Hawaii Ocean Science and Technology Park Administered by the Natural Energy Laboratory of Hawaii Authority Summer 2020 Volume 2, Issue 1

# THE PIPELINE

#### IN MEMORY OF SYD KRAUL

This past December, Syd Kraul passed at his residence from a brain trumor. The local newspaper stated that he left behind an ocean-sized legacy and rightfully so. Syd, raised on Oahu and a Vietnam War Navy Veteran, was a talented aquaculture researcher who mentored many people at HOST Park over the years, ranging from successfull NELHA business owners to West Hawaii Explorations Academy highschool students. Syd could breed and raise difficult species such as mahimahi, ahi, yellow tang and angelfish. Most recenty, he owned and operated Pacific Planktonics, which specializes in hatchery technology and methods to culture ornamental marine fish. The goal was to help alleviate the impact of the aquarium industry wild catch on Hawaii's reefs. Syd's easy going, good humored and unassuming manner made him a beloved person at NELHA. He is sorely missed.



Syd Kraul at his Pacific Planktonics facility.



#### INSIDE THIS ISSUE



## HATCH GLOBAL COHORT 4.0 NOW ACCEPTING APPLICATIONS

HATCH seeks to find, develop, and scale disruptive aquaculture startups. Are you part of an outstanding team with an innovative and sustainable solution that solves a real world problem? If so, you might want to consider submitting an application to join the Global Cohort 4.0!

Applying is quick and easy at <a href="https://www.hatch.blue/">https://www.hatch.blue/</a>

apply . This year's program starts August 17, 2020. Due to challenging travel and health situation, the program will take a blended approach to delivery. However, the perks remain unchanged: \$75,000 cash (includes in kind services), an incredible mentor, investor and business network, travel, and onsite engagement in Norway, Hawaii and Singapore.

"When hard times get rough, you'll find out who your real friends are." Unknown Author.

#### PRE-SCOPING FOR OFF-SHORE DEMO PROJECTS

The waters offshore of the HOST Park could offer an ideal location for testing innovative conservation, energy, aquaculture and ocean monitoring concepts. NELHA is interested in hearing from everyone with offshore project ideas! Please contact us at: laurence.sombardier@hawaii.gov



#### WHSBDC ASSISTS CLIENTS THROUGH COVID19 PANDEMIC

COVID19 has caused massive economic disruption in in Hawaii and around the world. The West Hawaii Small Business Development Center (WHSBDC) has been and continues to be available to help small businesses navigate programs and initiatives for financial relief and recovery.

WHSBDC is a resource open to all HOST Park tenants, and to all Hawaii residents for that matter, and is located on the first floor of Hale Iako, at 73-970 Makako Bay Dr, on our campus. The SBDC also works with entrepreneurs and businesses of all types in helping them to develop business plans, create cash flow projections, secure financing, assist in acquisitions or business sales, perform market research or assist in any number of other strategic tasks a small business would need. Our local SBDC is part of a statewide network that is part of a national network of almost 1000 Small Business Development Centers.

Please do not hesitate to give Dennis Boyd or Marty Kennedy a call at 333-5000.



Hawaiian Islands Trading Company, LLC line of sea salt products sold at retail outlets and through direct internet sales (Photo curtesy of Hawaiian Islands Trading Company, LLC )

### NEW HOST PARK CLIENTS

COVID is not getting in the way of innovation at HOST Park! Two companies that have recently joined the HOST Park ohana are Blue Ocean Barns (<u>https://www.blueoceanbarns.com/</u>), a company aiming to produce a seaweed supplement to reduce methane emission for cows and Innovator Energy (<u>https://innovatorenergy.com/</u>) which is aiming to demonstrate an underwater liquid electricity storage system.

Sea Salts of Hawaii (<u>https://www.seasaltsofhawaii.com/</u>) received Board approval to take over the Mera Pharmaceuticals facility and has entered into a sublease to produce salt and nigari, used in making tofu and ricotta cheese. Sea Salts of Hawaii is the trade name for Honolulu based Hawaiian Islands Trading Company, LLC. They also have plans to expand their existing line of products.

