

# Kilo iā

2013/JUL//AUG///SEP

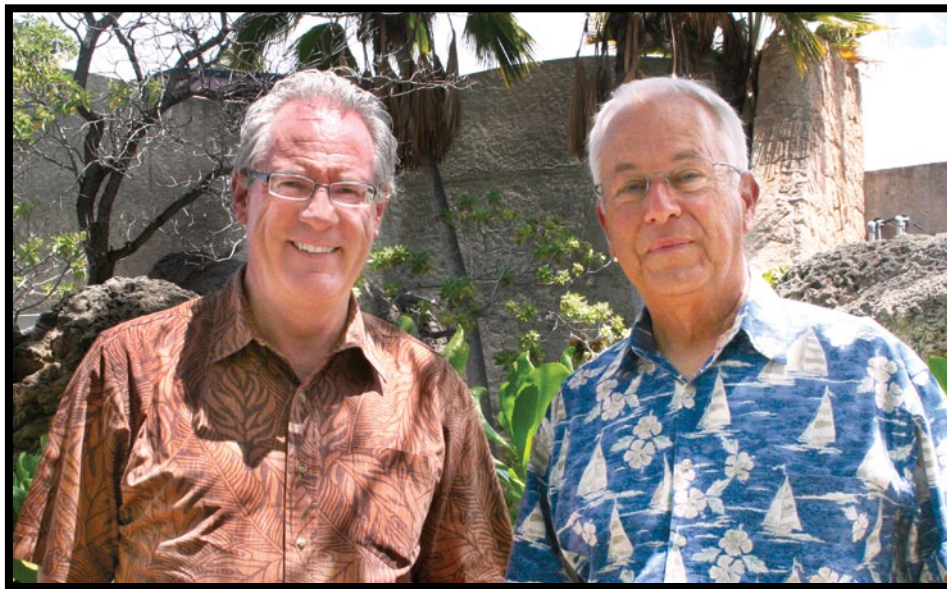
## RESEARCH ON THE REEF

Students use the Edge of the Reef  
exhibit as a research laboratory



When its doors first opened on 21st March, 1904, I wonder how long the original owners foresaw the Aquarium operating? Probably not as long as it has existed, and nor, likely, would they have envisaged its evolution from a purely entertainment facility into the educational institution it has since become. Next year will see Waikiki Aquarium's 110th anniversary, and plans are well underway to celebrate this milestone. These include some signature events, such as a high-profile guest lecture series and a gala dinner, details of which will be given in future issues of *Kilo i'a*. Also on the menu are several new exhibits, and some long overdue capital improvements and renovations throughout the facility. Of course, the latter require funding, and it is almost exclusively thanks to the support of you, our FOWA family, that we are able to achieve anything in this regard. As the State Aquarium of Hawai'i, the state legislature kindly provides us roughly 20% of our annual operating costs. The remaining 80% needed just to balance the books, and the additional funds required to pursue increased and better facilities, education programs and conservation activities, are up to us to raise. Ever optimistic, we hope that our 110th year will see a renewed interest and commitment that will result in the Aquarium henceforth receiving the attention it needs and the support it deserves. This will enable the Aquarium to not just continue providing educational information and programs about Pacific marine life, but to provide more, better and expanded experiences for all.

With the closure of the National Aquarium, Washington D.C., on September 30th, 2013, as of October 1st the Waikiki Aquarium will become the second oldest public aquarium in the United States, topped only by the Woods Hole Science Aquarium in Falmouth, Massachusetts, which was founded in 1885. While historically of interest, being third, second or first in the age-status list is not an issue of great importance to us. Instead, we place greater premium on the many firsts we have achieved, and our contributions and successes; in terms of our pioneering research on marine life husbandry; in terms of our educational offerings, and in terms of the conservation messages and activities that have long formed the core of our mission and activities. The Waikiki Aquarium was the first in the world to display Hawaiian



Dr. Andrew Rossiter with George Tinker, son of the Aquarium's second director, Spencer Tinker.

monk seals and to breed mahi-mahi (dorado, or dolphinfish). We were the first in the U.S. to display and breed nautilus, and the first in the U.S. to display black-tipped reef sharks, giant clams, live corals, and several species of butterflyfish and angelfish. The Aquarium pioneered the keeping and propagation of corals in captivity, and the methods developed here are used today by public aquariums, researchers and hobbyists throughout the world. The Aquarium is internationally renowned for its coral propagation program and houses probably the largest collection of living corals in any U.S. aquarium.

Ever ambitious and never satisfied with the status quo, Aquarium staff consistently raise their bar regarding the core activities. It is this consistent quest for improvement that is reflected in the quality of our exhibits and education offerings. In this regard we have been fortunate enough to have recently attracted several high caliber staff in key positions to replace those who have moved on. Brief introductions to these talented individuals were in the last, current and next issues of *Kilo i'a*. With these new energies and ideas and expertise combined with the wealth of experience and knowledge we already have, we are confident of achieving even greater successes for the Waikiki Aquarium over the coming decade. So, please join us as we celebrate our 110th history next year, but also come on board and get involved as we move into an expanded, improved and exciting future.

*Andrew Rossiter*

Dr. Andrew Rossiter  
Director, Waikiki Aquarium

## Kilo i'a

Issue Number 186  
2013/JUL//AUG//SEP

EDITOR  
Dr. Andrew Rossiter

ART DIRECTOR + MANAGING EDITOR  
Kelsey Ige

PRINTING  
Reskyu

*Kilo i'a* is published quarterly by the University of Hawai'i and the Friends of Waikiki Aquarium and is dedicated to increasing the community's knowledge of the Waikiki Aquarium and Hawai'i's marine life.

