

# Kilo iā

2017 | OCTOBER | NOVEMBER | DECEMBER

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## AQUARIUM MESSAGE

There was a lot of excitement this summer in Waikiki with the Hawaiian Monk Seal pup 'Kaimana' taking up residency at Kaimana Beach. Following her birth in June on Oahu's Kaimana Beach, the pup and her mother, Rocky, quickly became a popular tourist attraction in Waikiki. The overwhelming amount of human interaction and attention, the possibility of mom and pup swimming into the adjacent Natatorium, along with many other risks led to the Department of Land and Natural Resources (DLNR) moving the pup to an undisclosed location.

Experts from the National Oceanic and Atmospheric Administration's National Marine Fisheries (NOAA Fisheries), the DLNR Chair's Office and its Divisions of Aquatic Research (DAR) and Conservation and Resources Enforcement (DOCARE) came to the decision that the pup should be moved to an undisclosed shoreline area in order to 'continue her natural growth as a wild seal with less human interaction and other hazards.'

Due to the popularity of Rocky and Kaimana throughout their stay in Waikiki, an opportunity and responsibility to educate the public about proper procedures presented itself. NOAA and

other partner organizations issued guidelines to ensure that visitors and residents knew what the proper procedures were surrounding a monk seal pup should they encounter one. These included:

- Do not touch, pet, or attempt to play with a seal.
- Do not approach or follow the seal. Observe from a respectful distance of 150 feet.
- If the seal approaches you, ignore it and quickly move away or exit the water.
- Do not feed the seal or discard bait or scraps into the water.
- When spearfishing and/or wading, remove fish as quickly as possible from the water.

While the decision was made to move Kaimana, we are grateful for the opportunity to view such beautiful creatures and thankful that they served as ambassadors, just as our resident monk seals do. Just as it's stated in our mission, their presence provided an opportunity to promote understanding, appreciation and conservation of Pacific marine life.

We wish Kaimana a long and happy life in the wild.

## Kilo i'a

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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.



# RECENT EVENTS

## Family Night

We were thrilled to welcome more than 650 circus-goers at our annual Family Night on August 25. Keiki and their families enjoyed a Freak Show featuring sea spiders, nudibranchs and more, as well as a spectacular Side Show and Adaptation Station.



## Chasing Coral

On August 23, guests enjoyed a special screening of the Sundance Award Winning Film, *Chasing Coral*. Not only did guests enjoy this free, educational event with a picnic on the lawn, they also learned about the crucial issue facing our coral reefs. Mahalo to Aqua-Aston Hospitality and Matson for their support.

AQUA-ASTON  
HOSPITALITY

Matson

## 4th Annual Hawaii Shorts Film Festival

Movie enthusiasts joined us on August 22 for a special lineup of short films, a picnic on the lawn and a beautiful evening under the stars! Mahalo to our sponsors, Aqua-Aston Hospitality and Hard Rock Cafe Honolulu.

AQUA-ASTON  
HOSPITALITY



## LEGO Ninjago Movie Kick Off Event

Guests joined the Aquarium on September 16 for a chance to win passes to the special screening of the new LEGO Ninjago Movie. Mahalo to LEAHI for doing a special build for the event!



## An Evening with Monk Seals

On September 23, guests brought their picnic baskets and enjoyed a special evening under the stars featuring our beloved friends, the Hawaiian Monk Seal. NOAA Fisheries showed incredible footage of Hawaii's native seal and a panel of experts shared insights about Hawaiian Monk Seal conservation. In addition, Lanikai Brewing Company debuted its new monk seal-inspired local craft beer, with a portion of the proceeds to benefit the local non-profit group, Hawaii Marine Animal Response.



NOAA  
FISHERIES



# UPCOMING EVENTS

## The Future of Hawai'i's Coral Reef

Join us on November 2 from 6 to 7 p.m. at Tenney Theatre at St. Andrew's Schools for our next Distinguished Lecture Series featuring Dr. Robert Toonen, Hawai'i Institute of Marine Biology. He will be discussing the work he and his team of researchers are doing, looking at how different corals deal with climate change and where the next generation will come from if our local corals are wiped out from a disease outbreak or mass bleaching event.

Sponsored by  
**AQUA-ASTON**  
HOSPITALITY



Photo: Derek Smith



Photo: Carlie Weiner

## Makahiki

In partnership with Pa Ku'i A Lua, the Waikiki Aquarium will celebrate the Hawaiian New Year and Season, Makahiki, on Saturday, November 11.

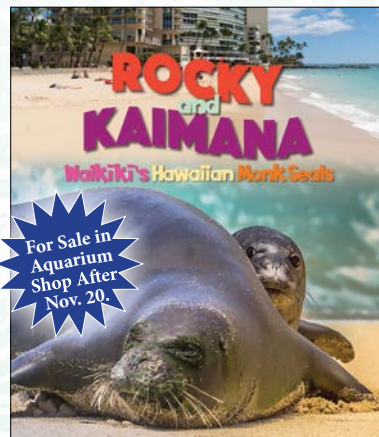
Procession of Akua Lono and Akua Paani begins at 9am. Guests should arrive by 8:30 a.m. for a briefing of Makahiki and responsibilities.

## Halloween

Join the Waikiki Aquarium on October 28 for a spook-tacular Halloween event! From 9 a.m. to 1 p.m. the Aquarium will host special activities including a scavenger hunt, mermaid photo booth and more! A costume contest for keiki ages 3 to 12 will be judged at 11 a.m. and prizes will be awarded for most original, spookiest and ocean themed costumes. Prizes include a \$100 Hard Rock Cafe gift certificate, Aquarium membership and more!

**Available November 20 for Only \$10!**

*A portion of the proceeds benefit the Waikiki Aquarium*



The heart-warming true story of Waikiki's own Hawaiian monk seal born on Kaimana Beach.