Please join us in welcoming these new companies!

If you are interested in reaching out to other park clients, give us a call or send us an email and we will be pleased to facilitate the connection.

## NEED A HARD TO FIND ITEM OR WANTING TO SELL/DISPOSE OF ONE?

NELHA is testing a new tool to help HOST Park clients connect to find, sell or dispose of equipment and other items.

The tool is a classified ad system that can be found at the NELHA website: <u>https://nelha.hawaii.gov/</u> <u>adverts/</u>

Anyone can create an account and publish ads. The ads can be viewed all at once or sorted out into categories. Feedback on this tool would be very welcome!



#### FRIENDS OF NELHA CHANGES NAME TO KEAHOLE CENTER FOR SUSTAINABILITY

Friends of NELHA, a Hawaii non-profit organization, is now doing business as Keahole Center for Sustainability. While the organization's priority remains on HOST Park and supporting its clients, the name change and rebranding reflects the desire to promote education and advocacy of the culturally sensitive and environmentally sound use of sunlight and seawater for a sustainable future for Hawaii. The organization plans to reach beyond the Park and evolve partnerships with other sustainable projects that are in line with their updated mission. And they now have a new nifty logo and an updated website (https://kcshi.org/)!



#### NELHA SATISFACTION SURVEY 2019

Overall, how satisfied or dissatisfied are you with the services you receive at HOST Park?

The results of the summer 2019 satisfaction survey were presented at the September 2019 Board meeting. The 11 question anonymous survey had a 60% response rate. Thank you to all of you who took the time to respond!

These surveys help to improve our services. We have increased our funding to upgrade water quality lab equipment in response to the feedback received on one of the questions.

In response to feedback on one of the questions, the Board discussed ways to make the Board meetings more conducive to tenant participation. We would welcome any further ideas you may have on the subject.



From top to bottom: Very satisfied (green), Somewhat satisfied (blue), Neither satisfied or dissatisfied (yellow), Somewhat dissatisfied (no responses) and Very Dissatisfied (orange).

Please let us know if you wish
to receive a copy of the full
survey results.

## GUIDING PRINCIPLES TO UPLIFT HAWAII AND OPEN A DOOR TO A DIFFERENT FUTURE

Uplift Hawaii aims to highlight and create a dialogue between the various coalitions, organizations, and individuals rising to address the challenge of a post-COVID recovery in Hawaii .

Uplift's newly created website shares 5 principles to help guide recovery efforts: <u>https://</u>

www.uplifthawaii.org/

Organizations and individuals sign on to Uplift Hawaii to support, share ideas, stories and anecdotes of how the principles an be put into practice.

NELHA has signed up and we hope you will also consider participating.

Get involved and share your manao today!

UPLIFT HAW/AIʻI

## SYMBROSIA PROCEEDS WITH ITS SUMMER 2020 INTERNSHIPS AT NELHA

At a time when many a college student has sadly seen their internship prospects evaporate as a result of COVID 19, Symbrosia Inc., recently established at HOST Park in 2019, is thrilled to receive two interns in Kona this summer. Claire Goloja is an undergraduate at the University of Wisconsin-Madison majoring in Environmental Sciences and Conservation Biology and Forest Abott-Lum is working on a Master of Environmental Management at et Yale School of Forestry and Environmental Studies. Forest is born and raised in Hawaii. If you spot them in the research campus, please say hi and welcome them to the ohana!

Symbrosia (<u>https://symbrosia.co/</u>) is hard at work on a break through solution to drastically reduce the methane produced by livestock using seaweed.



Claire Goloja



Forest Abbot –Lum

#### NELHA HAS RESUMED "MOSTLY" NORMAL OPERATIONS AFTER COVID QUARANTINE

NELHA staff have returned to the main offices in the Keena Hana building. Anyone entering that building will need a temperature check. Please call in advance if you wish to make an appointment.