Waikiki Aquarium  
2777 Kalākaua Ave.  
Honolulu, HI 96815-4027  
PHONE (808)923-9741  
FAX (808)923-1771  
www.waquarium.org

WRITE TO US AT kiloia@waquarium.org

© 2013 Waikiki Aquarium

PRINTED ON RECYCLED PAPER WITH  
ENVIRONMENTALLY FRIENDLY INKS

### MANA'O

Traditionally, the *kilo i'a* was an expert of fish and marine life. He studied the behaviors and movements of *i'a*. The *kilo* stood at a high point of land overlooking the ocean to watch for an expected school of fish and steered the fishermen in the school's direction. The success of surrounding the school was entirely up to the *kilo*.



## Ke Kani O Ke Kai

Don't miss out! You have three more chances to join us under the stars for our popular summer concert series!

The 19th annual Ke Kani O Ke Kai concert series kicked off on June 13 with stellar performances by Nathan Aweau and John Cruz, and KuMZ and Manu Boyd on June 27.

Join us on Thursday evenings as the sun sets just beyond Waikiki Beach for performances by Mark Yamanaka and Nā Hoa (July 11); Amy Hanaiali'i and Hi'ikua (July 25); the series will conclude with a sought after performance by The Makaha Sons (August 8). Doors open at 5:30 p.m., concert begins at 7:00 p.m. A menu of signature items prepared by a noted local restaurant will be available for purchase.

► Friends of the Waikiki Aquarium (FOWA) members receive discounted ticket prices! Purchase tickets at [www.waquarium.org/KKOKK](http://www.waquarium.org/KKOKK) or at the Aquarium front desk (between 9:00 a.m. and 4:00 p.m.).

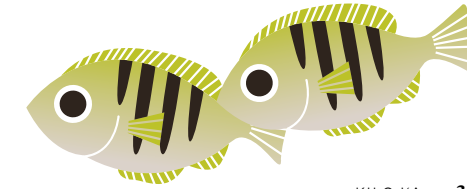
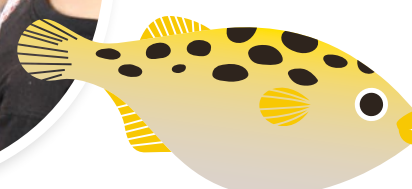
NEW  
Education  
Program!



## Hawaiian Sea Creatures: Preschool

This Fall, Waikiki Aquarium is offering Hawaiian Sea Creatures, a new program designed for Preschool and Junior Kindergarten students. Students will learn to move like seals, find fish with stripes and fish with spots, and to gently handle Hawaiian reef creatures.

► The new program will run on Tuesday mornings from September 3 to October 8. Call 440-9011 or email [reservations@waquarium.org](mailto:reservations@waquarium.org) for more information.



### Family Night

Friday, August 23  
6:00 to 8:30 p.m.

It's a night under the big top as we highlight the weird and wacky. Visit the freak show featuring an amazing array of animal adaptations: gender swapping animals, creatures that regrow parts, a fish that lives inside a sea cucumber, punching shrimps, beautiful worms and much, much more! Scientists will be on hand to answer questions, and share their expertise along with circus performers that will dazzle audiences. You can join the circus by creating your own "animal" adaptation at our craft station! In between the activities enjoy the warm summer evening and bring a picnic to share on the lawn. It's fun for the whole family!

► \$9/person (\$12 for non-members), includes educational gift bags for children. All ages welcome; children 2 and under are free.



# RESEARCH ON THE REEF

Undergraduate researchers are finding a solution to eliminate invasive algae from Hawai'i's reefs.

From the days of old Waikiki, sepia-toned photographs document piles of *limu* (seaweed) on sandy beaches: in the background lays Leahi, or Diamond Head; locals gather their favorite *limu-limu* 'ele'ele and *lipoa* in the foreground. Fresh ocean breezes were filled with the fragrance of plumeria and *limu lipoa*. In those days, our coasts were far healthier, with at least twice as many fish populating our reefs. The Waikiki shoreline of today is littered with beds of invasive seaweeds that few fish (and people) choose to consume.

The Aquarium setting offers a unique opportunity for research not possible in the wild. Dr. Celia Smith and her undergraduate students from University of Hawai'i at Mānoa are using the Aquarium's Edge of the Reef exhibit as an outdoor research facility to determine if native fish prefer certain native *limu* or invasive seaweeds. "Using the Edge of the Reef exhibit, we offer a choice of native and invasive algae on a 'platform' in two formats: paired sets of native or invasive algae or a veritable salad bar offering multiple species of native and invasive seaweeds," says Scott Chulakote, "The fish are allowed five minutes to eat and are video recorded for the duration of the feeding trial. Once time is up, all seaweed is removed from the platform and weighed to quantify preference and amount eaten." In addition to helping determine preference of food, Dr. Smith and her students use the recorded Feeding Preference Tests to examine other feeding traits such as bites, interest or disinterest, and other interactions.

The causes of the changes in Waikiki's



ABOVE: Students from surrounding Pacific Islands; including American Samoa, Guam, the Marshall Islands, and Saipan; observe the research at the Edge of the Reef.

LEFT: Scott Chulakote secures *limu* to a platform for testing.

reef ecosystem are diverse and not well documented, but the research of Dr. Smith and her undergraduate students offers a possible solution. While exploring the feeding preferences of native reef fish, their research points to a second goal: to determine which species of herbivorous (plant-eating) fish can be used to control invasive seaweeds.

Preliminary results from their work at the Edge of the Reef show some fish, the Sailfin Tang (*Zebрасoma veliferum*) and the Yellowfin Surgeonfish (*Acanthurus xanopterus*), appear to prefer invasive seaweeds (*Gracilaria salicornia* and *Acanthophora spicifera*) over native species.

"Some of our future work will explore the impact of regular feedings on choices made by fish," says Smith, "While this research is still in its early stages, it is our hope that native reef fishes such as the Sailfin Tang and Yellowfin Surgeonfish can be raised and released as a kind of 'biocontrol' of invasive seaweed infested reefs."

