Tech park tours offer ‘science in action’

Cheryl Chee Tsutsui
Hawaii’s Backyard

Hawaii is the most isolated population center on earth, with some 2,400 miles of ocean separating it from California, the nearest landmass. About 90 percent of the island’s food is imported, and more than 70 percent of its electricity is from oil.

Thus, food security and alternative energy are critical issues. Both are the focus of the innovative tenants of the Hawaii Ocean Science and Technology Park, near Kailua-Kona. The park is administered by the Natural Energy Laboratory of Hawaii Authority. More than 80 percent of Hawaii’s aquaculture products come from the park.

“People think of farming and energy sources as land-based, but HOST Park’s businesses are using energy authority’s two pipeline systems to obtain clean surface seawater and ocean water from as deep as 3,000 feet to complete their work,” said Candee Ellsworth, executive director of the authority’s support group, Friends of NELHA. “They’re solving worldwide problems with out-of-the-box thinking. It’s science in action that visitors can see.”

The Friends in March launched the sustainable aquaculture tour at HOST Park to meet the growing demand for science education and science-related tourism. It starts with a presentation at the Gateway Visitor Center, one of the first Platinum LEED-certified buildings in America. Here are other highlights.

Makai Ocean Engineering
makai.com

Makai Ocean Engineering dedicated the world’s largest operational ocean thermal energy conversion system in August. At this stop on the tour, visitors learn how the temperature difference between warm surface water and cold deep seawater produces electricity.

Volunteer oil prices, rising electricity costs and environmental concerns made Makai’s alternative energy concept attractive for island communities. Among OTEC’s benefits: Its energy source is not controlled by other countries, its power can be ramped up or down in seconds and it supplies constant, steady power around the clock, 365 days a year.

Rising more than four stories high, Makai’s demonstration plant is generating enough electricity to power about 125 homes in Hawaii annually. Approximately 12 offshore commercial scale plants reportedly could meet all of Hawaii’s electricity needs. Every year, just one of those plants could replace the burning of roughly 1.3 million barrels of oil and prevent more than half a million tons of carbon dioxide emissions.

Makai is working to reduce its cost and improve the performance of its OTEC technology to make commercial plants a reality in Hawaii, Southeast Asia, the South Pacific and the Caribbean in the next three to seven years.

Kampachi Farms
humpbackfarm.com

Kampachi Farms is revolutionizing the fish-farming industry by reducing reliance on wild-caught fish (whose populations are being depleted by overfishing) and by testing diets of sustainable agricultural proteins as replacements for fish meal. Kampachi (yellowtail), mahi-mahi, mackerel (chub) and Pacific giant grouper inhabit more than three dozen 1,000- to 15,000-gallon tanks on a little more than half an acre.

Researchers also discuss the company’s experiments with open-ocean aquaculture using an “over-the-horizon” net pen system. Submerged 32 feet underwater, the unanchored pens were the first in 2011-2012 trial for eight months between 3 and 75 miles off Kona. The results were promising: By the end of the trial, 98 percent of 2,000 kampachi fingerlings reached harvest size of 4 pounds in four months — about half the expected time — without buildup of ammonia and impact on wild stocks.

The second trial in 2013-2014 was moved 6 miles off Kona to a depth of 1,000 feet. The world’s deepest net pen installation, it yielded similar results, with basic husbandry tasks completed almost entirely by remote control. A third trial is set to start in August.

Big Island Abalone Corp.
bigislandabalone.com

From spawning to market, Big Island Abalone Corp. raises zoox, a premium species of Japanese abalone, at its 16-acre aquarium, which includes a hatchery, a nursery and 450 tanks containing abalone in five stages of development: machinery (six to seven months), intermediate (eight to 15 months), juvenile (16 to 29 months), young growout (20 to 35 months) and mature growout (29 to 55 months). BIC produces up to 100 tons of abalone per year along with the algae that is their primary food source.

At any given time the inventory includes about 4 million live abalone.

A guide explains the process, including biology, breeding, feeding and growth; market-size abalone weigh between 25 and 130 grams (0.88 and 4.5 ounces). The visit concludes at a display tank, where guests can see abalone up close, touch them and taste grilled samples.

The abalone is sold online and at BIC’s farm on weekends, its Kona Abalone store at Akua Market Center at Kapolei Community College’s Saturday farmers market, some 50 restaurants statewide (including IK Restaurant, Yanagi Sushi and Restaurant Sontory on Oahu) and at the abalone.”

Cherry Ohe Tsumumi is a Honolulu-based freelance writer whose travel features for the Star-Advertiser have won several Society of American Travel Writers awards.

IF YOU GO . . .
Sustainable Aquaculture Tour

Meeting place: HOST Park, 74-485 Kahului St., Kona, Hawaii
Time: 10 a.m. to 12:30 p.m. Wednesdays and Fridays; advance reservations recommended
Cost: $30 for adults, $20 for children, educators, students of any age, seniors (60 and older) and active and retired military personnel with valid ID.
Phone: 808-329-8672
Email: nolaha@gmail.com
Website: friendsofnelha.org/tours/grand-tour

Notes: Most of the tour is handicap accessible, but visitors with mobility issues should call ahead to ensure it is appropriate for them. Wear a hat and cool, comfortable clothing; apply sunscreen, and bring bottled water.
Friends of NELHA also offer an Ocean Matters Tour and an Ocean Conservation Tour (visits Kanaloa Octopus Farm and Ke Kai Ola, a rehabilitation center for endangered monk seals). Call or view the website for details.