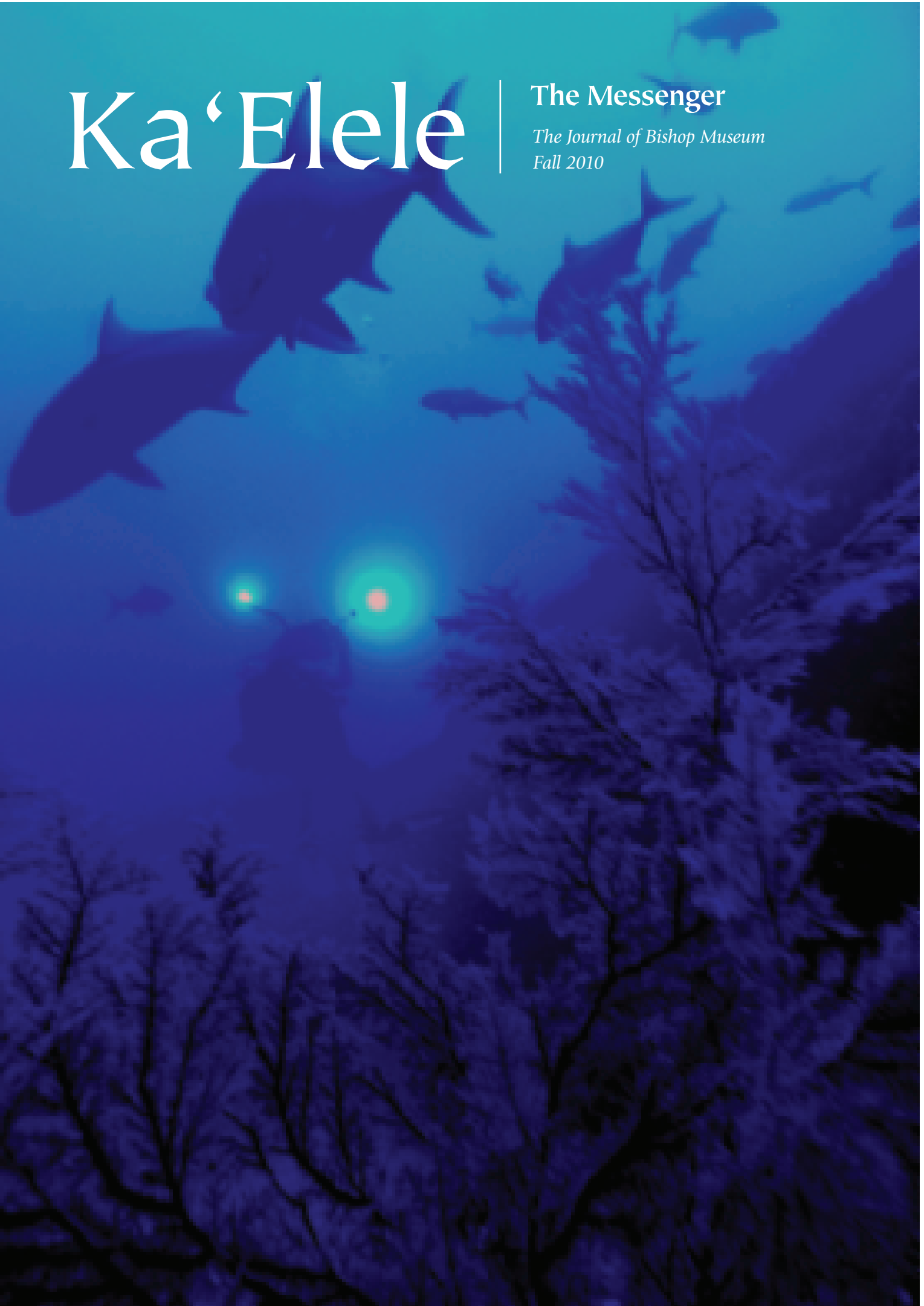


Ka‘Elele

The Messenger

The Journal of Bishop Museum
Fall 2010



the museum

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upcoming events

Upcoming Events



23rd Annual Treat Street
Sunday, October 31; 5:30–8 p.m.
Bishop Museum, Great Lawn
Admission is free

Treat the family to an unforgettable Halloween experience at Bishop Museum for the 23rd Annual Treat Street event. Festivities begin Sunday, October 31st from 5:30 to 8:00 p.m. on the Great Lawn. Trick-or-treating, games, activities, and costume contests for all ages are part of the festivities. Additional parking available at Kapālama School. Admission is free.