Dr. Celia Smith is a professor of botany at the University of Hawai'i at Mānoa. Scott Chulakote is a student of the Undergraduate Research and Mentoring in the Biological Sciences program and works in the Limu Lab with Dr. Smith. Be sure to visit them at the Edge of the Reef, their research will continue through the end of summer.

### Mauka to Makai

Despite flash flood warnings, more than 3,300 people joined us to celebrate Earth Day at the Mauka to Makai Expo, on April 13.

The event, sponsored by the City & County of Honolulu Department of Human Services and the State Department of Health Clean Water Branch, featured over 25 agencies and included interactive educational displays, free native Hawaiian plants, a sea urchin release, and music by Awaloa.



### Ocean Mysteries

On May 30, staff welcomed renowned Conservationist and TV nature show host Jeff Corwin to the Aquarium. Corwin was in Hawai'i to film three episodes of his "Ocean Mysteries" series. The segment will feature the Aquarium's very own Makaonaona and Hō'ailona. Corwin's hope is to educate people on the unique animals and environments of Hawai'i as well as inspire stewardship through the Ocean Mysteries series. Lookout for Maka and Hō'ailona this fall!



### Seasons and the Sea

On May 2 we celebrated the beginning of the dry season, *kaui*, with hula and chant by Kumu 'Ōhu Gon and Hālau Mele.



### The Newest Predator

The Predators on the Reef exhibit welcomed the spotted knifejaw. This fish was originally brought to the Aquarium in 2011 after it was found living in a fishing float in the Northwestern Hawaiian Islands (it was about three-inches long at the time). The knifejaw was kept behind-the-scenes because it is an aggressive feeder and Live Exhibits staff wanted to be sure it wouldn't outcompete any future tankmates. In addition,



it needed to grow larger before being integrated into the shark tank. Be sure to come see the knifejaw in our Predators on the Reef exhibit, it is the first time we have displayed this species!

### Rhythm of the Ocean

We welcomed the delightful Japanese choreographer Minami Sasuga on April 19. Sasuga previously visited the Aquarium in January and created a special dance piece incorporating choreography inspired by our very own marine residents! With the help of students from neighboring Jefferson Elementary School, Sasuga's Waikiki Aquarium dance was performed for the first time.

### Invasive Algae Cleanup in Honor of the Late Dr. Isabella Abbott

Over 60 volunteers gathered on the shore behind the Aquarium to honor the legacy of the late Dr. Isabella Aiona Abbott by removing invasive algae on June 22. The event was organized by Bill Thomas of NOAA, U.H. Botany professor Celia Smith and internationally noted marine botanist Dr. Gerald Kraft. More than 850 pounds of invasive algae was removed and recycled by the Honolulu Zoo as compost. Mahalo to volunteers from the Waikiki Aquarium; U.H. Botany department; NOAA; Jefferson Elementary School; the American Society of Civil Engineers-Hawai'i Section Younger Member Forum; Naval Health Clinic Hawai'i; and the 535th Airlift Squadron, Operation Flight from Joint Base Pearl Harbor-Hickam. Thanks to Mark Toohey of Starbucks at Outrigger Reef who provided refreshments. The event is part of an ongoing effort coordinated by Dr. Celia Smith and the Waikiki Aquarium, with support from Aqua Hospitality, NOAA Coastal Restoration and Hawai'i Community Foundation.



## Pele Awards

The Aquarium's Graphics Department is swimming with the big fishes.

From a frenzy of entries representing the apex design firms of the state, the small, one-person Waikiki Aquarium Graphics Department emerged with two bronze Pele Awards. Only the top 20 percent of entries were recognized as finalist.

The 2012 Ke Kani O Ke Kai Concert Series campaign emerged as an awards banquet attendee favorite with its uniquely refined local sense of place. And the illustrations and collectible trading cards from the 2012 Fish Frenzy Family Night campaign brought smiles to even the most scotch-laden mouths of the many bowtied adsmen in attendance.

The judges — principals from the top agencies in the world, including BBDO,

Design Army and Camp + King — recognized the young Kelsey Ige's mastery of design and illustration and praised her ability to communicate fun localisms while avoiding kitsch.

"A large portion of our visitors are school children and local families, I like to present ideas that are familiar and exciting to them, that they can relate to," Ige said. "I grew up in a fishing and diving family from Wahiawa and to be able to work in a rich environment where I can learn about and share Hawai'i's marine life — you can't ask for a better source of inspiration!"

Known only regionally as the Pele's, the award is actually the local name for the American Advertising Federation's national Addy Award, the industry's highest-honor.



## World Oceans Month

A month long celebration of our amazing oceans.

Officially, World Oceans Day was June 8, but the Waikiki Aquarium hosted the nation's largest World Oceans celebration throughout the entire month of June. Volunteers and partners cleaned marine debris from Makapu'u Beach and educated the community about the dangers of ocean pollution. Aquarium visitors enjoyed special activities, film screenings, and an exclusive

live performance of Johnson Entertainment's *Honu by the Sea*.

As a part of the World Oceans Day festivities, the Aquarium participated in the *Ka 'Ike O Ka Moana: Knowledge of the Ocean* exhibit at Honolulu Hale. Our thanks to national and local partners: the Mayor's Office on Culture and the Arts, Department of Transportation Storm Water Management Program, Kona Brewing

Company, Matson Navigation's Ka Ipu 'Āina project, Duke's Waikiki, Hard Rock Cafe, NOAA, Hawaiian Airlines, U.H. Mānoa's KIDS FIRST! Film Festival, PacIOOS, Johnson Entertainment, Hawai'i Watercolor Society and artist Patrick Ching.





# In Full Bloom

Our Hawaiian Cultural Gardens are home to rare species of native hibiscus.