For those interested in night fishing permits and seawater sales there are forms outside the main door in Keena Hana. Please fill out the necessary form and knock on the door and someone will assist you.

Hale Iako building, Wawaloli beach park and bathrooms are now open to the public.

Please ensure that you practice safe distancing and wear a mask per the County of Hawaii guidelines. You may wish to refer to CDC safety guidelines (<u>https://nelha.hawaii.gov/wp-content/</u><u>uploads/2020/05/References-for-COVID.pdf</u>).



Uplift Hawaii Principle Number 3: "A diverse island economy with more local business and a new model for tourism." 2020

### A NEW SPECIES OF NUDIBRANCH DISCOVERED IN WEST HAWAII

NELHA's Pam Madden and her dive buddies were the first to report a new species of nudibranch to Hawaii!! It is one of the 'solarpowered' sea slugs that can incorporate its host algae's chloroplasts into its body so this animal can carry out photosynthesis to fuel itself. This type of nudi is nicknamed "Shaun the Sheep" (after the kids cartoon show) and it looks just like a sheep grazing, albeit the size of a grain of rice.

Check out Shaun the Sheep's video: <u>https://www.youtube.com/</u> <u>watch?v=u31uFx9\_p-</u> <u>s&app=desktop</u> Currently, it is classified as Costasiella sp#2: <u>http://</u> <u>seaslugsofhawaii.com/species/</u> <u>Costasiella-sp2-a.html</u>



Capture from video link on left

#### INTERNSHIP OPPORTUNITIES THROUGH KCS

There are many career opportunities on our island for students and the missing link is often a mentor with time to bridge the gap to experiences, business owners and professionals. This networking takes time and energy to build and foster these relationships. Friends of NELHA dba Keahole Center for Sustainability (KCS) is developing a program to contact, design, and connect those identified students with professionals within our community. If vou are an interested learner or business or know of anyone who might be, please reach out to KCS Executive Director, Candee Ellsworth (808.329.8073, KCS@kcshi.org).



Photo Curtesy of KCS

## FON/KEAHOLE CENTER FOR SUSTAINABILITY COMPLETES GIA GRANT STEAM WORKSHOPS

Despite the pandemic, FON/ KCS was able to complete the Sustainable Aquaculture STEAM Education workshops. 20 local Big Island educators attended the in person workshops in January 2020 and 80 local high school students were able to take the student workshops remotely. Funding for this program was provided by a State of Hawaii Grant In Aid through NELHA.



Big Island Educators visit Ocean Era LLC in January 2020 as part of the Educator STEAM workshop at HOST Park. Photo Curtesy of KCS.

## NELHA WATER QUALITY LAB ANALYZES SAMPLES FOR HAWAII DEPT. OF HEALTH

The NELHA Water Quality Lab has partnered with the Hawaii Department of Health to provide additional water quality testing for the Clean Water Act required biennial Integrated Report which informs the public of the overall status of the water quality statewide. The analytical work which includes inorganic nutrients, total nutrients and chlorophyll-a is funded through an EPA grant and provides pollutant testing for samples from Kauai, Maui, Hilo and Kona. Below is a picture of an algae bloom in Kailua Bay from May 28, 2020 by Kawika Singson (community member).



#### FROM THE DEEP

Covid-19 has created many challenges for all of us at NELHA. As the business climate changed during the pandemic, NELHA observed a steady and overall reduction in client seawater demand. This generated several opportunities to reconsider how NELHA delivers seawater to our customers, at the lowest energy requirements.

How does the seawater delivery system work? NELHA operates an "on demand" pipeline system, with no header tanks or storage capacity. NELHA's Variable Frequency Drives (VFD) control the pumps output based on changes in pressure in the distribution pipelines. It works like this, if a valve is opened in the system, the pressure in the pipeline will drop as water flows out. The pump system will respond by pumping more water to bring the pressure back to its set point. The reverse occurs if a valve is closed in the system.