**Specs:** 8 x 9 inches • 48 pp  
**hardcover • retail: \$14.95**

**To Pre-Order Your Copy Now**  
(Available After Nov 20)

**CALL** Mutual Publishing at  
808-380-1022 or  
**ORDER ONLINE** at  
[www.mutualpublishing.com](http://www.mutualpublishing.com)  
using the sale code  
**AQUARIUM.**



# HUMPBACK WHALE SEASON

**W**hile it is not yet humpback whale season, it is not too early to start thinking about getting involved in Sanctuary Ocean Count. During the peak months of whale season — January, February, and March — squads of sanctuary volunteers assemble at sixty designated shore sites on the islands of Oahu, Kauai and Hawai'i to monitor these charismatic giants. Armed with binoculars, clipboards, data sheets and pencils, the volunteers record sighting frequencies and specific surface behaviors to help identify how the whales are using the sites.

Hawai'i hosts one of the planet's largest seasonal aggregations of humpback whale which are attracted to our waters for breeding, birthing, and nursing. About half of the North Pacific population use Hawai'i's waters as their principle wintering grounds. Once hunted commercially for their whale oil and baleen, their populations dropped significantly, as did those of other large whales worldwide. No longer on the endangered species list, the Hawai'i population feeds in the productive waters mainly off Alaska.

In the last few years, Sanctuary Ocean Count volunteers have documented fewer sightings at many of their shore-side stations, which may be a result of different habitat usage or changes in population numbers. It could represent a population that is recovering and reaching the limits that the environment might sustain (i.e. carrying capacity), or increased impacts from changes in the environment (e.g. climate change affecting their food resource or habitat conditions). In the feeding areas, researchers are noting changes in prey abundance and feeding locations, and animals that may be emaciated.

Even with ongoing research and response, as undertaken by the sanctuary and others, that continue to monitor Hawai'i's humpback whale population, there are many things we still do not understand. The Sanctuary Ocean Count contributes to our understanding of these magnificent animals.

For those of us in Hawai'i, it is easy to take the whales for granted when populations were increasing steadily about 5-7% annually, and sightings from shore were a common occurrence. Today, we no longer assume that population trends will always increase, as the whale's habitat — our ocean — continues to change.

We invite you to join us in helping to understand these dynamic creatures while learning a few new things about humpback whales. Online volunteer registration for the 2018 Sanctuary Ocean Count will commence in mid-December. To receive a notification when the website goes "live", please email us at [oceancount@noaa.gov](mailto:oceancount@noaa.gov). To read more about this project, please visit our website at [hawaiihumpbackwhale.noaa.gov/involved/ocwel-come.html](http://hawaiihumpbackwhale.noaa.gov/involved/ocwel-come.html).





# VOLUNTEER SPOTLIGHT



Providing the best care for the Waikīkī Aquarium's two resident Hawaiian monk seals requires a team of dedicated, passionate, and self-motivated individuals. Monk Seal Interns are often found preparing fish, cleaning exhibits, and enriching the lives of Ho'ailona and Maka Onaona before the sun rises and well after the sun sets. Animal care staff are on site each day, rain or shine, and often spend more time with the seals than their own families or friends. However, each intern will also share with you that the feeling of playing a direct role in the conservation of one of the most critically endangered species is worth every minute. Every day, I look forward to teaching, mentoring, and sharing invaluable experiences with a team of individuals who continually strive to provide nothing but the best to our two resident Hawaiian monk seals.

**--Leann Castle, Monk Seal Biologist**

Since we want no two days to be the same for the monk seals at the Aquarium, no two days are the same for an intern either. This keeps every day interesting. However, there are some things that we have to do every day, such as prepping food for the seals and having our arms in buckets of raw fish, as well as maintaining the monk seal exhibit and four other tanks (two fresh water and two seawater). We get great experience in different tank systems as well as animal training. My favorite thing I've learned so far is how to scatter feed Hoa. I was smiling all the way home from the Aquarium that day.

**--Sanna Bergstrom, Monk Seal Intern**

What I love about being a Hawaiian Monk Seal Intern is that I get to be a part of such a special and fascinating species at the Waikīkī Aquarium. Working so close to a large marine mammal keeps me on my toes and keeps me in a constant learning environment. I really enjoy getting to be around

amazing mentors who share my passion for the ocean, and I love to share what I learn by educating everyone from a young child all the way up to their grandparent. My favorite thing to do is feeding sessions with either seal because the interaction is fun and rewarding.

**--Michelle Santerno, Monk Seal Intern**

Working with the seals has been an awesome experience. My favorite part has definitely been forming a bond with the boys! Each of them have such fun quirks that I have had the chance to know and love. Smelling like fish every day is totally worth it! My favorite task so far would have to be helping prep for the seals birthdays! It's so fun to think of alternative enrichment for them and to see their reactions to it.

**--Claudia Cedillo, Monk Seal Intern**

The thing I like most about interning at the Waikīkī Aquarium is having the chance to be up close and personal with the Hawaiian Monk Seals. It also helps me realize my goal of working in an aquarium or rehabilitation facility by providing valuable experience of working closely with marine mammals. I'm really glad to have been given this opportunity and I look forward to learning new things every day. My favorite thing to do is talking with the guests about Hoa and Maka.

**--Cydney Johnson, Monk Seal Intern**

I love working with our boys at Waikīkī Aquarium because Hawaiian monk seals are such a unique and rare species! Hoa and Maka are so fun to be with because they both have such distinct personalities and quirks of their own. I like learning how to train the boys because it is very interesting to me and it is a way to get closer with the seals and coworkers.