When you visit the Waikīkī Aquarium you probably look forward to seeing beautiful fish, Hawaiian monk seals, chambered nautilus or perhaps an octopus, but on your next visit, try looking for something less aquatic. Best known for vibrantly colored flowers, hibiscus of a spectrum of colors can be found almost anywhere in Hawai‘i. Vivid oranges, deep reds, bright pinks, even purple and yellow varieties can be found in commercial and residential areas, but rare native species are typically found in more subtle colors of white, red or yellow. Several of these species can be found scattered throughout our Hawaiian Cultural Gardens.

## Ma’o Hau Hele

The official state flower of Hawai‘i, this striking yellow hibiscus is considered an endangered species rarely seen in the wild, except in native dry forests at elevations of 400 to 2,600 feet.

*Located between our Coral Farm and Hawaiian Monk Seal Habitat.*



## Koki’o ‘Ula’ula

Found sparsely in dry-wet forests throughout the main Hawaiian Islands, the small red *koki’o ‘ula’ula* flower was traditionally used as a mild laxative and as a red dye.

*Located between the Giant Clam exhibit and the main stage.*



## Koki’o Kea

One of only two fragrant hibiscus species in the world, the petals of this distinctive white hibiscus frame a bright red stamen, and separate from one another when the flower is fully opened. *Koki’o kea* is native to the dry forests of Waimea Canyon on Kaua‘i.

*Located on both sides of main stage.*



## Hau

In Hawaiian lore, this hibiscus, with its soft yellow petals and dark red center, was paired with the similarly colored fourspot butterflyfish, or *lauhau*. Early Hawaiians used the sturdy wood of the hau plant for tools and in canoe building. The wood became the cross beam connecting the *ama* (balance float) to the outrigger canoe.

*Located near our saltwater pickup.*



# Pua ka Lehua

The lehua are in bloom. Our new lehua garden at the front of the Aquarium is a sight to see: bright red feathery flowers and deep green leaves attract bright green Japanese mejiro birds to its branches. Many thanks to Kaulunani Urban and Community Forestry Program and the Department of Land and Natural Resources, Division of Forestry and Wildlife.

## WAIKĪKĪ AQUARIUM RESEARCH

Toonen, R.J., Nakayama, T., Ogawa, T., Rossiter, A. and Delbeek, J.C. (2012). Growth of cultured giant clams (*Tridacna spp.*) in low pH, high-nutrient seawater: Species-specific effects of substrate and supplemental feeding under acidification. *Journal of the Marine Biology Association of the United Kingdom*, 92: 731-740.

Rossiter, A. (2011). Sturgeons – Ancient Fishes. pp. 64-65. *In Lake Biwa: A Vital Lake*. T. Takahashi, (Ed.). Bun-ichi Publishers, Tokyo, Japan.

Rossiter, A. (2011). The cichlid fishes of Africa’s three Great Lakes. pp. 64-65. *In Lake Biwa: A Vital Lake*. T. Takahashi, (Ed.). Bun-ichi Publishers, Tokyo, Japan.

Rossiter, A. (2011). Evolution & Biodiversity in Ascent Fishes. pp. 64-65. *In Lake Biwa: A Vital Lake*. T. Takahashi, (Ed.). Bun-ichi Publishers, Tokyo, Japan.

# Meet the newest members of the Aquarium ‘ohana!



## Jesse Ciletti

**POSITION**  
Marine Mammal Specialist  
**EDUCATION**  
B.S. in Biology,  
William Smith College (2005)  
**FAVORITE AQUARIUM RESIDENT**  
Hō‘ailona!

Hailing from the Empire State, Jesse Ciletti moved to Hawai‘i in 2006 and worked as a marine mammal trainer at Sea Life Park for six years. “I wanted to join the Waikīkī Aquarium Team in order to better use my skills and experience as a marine mammal trainer and to advance marine mammal research and conservation. I’d also like to get our visitors excited about training at the same time!” A true animal lover, when she is not at the Aquarium she enjoys spending her free time with her dog, Kana.



## Byron A.L. Apo

**POSITION**  
Administrative Officer  
**EDUCATION**  
M.B.A. in Business Administration,  
Chaminade University (2004)  
**FAVORITE AQUARIUM RESIDENT**  
Moi

With a vast background in banking and finance, Byron Apo joined the Aquarium as our new Administrative Officer. “As Administrative Officer, I oversee the Aquarium’s fiscal, human resources, and visitor services related matters. Tasks that are challenging but achievable due in part by a very welcoming staff and volunteers that perpetuate the Aloha spirit!”

He is passionate about sharing the Aquarium’s mission with visitors, “The Waikīkī Aquarium is a place of gathering for *kama‘āina* and *malihini*. A place of purpose that people from around the world can enjoy, share and learn about our vital ocean resources.”

In his spare time, he enjoys various water sports, cooking, and audio electronics.



**MAHALO**  
to all of our volunteers  
for their outstanding  
dedication to the  
Waikiki Aquarium.

# You're the Best!

On April 27th, it was our turn to give back as we acknowledged the invaluable contribution of our amazing volunteers with the annual Volunteer Appreciation Luncheon held at the Willow's Restaurant. We recognized the long years of service of several volunteers, presenting them with custom-made marine animal pins.

Among the honorees was our first recipient of the Treasured Volunteer Award, Wayne Yempuku. He has volunteered for nearly every program and at every Aquarium event this past year. Mahalo nui loa Wayne for your outstanding commitment of volunteer service and dedication to the Waikiki Aquarium!

Are you interested in volunteering? For more information, contact Volunteer Coordinator Mercedes Matthews at 440-9020.

### Afternoons at the Aquarium

Every Wed 3:00 p.m.  
This summer, thanks to a grant from Aqua Hotels and Resorts, the Aquarium has invited storytellers, puppeteers and crafts people from the community to join the Afterschool at the Aquarium line-up. Critter encounters, puppet shows, Stories by the Sea, and animal feedings are just some of the fun designed for kids. Free with admission to the Aquarium.

