www.waquarium.org

Spring 2008

WAIKIKI AQUARIUM

THE BIRTH OF A NEW REEF

CLASS CALENDAR

FROM THE DIRECTOR

For years, the Aquarium's entrance has been graced by a wiliwili tree. This native tree has great significance in Hawaiian culture, its wood being used in everything from chieftains surfboards to fish floats. Sadly, an introduced parasitic gall wasp has been decimating wiliwili trees across the islands and the Aquarium's tree did not escape the deadly wasp. The largest limbs have already been removed and the remainder of the dead tree will be felled in the near future. On a brighter note, the trunk has been donated to a local school for woodworking projects.

Meanwhile, the project to upgrade the Aquarium's electrical system has been delayed while contractors resolve permitting issues. Work will hopefully start soon. In the meantime, work has been progressing on the roofing repairs so we no longer have to worry about leaks in our aging facility.

On the staff front, Amanda Hendrickson has stepped into the newly created position of events and membership manager. Amanda has been a bright and welcoming face for members and visitors alike since she joined us as visitor services coordinator —we know she will bring the same positive energy to our many popular events.

Speaking of which, spring is a busy time of year for us. On Valentine's Day we hosted another hugely successful Seaduction dinner. The evening was sold out so far in advance that we added a second night on Feb. 15. A great time was had by all and our taste buds give thanks to Ginniberries caterers who created a truly tasty Valentine affair.

Another spring favorite, the Sea Hunt, returned to the Aquarium lawn on March 15. As you can see by the photos on page 7, it was another successful family day with the Easter bunny, treasure eggs, crafts and plenty of happy keiki.

And so summer rolls toward us again and planning is well under way for the summer concert series. You can find the dates on the opposite page. Our staff is finalizing the artists as we go to press and we have high expectations that this year's line-up will eclipse all others, vaulting Ke Kani O Ke Kai on its way to one of the premiere events in town. We look forward to seeing you there!

Andrew Rossiter

Dr. Andrew Rossiter
Director

> "We have high expectations that this year's line-up will eclipse all others"

Kilo i'a

Kilo iä

Issue Number 165 Spring 2008
Editor: Alice Keesing
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Cover photo: Fourspot butterflyfish by Jerry Kane (SeaLifeImages.smugmug.com).

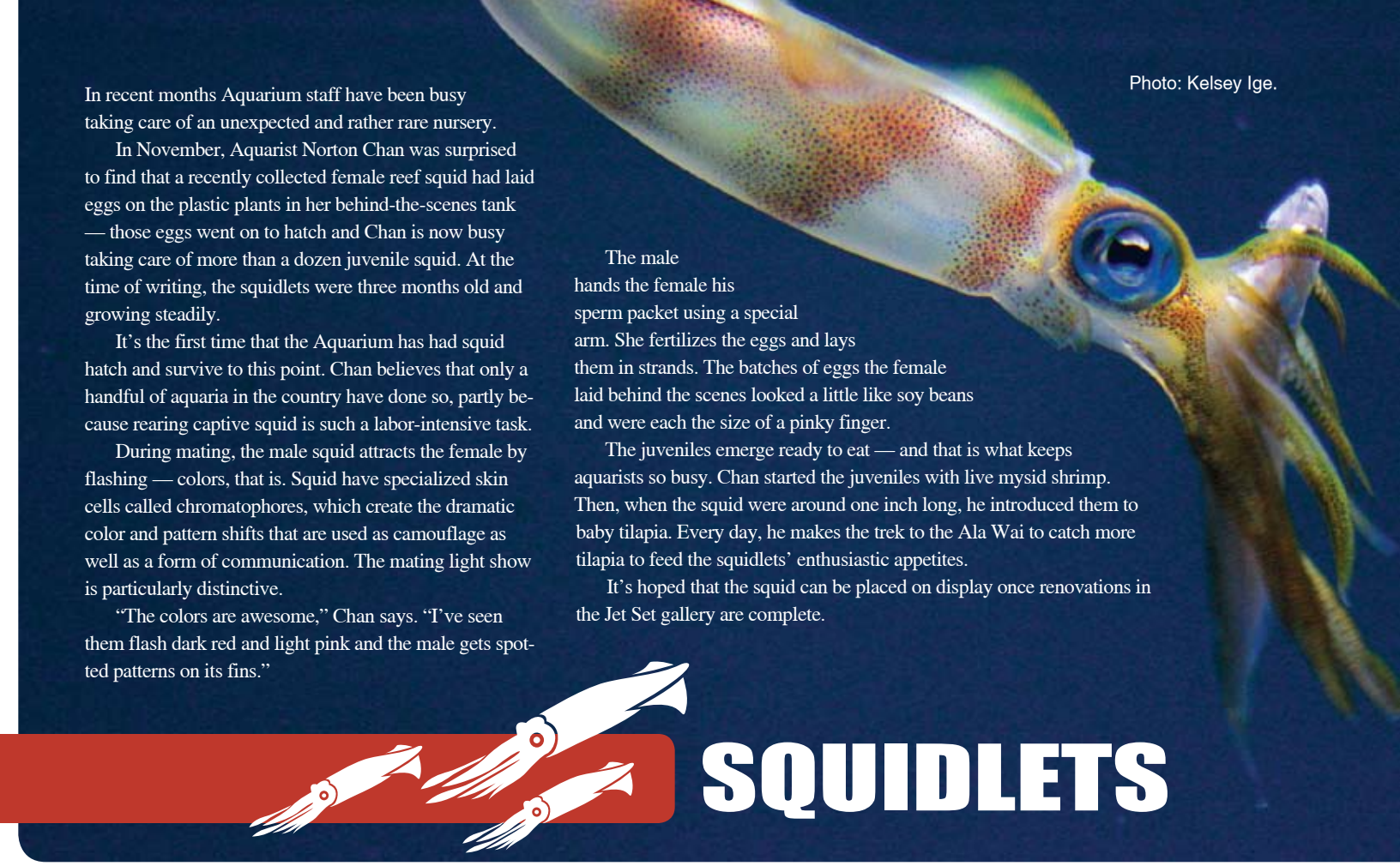


Photo: Kelsey Ige.

SQUIDLETS

In recent months Aquarium staff have been busy taking care of an unexpected and rather rare nursery.

In November, Aquarist Norton Chan was surprised to find that a recently collected female reef squid had laid eggs on the plastic plants in her behind-the-scenes tank — those eggs went on to hatch and Chan is now busy taking care of more than a dozen juvenile squid. At the time of writing, the squidlets were three months old and growing steadily.