**--Jessica Kim, Monk Seal Intern**





## DADIA SALOMÃO ELLIS

### POSITION

Public Information and Event Planning Specialist

### FAVORITE AQUARIUM RESIDENT

Humu humu nuku nuku apua'a

Born and raised in Juiz de Fora, Minas Gerais, Brazil, Dadia joined the Aquarium as Visitor Services Supervisor and recently transitioned to her new role as Public Information and Event Planning Specialist. In this role, she will manage, plan, coordinate and implement facility rental events and birthday parties at the Aquarium. She will manage event agendas, and book and coordinate department schedules to optimize facility usage.

Dadia graduated with a Bachelor's degree in Tourism Management from the Federal University of Juiz de Fora. She is certified as a Travel and Tourism Specialist by Penn Foster School. She has also received various certifications as a Destination Specialist for the Hawaiian Islands, Lifestyle Specialist Honeymoon and Destination Wedding, Travel Agent and Travel Industry Executive from the Travel Institute. In the fall of 2018, she will be enrolled at UH Manoa for the Travel Industry Management program. Dadia is a member of the Travel Institute Certified Travel Agents Network Lounge.

## CORI TUFANO

### POSITION

Research Support: Hawaiian Monk Seal Assistant Biologist

### FAVORITE AQUARIUM RESIDENT

Maka (Hawaiian Monk Seal)

Born and raised in West Haven, Connecticut, Cori joins the Aquarium team with previous experience as a marine mammal trainer at both Dolphin Quest Hawaii and Sea Life Park. Cori attended the University of Hawaii at Manoa.

As a Hawaiian Monk Seal Assistant Biologist, Cori will be responsible for feeding, training and caring for our resident Hawaiian Monk Seals, as well as maintaining gallery tanks.



## MORIAH RAE JOHNSON

### POSITION

Aquarium Biologist (non-permanent status)

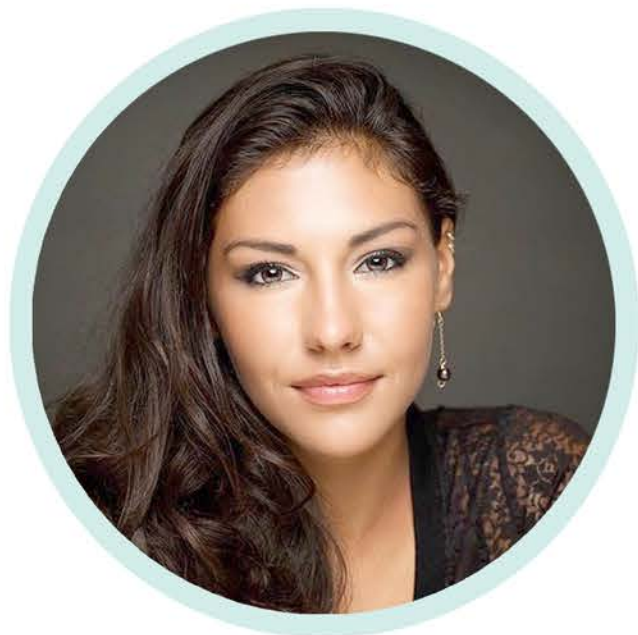
### FAVORITE AQUARIUM RESIDENT

Asian Arowana

Born in Rocksprings, Wyoming and raised throughout the West Coast, Moriah studied and received training through UH Manoa's Scientific Diving Program and QUEST Field School. She received the Presidential Award of Academic Achievement and graduated in the top 1% of her class.

In her position as an Aquarium biologist, she will help to maintain exhibit aesthetics, tank maintenance water quality and overall exhibit health. She will also assist with extensive animal husbandry.

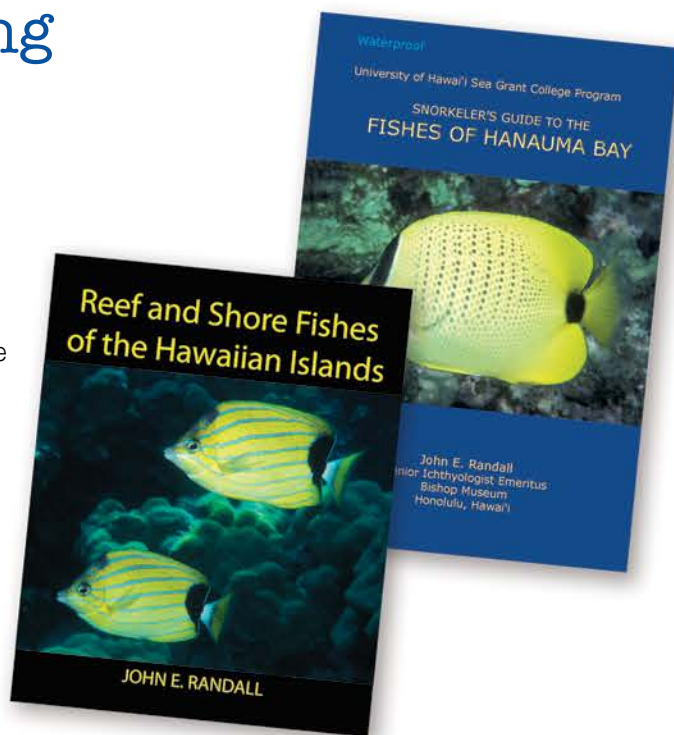
Moriah is a member of the Phi Beta Kappa Society, a committee member with the American Cancer Society and assists in beach cleanups with Trees to Seas, Inc. In her free time, she's a master scuba diver, rock climber, skydiver and motorcycle rider.



# Hawai'i Sea Grant: Bringing the Sea to the Shore

December 9, 2017 • 10 a.m. to 1 p.m.

