Kilo iā

2015 | MAY | JUNE



WAIKIKI AQUARIUM
UNIVERSITY OF HAWAI'I

Aquarium Enrichment
A LOOK BEHIND THE SCENES
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Ke Kani O Ke Kai
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With spring already upon us, the Aquarium is looking forward to the exciting array of entertainers in this year's Ke Kani O Ke Kai summer concert series. A list of the truly outstanding lineup of local entertainers, the dates of their performances and details about how to purchase tickets for these special events can be found on Page 5. Beyond being a wonderful community-oriented event, these concerts have an equally significant purpose in that all proceeds go towards education, research and conservation projects here at the Aquarium, and provide an important source of revenue for our many activities in these three areas.

Since being reintroduced 11 years ago, the summer concerts have expanded and improved to where they are today, and have become one of the signature events on the summer social calendar. Often in excess of 600 guests are hosted in the ambience of the natural amphitheatre of the Aquarium lawn, complete with food and drink services, and as everyone reading this will already know, the best deal in town is the FOWA members' discount for tickets!

Elsewhere in the Aquarium, several projects are nearing completion, and several others just beginning. Ever a work in progress, the renovation and improvements to various facets of the building's physical structure, the care and well being of our live animals, and the offerings to visitors, proceeds apace. Just beyond the gallery exit next to the oceanside walkway, a new animal holding area is almost complete. Neatly shaded with a custom built canopy, several local residents and passersby have been kind enough to compliment us on this structure and the new, clean looking fencing that has been erected. In the immediate future, this fencing will be extended along the gallery exit doors and across the staff entryway to the monk seal area, providing a uniform appearance, greater privacy for the monk seals, and more working space for staff. It is planned that the animal holding area will be accessible to visitors as part of behind the scenes tours.



Cheryl Williams, Royal Hawaiian Hotel General Manager and Mike Swerdloff, Azure Restaurant presented Dr. Rossiter with a check for $2,456.78 from their "You Dine, We Donate" Table 53 program.

Another project that should meet with unanimous approval: the public bathrooms are scheduled for a complete renovation, to be ready before the start of the concert series! We apologize in advance for the inconvenience caused while this work is ongoing, but are sure you will feel the wait was worth it. A legacy of decades of patchwork repairs, the existing dated and tired-looking bathrooms will be completely gutted as part of a repair project. The new, energy efficient bathrooms should provide a modern, well appointed and pristine visitor experience. These, and so many other improvements that have taken place around the Aquarium over the past few years, have only been possible through the kind support of the FOWA board, and ultimately, to your memberships and other contributions. We thank you for your support towards our efforts to make the Waikiki Aquarium an educational and enjoyable visit for all.

Andrew Rossiter

Dr. Andrew Rossiter
Director, Waikīkī Aquarium

Kilo iʻa

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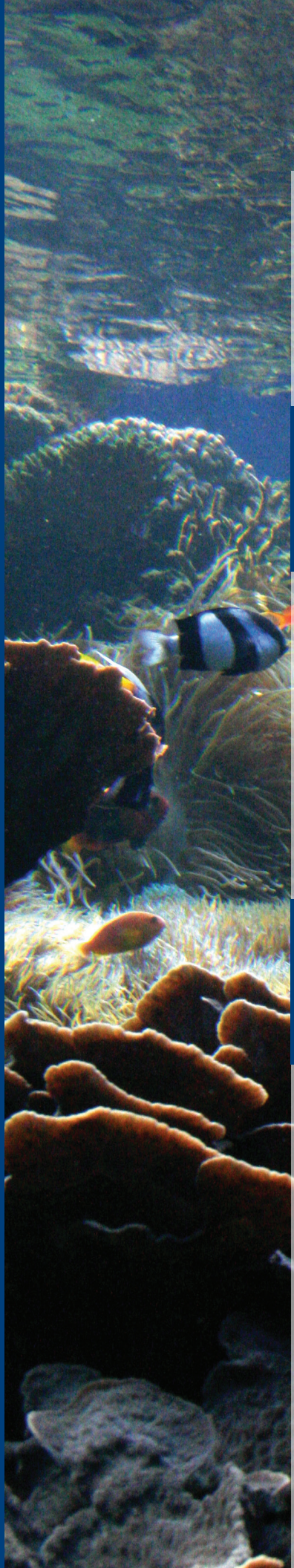
WRITE TO US AT kiloia@waquarium.org

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MANAʻO

Traditionally, the kilo iʻa was an expert of fish and marine life. He studied the behaviors and movements of iʻa. 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.



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SAVE THE DATE

SEASONS AND THE SEA
FRIDAY, MAY 2, 6:00 PM
Get down to the Waikīkī Aquarium on Friday, May 2 as we say a hui hou to the wet season, ho'oilo, and welcome the dry season, kau. Hawaiians marked this time by observing the sun setting into the crown of Pu'u o Kapolei at the foot of the Waianae mountain range. Join us in the park 'ewa of the Aquarium to observe this occurrence while enjoying traditional chanting and hula.

WORLD OCEANS DAY
SATURDAY, JUNE 6, 9:00 to 10: 00 PM
Celebrate the ocean by participating in a wide variety of marine related activities. Learn about ocean creatures like sea snails and sea horses. Free with admission to the Aquarium.

SUMMER BY THE SEA
SESSION 1: JUNE 8-12
SESSION 2: JUNE 22-26
Spend a week of summer learning about some of the animals that live in Hawaiian waters. What's the best way to learn? By doing! Snorkel, swim and explore the coast from Waikīkī to Diamond Head. After a morning of outside adventures, the Aquarium turns into a classroom. Learn about the animals in our exhibits and watch them being fed on special behind-the-scenes tours. For marine biologists 8-12 years of age. All students should be confident swimmers and enjoy snorkeling. $275/child member ($325 for non-members).

KE KANI O KE KAI
EVERY OTHER THURSDAY, 7:00 PM
JUNE 11, 25, JULY 9, 23, AUGUST 6
Hawaiian music at its finest in the perfect setting will once again return to the Aquarium lawn as we kick-off our ever popular summer concert series Ke Kani O Ke Kai on June 11. Join us on Thursday evenings through August 6 for some of Hawai'i's top headlining entertainers accompanied by "Ono Kine Grinds" by popular Honolulu restaurants and caterers. See page 5 for the concert line-up. Check your mailboxes or our website for more concert info! Series tickets will be available for purchase from May 18.

AQUATIC EXPLORERS!
TUESDAYS, JUNE 9-AUGUST 25, 11:00-1:00 PM
Learn about marine life, fish identification, snorkeling, and dive gear. Kids ages 3-13 can try on fins and weight belts in partnership with a partnership initiative with Oceanic Aeris and Waikiki Dive Shop. Free with admission to the Aquarium.