### Meet the Monk Seals!

Tue 3:00-3:45 p.m.  
Jul 2, 16, 30, Aug 6, 20  
Sep 3, 17, Oct 1, 15  
More sightings of seals around the main Hawaiian Islands have renewed interest in these amazing and endangered animals. Learn about seals in the wild: What do they eat? How deep do they dive while hunting? Do they really have fingernails? Then move to the monk seal habitat where Aquarium biologists will introduce you to the resident seals, Makaonaona and Hō'ailona. Participants will assist with seal enrichment activities. Designed for participants 6 and up, but anyone interested is invited to attend. Groups of 15 or less are welcome. \$5/person (\$8/person for non-members). Pre-registration is recommended.

### Behind the Scenes

Tues 3:00-4:15 p.m.  
Jul 9, 23, Aug 13, 27  
Sep 10, 24, Oct 8  
Learn what makes the Aquarium run, from fish food to quarantine, and many stops in between. Visit

the Coral Farm and the Jelly Hale, where sea jellies are raised. The program will end with participants feeding the animals at the Edge of the Reef exhibit. Minimum age 7 years; youngsters must be accompanied by an adult. Accessibility is limited. Groups of ten or less are welcome. \$10/adult, \$6/child (\$15/\$10 for non-members).

### Aquarium After Dark

Jul 8, Mon 7:00-9:00 p.m.  
Jul 18, Thu 7:00-9:00 p.m.  
Sep 13, Fri 7:00-9:00 p.m.  
Discover if fish sleep on an after-dark flashlight tour of the Aquarium. Find the sleeping spot for the red-toothed triggerfish or the rock-mover wrasse. What color are yellow tang at night? Minimum age 5 years; youngsters must be accompanied by an adult. Participants are asked to bring flashlights. \$10/adult, \$7/child (\$14/10 for non-members).

### Exploring the Reef by Day: Makapu'u

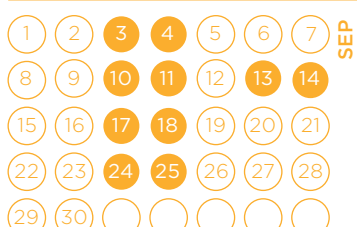
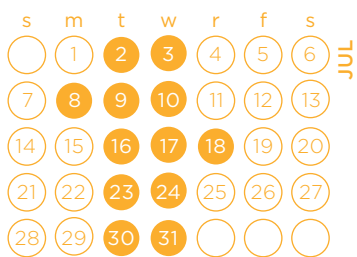
Jul 23, Tue 8:30 a.m.  
Spend a morning discovering sea slugs, brittle stars, spaghetti worms, ghost shrimps and the variety of other animals that the tide reveals. Explore shoreline, reef flat and tidepool habitats with Waikiki Aquarium naturalists. Participants must provide their own transportation to the field site. Minimum age 5 years; youngsters must be accompanied by an adult. \$10/adult, \$8/child (\$12/\$10 for non-members). Pre-registration required.

### Family Night: Circus Under the Sea

Aug 23, Fri 6:00-8:30 p.m.  
Family Night is here again and this year we are highlighting the weird and the wacky. Gender swapping animals, creatures that re-grow parts, fish that live in sea cucumbers, punching shrimp, beautiful worms and much, much more! Scientists will be on hand to answer questions, and share their expertise. Visit the freak show, highlighting the amazing array of animal adaptations. Enjoy circus themed performers. Create fascinating crafts, and your own "animal" adaptations. In between the activities enjoy the warm summer evening and bring a picnic to share on the lawn. It's fun for the whole family! \$9/person (\$12 for non-members), includes educational gift bags for children. All ages welcome; children 2 and under are free.

### Ocean Literacy Day

Sep 14, Sat 9:00 a.m.-1:00 p.m.  
Our focus this year will be all about sharks! Join us for keiki arts and crafts, storytelling, and more as books about the ocean come to life with costumed characters. Sponsored in part by Aqua Hospitality and NOAA. No pre-registration required.



Look for class updates on:  
[www.waquarium.org](http://www.waquarium.org)  
**PRE-REGISTRATION  
REQUIRED**

## ACTIVITY REGISTRATION FORM

### NAME(S)

Adults \_\_\_\_\_ Phone (Home) \_\_\_\_\_

Children/Ages \_\_\_\_\_ Phone (Work) \_\_\_\_\_

Address \_\_\_\_\_

City/State/Zip \_\_\_\_\_ Email \_\_\_\_\_

### 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 ☐ MC ☐

Expiration Date \_\_\_\_\_ Last three digits of security code on back of card \_\_\_\_\_

I am a FOWA Member Yes ☐ No ☐



## Bearded Armorhead

*Evistias acutirostris*

► These rare fish have a very unusual distribution, being found in Hawai'i, Japan, New South Wales (Australia), Lord Howe Island (Tasman Sea), Norfolk Island (South Pacific), New Caledonia (Coral Sea) and New Zealand. In Hawai'i they occur at depths greater than 60 feet (18 meters) in cooler waters off Kaua'i westward through the Northwestern Hawaiian Islands. Their head is encased in bone and they have a "beard" of short whisker-like barbels under their chin.

When this species first arrived at the Aquarium, biologists had difficulty getting them to feed. After analyzing fecal samples, it was determined they fed on brittlestars. Successful brittlestar feeding led to adaptation to other foods. Our specimens were donated by a Japanese aquarium and are the only ones on display outside Japan.

### REGISTRATION INFORMATION

- » Pre-registration is recommended.
- » FOWA members are allowed up to four total registrants at FOWA rate.
- » Questions about the activities? Call the Waikiki Aquarium Education Department at **440-9007**.
- » 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.
- » **Please do NOT fax or email your registration.**

To register by phone:

- » Call **440-9011**. Visa and Mastercard are accepted.

