

Herring Gut News

SPRING 2010

A QUARTERLY UPDATE TO OUR SUPPORTERS

Growing Green in Port Clyde

OUR FALL 2009 newsletter explained that our very own Sara Rade-maker had undertaken a full system redesign of our aquaponics hatchery and greenhouse in an effort to help curb energy costs and create a better overall operating system. We are pleased to report that things have been thriving ever since - except our energy bills, which are dwindling!

Aquaponics is the cultivation of plants and aquatic animals in a re-circulating environment. A combination of aquaculture and hydroponics, aquaponics pairs fish and plants in one integrated system. Fish waste provides a food source for the growing plants and the plants provide a natural filter for the water the fish live in, thus creating a sustainable ecosystem where both plants and fish thrive.

Since Sara moved the tilapia tanks into the main building, set up the new raft hydroponics tanks and updated the flow-through system we've seen plant production levels rise.

February and March Harvest Details

FEBRUARY (2/5/2010)

10 lbs of Bok Choy
10 lbs of Lettuce mix
33 Basil plants
10 heads of Bibb Lettuce
28 lbs of Tilapia
40 Fingerlings

MARCH (3/30/2010)

8 lbs of Bok Choy
16 lbs of Lettuce Mix
30 Basil plants
90 Heads of Bibb Lettuce
20 lbs of Cabbage
30 Heads of Romaine

These harvests were purchased by the Midcoast School of Technology in Rockland, where students, under the supervision of Josh Gamage in the Culinary Arts

program, have learned to fillet the fish and prepare the greens in all manner of deliciousness! The 40 fingerlings were sold to Homegrown Aquaponics, Colby College for an aquaponics project, and Inland Fisheries & Wildlife for an experiment.

Worms

This spring we added a bin of red worms to the greenhouse to compost our plant waste (roots, tattered leaves) and our office paper recycling. The soil and liquid "leach" the worms make are very high in nitrogen, creating an additional fertilizing ingredient to the aquaponic stew. The liquid leach is dripped into a water barrel, then pumped into our raft aquaponics tank. Of course, we don't need the soil created by the worms, so that will go out to our campus gardens to feed the perennial beds. Yum.

Genetics

The SAD 40 Rivers Alternative Middle School is conducting a genetics study in the greenhouse this semester designed to teach how gene expression may be influenced by an organism's environment. Through this project they are also learning about experimental design, data collection and analysis, and how to communicate the results of their experiment. They have structured the study around a number of constants: sunlight (quality and quantity), water temperature, seed stock, and air temperature. The variable is water quality.

Using the three raft aquaponics tanks, they've set basil seedlings in the first tank in water. In the second tank, seedlings grow in water with added chemical fertilizer (hydroponic model). In the last tank the seedlings grow in a tank populated with baitfish AND receive the worm leach (aquaponic model).

Over the course of the semester the



SUMMER PRODUCE
Over the summer we plan to offer limited quantities of our produce to the public. Call ahead for availability and pricing, 372-8677. Also look for our produce at Harborside Market & Gardens on Route 131.

students closely monitor the water quality (ammonia and nitrate levels) of each tank and measure the plant size, growth rates, appearance and taste against the environmental variable. Taste is subjective, but they've already come up with a system by which to measure that.

The new greenhouse set-up provides additional resources for our students to experiment with specific scientific concepts - gaining hands-on experience and confidence - which may be the best measure of an environmental variable yet!

Business Plans

Plans are in motion to develop a business model for the aquaponics greenhouse, much like the *Teel Cove Student Shellfish Co-Op* successfully managed by our oyster hatchery students. A cooperative affords students the opportunity to learn the business of aquaponics from the inside out: growing, tending, harvesting fish and produce, marketing, distribution and sales. If the first months of production in our new system are any indication, that program is well poised for success!



World Ocean Day

“FROM THERE TO HERE and here to there”
Protect Our Oceans Everywhere!

June 8th marks World Oceans Day. Much like Earth Day, World Oceans Day is meant to call attention to the need for conservation and protection of our ecological resources, particularly our aquatic environment.

First celebrated in 1992, it wasn't until December 2008 that the United Nations General Assembly passed the resolution to officially recognize World Oceans Day. The Ocean Project and World Ocean Network have been working together to mobilize citizens and institutions to spread the word about the annual event.

Here at Herring Gut Learning Center, we'll be celebrating our 4th annual World Oceans Day with the Jackson Memorial Library in Tenants Harbor.

Each year we have presented different school and community events focused on preserving the St. George watershed.

This year's theme One Fish Two Fish, Red Fish Blue Fish! ties into celebrations of 50 years of Dr. Seuss's wonderful rhyming books.



See our website Calendar of Events for details.
<http://www.herringgut.org/calendar.html>



Educators enjoy getting up close to their subjects!

Professional Development Workshops

IN APRIL five elementary school teachers from RSU #13 spent four afternoons participating in a marine science workshop that included shoreline investigations and center-based hands-on sessions matched to their classroom curriculum or personal learning interests. Herring Gut proved to be a perfect venue for these educators to explore science applications closely

tied to their community, both economically and culturally.