Explore the beauty and splendor of Hawai'i's undersea resources with Dr. John E. Randall, world-renowned ichthyologist and award-winning author! Two of his publications, the *Snorkeler's Guide to the Fishes of Hanauma Bay* and *Reef and Shore Fishes of the Hawaiian Islands*, published by the University of Hawai'i Sea Grant College Program, will be available for purchase at a special event price and guests will also get a sneak preview of the brand new Japanese language version. The *Snorkeler's Guide to the Fishes of Hanauma Bay* provides users access to full color images, names (English, Hawaiian, and scientific), and descriptions of 114 species of reef and shore fishes most commonly viewed by snorkelers and swimmers in Hawai'i. *Reef and Shore Fishes of the Hawaiian Islands* is a 560-page volume which covers the 612 species of fishes found in the Hawaiian Archipelago from the shore to 200 meters in depth. Dr. Randall regards this as his finest publication, the result of 47 years of study of the Hawaiian fish fauna.



## Phytoplankton Fish Food

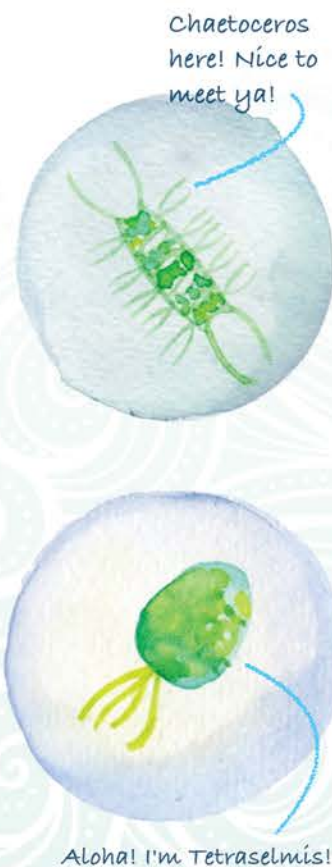
Optimizing *Chaetoceros* and *Tetraselmis* culturing  
Kyra Tan '19, Mentored by Dr. Yvonne Chang  
(Iolani Schools) and Erin Kelly (Aquarium Biologist)

### Meet *Chaetoceros* and *Tetraselmis*!

They are just two of the many genres of microscopic phytoplankton that inhabit our oceans. Both no larger than 10µm, their tiny size leaves them at the mercy of the tides but also allows them to serve as part of the vital basis to all marine food chains. Whether in the wild or being raised in captivity, nearly all marine species rely on phytoplankton directly, or to feed the zooplankton they eat. For example most fish can only eat small zooplankton like rotifers and copepods in their larval stage, limited by their small mouths. The health and likeliness of survival of fish fry and other aquatic animals is also impacted by the health and nutritional value of the phytoplankton lower on the food chain.

The aim of my research is to further optimize the culturing process of *Chaetoceros* and *Tetraselmis* using the Waikiki Aquarium's protocol as a control. I would also like to collect and culture native Hawaiian species of the two genres. Several cultures of both plankton will be grown in flasks exposed to different conditions over a two-week growth period. The growth of a culture will be determined by counting the number of plankton cells regularly of each flask in order to obtain a density estimate. By recording differences in culture growth in response to different light spectrums, I hope to find some of the optimal conditions for growing healthy plankton.

Exploring the process of plankton culturing will hopefully help researchers and organizations like the Waikiki Aquarium to provide their animals with better nutrition and facilitate their efforts to protect our oceans.







# School of Wishes

We welcome your donations toward a specific item on our wishlist.  
If you have any questions please contact MaryLou Foley at (808) 440-9027.

## LIVE EXHIBITS

**\$25,000**

New UV for NWHI Exhibit

**\$25,000**

Neptune Systems

**\$15,000**

Water Quality Equipment

**\$5,000**

Diving Equipment

**\$5,000**

Eco-Friendly DC Pumps

**\$1,500**

Food Prep Commercial Blender

**\$5,000**

Underwater Camera

## EVENTS

**\$500**

Tents

**\$600**

Sound System,  
Cordless Microphones

**\$300**

Podium

## INFORMATION TECHNOLOGY

**\$3,100**

AI-MK350S  
Advanced Handheld Spectrometer

**\$2,700**

NetScout AIRCHECK-G2  
Wireless Tester

## GRAPHICS

**\$1,600**

Apple iMac (Retina 4K Display,  
3.4GHz Processor, 1TB Storage)

**\$2,400**

(2) iPad Pro 12.9-in

## VOLUNTEER SUPPORT

**\$500**

Logo Pop-Up Tent for  
Events/Cleanups

**\$500**

(3) Interpretive Station  
Umbrella Misters

**\$750**

Snorkel and Masks for  
Live Exhibits Volunteer

## EDUCATION

**\$1,000**

Fish and Reef ID Cards

*For participants in  
educational programs.*

**\$1,000**

6-ft Coloring Table Posters

**\$200**

(4) Resin-Casted Sea Urchin  
Specimen Props for School Programs

**\$600**

Ruler for Fishwheels Activity

## FACILITIES

**\$3,000**

Solar LED Tree Lighting

**\$1,900**

Outdoor Shaded Area

**\$770**

Demolition Hammer Drill

## COMMUNITY OUTREACH

**\$25,000**

Energy Efficient Logo Mini SUV

*For printing costs.*

*To be used by  
both employees  
and visitors.*

*Increase ocean education  
and outreach to our  
community and schools.*

*For animal food  
production.*



# The Ever-Forward March of

The plant and animal kingdoms teem with bright colors, from the lush green of photosynthesizing plants to the bold swaths and stripes of blues, purples, yellows, reds, and oranges of reef fishes. Light is what allows us to appreciate nature's paintbrush. The reflection of light off of these colorful fishes gives us an appreciation for how life evolves to fit and respond to its environment. Sunlight warms and brightens our world on a daily cycle. The plethora of hues around us shows us that the sunshine is actually composed of many colors. Life uses this bright opportunity provided by our sun to diversify and survive.