AFTERNOONS AT THE AQUARIUM
EVERY WEDNESDAY, 3:00 PM
Every Wednesday, the Aquarium hosts an interactive learning activity near the Monk Seal Deck. Join us for a critter encounter, a game or a marine science craft designed for families. Examples include: Oragami Fish, Honu Petroglyph Printing, and Special Guest, Dr. Rachel Sprague, Monk Seal Recovery Coordinator on May 6. Free with admission to the Aquarium.

AQUARIUM HIGHLIGHTS TOUR
WEDNESDAY, JUNE 17, 5:30-6:45 PM
TUESDAY, ULY 28, 5:30-6:45 PM
Peek behind the scenes and then head into the Aquarium for a private, peaceful, after-hours tour. Meet both our youngest residents in the seahorse nursery and old friends like our 38-year-old giant clam. Learn to appreciate the importance of sea cucumbers, the intelligence of an octopus and the beauty and diversity of a coral reef. Get a look at the peppermint angelfish and other unique species that can be seen only at Waikīkī Aquarium. $25/person, $15/member ages 8 and up.

AQUARIUM AFTER DARK
TUESDAY, JULY 7, 7:00-9:PM
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. Are yellow tang always yellow? Join us for a class followed by a tour of the exhibits. Minimum age 5 years; youngsters must be accompanied by an adult. $10/$7 for members, $15/adult, $10/child for non-members.

PUPPET SHOW
WEDNESDAY, MAY 20 - Monk Seal Puppet Show
WEDNESDAY, JUNE 17 - Octopus Puppet Show
THURSDAY, JULY 16 - Sea Turtle Puppet Show
Join Marianne Ambrose for educational puppet shows and learn about Hawaiian marine life. Free with admission to the Aquarium.

BEHIND THE SCENCES
EVERY THURSDAY, 3:00 PM
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 tanks and see how exhibits are created. Visit the coral farm and the Jelly Hale, where sea jellies are raised. Minimum age 8 years; youngsters must be accompanied by an adult. Accessibility is limited. $10/$8 for members, $16/adult $12/child for non-members.

Look for class updates on:
www.waikikiaquarium.org

PRE-REGISTRATION REQUIRED

To Register: Call 808-440-9011 or
e-mail: reservations@waquarium.org

KE KANI O KE KAI

The Waikiki Aquarium's popular annual summer concert series offers visitors and residents an evening of live entertainment and food under the stars. The five-concert series is held on alternating Thursday evenings from mid-June through early August. Featuring some of Hawaii's top entertainers, doors open at 5:30 p.m., and the concerts begin at 7 p.m. Guests are encouraged to explore the Aquarium galleries that remain open throughout the evening and bring blankets/chairs to sit on the Aquarium's lawn. Some of Hawaii's finest entertainers make this major fundraiser one of the best and most unique ways to experience the Aquarium.

Entertainment line-up:

Concert Date	Performers
June 11	Kailholu & Makana
June 25	Sean Naauao & Ben and Maila
July 9	Kawika Kahiapo & Raiatea Helm
July 23	Cyril Pahinui & Jerry Santos
August 6	Jake Shimabukuro

Tickets will go on sale on May 1 to FOWA members only and then to the general public on May 18th and then single concert tickets will go on sale on June 2nd.

For more info visit:

http://www.waikikiaquarium.org/interact/annual-events/ke-kani-o-ke-kai/

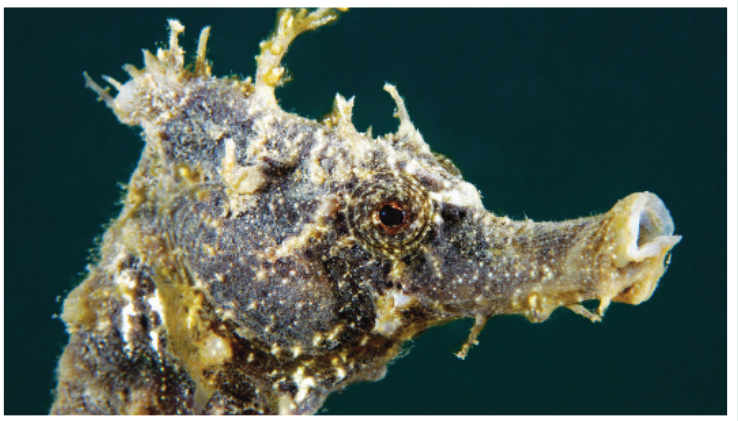








FUN FACT



Did you know...

Seahorses can grow fleshy appendages called cirri on their bodies. This gives them a weed like appearance and helps with camouflage.



HAWAIIAN MONK SEAL ENRICHMENT

The importance of enrichment in captive care of marine mammals is paramount. These intelligent animals require both mental and physical stimulation to enhance their lives. In addition to providing stimulation, enrichment can help these animals adapt to changes in their environment and can also be used to encourage natural behaviors. The slightest change or addition to a habitat can be considered 'enrichment', as it is something new and different. If you've ever seen Ho'ailona playing with a fender, or Maka'onauna dunking his head in a bin full of running water and fish, you've seen examples of monk seal enrichment.

The key to marine mammal enrichment at the Aquarium is choice and variability. Animals always have the choice of whether to interact with the chosen enrichment item. We try to vary the time of day they receive enrichment, as well as the type of enrichment, so that the animals remain stimulated.

Maka'onauna and Ho'ailona primarily receive tactile enrichment. This means that they are often offered objects that they are able to interact with; this could be anything from a mimicked 'waterfall' to a body board. While both animals definitely appear to have enrichment items that they prefer, they also interact with certain items differently on occasion. For example, sometimes they swim under the 'waterfall' as if they were getting a massage, and on other occasions completely ignore it. Even if the latter does happen, the item is still enriching as it has added something different to the animal's natural environment.