The cost of pumping water is heavily related to the pressure set point the system is controlling to and the volume of water pumped. The higher the system pressure set point, the more work the pumps are asked to do, and the more energy it will consume to do that work. Next time you read a pressure gauge, you can apply this relationship to see how high the seawater can be lifted. For every pound per square inch (psi) the gauge pressure is reading, you can multiply the number by 2.31 to appreciate how high in feet the water will rise. This is why the NELHA distribution system is segmented into three pressures systems. It takes much more pressure/energy to lift the water to the Gateway Center from the shoreline pump stations than it does to move it along the coastline. The challenge for NELHA is to balance providing enough pressure for our clients to receive water at their facility, but not to provide too much pressure where energy is mostly wasted.

Another aspect to the "on demand" system is having the appropriate set of pumps deployed to match the volume of seawater the system is demanding. NELHA's Operations Staff would have a much easier job if the clients' seawater demand was at a steady state 24/7/365. However, that is not how the real world works. As such, NELHA experiences flow rate swings as high as 3500 gallons per minute (gpm) in its pumping system during a 24 hour period of time. Matching the right pumps to meet the demand is challenging. Each pump is designed for a peak efficiency point on a pump curve. Some pumps will deliver a lot of water efficiently at low pressures, others operate more efficiently at high pressures and lower volumes. As demand changes during the day, the system has to respond by selecting which pumps would be the most efficient to operate based on the overall flow rate.

With over 100 years of experience within the NELHA Operations Department Staff managing three major pump stations and two booster stations, the internally developed VFD programing knowledge to operate multiple system with lead and follower pumps, and the ability to program the internal control system to turn on and off pumps as demand requires, has allowed NELHA to pump seawater to your facility at the lowest operation cost possible. NEL-HA reviews the automated system decision frequently with its SCADA monitoring system, which currently monitors 1397 parameters and provides access to key operational factors which provide real time calculations to help guide management decisions. As we look forward to the future, many of the deployed systems and controls will be upgraded to allow remote management with the appropriate security systems in place. Despite the Covid-19 challenges, NELHA's Operations Staff continues to assess and adjust the seawater delivery system to provide seawater 24/7/365 at the lowest operational cost.

#### **BIVALVE BREAKOUT**

On Friday, February 14, 2020 the Washington Department of Fish and Wildlife in conjunction with NELHA and UH Hilo sponsored a Bivalve Breakout Session at HOST Park. The session was well attended with over 30 people in attendance from the Western Region. Most attendees participated in person. In addition, we had several speakers and participants tune in via Zoom. This included industry experts, private sector companies, and State regulators from Hawaii, California, Oregon, and Washington.

The agenda was action packed with nine speakers discussing a range of topics related to biosecurity, production, and regulation in the shellfish industry. The primary takeaways were:

- Current and emerging bivalve diseases are a real threat to the industry;
- 2) Regional communications protocols between the industry and regulators need to be established; and
- 3) Hatchery Certification Pilot Program Implemented by the East Coast Shellfish Growers Association may be a good model to implement in the West Coast Region.

NELHA hopes to follow up with similar events like this in the future. If you have a suggested mini conference topic, please inform the NELHA staff!



#### NATURAL ENERGY LABORATORY OF HAWAII AUTHORITY

NELHA administers the world's premier energy and ocean technology park. This unique master-permitted park is located on 870 acres of prime coastal property in Kailua-Kona Hawaii and offers research support facilities for the development of renewable energy and other demonstration projects that utilize the unique resources found at the park. It is the world's only facility that continually brings ashore high quality, pristine supplies of both warm surface and cold deep seawater 24 hours a day which allows for various tests to take place with intent to reap economic potentials from the dual temperature seawater delivery system and high solar insolation. Tenants located in HOST Park work at the precommercial, commercial, research and educational levels. It is the largest diversified economic development project in the State and is solely focused on developing green economic projects.

## POT OF GOLD AT THE END OF THE RAINBOW?



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