Upgrading our Aquarium lighting from traditional incandescent and metal-halide fixtures to new Aqualllumination LED fixtures yields two major benefits. The first benefit is the same reason we ought to upgrade to LED lighting in our homes: LED lights are more efficient and consume less energy to produce the same amount of light. This results in both financial and environmental savings. The second major benefit is that the LED lights we installed at the Waikiki Aquarium come in a matrix of power-dense LED lights, each with its own light wavelength (see Figure 1). Think of this matrix as the dabs of paint on an artist's palette. Additionally, there is an embedded microcomputer in each lighting fixture that mixes the color gamut and intensity on demand or by automated program. This second benefit gives our aquarists at the Waikiki Aquarium complete control over the spectrum that is illuminating an exhibit.

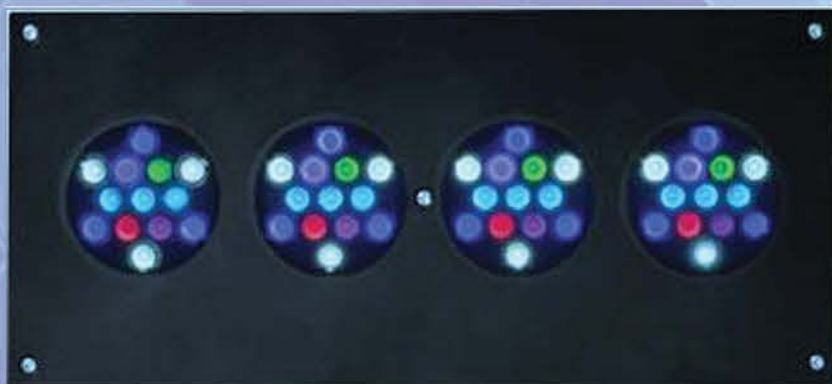


Figure 1 - Microcomputer Controlled LED Lighting Fixture

Technology		Lighting Ma
Metal-Halide		2 x 250W Bulb
LED		6 x AI Prime H
LED		6 x AI Prime H
Time (hours)	Energy (Wh)	Energy (KW)
12	6000	6
12	1620	1.6
12	276	0.2

Figure 2 - Lagoon Communities Exhibit Conversion from metal-halide to microcomputer controlled LED lighting



# Efficiency and Functionality

Our aquarists may now adjust lighting precisely to showcase the natural colors of an exhibit's denizens.

The combination of these benefits, inherent efficiency of LED lighting and computerized programs that control the light's "rise and set" in a daily/seasonal cycle, gives a compounded energy savings compared to the always on, constant output lighting being replaced. Our expectations were exceeded when we measured the energy usage on our first conversion to be a 96% savings (see Figure 2 & Chart 1). We now have 48 of these LED fixtures installed as we approach a complete lighting conversion for the Waikiki Aquarium.

The lighting of an exhibit at the Waikiki Aquarium can change your mood as you appreciate the marine life being presented. The animals have evolved in their natural ecosystems to have colorful exteriors that help them survive, by blending with their surroundings, mimicking other life forms, or becoming better predators. In marine aquariums, the type of animals and plants determine the ideal lighting for that exhibit. Our aquarists establish the lighting that works in conjunction with species selections, tank size, availability of natural light and staging selection. These elements come together when the right lighting is achieved to transform an exhibit into a seamless combination of habitat and inhabitants, a true masterpiece of nature.

Matrix	Regulation		Power (Watts)
ss	Constant		500
D	Constant		135
D	Program		23
Energy (Wh)	Daily Cost	Yearly Cost	Savings
	\$1.68	\$613.20	0%
52	\$0.45	\$165.56	73%
76	\$0.08	\$28.21	95%

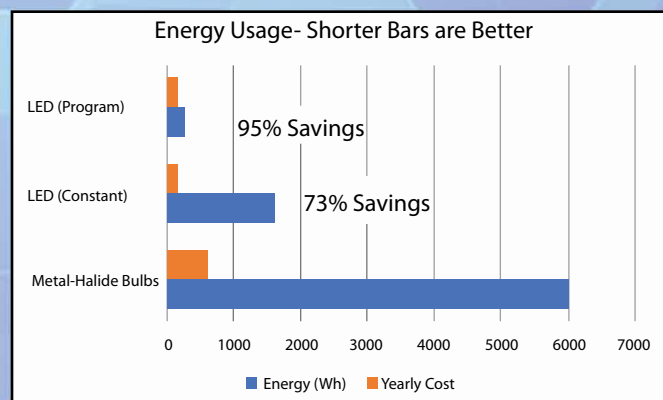


Chart 1 – Energy Usage Comparison on Lagoon Communities Exhibit

Conversion from Metal-Halide lighting to microcomputer  
LED Smart Lights



# CLASSES & ACTIVITIES

## BEHIND THE SCENES

Every Thursday of the month, 3:00 p.m.

Learn what makes the Aquarium run, from fish food to quarantine, and many stops in between. Climb up and peer into the backs of the exhibits. Visit the Coral Farm and the Jelly Hale, where sea jellies are raised.

Minimum age 7 years; youngsters must be accompanied by an adult. Accessibility is limited. \$16/adult, \$10/child members receive a 40 percent discount.

## AFTERNOONS AT THE AQUARIUM

Wednesdays at 3:00 p.m.

Every Wednesday, the Aquarium hosts an interactive learning activity near the aquaculture deck. Join us for a critter encounter or a marine science craft designed for families. Free with admission to the Aquarium.

## SMALL FRY

Wednesdays at 9:15 a.m.

October 11, 18, 25 and November 1

Fish, turtles, and seals are just some of the animals that will be highlighted in these classes for kids. Keiki will learn about sea creatures through crafts, singing, storytelling, dance and play. Designed for kids 1 to 4 years-old. \$10/person, \$6/member.