Ho'ailona is particularly interested in objects he can wrap his flippers around, and is often seen sleeping at night with his flippers around a particular enrichment item. Often when animals lack in one 'sense', the other senses become heightened. Ho'ailona's eye sight has steadily decreased over the years, and it appears that his hearing has improved to compensate. Trainers can often be found serenading Ho'ailona with a harmonica before the Aquarium opens. He responds by swimming over

Hard Rock Cafe located on Beachwalk Avenue off of Kalakaua



ROCK OUT

FOR A GOOD CAUSE

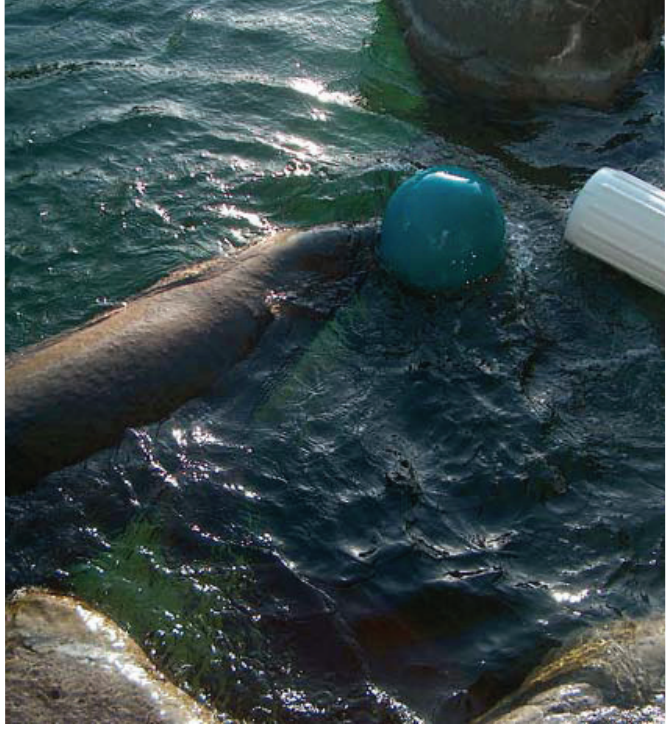
A fundraiser to benefit the Waikiki Aquarium!

Thursday, May 14
5:30-7:30 PM
$15 pre-sale / $25 at the door

Includes pupus, beer, & wine from Happy Hour menu

- Space is limited -

To purchase tickets visit our website or call 440-9027

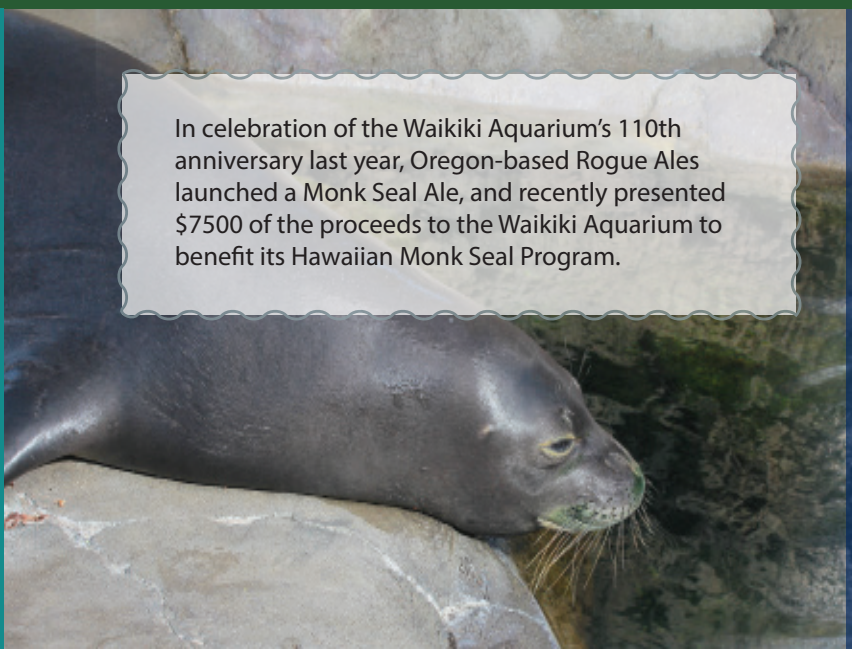

to the source of the music and placing his face against the window. If he was not stimulated positively by the sound, he would veer away from the source rather than gravitate towards it.

Maka'onauna seems to particularly enjoy the 'tide pool' enrichment offered to him. This enrichment is a shallow bin of water with a handful of fish in it. The bin has a continuous flow of water which creates an environment similar to that of a shallow tide pool. In the wild, monk seals are often seen foraging in tide pools. This type of enrichment simulates the natural foraging behaviors of monk seals as he dips his head in the water and forages through the "waves" in search of fish.
The Monk Seal Team are constantly trying to find different ways of stimulating Maka'onauna and Ho'ailona. Next time you come to the Aquarium, take a look around the monk seal exhibit and see what enrichment items you might find. Maybe you'll be lucky enough to get serenaded too!

Interested in being inspired on a daily basis?

Follow us on
Twitter, Instagram, and Facebook.

@waikikiaquarium
#waikikiaquarium



In celebration of the Waikiki Aquarium's 110th anniversary last year, Oregon-based Rogue Ales launched a Monk Seal Ale, and recently presented $7500 of the proceeds to the Waikiki Aquarium to benefit its Hawaiian Monk Seal Program.



From L to R: FOWA Board Members Faye Kurren and Marcus Boland; Waikiki Aquarium Director Dr. Andrew Rossiter; Rogue Beer Ambassador Byron Apo; and Paradise Beverages President Paul Ah Cook, a Rogue Beer Distributer.

TRAINING & "ENFISHMENT"

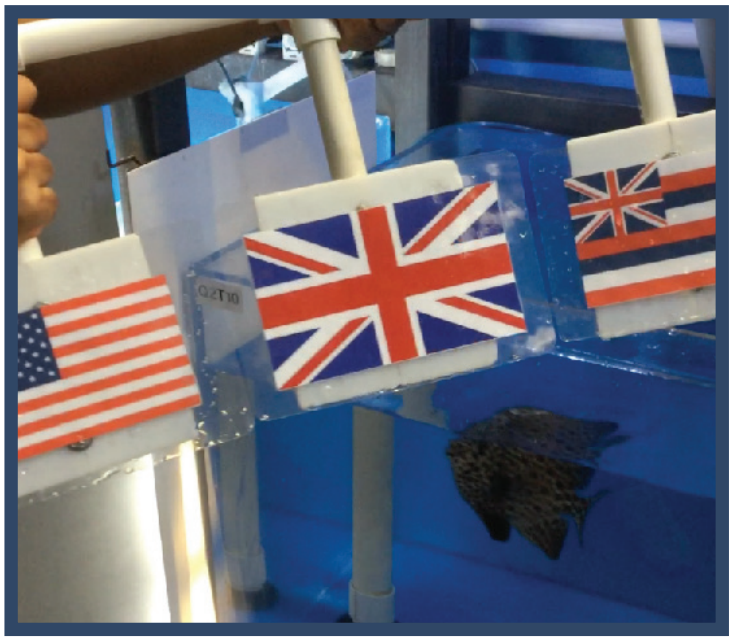
While terrestrial enrichment is well documented, relatively little attention has been paid to the marine environment. At the Waikiki Aquarium, training and enrichment were once considered supplementary activities only, but are now increasingly and are considered an integral part of basic husbandry. While once considered supplementary, enrichment is now considered an integral part of basic husbandry. This trend can be seen throughout the Aquarium as enrichment and training techniques are used in dietary management, behavior modification and management of medical procedures. In addition, enrichment can be used to enhance visitor experience and change misconceptions regarding the cognitive ability of certain animals. Training and enrichment are currently being used with the aquarium's Hawaiian monk seals, the octopus, fish and turtles.