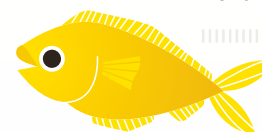
To register by mail:

- » Full payment must accompany completed registration forms. Please, no cash.
- » Make checks payable to University of Hawai'i. Visa and Mastercard are also accepted.
- » Mail the completed registration form with a check or credit card information to:

Waikiki Aquarium  
Education Department  
2777 Kalākaua Avenue  
Honolulu, Hawai'i 96815-4027

## SEA SQUIRTS

### Something Fishy



What makes a fish a fish? Is a sea cucumber a fish? Is an eel a fish? Let's dive into the waters of Waikiki and find out!

Using the words below, fill in the blanks to find out what makes a fish a fish. You can use these words multiple times!

water

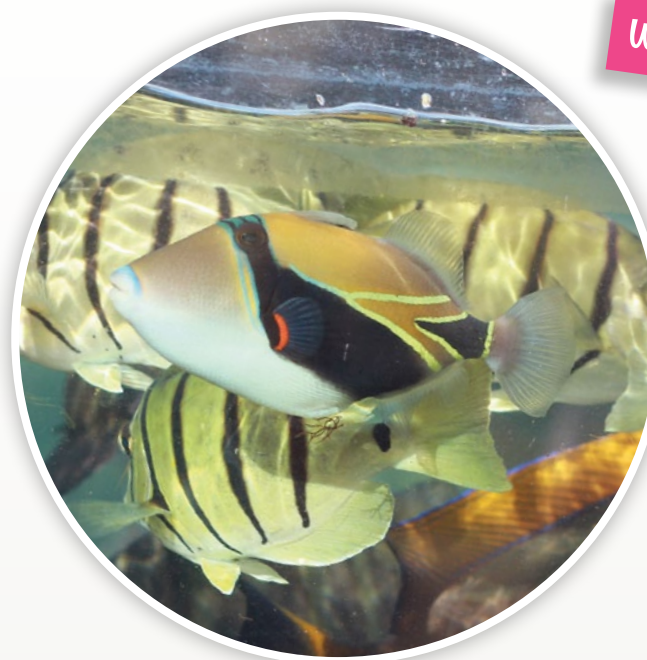
gills

fins

scales

backbone

cold-blooded



**Yes!** Eels and sharks are fish.



Fish live in \_\_\_\_\_, some in the ocean, others in lakes, rivers or streams. Mammals, like monk seals and humans, breathe air with their lungs to get the oxygen they need, but fish get oxygen by using their \_\_\_\_\_. Fish use their tail \_\_\_\_\_ to propel themselves through water. Most of their tail \_\_\_\_\_ for power, but some fish, like the **humuhumu** use their top and bottom \_\_\_\_\_ for power. Most fish have \_\_\_\_\_, which are woven together like a coat of armor for protection. Fish are vertebrates and have a \_\_\_\_\_. The \_\_\_\_\_ of sharks and rays are made of a flexible substance called cartilage. Fish are also \_\_\_\_\_, which means they are usually the same temperature of the \_\_\_\_\_ they live in. We humans have a healthy body temperature of 98.6 degrees even when we swim in the cool ocean or lay in the warm sun!

# NEW + RENEWING FOWA MEMBERS

The Membership Office recorded these new and renewing memberships between February 20, 2013 and May 31, 2013.

Mrs. Tomoko Agne  
Dudley & Sharon Akama  
Wayne & Joslyn Akimoto  
David & Tamara Aldrich  
Margaret, Denise, & Ted Araki  
Julie & Mattias Atterbom  
Jeffry Babb & Nyla Fujii-Babb  
Mrs. Judith Baird  
Mr. & Mrs. Malcolm Barcarse  
Robert Barefoot &  
Francine Cabanilla  
Basilio-Valdez Family  
Marcus & Emma Boland  
Bonnie & Chad Bollmann  
Mr. Brian Borell  
Lee Ann Bowman  
Aiko & Anthony Boyd  
Ms. Mary Brandt  
Karyn Braun & Casey Hines  
Mark & Martha Brown  
Brian & Jennifer Calhoun  
Patrick & Catherine Calio  
Jennifer & Christopher Canales  
Joseph E. Cappabianca  
Ann B. Catts  
Deric & Glenda Ceria  
Dr. Yvonne Chan &  
Mr. Benjamin Godsey  
Mr. & Mrs. Tui Chanel  
Russell & JoAnna Chang  
Dr. James & Mrs. Lisa Chen  
Katerina & Matthew Chester  
Mr. & Mrs. Douglas Cheung  
Curtis & Shirley Chew  
Diane & Derek Ching  
Paul & Jolene Ching  
Carole Cathcart Chun  
Mr. & Mrs. Dale Chun  
Mr. & Mrs. Noah Chun  
Mrs. Jody Conjugacion &  
Mr. Mel Conjugacion  
Mr. Joshua Copus  
Mr. and Mrs. Frank Cordova  
Evelyn Cox & Frank Stanton  
Meyer Cummins &  
Natalie Wallsgrove  
George & Lauren Danneman  
Alexander Das & Vilma Ararcon  
Mr. & Mrs. Brian M. Davis  
Mr. Allan DiCastro  
Marcus & Maressa Ditsch  
Mr. & Mrs. Wally Doud  
Mr. & Mrs. Peter A. Dudgeon  
Barbara Dwyer &  
Bridget Dwyer-Dial  
Mike & Jen Eberlein  
John & Courtney Edens  
Bryon & Michelle Edwards  
Karen & Burt Eissler  
Donald & Caroline Ellermann  
Keith & Chelsea Endow  
Kerry & Karen Ferguson  
Cynthia Fernandez  
Ian & RG Fitz-Patrick  
Mr. Jimmy Fonseca  
Michele & Andrew Freitas  
William & Judith Frisco  
Jack & Karen Frutchey  
Kenneth & Stacie Fujikami  
Mr. & Mrs. Lawrence &  
Nora Galiza  
Julie & Jennifer Galves  
Hank & Aloha Gellert  
Kim & James Gerow  
Kim Gilfillan  
Mr. & Mrs. Eugene B. Gleason  
Kara & Nathaniel Gollehon