Register online at  
[www.waikikiaquarium.org/  
interact/activities-classes/](http://www.waikikiaquarium.org/interact/activities-classes/)



## CRITTER ENCOUNTERS

Mondays at 3:00 p.m.

Sneak-a-peek behind the scenes and learn about Hawaiian reef animals. Hold a sea star, feel a sea cucumber and feed an anemone. This half-hour program is a great addition to any visit to Waikiki Aquarium. Perfect for families with children 4 and up. \$5/person plus Aquarium admission.

## AQUARIUM AFTER DARK

Tuesday, October 10, 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. Are yellow tang always yellow? Come for a class followed by a tour of the exhibits.

Minimum age 5 years; youngsters must be accompanied by an adult. \$15/adult \$10/child for non-members. Members get a 40 percent discount.

## EXPLORING THE REEF AT NIGHT

Thursday, November 2, 7:00-9:00 p.m.

Friday, December 1, 6:30-8:30 p.m.

Monday, January 29, 6:30-8:30 p.m.

Search for night-active crabs, lobsters, eels and octopuses. Look for sleeping parrotfishes, triggerfishes and day octopuses in their dens. For the adventurous, ages 6 years and up; youngsters must be accompanied by an adult. Participants should be comfortable in the ocean, both day and night. \$20/ adult, \$15/child; \$15/adult \$10/child for members.



# Box Jellies!

By Guerin Earhart, Education Specialist

Have you ever seen “Jellyfish” warning signs on the beach? Have you ever wondered why?



Box jellies (also known as jellyfish) belong to the invertebrate *Phylum Cnidaria*, a diverse group of stinging animals whose members all possess stinging cells for feeding and protection. Jellyfish relatives include the sea anemones, corals, and Portuguese man-of-war. The box jellies, or *Cubomedusae*, are named for the squarish shape of their bell-shaped body. Three species are now known in Hawaiian waters. *Carybdea alata* is the largest of the three, reaching sizes of two inches in diameter and three inches in height. The smaller species is about a third of that size. Each of these box jellies has four thin, pinkish tentacles that trail from the “corners” of the transparent body. Complex sensory structures are located between the tentacles, just above the bell margin, each containing a balance organ and a light detector that includes a lens. Box jellies are capable of directed swimming toward a light source and are reported as the fastest swimmers among the jellies and their relatives. They are active predators, capturing small fishes and crustaceans with their potent sting.

As a group, box jellies are found in shallow tropical seas throughout the Pacific, Indian, and Atlantic Oceans. They generally occur in quiet, shallow waters of protected bays and estuaries, and over sandy-bottomed shorelines, though some species have been reported in the open ocean. Box jellies apparently descend to deeper water during daylight hours, but during summer months, adults are often reported at the surface. The tentacles, well-armed with potent stinging cells, can inflict a painful sting on unwary beach goers. An Australian relative, the notorious “sea wasp” box jelly (*Chironex fleckeri*), is deadly. While the sting of Hawai‘i’s box jellies is not usually lethal, it is reported to be more painful than that of the more common Portuguese man-of-war.

The tentacles of jellies and their relative, the Portuguese man-o’-war, are lined with microscopic stinging cells

(nematocysts) that are activated by touch or chemical cues. Each cell fires a barbed thread that can penetrate the skin and deliver toxin that causes a burning sensation and, sometimes, more severe reactions. However, sensitivity varies from individual to individual; some may be highly allergic to jellyfish or man-o’-war stings and need a physician’s care.

The largest of the locally-occurring species, *C. alata* is identified in the recurring “invasions” that have been reported on O‘ahu shores since 1988. Armed with research articles supplied by the Waikīkī Aquarium, local water safety officials teamed with a marine scientist to find the pattern of occurrence of the jellyfish so that predictions could be made about their probable appearance. More than a year of data revealed a lunar and tidal pattern. The present theory is that when certain high tides occur at night, the jellies are carried over the reef and into the shallows along the beach. When the tide flows out, the jellies are trapped and beach goers encounter them the next morning. Researchers have found that in most cases, the box jelly “invasions” occur about eight to ten days after a full moon.

On south shore O‘ahu beaches, there is a predictable box jelly invasion, orchestrated monthly by the phases of the moon. While box jellies are not on exhibit at the Aquarium, being difficult to maintain in captivity, we are now providing a free monthly educational activity in the lobby. See our website calendar for times, which coincide with the box jelly invasions.

Separate from the Aquarium Events calendar, we have posted a box jelly calendar on our website: <http://www.waikikiaquarium.org/box-jellyfish-calendar/>. Please note this calendar is for informational purposes only, and all box jelly arrival dates are estimates. Jellies may be present on any day of the year.



# NEW & RENEWING MEMBERS

from April 2017 - June 2017

Rachel Ah Sue  
 Brennan & Tracie Alexander  
 Thomas & Carol Allison  
 Catherine Alo  
 Vina Ariyaprakai  
 Emmy Lou Armstrong  
 Deborah Ayars  
 Kerri Aybar  
 Mr. and Mrs. Balsis  
 Mamadou & Bintou Baradji  
 Sean & Maryann Barr  
 Hedwige & Daniel Barrett  
 Erin & Trevor Bayly  
 Sandra Billington  
 Kelly Boklage and Ron White  
 Marcus & Emma Boland  
 Robert & Nicole Bonning  
 Sherine Boomla  
 Donald Bozarth  
 Dan & Veronica Bragdon  
 Elizabeth Bremer  
 Mr. Greg Burrell  
 Kacy Byxbee and Scott Caan  
 Shiela Calapan and Arthur Stout  
 Christopher Capaldo  
 Mr. & Mrs. Aaron Carpenter  
 Markesha Chance  
 Mrs. Lisa Chen  
 Irene Ching  
 Mark & Jonelle Ching  
 Richard & Mary Anne Chow  
 April Clifton  
 Sarah & Peter Cole  
 Cheryl Collins  
 Nancy Conley  
 Kirstyn Cortez  
 Diane Crisologo  
 Lisa Crouch  
 Joseph & Nadine Cunningham  
 Ruth Cushman  
 Mieczyslaw Dabrowski and  
 Jane Earle-Dabrowski  
 Yik Man Dai and Chi Hai Sung  
 Kyle Davis  
 Kathryn & Tim Delaney  
 Jim and Sherry Dittmar  
 Samuel & Jamie Djonorh  
 Ashok Do  
 Mary Doi  
 Connie & Mohamed Doma  
 Zoa & Matthieu Dubarry  
 Amy & Erik Eck  
 Dyanna El-swaify  
 Andrea Esquibel  
 Mr. & Mrs. Jerry Feeney  
 Dr. Daniel J. Fischberg and  
 Dr. Barbara L. Ebersole  
 Sarah Fleming  
 Dolores Foley  
 David & Jocelyn Franks  
 Timothy Freson