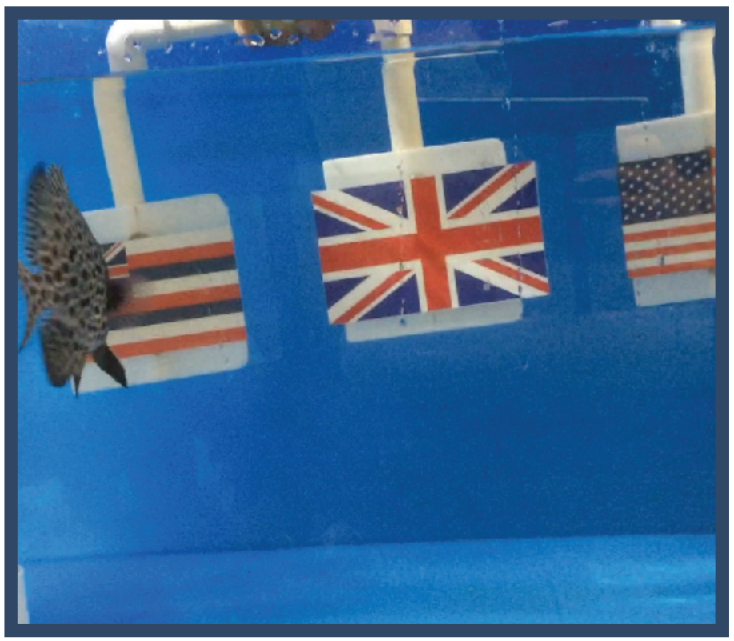
The Spotted Knifejaw (*Oplegnathus punctatus*) is one of the fishes currently being trained at the Aquarium. This relatively uncommon reef fish has an incredible cognitive ability, and get their common name from their beak-like jaw, which they use to consume hard items, such as sea urchins. While 'growing out' in Quarantine, the inquisitive young fish would regularly scratch the acrylic with its beak and would react aggressively to any stimulus. Biologists at the Aquarium decided that this intelligent animal needed more stimulation as this would decrease aggression.

The Knifejaw, named 'Zulu', was trained to station on a specific part of the Hawaiian state flag. A few days later, a second flag was added. The fish had a little difficulty distinguishing between the two flags initially, but after two days, was able to differentiate between the Hawaiian state flag and the American flag with a100 % accuracy. Biologists added a new flag each day, eventually reaching a total of twelve different flags. The orientation and position of the flags where changed for variation and the Knifejaw was able to target with a 100% accuracy on each occasion.

Training with this animal was initiated with the intention of decreasing aggression and providing stimulation. However, the Knifejaw learned so quickly that Biologists strived to find new ways to challenge 'Zulu'. During the training, which took three weeks and included twelve flags, the animal only appeared confused with the introduction of the second flag and when the color of the Hawaiian state flag was altered. In both instances, 'Zulu', learned very quickly. As other stimuli were introduced, the animal appeared to be 'thinking' before choosing the appropriate target. The target has since been used to coax the fish into a bucket for relocation and to swim through a hoop. While fish that are able to target are not uncommon, this animal is impressive in that it takes an average of 30 seconds to learn each time a new stimulus is introduced. Training and enrichment with this animal are ongoing.

If you would like to see some of the training and its remarkable cognitive abilities, first hand, visit: http://youtu.be/XrnnPo4mfgw .







VOLUNTEER

The Waikīkī Aquarium aims to "inspire and promote understanding, appreciation and conservation of Pacific marine life." More than 300 wonderful volunteers help to make this mission a reality. These special people, diverse in age, background and experience, are eager to learn more about Hawaii's marine environment and how they can share this knowledge with others. Whether you are a professional or a homemaker, retired or work full-time, a teacher or a student, the Aquarium needs your skills and talents.

Currently Seeking:

Aquarium Educators
Gift Shop Volunteers
Expert Gardeners

Starting registration for September Docent training.

To Learn more about our programs and to apply online, visit WaikikiAquarium.org/volunteer