Katie & Hector Gonzalez  
Mr. & Mrs. Brent Goodrich  
Nami Shibuya Grafia  
Mr. & Mrs. Graumann  
Julian Gray & Trisha Tamashiro  
The Guannel Family  
Rey & Aika Gumboc  
Dale & Jihye Hamamura  
Kyunghee & Danny Han  
Mr. & Mrs. Allen H. Hanamoto  
Mr. & Mrs. Josh Hansen  
Michelle & Chad Hartley  
Yuga, Tyga, Ryoma Hashimoto  
Adrienne & Scott Hayashi  
The Hayes Ohana  
The Hazens  
Mr. & Mrs. Heath &  
Daphne Hemmings  
Mr. Brandon Higa  
Wendy Higashihara  
David Hinson & Heidi Ebers  
Kela & Jarod Hiramoto  
Alan Honbo & Ann Tsugawa  
Julie Hong & Joshua Strickler  
Tom & Anna Hoover  
Ko Moe Htun  
Sascha & Christopher Hubbard  
Dr. Monty M. Huq  
Jennifer Iha & William Kaeo  
Dan & Mary Jane Ikeda  
Grant Ishimoto  
Ronald A. Javitch  
Matt & Phoebe Jefcoats  
Kalei Kahapea  
Sean & Shayna Kaku  
Dr. James & Mrs. Lisa Kameda  
Allen & Carol Kamemoto  
Mrs. June Kamioka-Fuller &  
Ms. Reina Tolbe  
Mr. & Mrs. Howard & Audrey Karr  
Kauinui Family  
Donna Kealohanui &  
Donna Edwards  
Yoshimi Kelly  
Sungwha Kim & In Young Chun  
Kimura  
Dr. Angela King & Mr. John King  
Jon & Gina Kobashigawa  
Kris & Patrick Kobayashi  
Karyn and Myles Komatsu  
Ryan & Jennifer Kozuma  
Eric Krejci & Barbara Glassmaker  
Barbara Krieg  
Andrea & David Kubo  
Gary Kuhlmann  
Mr. & Mrs. A. Kurian  
Sherrie Kuroda & Dave Hildreth  
Mrs. Erin Kwock  
Laura Lapa  
Mr. Timothy LaPlante  
Tammy & Matthew Larsen  
Kim & David Lau  
Mr. & Mrs. Michael H. Lau  
Mr. & Mrs. Gregg Lew  
Ellen Lim & Jan Lim  
Linda Lim & Antoine Garandeau  
Mrs. & Mr. Lilia & Kerwin Lima  
David Loui & Aulani Silva Loui  
Sam, Brandon, & Guo-Chi Lu  
Mr. & Mrs. Bud Lush  
S. & S. Lynch  
Dr. & Mrs. Terrence W. Lyttle  
Melissa Maii & Patricia Mowat  
Simeone Mapu &  
Rachel Kennedy-Mapu  
Christine S. Marks &  
William F. Marks  
Ms. Morgan Martin  
Mr. Gordon J. Mau  
Joseph & Lori McAlexander  
Dr. & Mrs. Steven McGraw  
Letishia & Sean McKernan

Scott Mead  
Candes Meijide Gentry &  
Steve Shropshire  
Ann Miho-Johnson & Jackie Johnson  
Mrs. Cristina Miliareis &  
Ms. Julliet Rhoden  
Mrs. Jana & Mr. Jay Moore  
Laura & Burt Moritz  
Chenoa Morris-Diehm  
Mr. Darren Muranaka  
Mr. Lane Muraoka  
Dr. Craig Musburger &  
Mrs. Pratima Musburger  
Nora Nakahara & Iris Stremick  
Mrs. & Mr. Andrew Namiki Roberts  
Mahealani & Robert Riley  
Mr. & Mrs. Neil K. Nihei  
Mrs. Nolan S. Nip  
John Nitao &  
Kristin Izumi-Nitao  
Roy & Kathy Noda  
Masayuki & Fumiko Nogi  
Mr. & Mrs. Jared Nomura  
Steve Nyman  
Mr. & Mrs. Miles Okano  
Mr. & Mrs. Paul Oshima  
Thomas & Diane Otake  
Mr. Andrew Pang  
Matthew Park & Malia Arecchi  
Annie Patricio  
Ms. Jenna Paulson  
Ellen & Dexter Payne  
Dr. Nicole Pearce &  
Dr. Matthew Pearce  
Ms. Diane Peterson  
Ms. Margaret Pettyjohn  
Anamarie & Ben Pilar  
Monica G. Pratt  
Frank M. Price III &  
Jayneen Price  
Paul Quintiliani & Natalia Li  
Kathleen & Paul Ramos  
Ryan & Natalie Rickert  
Ridenour Family  
Leila Saib & Jacob Whitley  
Mr. Ivan & Mrs. Rita Sakamoto  
Mr. & Mrs. B. Salvatierra  
Jon & Gina Kobashigawa  
Kris & Patrick Kobayashi  
Mr. & Mrs. Harold Schatz  
Bobby Scheve  
Anne Schuettinger  
Scialabba Family  
Yumi & Mitchell Seavey  
Lindsay & Kai Seglem  
Ritika Segu  
Viji Shilhi Seibel & Jesse Seibel  
Mr. & Mrs. James T. Senda  
Mrs. & Mr. Gene Sentell  
Danny & Beth Shiau  
Mr. & Mrs. Kenneth Shimizu  
Dick & Sharon Shlegeris  
Mr. & Mrs. Raul Sicardi  
Andrew B. Simmons &  
Mitchell Loewenthal-Grassini  
Craig & Jen Snyder  
Mr. Sean Soto  
Mr. & Mrs. Thomas Soquena  
Kristin Speltz  
Syelvia & Jordan Stallard  
Mrs. Elyse & Mr. Ahiaid Steinfeld  
Mrs. Lori-Lei Tagami &  
Mr. Bryce Tagami  
Ken & Sherryl Takahashi  
Victoria & Shoichi Tamura  
Mr. Chad Taniguchi  
Chris & Nancy Terry  
Dason M. Teruya  
Ms. Joann Thomas  
Dr. Erik & Mrs. Danette Tinhon  
Mr. George Tinker  
Juliette & Webster Tom  
Mr. & Mrs. Cory & Christina Toyama