It's the first time that the Aquarium has had squid hatch and survive to this point. Chan believes that only a handful of aquaria in the country have done so, partly because rearing captive squid is such a labor-intensive task.

During mating, the male squid attracts the female by flashing — colors, that is. Squid have specialized skin cells called chromatophores, which create the dramatic color and pattern shifts that are used as camouflage as well as a form of communication. The mating light show is particularly distinctive.

"The colors are awesome," Chan says. "I've seen them flash dark red and light pink and the male gets spotted patterns on its fins."

The male hands the female his sperm packet using a special arm. She fertilizes the eggs and lays them in strands. The batches of eggs the female laid behind the scenes looked a little like soy beans and were each the size of a pinky finger.

The juveniles emerge ready to eat — and that is what keeps aquarists so busy. Chan started the juveniles with live mysid shrimp. Then, when the squid were around one inch long, he introduced them to baby tilapia. Every day, he makes the trek to the Ala Wai to catch more tilapia to feed the squidlets' enthusiastic appetites.

It's hoped that the squid can be placed on display once renovations in the Jet Set gallery are complete.

Ke Kani O Ke Kai

The Sounds of the Ocean

Join us for this year's summer concert series. We've got the best in island talent and the best venue in town.

Mark your calendar for these Thursday evenings and watch your mail for more information.

June 12	**Kaukahi**
June 26	**Hapa**
July 10	**Jerry Santos and Jay Larrin**
July 24	**TBD**
Aug. 7	**Willie K**

BUILDING

Geology in Hawai'i ticks away on a large-scale clock, taking millions of years to build the islands that we call home. Yet, at the same time, these massive processes are clearly visible every day on the Big Island of Hawai'i as new land is forged by lava flowing into the ocean. You can also see this brave new world in our revamped Kona Coast exhibit in Gallery 2.

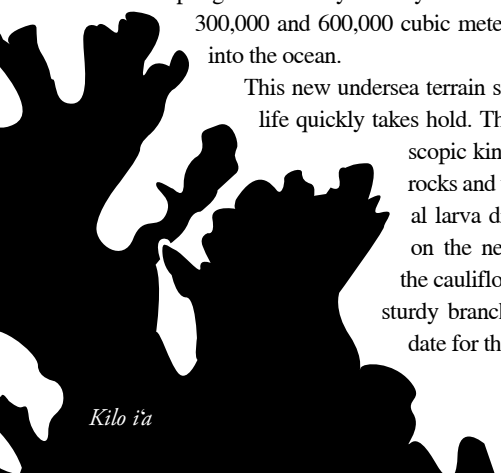
The Hawaiian archipelago is formed by a volcanic hot spot that sits in the middle of the Pacific plate. Lava flows from the hot spot, building islands that eventually rise above the ocean surface. Layer by layer, the whole process takes millions of years, but visitors to the Big Island's south-east shore can watch this island-building taking place every day. The Kīlauea volcano has been erupting continuously for 25 years and every day it pumps out between 300,000 and 600,000 cubic meters of lava, most of which flows into the ocean.

This new undersea terrain starts out barren and lifeless. But life quickly takes hold. The first arrivals are of the microscopic kind — bacteria form a film on the rocks and then the algae move in. Tiny coral larva drift in on the currents and settle on the new rock. One early colonizer is the cauliflower coral. Its dense skeleton and sturdy branches make it a successful candidate for the high-energy surge zone.

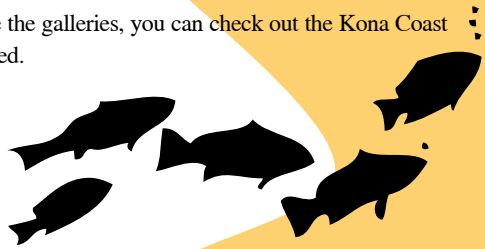
As they grow, the corals create homes and food for fishes and other creatures. And so the undersea habitat continues to build on itself, becoming richer and richer. After 10 years, the new terrain will look like that in the Aquarium's Kona Coast exhibit. But it's just the beginning — a fact that is dramatically clear when you consider that existing parts of Australia's Great Barrier Reef are 10,000 years old.

The Big Island itself is less than one million years old so, geologically speaking, it's still a youngster and its reefs are still forming. But, as time passes, the reefs will play their own part in the island-building process. As algae, corals, snails and other calcareous organisms live and die on the reef their skeletons are cemented together by coralline algae. This forms a crust on top of the basalt, which gets thicker and thicker over hundreds and thousands of years. When sea level drops, the reef becomes part of the island's real estate. Next time you walk up to the entrance of the Waikīkī Aquarium you can contemplate the fact that you are walking over an ancient reef that goes down hundreds of feet.

And once you get inside the galleries, you can check out the Kona Coast exhibit to see how it all started.



Kilo i'a



Kilauea volcano creates new underwater terrain every day as lava flows into the ocean. Photos: Dean Karamehmedovic.

REEF BUILDING: THE MANMADE WAY

The exhibits at the Aquarium are far more than static glass boxes that are filled with beautiful ocean life. Designing and creating an exhibit is something of an art form and our staff work hard to create miniature environments that closely replicate the ocean in everything from temperature to geology to currents.

The undersea world in the Kona Coast exhibit started with the master rockwork of Aquarist Kirk Murakami. Murakami used sheets of fiberglass grating to form a basic skeleton. This was then honeycombed with PVC pipes, which helps build the shape of the rockwork as well as creating places for fish to hide. The structure is then built up with concrete, which is finished off with latex molds that give that incredibly realistic texture. The final step is painting.

Aquarist Eric Curtis then stepped in with some creative plumbing that replicates the shifting currents typical of the surge zone. The currents are created by pumping water into the tank at strategic locations and by using a four-way valve, which switches the flow between the inlets. The jets of water can be modified by adjusting the strength of the flow, as well as the direction and even the shape of the nozzle.

Curtis tested the currents by placing colored anemone-shaped streamers in the tank to see how the water moved through the exhibit. He patiently adjusted the flow until it moved across the areas where the corals would be placed.

Resident green thumbs Charles Delbeek and Rick Klobuchar began with the early colonizing cauliflower and lobe corals. The exhibit is designed to evolve over time, just like a new reef on the Kona Coast. As time passes, you will be able to see these coral fragments spread out to cover the bare rock. Other lobe corals and finger corals that are typical of a deeper, more mature reef will be added as the exhibit continues to develop.