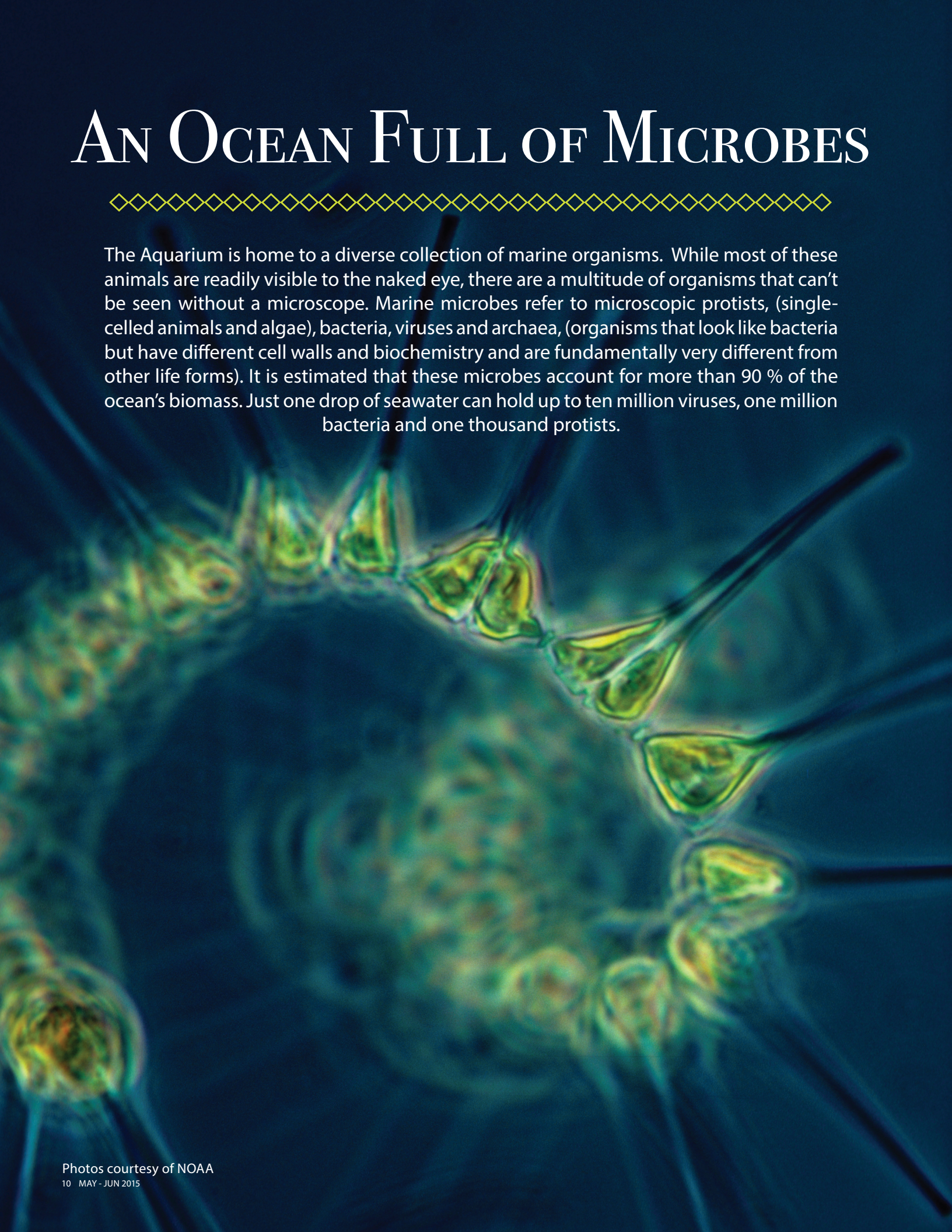


Did you know...

The next Waikiki Aquarium Algae Clean up is on June 6th? Send your name and email to volunteer@waikikiaquarium.org to be added to the registration list and to recieve invites to future clean-ups.

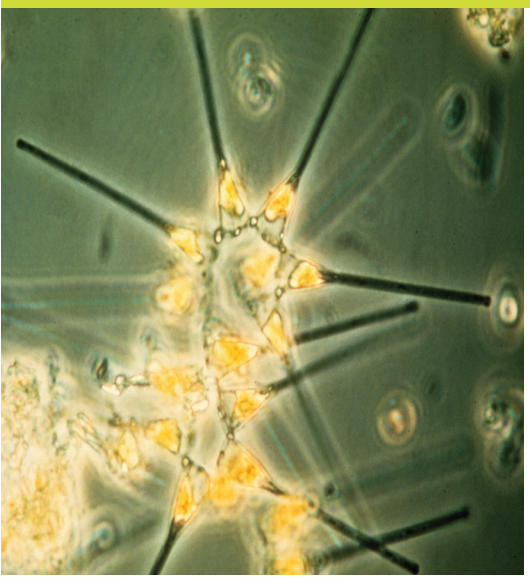
An Ocean Full of Microbes

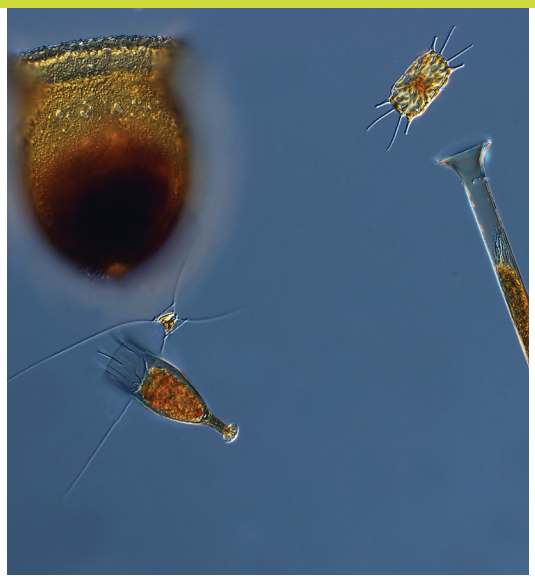
The Aquarium is home to a diverse collection of marine organisms. While most of these animals are readily visible to the naked eye, there are a multitude of organisms that can't be seen without a microscope. Marine microbes refer to microscopic protists, (single-celled animals and algae), bacteria, viruses and archaea, (organisms that look like bacteria but have different cell walls and biochemistry and are fundamentally very different from other life forms). It is estimated that these microbes account for more than 90 % of the ocean's biomass. Just one drop of seawater can hold up to ten million viruses, one million bacteria and one thousand protists.