“The workshop was excellent. Very informative and a good balance of classroom/field experiences. It was a great opportunity. I learned a great deal in such a short amount of time.” – Marine Science Workshop Participant

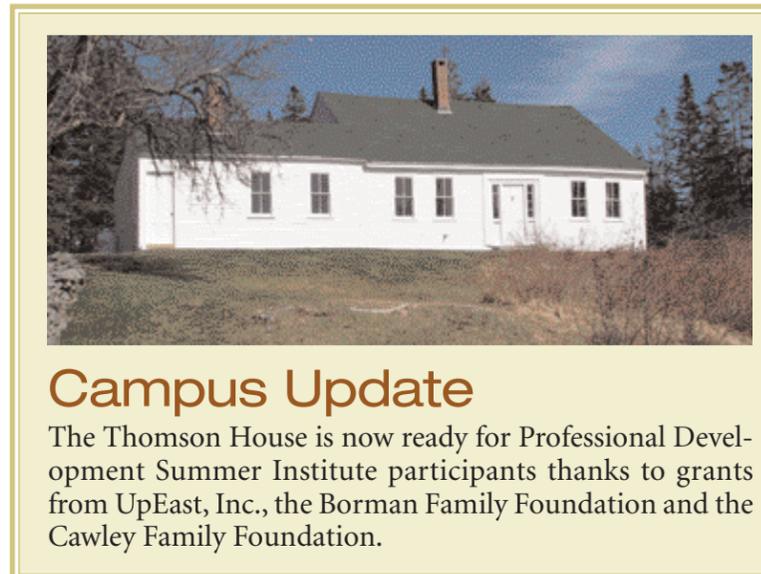
This summer our Professional Development Institute will host two workshops for K-8 and alternative education teachers, presenting aquaponics as a dynamic, effective hands-on technique for teaching science concepts. **Aquaponics: Dynamic Science for the K-8 Classroom** will be held on July 6-8th and **Aquaponics: Dynamic Science for the Alternative Education Classroom** on July 13-15th.

Herring Gut's small-scale commercial aquaponics facility will be the laboratory for educators to explore, hands-on, the many ways aquaponics can be integrated into their science classes.

Sara Rademaker, our Aquaponics Instructor and Systems Design Engineer, will demonstrate how students can be introduced to plant biology, earth cycles, water chemistry, nutrition, fish anatomy, and sustainable agriculture using aquaponics experiments and activities.

Continuing education credits will be available. Participants will be provided with complete curriculum materials and a ten-gallon classroom aquaponics kit - not your typical goldfish bowl; it is a mini- re-circulating system complete with tank, filters, pumps, and planting media. 

For more information on the workshops: www.herringgut.org/teachertraining.html or info@herringgut.org or call (207) 372-8677.



Campus Update

The Thomson House is now ready for Professional Development Summer Institute participants thanks to grants from UpEast, Inc., the Borman Family Foundation and the Cawley Family Foundation.

Interns at work at Herring Gut

TYPICALLY interns arrive at Herring Gut to help with summer and outreach programming and often come through our partnership with Americorps. However, never ones to turn down an opportunity to advance science education, *and* have some extra help in the finfish hatchery and greenhouse, we were pleased to welcome two new interns to Herring Gut in the second half of the school year.

In January, Sean Weed from Thomaston, a senior at U. Maine Augusta, now completing his undergraduate degree in liberal studies with a minor in Marine Biology joined our crew. Sean spends two days a week from 10 to 4 work-

ing on an assortment of projects, from building fish tank lids to planting or harvesting produce, maintaining equipment to updating software designed to monitor life in the hatchery. Sean has aspirations for starting a small cattle farm, or a vineyard.



Sean Weed checks salinity, temperature, pH, and oxygen levels in the tilapia tank.

The days at Herring Gut give him the opportunity to fulfill his credit requirements and watch a delicate system of produce production in the works. Sean is a gregarious fellow and passionate about locally grown food and Maine business.

Jason Pierce, a senior from Georges Valley High School, also began his internship in January. Jason is no stranger to Herring Gut having worked in the oyster hatchery program in middle school and the aquaponics greenhouse in his early high school years. He is a young man of few words, who remains unperturbed by people coming and going as he sets to work. Even the fish, who virtually throw themselves up and out of the tanks at the sight of him coming, don't distract him from the methodical way he goes

about feeding them and cleaning filters. Jason comes three days a week after school and stays for about an hour and a half. He is also in charge keeping an eye on those crazy worms in the greenhouse and distributing produce orders to teachers at Georges Valley High School.

Jason expressed his interest in going on to study marine biology to his guidance counselor and together they made a plan for him to further his hands-on experience at Herring Gut. Jason plans to work for Herring Gut three days a week this summer on systems maintenance before continuing his studies at the University of Maine in Rockland in the fall. He would like to someday work in the shellfish industry. He's certainly positioned himself well and we are happy to have him onboard. 

News from our Teel Cove Student Shellfish Co-op

ACCORDING to President Jared Hunt, the Teel Cove Student Shellfish Co-Op was recently contacted by Alison Macmillan, a teacher from the Great Salt Bay School in Damariscotta. Ms. Macmillan had heard the Co-Op was in the oyster growing business and wondered if she might purchase 100 seed oysters, to start an experiential education project with students at her school.

Now, Teel Cove Student Shellfish Co-Op is in the oyster growing business and does usually charge money for their product; however, after a brief discussion it was unanimously voted that the Co-Op would make a gift of these 100 seed oysters since it was for educational purposes, and it might prove helpful to their business' public relations profile in the future.

Jared said the teachers and students at the Great Salt Bay School also may need advice on growing oysters in the future and there is talk of a visit by the Great Salt Bay students to the Co-Op later this spring. “This gift helps these kids experience the rewards and challenges of raising oysters and we're glad we could do it” Hunt noted. 



Jared Hunt holds a bag of 100 seed oysters destined for students at the Great Salt Bay School.



One year old seed oysters are no bigger than your pinky fingernail.