A REEF

A school of racoon butterflyfish at Kaiwi on the Kona Coast. Photo: Lytha Conquest.

figuring OUT
>> climate change

2 The number of barrels of oil consumed in the world for every one barrel discovered.

125 years The length of time it took to consume the first trillion barrels of oil – the world will consume the next trillion in only 30 years.

35 The percent increase in carbon dioxide in the atmosphere since the beginning of the Industrial Revolution.

50 The percentage increase in automobiles in the world by 2030.

1/3 The fraction of United States carbon dioxide emissions accounted for by automobiles. Vehicles in the United States release more carbon dioxide than all the energy sources (such as heating, electricity, vehicles and factories) in all of India.

20 pounds The amount of carbon dioxide created by burning one gallon of gasoline.

0.7 - 1.5 The number of degrees Celsius that the global temperature has increased in the last 100 years. It is predicted that global temperatures in 2100 will be 1.4-5.8 degrees Celsius warmer than they were in 1990.

4 The number of degrees Fahrenheit that much of the United States has already warmed by. The top 10 warmest years have all occurred since 1990. Diseases such as malaria are predicted to spread as the world grows warmer, due to the carriers of disease spreading out over a larger geographical area.

16-20 The estimated number of feet of sea level rise if the West Antarctic Ice Sheet were to collapse. The likelihood of such a collapse before the year 2100 is low.

10 The percentage of all known plant species that are under threat of extinction. Agriculture and biodiversity are already being impacted by global warming.

15 - 37 The percent of wildlife species in some regions that could be "committed to extinction" by 2050 because of global climate change.

7 The increase in degrees Fahrenheit in Arctic winter temperatures over the last 60 years, a faster rate than in any other region. This affects wildlife such as foxes, caribou, walruses and polar bears. It also affects the lifestyles of native peoples in the Arctic.

20 million Number of Americans, 6.3 million of them children, who suffer from asthma. Public health experts worry those numbers will rise with continued greenhouse gas emissions.

40 The annual percentage savings in heating and cooling costs from planting a large tree that creates shade.

Source: Earth Day Network. Visit the site at ww2.earthday.net/~earthday/ for more information on events, programs and helpful tips.

New Class!

Cool Summer Camp

The coolest place to be this summer? The Aquarium, of course. Teens can get wet with our new Marine Biology Camp. Help create enrichment activities for our resident octopus. Learn the basics of underwater photo surveys. And get personal with all sorts of weird and wonderful undersea life. While exploring outside you might come face to face with an octopus guarding her eggs, an elusive reef squid shifting colors or a school of ulua.

The marine biology camp is for teens aged 13 to 16; younger aquanauts can explore with the Summer by the Sea class.

See the calendar on page 12 for more information on both cool classes.

Romancing the Reef

This summer marks the 10th anniversary of Coral Spawning and Reef Romance, the longest-running public display of coral spawning in the world.

Coral science is surprisingly new. Research on coral spawning behavior really got going in Australia in the early 1980s. In 1983, scientists from Australia's Great Barrier Reef came to Hawai'i to share their discoveries. They told tales of mass coral spawnings so large that, afterward, miles of surface waters were covered with an egg and sperm slick. They showed local researchers where and how to look for reproduction in Hawaiian corals. But, of course, Hawai'i's corals revealed their secrets slowly. Instead of spawning at the same time, our local coral types have their own unique reproductive behavior. Hawai'i corals are simply more discriminating (well… diverse at least). For instance, the overachieving lace coral spawns every month, while lobe, finger, cauliflower and mushroom corals all spawn only after the full moon, either in the spring, summer or fall, and each at different times of day or night.

Only rice corals consistently spawn after the new moon, the darkest of the moon phases, and then only in the summer months, one to five days after the new moon in June, July and August. They also have a preference to go off at about 9:30 p.m.

They are predictable, and, once the secret is known, observable. And that is just what we have been doing with our Reef Romance evenings for the last 10 years. Come and join us on June 6 for this unique event. For more information, see the Classes and Activities calendar on page 12.

— Mark Heckman

EGG-CELLENT!

Sea Hunt 2008 was a hoppin' great day of sunshine, fun and family. On March 15, more than 500 keiki hunted eggs on the lawn, took their chances at the fishing pond and got creative decorating their own Sea Hunt carry bags. They also got up-close with the Easter Bunny and dressed up in our cool new sea chick T-shirts.

Our thanks to the many hands that helped make this such a fantastic day and to Pizza Hut Hawaii and Costco for their generous support.

SOLVED

Fifteen super-sleuths successfully cracked the case of the missing zooxanthellae during the Aquarium's mystery night in February. The detectives used clues hidden around the Aquarium, including DNA samples left by the suspects. They worked diligently to solve the crime, applying their knowledge of the suspects.

Glowball Warming, it turns out, was the culprit although she did a nice job of trying to frame Ms. All-gal Bloom. Coral reefs all over the world can now breath a collective sigh of relief.

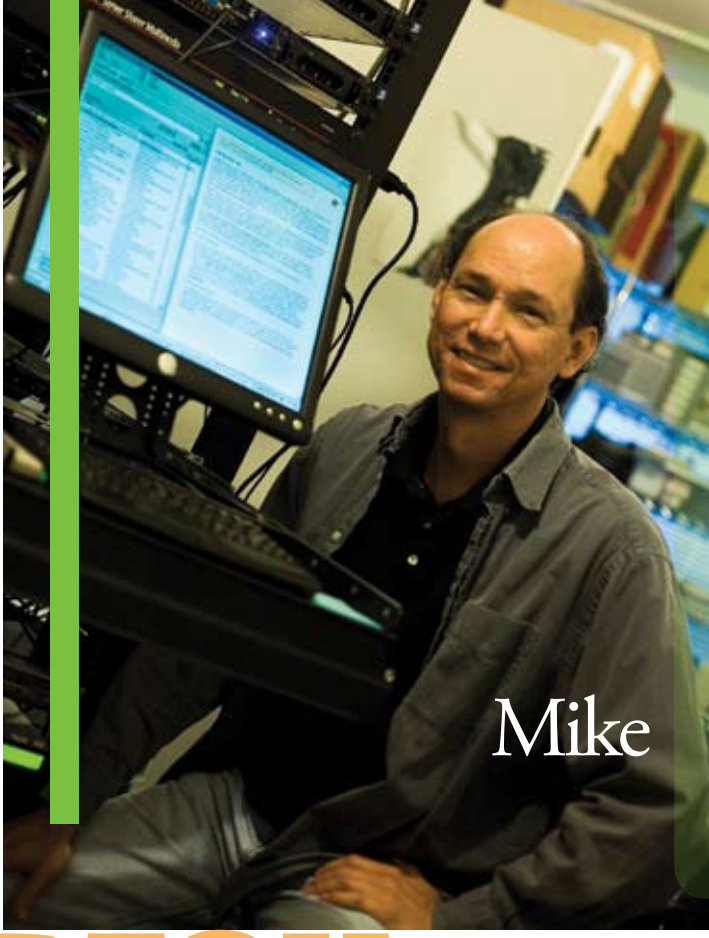
The Waikīkī Aquarium would like to thank the staff at the University of Hawai'i's Center for Microbial Oceanography: Research and Education for producing this great event.