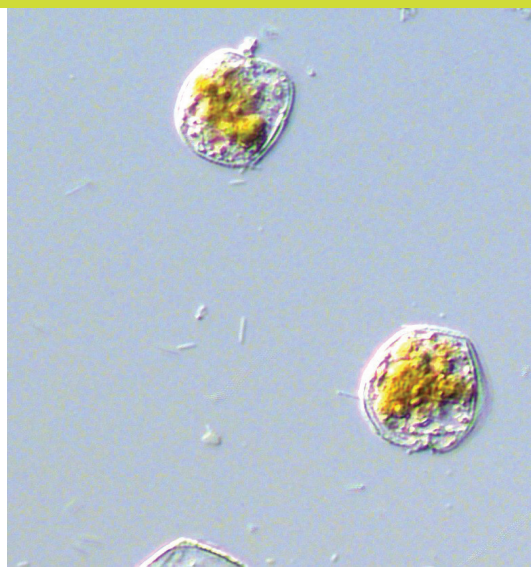


Photos courtesy of NOAA

Why Microbes Matter



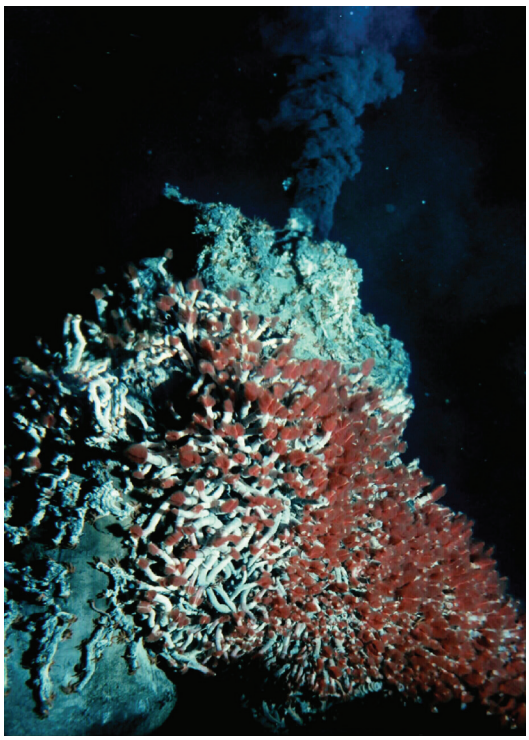


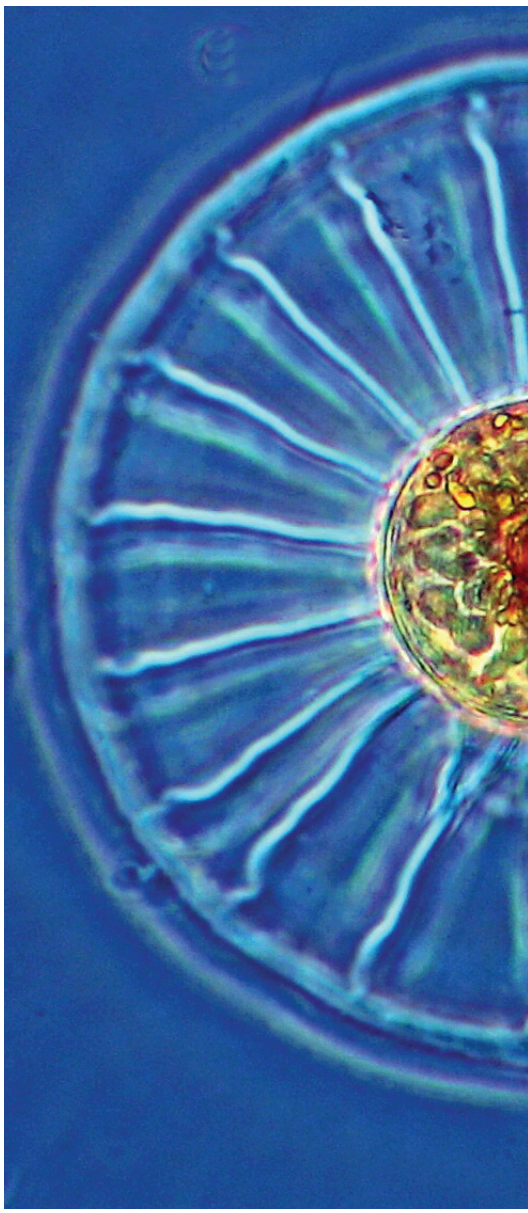


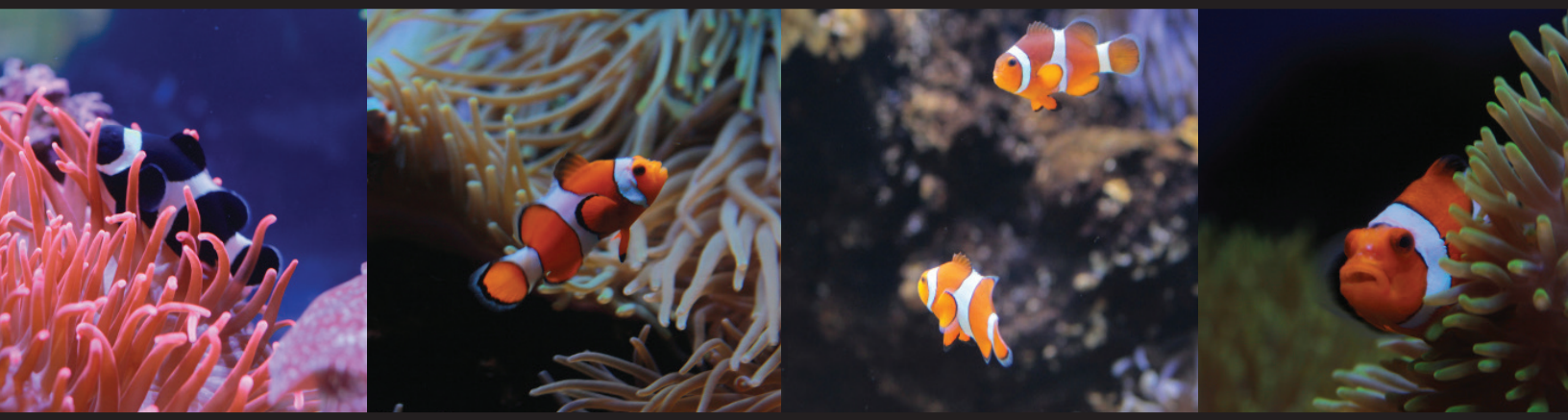
Some marine microbes can be thought of as single-celled plants. These include cyanobacteria, and single-celled algae such as diatoms and dinoflagellates. These plant-like microorganisms are collectively referred to as phytoplankton and are responsible for producing 50% of the Earth's oxygen. As primary producers that use sunlight to convert carbon dioxide into sugars, phytoplankton are the base of the food chain for much of the ocean. Phytoplankton are very diverse and many have beautiful, intricately patterned shells. Some dinoflagellates can even glow in the dark! Have you ever waved your hand through the ocean at night and seen a blue glow? That glow was caused by dinoflagellates.

In addition to microbes that make their own food using energy from sunlight, there are microbes that use energy from chemicals such as hydrogen sulfide, to make sugars. These types of microbes are common in environments like deep sea hydrothermal vents, and support animal life in these remote ocean environments.

Microbes that cannot make their own food using sunlight or chemical energy, feed upon existing organic matter. These microbes serve as a food source for larger organisms and recycle important nutrients, making them indispensable to the food chain and overall health of the ocean. Next time you visit the Waikiki Aquarium or venture out into the ocean, be sure to think about the almost invisible microbes that make it all possible.







Happy Healthy ANIMALS

Many visitors have commented upon the article in the last issue describing the medical procedure on the Spotted Knifejaw, (*Oplegnathus punctatus*), that involved colleagues from the John Burns School of Medicine, and have asked, "Is this level of care typical?" In short, yes. The health and wellbeing of the animals housed at the Aquarium is of paramount importance and a rigorous health regime is in place. As of six years ago, the Aquarium has a dedicated Fish Disease and Quarantine Specialist position on staff, whose primary duties are to attend to newly received animals, and to identify and treat any illnesses or injuries the animals housed here, might have. The Disease Specialist also undertakes necropsies, identifies health issues when needed, and liaises with other animal health professionals if further expertise is deemed necessary.

