, NIC Lead Researcher for the sea cucumber project.



Sea cucumbers, like this one, could be aquaculture superheros in the help to clean up around shellfish and salmon farms.

"Using either recycled materials or net systems that already exist means we're lowering the barrier to entry for small growers," she said.

Montgomery sees her research as an innovative way to bring more sustainability to the industry.

"It's to everyone's best interest if we are able to improve the sustainability and health of our aquaculture industry, both from an environmental perspective but also providing new revenue streams and job opportunities for people," Montgomery said.

"If everything works as we are anticipating, sea cucumbers could be something that could be grown at any current aquaculture facility."

NEW SENIOR RESEARCH TECH

CARTI has hired a Senior Research Technician, Logan Zeinert.

Logan hails from New Zealand, but recently completed his masters degree at Memorial University in Newfoundland.

Logan has extensive marine surveying and aquaculture research experience and is an accomplished diver.

Logan will be working on both the Kelp Habitat project and the Central Coast Geoduck project while NIC researcher, Allison Byrne, is on maternity leave.



Logan Zeinert, CARTI's new Senior Research Technician

ARE YOU INTERESTED IN SUBMITTING A STORY TO OUR NEWSLETTER? PLEASE CONTACT APRIL WHALEN APRIL.WHALEN@NIC.BC.CA

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PROJECT AUTOMATES FERMENTATION PROCESS

Electronics and Industrial Automation instructor, Cory Batch, worked with Wayward Distillery to develop an automated pH monitoring and control system for their fermentation process.

Batch was able to design and build a scaled down prototype which would closely resemble the system variables in place at Canada's first distillery to use 100% honey to produce their craft spirit line-up of gin, vodka, krupnik and rum.

Batch designed a stainless steel manifold which has a sensing port, sight glass and injection port where the pH could be sensed and corrected.

"At the heart of the system is a programmable logic controller which monitors and controls the flow rate of the fermentation solution through the manifold with a variable frequency drive and centrifugal pump," says Batch. "The signal from the pH transmitter is applied to an algorithm which allows for micro adjustments to the system by injecting a pH corrective solution through a diaphragm pump."

"A racking arm mounted inside the fermentation vessel is used to create a whirlpool effect and ensure proper mixing of the corrective solution," says Batch.

Initial system tests of the prototype have proven the pH can be controlled quite precisely to within 5/100 of the intended target value.

The \$25,000 project was funded by Natural Sciences and Engineering Research Council of Canada.



The prototype built to automate the fermentation process at Wayward Distillery.

Seaweed Processing

This past April, NIC joined Cascadia Seaweed Corporation at their ocean cultivated seaweed growing site in Gorge Harbour, near Cortes Island.

NIC biology and researcher, Amber Stroeder, and student research assistant, Tigerlily Coffey, examined Cascadia's on-site grading process during their commercial kelp harvest.

Cascadia's staff worked together to bring in sugar kelp and winged kelp.

NIC researchers were able to join the team in grading the kelp, sorting it into high grade food product and low grade fertilizer.

The timing of the harvest is important; bringing in the kelp too early means the seaweed has not reached optimal growth, too late and bio fouling or cultivation of other marine life occurs.

The two species of kelp are adapted to different environmental conditions, sugar kelp growing well within the enclosed bay of George Harbour and winged kelp better adapted to wave-exposed areas.

This project was funded by a \$25,000 NSERC Engage grant.

UPCOMING FUNDING DEADLINES

Please contact CARTI to discuss your ideas for research submissions in advance of the funder deadline or regarding any projects that may involve NIC. There may be additional funding programs that will suit your initiative. CARTI can search our database for funding that may align with your project idea. Additional information is available on the NIC CARTI portal site. You can contact CARTI at 250-923-9771 or carti@nic.bc.ca.

| FUNDING PROGRAM | DEADLINE |
|---|----------|
| NSERC - Engage and Applied Research Development Grant | Ongoing |
| INNOVATE BC - ISI Program: Hire A Student | Ongoing |
| Telus - Community Action Grants | Ongoing |
| LifeLabs - Community Investment Program | Ongoing |

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