FRESH Faces

Name: **Michael Balais**
Position: **Janitor**
Favorite Aquarium resident: **Tilapia**

Michael Balais grew up in the Philippine province of Ilocos Norte. He came to Hawai‘i two years ago to join his father and then joined the Aquarium as a janitor. The work that he and his fellow Facilities Maintenance staff do help make your visits to the Aquarium a great experience. Balais is responsible for everything from shampooing the carpets to wiping down the exhibits so you have the best view.

Balais has four children. When he’s not at the Aquarium he sometimes turns his hand to yard and landscaping work.



Name: **Karen Quinn**
Position: **Administrative Assistant**
Favorite Aquarium resident: **Western Pacific giant clams**

Karen Quinn grew up in Georgia where manatees and dolphins are regular visitors in the waters off her parent’s backyard. The first grandchild in an avid fisher family, Quinn grew up on the water, fishing, crabbing and shrimping.

She went on to work as an administrative assistant in Washington, D.C., before she and her husband moved to Hawai‘i in 1994. It was the perfect place for Quinn to pursue her marine interests and she earned a degree in marine biology at Hawai‘i Pacific University.

For several years, Quinn worked at the University of Hawai‘i with Dr. Angel Yanigahara studying the venom of stinging jellies. Last year she had the fun experience of working with a National Geographic film crew on the documentary, *Jellyfish Invasion*, although she notes with a laugh that most of the Hawai‘i footage and all of hers ended up on the cutting room floor.

Unfortunately, Quinn’s research work had to end when she began to react to the laboratory chemicals and the jellyfish toxins.

“I wouldn’t even have to be touching the jellyfish,” she says. “If someone was doing something with them in the lab, it got to the point that I had trouble breathing. So I had to make the decision to go back into administration.”

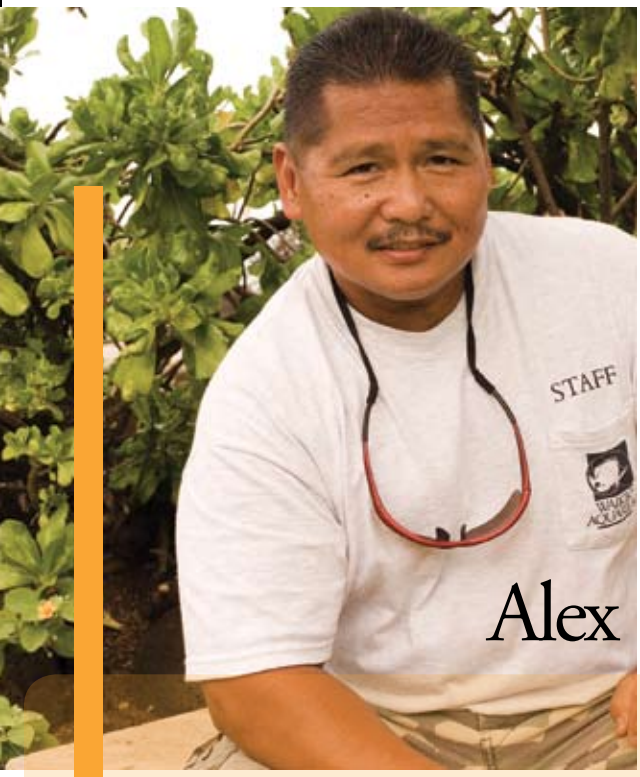
Quinn joined the Aquarium in December in the newly created position of administrative assistant for Director Dr. Andrew Rossiter.

Name: **Mike Wieneke**
Position: **IT Specialist**
Favorite Aquarium resident: **Monk seals**

The new go-to tech guy at the Aquarium is Mike Wieneke. A McKinley High School grad, Wieneke earned a computer science degree at the University of Hawai‘i and has concentrated his career in educational institutions on O‘ahu. One of his memorable positions was with a mapping group at UH called SeaMark. The job took him on mapping cruises over the East Pacific Rise and the Marianas Trench, around the Philippine islands and to Easter Island, where he has fond memories of horseback riding.

The Aquarium offers a similar element of fun, Wieneke says, from the galleries below to the ocean views (and seasonal whale sightings) that staff enjoy every day.

Wieneke also has a lot of fun volunteering with the NASA-sponsored Bot Bowl Competition. Wieneke helps train the educators who teach Hawai‘i students as they create robotic Lego creations that face off in national competitions.



Alex

Name: **Alex Alconel**
Position: **Building and Grounds Maintenance**
Favorite Aquarium resident: **Ulua**

Alconcel laughs that he’s “as local as you can find ‘um.” He grew up on O‘ahu’s Windward side, where fishing and skin diving were a part of his life.

Alconcel joined the Aquarium’s facilities department late last year and helps keep up the maintenance of our aging buildings.

“It’s a nice place to work,” he says. “The crew from our department, they’re all down to earth guys — that makes a difference.”

Alconcel calls himself a “seven-day work guy” — when he’s not at the Aquarium he works other construction jobs. A former body builder, Alconcel is also in the gym every day of the week. He made it to the nationals twice in the late 90s but these days his focus is on training other athletes.

Seaduction 2008

Seaduction 2008 got off to a hot start as the skies turned on a spectacular tropical sunset to greet our Valentine’s Day guests. After a champagne reception, couples made their way to the galleries and their tables, which were set up among the exhibits.

Ginniberries caterers served up a romantic meal that started with roasted beet and goat cheese salad, then made its way through filet mignon and mahi mahi and wound up with a flourless chocolate cake with raspberry puree. Even Cupid would have been back for more.