The Aquarium maintains close ties with the University's veterinarians, especially with Dr Michael Wong. Dr. Wong is the primary responder for any issues related to our Hawaiian monk seals, sharks, and turtles and is also our primary contact when assessing other animal health questions that require the proficiency of an experienced veterinarian. Doctor Wong along with the current Quarantine & Disease Specialist and the Curator, form the Aquarium's Animal Health Team. The team conducts weekly health checks on all animals at the Aquarium, reviews husbandry protocols and attends to any other health related concerns. The combined practical and theoretical knowledge of these three individuals together with the expertise of the Aquarium's Live Exhibit's biology staff ensure that the animals at the Aquarium receive exceptional medical care.

One such recent case involved the Blacktip Reef Shark, (*Carcharhinus melanopterus*), removed from exhibit a few months ago. The animal was swimming irregularly and struggling to maintain buoyancy. The animal was removed from exhibit, steroids and vitamins administered and fed via a tube as he had stopped feeding. Approximately two weeks later, the animal had started feeding again. The combined knowledge and skills of the team helped restore the above mentioned animal to good health.

Our small yet very capable staff at the Waikiki Aquarium are, biologists, life support system personnel, nutritionists, breeders, and maintenance technicians all wrapped into one. Each of them have their specialties but all of them are bound by the same permits, protocols, and regulations that the larger, more well-staffed organizations are. The Waikiki Aquarium abides by city and county regulations, state laws, animal welfare guidelines, federal mandates and protocols and are subject to yearly and bi-yearly inspections by several organizations such as IACUC (Institutional Animal Care and Use Committee) and Aphis (The Animal and Plant Health Inspection Service).

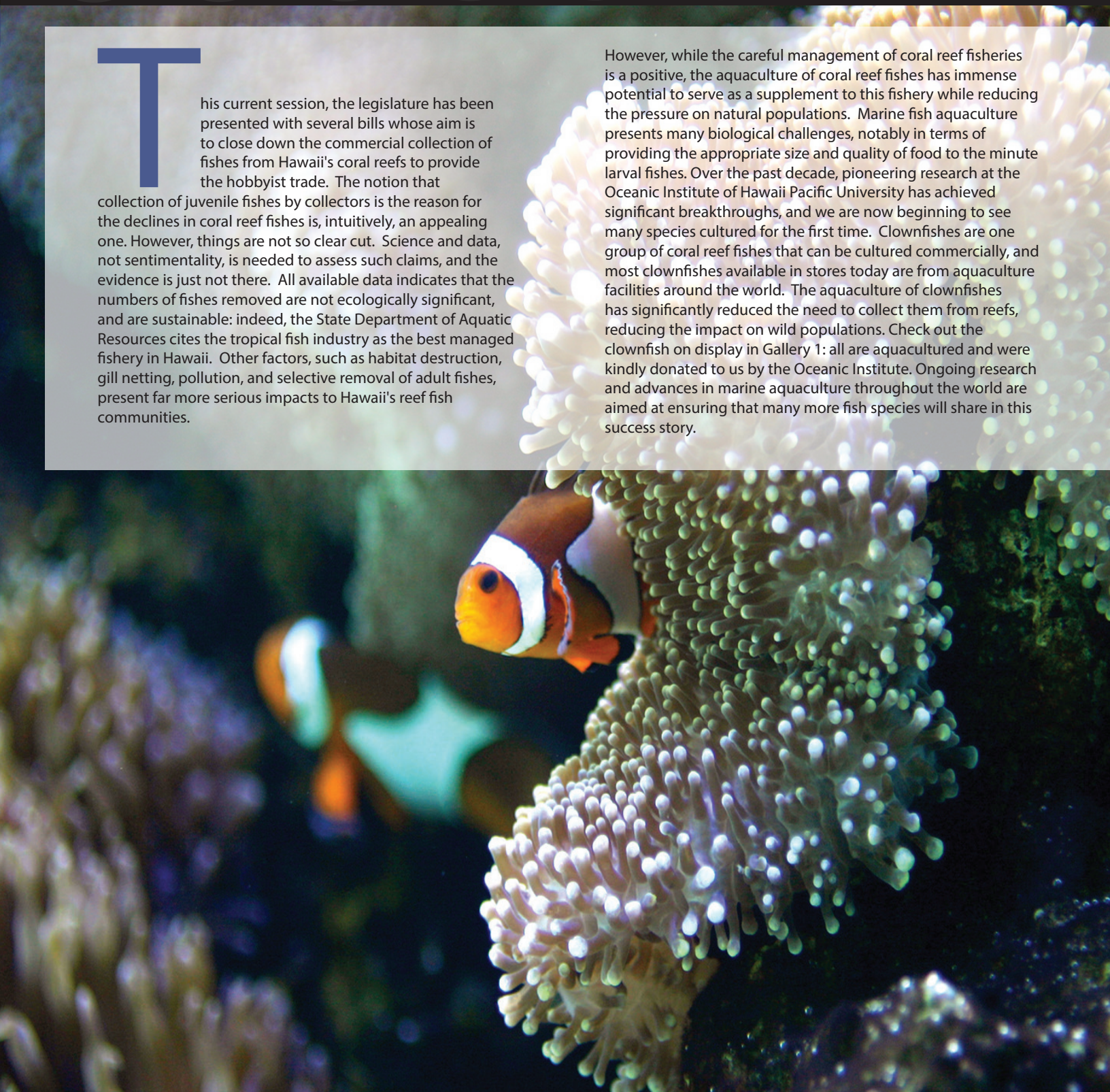
The excellent health care and general husbandry standards are a reflection of the overall expertise that the Aquarium staff has in maintaining our exhibits in optimal condition and in promptly and effectively addressing the occasional health issues that inevitably arise in any living system. And the Knifejaw? Feeding ravenously, no sign of recurrence of the buoyancy problems that plagued him, and evidence of a remarkable intelligence!

"The health and wellbeing of the animals housed at the Aquarium is of paramount importance"

Aquaculture
As a Conservation Tool

This current session, the legislature has been presented with several bills whose aim is to close down the commercial collection of fishes from Hawaii's coral reefs to provide the hobbyist trade. The notion that collection of juvenile fishes by collectors is the reason for the declines in coral reef fishes is, intuitively, an appealing one. However, things are not so clear cut. Science and data, not sentimentality, is needed to assess such claims, and the evidence is just not there. All available data indicates that the numbers of fishes removed are not ecologically significant, and are sustainable: indeed, the State Department of Aquatic Resources cites the tropical fish industry as the best managed fishery in Hawaii. Other factors, such as habitat destruction, gill netting, pollution, and selective removal of adult fishes, present far more serious impacts to Hawaii's reef fish communities.