David & Rie Fujihara  
 Masako & Arvin Fujii  
 Chris & Tamaki Fujiyama  
 Ken Fukuyama & Keiko Okada  
 Roy & Christine Gal  
 Isidore & Maria Russell Gamboa  
 Robert & Marites Garcia  
 Hank & Aloha Gellert  
 Joshua German  
 Peter Gibson  
 Dr. Amber Gill  
 Linda & Gerald Gono  
 Nicholas & Joanna Griffith  
 Ted Grisell  
 Jairus & Nicole Grove  
 Huizi Grover and Yingai Jin  
 Rosa & Steven Guevara  
 Reese Haine and Jodi Frankel  
 Sarah Hall  
 Jessica Hansen  
 Jeremy Hanson  
 Scott Harada  
 Susan Harris  
 Kohei & Ikue Hasebe  
 Netty Hax  
 Onawa Haynes  
 Angela Hayward  
 Rick & Haunani Hendrix  
 Elia Herman  
 Emily & Jason Hew  
 Darren Higuchi  
 Justin Hino  
 Sandra Hino  
 Peter Hirano and Birgitte Olsen  
 John & Kim Holzman  
 Eliot & Tomoyo Honda  
 Jazmin & Steven Hong  
 Mary & Leo Hopewell  
 Ryan & Kerri Hopkins  
 Dean & Yolanda Hu  
 Sarah & Jason Hunter  
 Wayne & Louella Ibara  
 Cheryl Ann Ikeda & Dawn Inouye  
 Mark & Jill Inoshiita  
 Glenn & Lynne Inouye  
 Maya Iriondo  
 Randall & Noladeane Ishihara  
 Iwamoto Household  
 Shirley Iwane  
 Daniel & Angela Jacso  
 Albert Keoni & Megumi  
 Toyama Jeremiah  
 Carlos Jimenez  
 Masako Jimenez  
 Lisa & Nicholas Johns  
 Felicia Johnson  
 Kristen & Terrence Kashima  
 Mr. & Mrs. Christopher Kastner  
 Yuta & Kozue Katabira  
 Phillip & Johanna Katzman  
 Paulette Kawakami

Cedar Kehoe and David Hather  
 Maile Kessler  
 Jeremy King  
 Erik Klein  
 Michihiro & Mariko Koibuchi  
 Cheol Min Koo & Hyon Hwa Choi  
 Juniper Krog  
 Evan Kroll  
 Mr. Brian Kubo and Mrs. Lani Kubo  
 Mitsuru & Ellen Kunihiro  
 Sheree Kuo  
 Kevin Kurihara  
 Tyler Kurita and Vanessa Chaves  
 Nicole Lamb and Jared McDermott  
 Melissa Lambert  
 Dennison & Sandra Lau  
 Diana & Eugene Lau  
 Leland Lee  
 Wendell & Bonnie Lee  
 Mrs. Chelsea Leitner  
 Hallie Len Wai  
 Lorenia Leyva  
 Rie & Khoi Lieu  
 Yuqi Liu  
 Pam Livingston  
 Harvey & Maylee Llantero  
 Cynthia Lum  
 David & Itsumi Lum  
 Marilyn Mach  
 Lisa Mahan  
 Larry & Julie Manth  
 Janice Marsters  
 Sarah & Kurt McCash  
 Linda McNamara  
 Rhea Lyn Mendoza  
 Kenneth Meyer  
 Makia & Nicole Minerbi  
 Robert Mist  
 Zay & Melissa Moen  
 April Money  
 Nick Monge  
 Joshua Monton  
 Rachel and Timothy Moore  
 Barb & Paul Morgan  
 Kristen Moura  
 Jennifer & Aaron Muraoka  
 Karen Muronaga  
 Rochelle & Justin Murty  
 Eryn Nakamura  
 Keli Nakata  
 Shigekazu Narui  
 Ronald Nasuti  
 Patricia & Travis Nekota  
 John Ngo  
 Risako & Mathew Ngo  
 Justin-Thomas Nissel  
 Elizabeth Norcross  
 Kawika & Dori Noyes  
 Mr. and Mrs. Leland Nye  
 Robert Ocampo