Reynaldo Transfiguracion &  
Christine DeAnda-Garcia  
Mr. Land & Mrs. Malia Tsuchiya  
Naoki & Makiko Tsukada  
Amelia & Kurt Tsuneyoshi  
Ms. Dana Uyeno  
Mr. Gavin & Mrs. Chelsea Villar  
Duane & Jacque Vilorina  
Mr. & Mrs. Jared Watumull  
Mr. Tom Wessner  
Kris & Bill Westmoreland  
Ms. Laura White  
Quintan & Kim White  
Kevin & Michelle Whitton  
Mr. Gaylord H. Wilcox &  
Mrs. Carol M. Wilcox  
Bret Williams  
Leilani Williams-Soloman  
Renee & Kawai Winchester  
Mr. & Mrs. Kevin Won  
Bonnie Wong  
Dan Wong & Laura Kawasaki  
Miao & Mien Woo  
Greg & Pauline Yamane  
Ms. Brittany Yamauchi  
Shannon & David Yarber  
Daniel & Kathryn York  
Keola Young  
Mr. & Mrs. Jerry Zak  
Robert & Aimee Zatlin

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.



Without the generous contributions of our sponsors, the 2013 Ke Kani O Ke Kai Summer Concert Series would not be possible.

**SEA JELLY JIVE \$10,000**  
Outrigger Hotels & Resorts

**SEAHORSE SYMPHONY \$7,500 › \$5,000**  
Pepsi  
Northwestern Mutual

**CORAL CHORALE \$3,000**  
Aqua Hospitality  
Bank of Hawai'i  
First Hawaiian Bank  
Hawai'i Dental Service  
Hawaiian Airlines  
McCabe, Hamilton &  
Renney Co., Ltd.  
Prime Builders of O'ahu

**ANEMONE TUNE \$1,500**  
Aloha Petroleum  
Alexander & Baldwin  
Armstrong Builders -  
Armstrong Foundation  
Armstrong Consulting  
Becker Communication Inc.  
Beth Chang, Realtor  
Cades Schutte  
Dr. Curtis Takemoto-Gentile  
Elliot Loden  
Goodfellow Bros. -  
General Contractors  
Halms Enterprises  
Hawai'i USA FCU  
Hawai'i Beach Front  
Izuo Brothers  
Jennifer & Brian Isobe  
King Windward Nissan  
Kualoa Ranch  
Marr Jones & Wang  
Michael D. Rudy, Attorney  
Ralph Inouye  
Servco  
Surf 4 Hugs  
Trinity Properties LLC

**IN-KIND**  
Barefoot Wines  
JMJ Rentals  
Kona Brewing  
Reskyu

## WALL of FAME

The beautiful exhibits at the Waikiki Aquarium and the valuable research and conservation efforts that go on behind the scenes and in the classroom are the result of the work of many. Here we recognize those who support us through their generous donations. Our thanks to all those who believe in what we do.

### APRIL TO JULY 2013

» **CORPORATE SUPPORT**  
Alston, Hunt, Floyd & Ing  
California Pizza Kitchen  
Ke Kani O Ke Kai 2013  
Sponsors (*left*)  
McKeague & Haley, Inc.

» **FOUNDATIONS, TRUSTS + GRANTS**  
Alexander & Baldwin  
Marie Cole Trust and  
Victor Cole Trust  
Freeman Foundation  
National Marine Sanctuary  
Foundation  
Weissman Family Foundation

» **IN SUPPORT OF OUR MISSION**  
Barbara Campbell  
Edith H. Chave  
Sybil Kwi  
Walter Loo  
Charlie Loomis  
Stephanie Nagata  
Mahealani Riley  
Linda Taylor  
Dick and Sharon Shlegeris  
Judith Simon



### Swimming in Schools

2,500 students from Title I schools will visit the Aquarium in the 2013-2014 school year through the generous support of the Freeman Foundation. The grant provides round-trip bus transportation to the Aquarium, docent guided tours, lunch, and educational materials for students.

### So Fresh, So Clean

Aquarium staff would like to thank the Friends of the Waikiki Aquarium (FOWA) for office renovations which will result in greater productivity. Mahalo to Damian Roncevich of Prime Builders of O'ahu for his generous donation of carpeting in the Volunteer, Visitor Services and Natural Selection Gift Shop offices.

### Hollings Ocean Awareness Trust Fund

Of 80 submitted proposals, The FOWA project, *Oceans Alive! Malama O Ke Kai*, was one of six selected by the National Marine Sanctuary Foundation for funding through the Hollings Ocean Awareness Trust Fund. The awarded \$19,000 will fund production of four professional video vignettes about Hawai'i's unique ocean initiatives to be shown in hotel rooms in Waikiki and on community media throughout the state.



### Mahalo Hawaiian Air!

Many thanks to the staff of Hawaiian Airlines for their efforts at our Sandy Beach cleanup on April 24.



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

**KILO I'A Issue Number 186  
2013/JUL//AUG///SEP**

NON-PROFIT ORG.  
U.S. POSTAGE PAID  
HONOLULU, HI  
PERMIT NO. 278

## THE WAIKĪKĪ AQUARIUM'S MISSION

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

### Deep Sea Urchins

Our newest additions come from depths  
of 1,000 to 1,300 feet off O'ahu.