Couples were also presented with a one-of-a-kind gift created especially for the occasion. Kailua’s Mu‘umu‘u Heaven crafted sacs from vintage fabrics and filled each with a stunning, matted print from wave photographer Clark Little.

RESEARCH NEWS

>> INVASIVE MANGROVES

Mangroves were introduced to Moloka‘i in 1902 in an effort to stabilize coastal areas for growing sugar. Since then, the water-borne seeds of the coastal plant have spread throughout the main Hawaiian islands where the plant has taken hold, choking bays and eroding fishpond walls.

In their natural environments, mangroves house rich and vital ecosystems. As an invasive species, however, they can wreak havoc on the existing endemic ecosystem. Dr. Andrew Sweetman, a post-doctoral scientist in the University of Hawai‘i’s biological oceanography department, has set out to unravel what effect mangroves are having on Hawai‘i’s coastal environments.

Funded by the UH Sea Grant program, it’s part of a larger project looking at various anthropogenic stresses on Hawai‘i’s coastlines. The next phase will investigate what happens to sediments beneath open-ocean aquaculture cages.

“These issues resonate not just for Hawai‘i but for the world,” Sweetman says. “Invasive species are becoming a problem everywhere and will continue to do so with increased trade and, more importantly, climate change. I tend to look at these problems we’re facing as a father first and foremost. This situation is most likely only going to become worse, and our kids are going to be the ones that have to live and deal with it. This is why we’re trying to figure out the effects of these impacts now. Only by knowing these, can we start to propose sound coastal management strategies.”

With the assistance of Dr. Liz Galley, graduate students Anja Berle, Fabio Deleo, Angelo Bernadino, Pavica Srsen and Iris Altimira, Sweetman has set up shop on the Aquarium’s research deck, where he is using a totally new method that allows him to recreate the natural environment in enclosed chambers. Sediments are collected in the field and placed in the chambers. Environmentally benign stable isotopes are added and, as the natural processes unfold, researchers are able to track those isotopes and build a picture of the geochemical and biological processes.

The first question is what effect the mangroves are having on the animals living in the coastal sediments.

“Because mangroves have a very dense root system they slow down the flow of the water so that all of the suspended organic material is deposited on top of the sediment making it super organically enriched,” explains Sweetman, who is working alongside Dr. Craig Smith.

Endemic animals that cannot survive in that high nutrient environment are either driven out or die, leading to substantial changes in the food web.

Sweetman’s work should also shed some helpful light on mangrove removal. The common practice is to cut down the plant while leaving the dense roots in place. While the eyesore is gone, Sweetman says early data suggest that the sediment is still unable to recover because of the remaining root system. Sweetman and Smith are now planning future experiments to gain further insight into how the mangroves are altering the coastal ecosystem in Hawai‘i.

on BOARD

Name:
Charles R. Kelley M.D.

Joined FOWA board:
November 2004

Can also be found at:
the family hotel business where he is vice president of KF Development, Outrigger Enterprises, Inc. and president of Outrigger International Travel

Favorite Aquarium resident: The ulua

What inspired you to become a FOWA board member?
As a child, my family often visited the Aquarium and I developed a love for marine biology, which has become a major part of my adult life. Being a FOWA member lets me play a role in maintaining this unique facility for the next generation.

What do you enjoy most about the Aquarium?
Learning about the behind-the-scenes research and the challenges of creating and maintaining the beautiful exhibits. Also, going with my family on the Aquarium-sponsored trip to Midway a couple of years ago was an amazing experience.

What do you believe is the Aquarium’s role in Hawai‘i?
To promote marine awareness and conservation through education.

On a personal note: I love to get out in the ocean as much as possible … surfing, paddle board racing, snorkeling, fishing, kayaking … or just walking the beach.

There are 12 people currently serving on the Friends of the Waikīkī Aquarium board. To acquaint you with these people who volunteer their time to help the Aquarium, *Kilo i‘a* features one board member each issue.

Classes & Activities

April-July 2008

Mauka to Makai Environmental Expo

April 12, Sat 9 a.m.- 2 p.m.

The Aquarium celebrates Earth Month with a free entry day and trolleys to other environmental clean-up sites in our ahupua'a. Come cheer on the release of captive-bred moi at 11 a.m. and stop by the activity booths of our state and federal partners. Sponsored by the Honolulu city and county environmental services department and the state health department clean water branch. Free.

Sea Stars

April 16-30, Wed 3:00-4:15 p.m.

Is your preschool age child ready to graduate from Small Fry? Bring your 3- to 5-year-old keiki to spend three afternoons singing and dancing, playing and creating. Learn about camouflage, locomotion, predators and prey in this three-session class. $36/adult & child ($48 for non-members).

Seasons and the Sea

May 2, Fri 6:00-8:00 p.m.

As the sun sets into the crown of Pu'u o Kapolei, the beginning of the season of warmth, or kau, begins. Through chant, hula and mo'olelo, Hālau Mele will interpret the meaning of this important event. The gathering will be in the park on the 'ewa side of the Aquarium. Bring a chair or a beach mat. Open to all ages. Free.

Aquarium Interpreter Volunteer Training

Begins May 13

Interested in sharing your love of marine biology with curious visitors and kama'āina? The Aquarium is offering training for volunteer Aquarium Interpreters in May. Aquarium Interpreters answer visitor questions, share the natural history behind our exhibits, nurture a sense of curiosity and encourage stewardship of the ocean environment. The eight training sessions will be held at the Aquarium on consecutive Tuesday and Thursday evenings and Saturday mornings. For more information about volunteering or to register, contact Volunteer Coordinator Jessica Souke at 440-9020 or e-mail volunteer@waquarium.org.

Tide Pool Exploration

Kewalo Basin

May 4, Sun 8:00-10:30 a.m.

May 18, Sun 8:00-10:30 a.m.

Spend a morning discovering sea slugs, collector crabs, brittle stars, spaghetti worms, ghost shrimps and a variety of other animals that the tide reveals. Explore shoreline, reef flat and tide pool habitats with Waikīkī Aquarium naturalists. Participants must provide their own transportation to the field site. Minimum age 5 years; youngsters must be accompanied by an adult. $8/adult, $6/child ($10/$8 for non-members).

Registration Information

- Questions about course, enrollment or disability accommodations? Call the Waikīkī Aquarium Education Department at 440-9007.
- Preregistration is required for all activities.
- FOWA members are allowed up to four total registrants at FOWA rate.
- Overpayments ($5 or less) cannot be refunded.
- A handling fee of $5 will be assessed for withdrawals.
- No refunds can be made for no-shows or for withdrawals made seven days or less before an activity.