Maki Ogden  
 Stacey Ohama  
 Roger Osentoski  
 Lisa Oshiro-Tamura  
 Linda & Mike Oxley  
 Eric & Geri Palacol  
 Clinton & Corri Pandaraoan  
 Monty Panui  
 Leonard & Deanna Park  
 Grace Pascua  
 Eleanor & Bruce Pattie  
 Peggy & Erich Pautz  
 Catherine K. & John Payne  
 Hien Pham  
 Kyle Phillips and Alex Ramsvig  
 Robert & Kathy Phillips  
 Tom & Betsy Pickle  
 Tyson Pizarro  
 Dawn & Robert Poiani  
 Kevin Prior  
 Craig & Marna Rae  
 Cynthia & Manuel Ramos  
 Trisha Ramos and Jolly Maene  
 James Rapisarda  
 Robert & Tonya Rauckhorst  
 Ryan Redoble & Precious Mia  
 Redoble  
 Jim Reel  
 Raymen & Lauren Rice  
 Christopher & Margit Rocchio  
 Janis & Jim Rodden  
 Mary Roney  
 Nancy Rose  
 Shima & Matthew Rossitto  
 Cade & Waileia Roster  
 Desirre and Todd Roys  
 Phil & Sarah Ryan  
 Tanya & Farhad Safi  
 Ayako & Shunsuke Sahara  
 Russell & Dale Saiki  
 Ryan & Jodie Sanada  
 Anthony & Joan Schermerhorn  
 John & Norma Jean Schmeelk  
 Jonathan Schochet  
 Paul & Cynthia Schuler  
 Gillian Schweighardt  
 Gabe & Michelle Scotti  
 Shilhi  
 David Sexton  
 Solomon Shelton  
 Alexander Shor and Joan Gardner  
 Tiffany Siegfried  
 William & Bianca Silliman  
 Mr. Andrew Barry Simmons &  
 Mr. Mitchell Loewenthal-Grassini  
 Christine Smith  
 Lea-Anne Smith  
 Natalie & Merrick Smith  
 Susan Steinemann and  
 John Kronen, Jr.

Zack Stoecker-Sylvia  
 James & Christine Stone  
 Clarice Strand  
 Kathleen & Matt Stula  
 Holly & Steven Sung  
 Noelle Sutherland  
 Victoria Sutton  
 Blair & Erin Malie Suzuki  
 Mitsuyo Suzuki-Severa and  
 Godwin Severa  
 Samuel Swartz  
 Alexandra Takayesu  
 Jeanette & Elmer Takenishi  
 Alyssa Tanaka and Wayde Iwanaga  
 Naoki Tanaka  
 Frances Tannen  
 Nancy & Carroll Taylor  
 Lawrence Tellez  
 Sir Andrew Thomas  
 Carl Thudium  
 Trish Tolentino  
 Aaron Tomatani  
 Gayle Tomokiyo  
 Nikie Torio  
 Cory & Christina Toyama  
 Lisa Trowbridge  
 Keith & Machiko Truelove  
 Dick & Cassandra Tsuda  
 Justin Tulk  
 Karen Uemoto and Dan Lehman  
 Marta Vakulenko  
 Michelle Vallejo-Sanderson  
 Carl & Paula Vetter  
 Valeen & Gordon Villa  
 Adrian & Seul Ki Villoria  
 Ms. Margo Vitarelli  
 Melinda Walker  
 Cheryl & Blake Wallick  
 Sara Watts  
 Jeffrey & Rosana Weldon  
 Krista Wells  
 Syki Wells  
 Nancy Westcott  
 Jennifer & Stephen Weydert  
 Kathy Whisler  
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 Laurie & David White  
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 Dianne Wolf and Roger Mies  
 Cindy Wong & Titus Tan  
 Thomas Woodrow  
 Dr. Andrew Yafuso  
 Barbara Yamamoto  
 Kerianne & Jason Yamamoto  
 Ai Yamane  
 Yun Yi and Leonard Cabral  
 So-Ching & Duke Yim  
 Rena Yoshida  
 Laurie Zane  
 Lina Zhang and Fuchi Zhou

## The Gift That Keeps On Swimming

### 'Tis the Season to Become a Member

Share your love for marine life this holiday sea-son with our Waikiki Aquarium gift certificates. The Aquarium offers five membership gift categories including:

- Family Plus Membership (two adults, their children and two guests): \$90
- Family Membership (two adults and their children): \$65
- Grandparents Membership (two grandparents and up to six grandchildren): \$65
- Individual Membership: \$45
- Senior (65+ years): \$35

\*Children must be under 18 years of age to be qualified as a child covered by membership

Members will have advance access and special discounts to functions throughout the year. To purchase a Christmas membership gift certificate, visit [www.waikikiaquarium.org](http://www.waikikiaquarium.org) or call the membership office at (808) 440-9054. For more information or to download an application, email [membership@waquarium.org](mailto:membership@waquarium.org).

## FRIENDS OF WAIKĪKĪ AQUARIUM BOARD MESSAGE

### Congratulations to our 2017 School Support Docent Program Graduating Class

We recently graduated a new class of School Support Docents, which included nine new members. Our Aquarium 'ohana is made up of over 300 volunteers who work together with our staff to make every guest's experience a memorable one.

This summer, we saw another successful Ke Kani O Ke Kai Summer Concert Series and this would not be possible without the help of the 40+ volunteers at each concert. They arrive early and stay late to make sure that every guest has an exceptional evening.

Our new School Support Docents will act as teachers and guides for the School Support Program. They will interact with kindergarten through sixth grade students, deliver interactive classroom presentations on Hawaiian marine life and conduct on-site exhibit tours. They will help to guide close-up observations and hands-on interactions of specimens that students wouldn't otherwise experience.

We are so grateful for our volunteers as they make our mission to inspire and promote understanding, appreciation, and conservation of Pacific marine life possible.

Mahalo to all of you, for you truly are the heart of our Aquarium.



**Top row** (left to right): Lauren Van Heukelem, Volunteer Program Coordinator; Frank Assante; Seung Ho Baek; Ana Marshall; Maxine Nagamine; Dean Spencer, School Support Docent Program Coordinator. **Bottom Row** (left to right): Lisa Golden, Volunteer Program Coordinator; Lori Fujimoto; Kelsey Loenhorst; Millie Ng; and Carol Tamura.  
**Not pictured:** Jeffrey Gere and Juanito So.





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## THE WAIKĪKĪ AQUARIUM'S MISSION

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