However, while the careful management of coral reef fisheries is a positive, the aquaculture of coral reef fishes has immense potential to serve as a supplement to this fishery while reducing the pressure on natural populations. Marine fish aquaculture presents many biological challenges, notably in terms of providing the appropriate size and quality of food to the minute larval fishes. Over the past decade, pioneering research at the Oceanic Institute of Hawaii Pacific University has achieved significant breakthroughs, and we are now beginning to see many species cultured for the first time. Clownfishes are one group of coral reef fishes that can be cultured commercially, and most clownfishes available in stores today are from aquaculture facilities around the world. The aquaculture of clownfishes has significantly reduced the need to collect them from reefs, reducing the impact on wild populations. Check out the clownfish on display in Gallery 1: all are aquacultured and were kindly donated to us by the Oceanic Institute. Ongoing research and advances in marine aquaculture throughout the world are aimed at ensuring that many more fish species will share in this success story.



NEW & RENEWING FOWA MEMBERS

Albie Miles & Christine Ahn
Kash & Mina Akamu
Shannon & Blaine Alexander
Jon & Janelle Allen
Kandee K. Almond
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October 2014 to April 2015

The beautiful exhibits at the Waikīkī Aquarium and the valuable research and conservation efforts that go on behind the scenes are the result of the work of many. Mahalo to all those who support us through their generous donations.

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Join us on Wednesday, May 20, 2015 at the Waikiki Aquarium

8-8:45am Tour of Aquarium with Dr. Andrew Rossiter

9-10am. Continental Breakfast and presentation by Lani Starkey, University of Hawaii Foundation

RSVP by Friday, May 15
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Grants & Gratitude

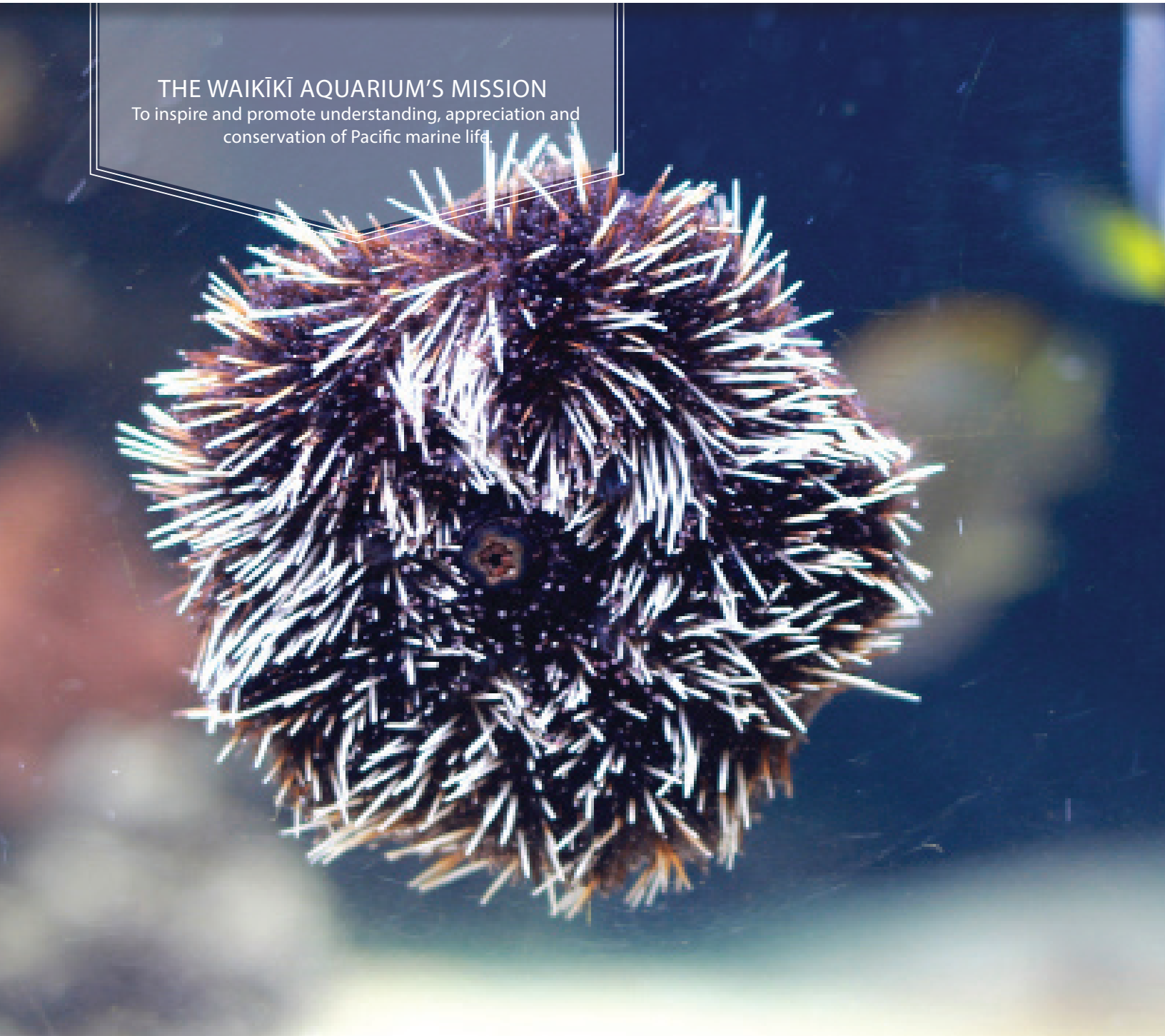
Over the past several months the Aquarium has received several grants and donations in recognition of its research, education and conservation activities. Foremost among these has been a $300,000 award from Matson, as part of their restitution for the molasses spill in Honolulu Harbor. Matson chose the Aquarium as a recipient based upon our long term and ongoing commitment to marine conservation in Hawaii, notably our coral propagation activities and alien algae cleanup, run in collaboration with UH Department of Botany. Details of the next clean up, to which all are invited to attend and which is the longest running alien algae removal project in the entire state, are given elsewhere in this issue.

The Aquarium was also awarded a $110,000 grant by NOAA for its part of a collaborative project aimed at improving public education and communication about ocean carbon networks and climate change. Our collaborators in this project are the Exploratorium in San Francisco and the Pacific Science Center in Seattle, and will begin in earnest in early April. This type of project, which addresses major ocean themes, in addition to education- and conservation-related grants, will be increasingly sought as the Aquarium seeks to redefine its role into an educational institution about marine issues and science, ongoing research, and conservation possibilities. To this end, a five-person Aquarium grant writing team has been assembled, and the amount of grant applications submitted, and hopefully, awarded, will increase greatly over the coming years.

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THE WAIKĪKĪ AQUARIUM'S MISSION

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