Full payment must accompany completed registration forms. Please, no cash. Make checks payable to **University of Hawai'i**.

Mail registration. Fill out the registration form over the page; send check or credit card information for the total amount to:

Waikīkī Aquarium Education Department
2777 Kalākaua Avenue
Honolulu, HI 96815

Coral Spawning and Reef Romance

June 6, Fri 8:00-10:00 p.m.

Each summer, rice corals in the Edge of the Reef exhibit and all over Hawai‘i spawn two to four days after the new moon. Celebrate this rite of reef renewal with Aquarium staff. Learn a little coral biology and join a tour of the exhibits with Aquarium biologists. Courtship and nesting behaviors of many of the fish will also be observed on this special night. Minimum age 14 years. $12 ($16 for non-members).

Ke Kani O Ke Kai

The Aquarium’s popular summer concert series lights up your Thursday evenings on June 12 and 26, July 10 and 24 and Aug. 7. Save these dates and watch your mail and the *Kilo i‘a* for more information.

Summer by the Sea

June 16-20

Mon-Fri 8:00 a.m.-3:00 p.m.

Fri 7:00-9:00 p.m.

Spend a week of summer learning what lives in the ocean surrounding our islands. What’s the best way to learn? By doing. Snorkel, swim and explore the coast from Waikīkī to Diamond Head. When we are not outside adventuring, we will use the Aquarium as our classroom with sneak peeks behind the scenes. On the final night we will invite families for a student-led tour of the Aquarium. For marine biologists ages 8 to 12 years. All students should be confident swimmers. $200/child, ($250 for non-members).

Small Fry

June 21-July 19, Sat

A Session 8:30-10:00 a.m.

B Session 10:30 a.m.-noon

June 24-July 22, Tues 10:30 a.m.-noon

For the youngest learners. An adult and their 1- to 3-year-old team up to discover the amazing undersea world of the Aquarium. Five weekly sessions include crafts, song, play and exploration of the exhibits. For adult-child teams. $50/adult & child ($80 for non-members).

Aquarium After Dark

June 24, Tues 7:30-9:30 p.m.

Discover if fish sleep, sea snails snooze or weedy seadragons doze on an after-dark flashlight tour of the Aquarium. Find the sleeping spot for the red-toothed triggerfish or the rockmover wrasse. What color are yellow tang at night? Minimum age 5 years; youngsters must be accompanied by an adult. $8/adult, $6/child ($10/7 for non-members).

Marine Biology Camp NEW!

June 30-July 3

Mon-Thu 8:00 a.m.-3:00 p.m.

Thu 7:00-9:00 p.m.

The Aquarium’s exhibits and nearby waters will provide a living laboratory for this teen marine biology week. Prepare to get wet, use underwater cameras, micro-video and other gear as we explore the marine world. Participants must be between 13 and 16 years old and able to swim and snorkel. $175/teen ($200 for non-members).

Gyotaku with Riley Yogi

July 8 & 15, Tues 6:30-8:30 p.m.

Fishermen! Artists! Teachers! Learn the art of fish printing with local fisherman and artist Riley Yogi. On the first night, participants will use non-toxic black ink to print their fish and learn to paint realistic eyes. On the second night, techniques for adding watercolors will be taught. Supplies will be provided, but participants are encouraged to bring their own fish or octopus. Minimum age 14 years. $22 ($26 for non-members).

Activity Registration Form

Name(s)

Adults _____ Phone (home) _____

Children/Ages _____ Phone (work)_____

Address _____

City/State/Zip _____

Please register me for

Activity	Session	Date(s)	Number of Adults/Children	Price
_____	_____/_____	_____	_____	_____
_____	_____/_____	_____	_____	_____
_____	_____/_____	_____	_____	_____
_____	_____/_____	_____	_____	_____
_____	_____/_____	_____	_____	_____

Total amount of payment enclosed (check payable to University of Hawai‘i) : _____

If paying by credit card

Credit card # _____ ☐ Visa ☐ Mastercard ☐ JCB

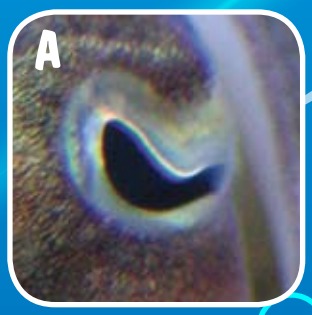
Expiration date: _____ Last three digits of security code on back of card: _____

I am a FOWA Member ☐ Yes ☐ No

sea squirts

What's That?

How well do you know our Jet Set critters?
Match the body parts with the correct animal:
Draw a line connecting one of the closeups to one of the animals!

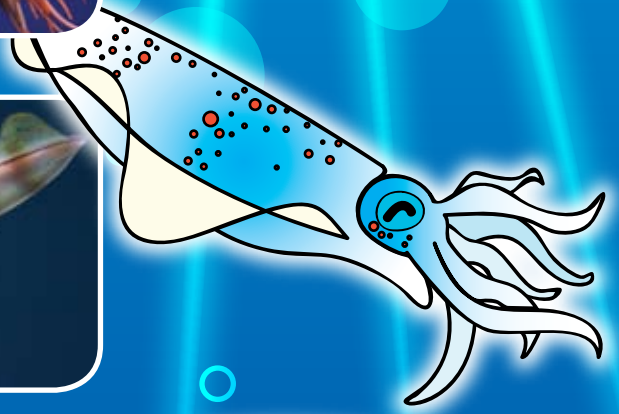


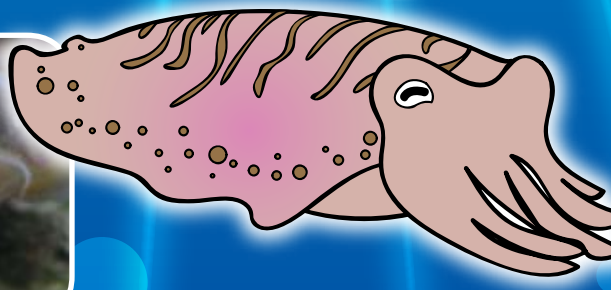
● Nautilus

● Squid

● Cuttlefish

● Octopus





Answers: squid eye-D, cuttlefish eye-A, nautilus siphon-C, octopus tentacle-B

New & Renewing FOWA Members

The Membership Office recorded these new and renewing memberships between Nov. 16, 2007 and Feb. 21, 2008.

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Stephen Abear
Ms. Nessie Cruz Adame
Mr. & Mrs. Jaime K.H. Ahu
Dr. & Mrs. Bruce S. Anderson
Tom & Theresa Annis
Dr. Bud Antonelis &
Mr. Troy Antonelis
Roger & Amy Aoki
Glenn Arai
Mr. & Mrs. Richard J. Armsby
Mrs. Eileen I. Awai
Mr. & Mrs. Kent Badham
Ricky & Debbie Baker
Val Baliad
Mr. & Mrs. Barth Baron
Brad & Anita Barshaw
Melani Bartholomew &
Jon Stapp
Denise & Michael Beauchemin
John & Saro Berghese
Mrs. Valerie Berman
Michelle & Steve Bienkowski
Jim & Kristen Boano
Mr. Ernest Bodner &
Mrs. Sonia Byon
Mr. Edward &
Mrs. Catherine Bonan-Hamada
Andrew & Ana Bouck
Charles & Norren Bowman
Dr. Gerald & Joyce Brouwers
Shepherd & Angie Brown
Robert & Sarah Bryant
Dan, Sara, Kaitlyn &
Andrew Buehler
Ms. Jennifer Canale
Mr. Michael Cape &
Dr. Miki Kiyokawa
Jean M. Carr
Dr. & Mrs. Jay Carter
Mrs. Rema Caspillo &
Ms Jasmine Lai
Ann B. Catts
Elizabeth D. Chalmers
Dr. Yvonne Chan &
Mr. Benjamin Godsey
Elaine M.L. Chang
Harry & Yvette Chang
Jennifer Chang &
Nyles Toguchi
Sharon Chang and
Raynor Agpaoa
Sherry & Brent Chang
Ying Ya Chang
Dr. William G. &
Mrs. T. Rose Chismar
Mr. & Mrs. Kurt Chivers
Manda Choi & Matt Vo
Patricia & Mark Choo-Kang
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Mr. & Mrs. Terence Chun
Michael & Tracy Chung
Steve & Malia Clemons
Mr. & Mrs. Kaai Cobb-Adams
Mr. Christopher &
Dr. Patricia Cooper
Bill & Carol Coops
Frank & Katrina Cordova
Gwendellyn Cruise
Janie Culp
Albert Del Rio
Jose & Nelisa Deleon
Erik & Konane Deryke
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Mark Duda & Stephanie
Saephan
Mr. & Mrs. David R. Earles
Andrew & Barbara Endo
Mr. & Mrs. Steve Endo
Jose & Eva Enriquez
Gene Evans
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Mr. Chris Lepczyk
Cameron & Karen Farrer
Mr. & Mrs. Leslie C. Fong
Lyle & Brenda Fong
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Dr. Richard & Mrs. Donna Frankel
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Stuart & Gayle Fujioka
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Brett-Riley Fujita
Dr. Jon S. Fujita &
Dr. Brenda Nishikawa Fujita
Dr. Nathan & Dr. Brenda Fujita
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Vickie Fullard-Leo
Lori & Mel Garcia
Ethan & Beth Gardner
Pete & Berni Gaskell
Michael & Erin Gayer
Mr. & Mrs. Chad Ginoza
Mrs. Catherine Gold
Mr. & Mrs. Donald W.Y. Goo
Mr. & Mrs. Michael B. Gorman
Jeremy Grad
Tim Gray
Steven M. Gross
Christopher K.H. Guay &
Lori Teranishi
Mr. & Mrs. Todd Hackney
Ms. Kathy Hallock
Mr. & Mrs. Dean Hamada
Charles & Camesha Harper
Lee Hekaulani Harper
Robert & Tinna Harper
Sally Ann Harper
Tom & Magdalina Harper
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Kendall & Diane Hawkins
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Hazel K. Hirayama
Brenda and Vance Hirokawa
Robert & Sandra Hoggan
Jeremy & Krista Hollaway
Annette Hollingshead
Raymond Hoptowit
Trent & Julie-Ann Horita
Mrs. Calvin Huynh
Pao-Chi Hwang &
Gwendolyn Isherwood
Herbert & Judith Inouye
Ms. Masako Iwami
Mr. & Mrs. Kyle K. Iwamoto
Mr. & Mrs. Tadami Izutsu
Mr. & Mrs. John L. Jacobs
Josh Jacobs & Ann DeJesus
Kimberly and Stan Jacobs
Dr. Kevin Jim &
Dr. Katherine Heinzen Jim
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Mr. & Mrs. Pio Jimenez
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Wesley & Violet Kim
Woong Min & Jung Hae Kim
Michael Kinzie
Jose & Barbara Kirchner
Dr. Jerold & Mrs. Lori Kouchi
Ryan & Jennifer Kozuma
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Mr. & Mrs. Earl Kuon
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Joseph Chvosta V
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Dr. Lorren Loo & Dr. Paul Martin
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Robert Lower
Mr. & Mrs. Jonathan B. Lum
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Kimball & Deborah Millikan
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Melvin & Sandra Miyamoto
Lori Miyashiro
Doug & Dale Miyoi
Reid & Hayley Mizuguchi
Yukie Moen
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Mr. & Mrs. Archie T. Murakami
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Mark & Vicki Nakagaki
Mr. & Mrs. Kevin L. Nakagawa
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Stuart & Michele Nakamoto
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Reynold & Sue Nakano
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Thomas & Asae Nakano
Jan Nakaya
Yubun & Yukari Narashiba
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Mr. & Mrs. Keith Niiya
Paula Nishida-Murakami
Mrs. Subhadra Nishiki
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Dr. & Mrs. Wesley Ogata
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Kayoko Ogino
Albert Oh
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Mattias & Maria Ormestad
Barbara & Ornellas
Joylynn Orrico
Roger Osentoski
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Mr. & Mrs. Darren Pai
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Mr. Andrew Pang
Denis & Corrine Pang
Mrs. Kulia Petzoldt
Eva Ponte
Forrest & Ann Ramey
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Oren Schlieman
Leina & Gino Sellitto
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Adrian Smith
David & Sherrie Smith
Ms. Cora and Mr. Mark Speck
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Gail Yamaguchi
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Nobuo Yoshioka
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Benedict & Leoannalissa Yung

If your name is not listed or is listed incorrectly, please accept our apologies for the error and our most sincere thanks for your support.

AQUARIUM QUERY

Habitattitude

By Gerald Crow, Curator

Q **I remember hearing that the only freshwater fish native to Hawai'i are the gobies. But when I go fishing in the reservoirs and check out many of the streams in Hawai'i, I see a lot of other fish. Where did they all come from?**

A As you can imagine, fish have been introduced to Hawai'i from a number of sources. Some, such as tilapia, were introduced intentionally to control aquatic plants. Some species were brought in as gamefish for reservoir fishing, others for food and many have been released by aquarium hobbyists.

Today, we know that releasing alien species can cause permanent damage to our islands' fragile ecosystem because they not only compete with native fish for food, but they alter the environment and introduce disease.

Amazingly, we now have 45 species of alien freshwater fish in Hawai'i, according to Mike Yamamoto of the state Department of Land and Natural Resources. To highlight the dangers of these introduced species, the Waikīkī Aquarium has created two exhibits, Food Gone Wild and Responsible Fishkeeping.

Recently, the state partnered with the federal government in a program named Habitattitude to help the public become more aware of the dangers of releasing pet species into the wild. The Aquarium is also a partner in this program and helps find homes for fish that can no longer be maintained by their owner. It is very important that we all take responsibility for our pets and protect Hawai'i's environment. Please spread the word about Habitattitude and do your part to stop the spread of alien species.

Got questions about your home aquarium? We've got the experts. Every issue, *Kilo i'a* addresses some of the key concerns and quandaries of the home aquarist.

OCEAN EXPLORER WORKSHOP & MARINE EDUCATORS' EVENING

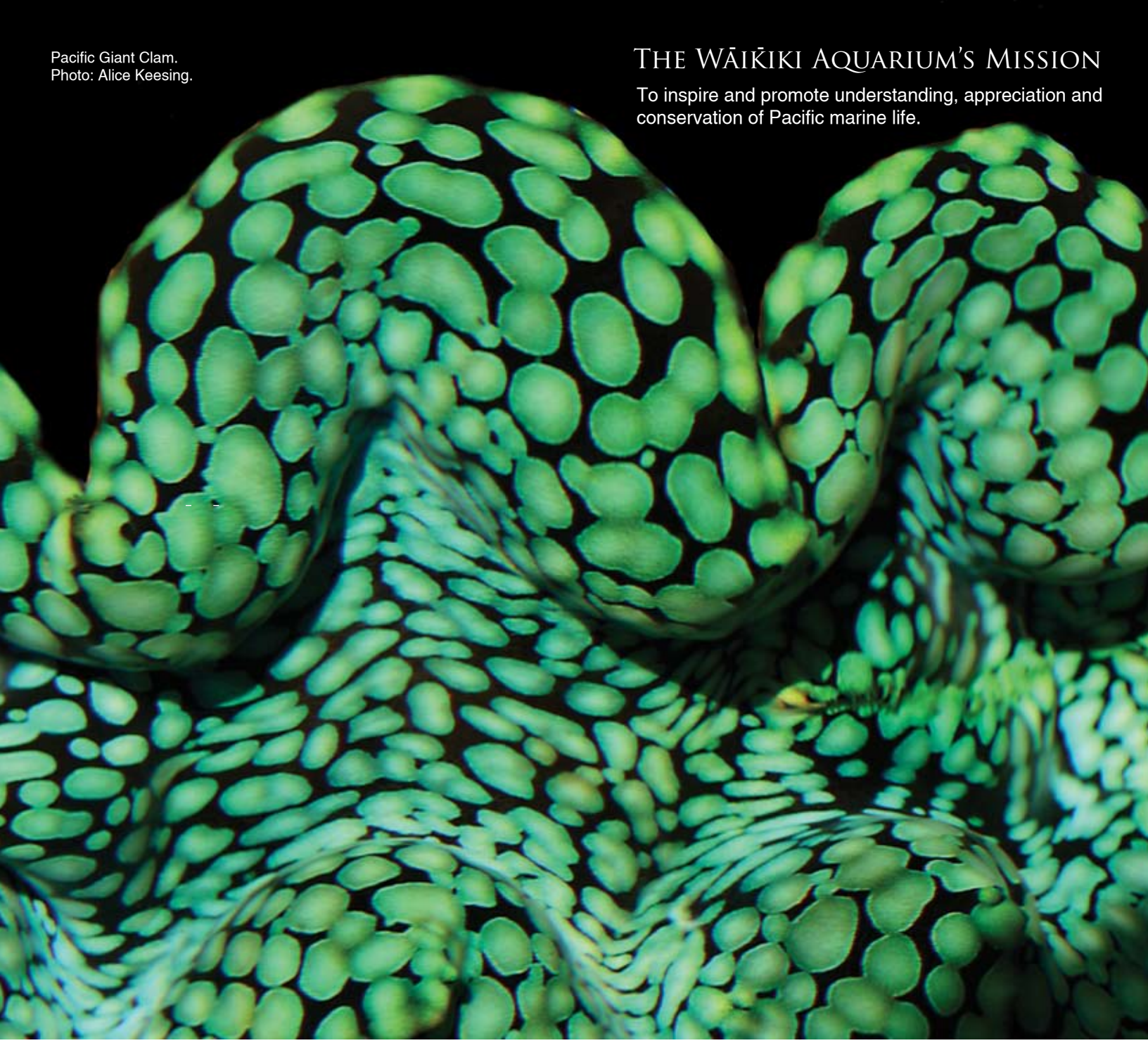
Left: Participants explore the NMSS booth. Below: Education Director Mark Heckman and Michael Lameier of NMSS.

February 9 may have been Pro Bowl Saturday for some, but it was all about marine education at the Waikīkī Aquarium. Educators from across the state gathered for a daytime workshop on the Ocean Explorer curricula and then mingled under the stars during the Marine Educators' Night.

The workshop was sponsored by a $20,000 grant from NOAA's Ocean Explorer program and the National Marine Sanctuary Foundation. Exhibitors from many agencies were on hand to celebrate the International Year of the Reef and to provide teachers with a wide variety of additional marine resources.

The Ocean Explorer site is not just for teachers; log on and follow real time ocean explorations across the Pacific and beyond: **oceanexplorer.noaa.gov/**

Pacific Giant Clam.
Photo: Alice Keesing.



The Wāikīki Aquarium's Mission

To inspire and promote understanding, appreciation and conservation of Pacific marine life.

WAIKIKI AQUARIUM

University of Hawai'i at Mānoa
Waikīkī Aquarium
2777 Kalākaua Avenue
Honolulu, HI 96815-4027

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