- | | | | |
|---------------|---|---------------|---|
| Oct. 15, 2010 | The Sky Tonight, 8 p.m. (J. Watumull Planetarium)
<i>Reservations required (808) 848-4168</i> | Dec. 11, 2010 | Lecture: Hula and the Natural World with Dr. Samuel M. 'Ohukani'ōhi'a Gon III, 1 to 2:30 p.m. (Atherton Hālau) |
| Oct. 31, 2010 | 23rd Annual Treat Street, 5:30 to 8 p.m. (Great Lawn) | Dec. 17, 2010 | The Sky Tonight, 9 p.m. (J. Watumull Planetarium)
<i>Reservations required (808) 848-4168</i> |
| Nov 5, 2010 | The Sky Tonight, 9 p.m. (J. Watumull Planetarium)
<i>Reservations required (808) 848-4168</i> | Dec. 19, 2010 | Princess Bernice Pauahi Bishop's Birthday—
FREE Museum admission all day (Bishop Museum) |
| Nov. 6, 2010 | Arbor Day at the Garden, 8:30 a.m. to noon.
(Amy Greenwell Garden) (808) 323-3318 | Dec. 25, 2010 | Bishop Museum closed for Christmas Day |
| Nov. 13, 2010 | Free Garden Tour, 10 to 11:30 a.m. (Amy Greenwell Garden) <i>Reservations required (808) 323-3318</i> | Jan. 9, 2011 | Free Garden Tour, 10 to 11:30 a.m. (Amy Greenwell Garden) <i>Reservations required (808) 323-3318</i> |
| Nov. 14, 2010 | Family Sunday: <i>Creatures of the Abyss</i> , 9 a.m. to 5 p.m. (Bishop Museum) | Jan. 14, 2011 | Research Seminar Series: "Marine Bioinvasions of Hawai'i" and "Introduced Marine Species in Pearl Harbor: What Has Happened in 12 Years?" Lu Eldredge and Steve Coles, Research Zoologists, 4 to 5 p.m. (Bishop Museum) |
| Nov. 19, 2010 | The Sky Tonight, 8 p.m. (J. Watumull Planetarium)
<i>Reservations required (808) 848-4168</i> | | |
| Dec. 3, 2010 | The Sky Tonight, 8 p.m. (J. Watumull Planetarium)
<i>Reservations required (808) 848-4168</i> | | |
| Dec. 4, 2010 | MAMo Arts Market & Members' Mahalo Day at Shop Pacifica, 9 a.m. to 6 p.m. (Shop Pacifica) | | |
| Dec. 11, 2010 | Free Garden Tour, 10 to 11:30 a.m. (Amy Greenwell Garden) <i>Reservations required (808) 323-3318</i> | | |

Please visit our online calendar, available at www.bishopmuseum.org/calendar, for an up-to-date listing of events at Bishop Museum and Amy Greenwell Garden.

Cover: The deep reefs of the Papahānaumokuākea Marine National Monument harbor a great diversity and abundance of marine life. Photograph by Raymond Boland, NOAA.

from the president

Dear Friends of Bishop Museum:



Timothy E. Johns

2010 has been a year of tremendous change for Bishop Museum, and we are confident that the momentum we've gained through hosting inspirational exhibits, improving our main campus, fostering new partnerships and strengthening established ones will continue on well into 2011. This October Bishop Museum proudly hosted the Association of Science-Technology Centers (ASTC) 2010 Annual Conference. ASTC is an organization of over 600 science centers from around the world, and the Conference brought 2,000 science center professionals to Honolulu to explore new and exciting ways to help science centers better serve their communities. In the world of science centers, Bishop Museum is unique in that we don't just teach science, or develop science based exhibitry, we also employ scientists whose work and studies are an on-going and essential part of the Museum's daily operations. You can read more about ASTC and the Museum's role in hosting the Conference on page 16.

One of the scientists Bishop Museum is proud to call its own is Ichthyologist Dr. Richard Pyle. Dr. Pyle's work, studying the marine life living in the deep ocean reefs off the Northwestern Hawaiian Islands, is essential to broadening our understanding of the condition of marine environments. His article on page 8 will take you on an exciting voyage to Papahānaumokuākea Marine National Monument, where you will learn more about the specialized equipment needed for diving to great depths, discover new fish species, and encounter dozens of Galapagos sharks.

Another Bishop Museum scientist whose research is vital to the Museum's mission is Dr. Jennifer Kahn. Jenny's recent studies of remote Miloli'i valley on the island of Kaua'i, where Hawaiian Hall's *hale pili* originated, will help us to understand how the

hale may have been used and how people lived and subsisted in the valley over 100 years ago. Her article on page 6 describes the discoveries she and her crew made in the valley.

After reading about the interesting work Archeologist Jennifer Kahn is doing on Kaua'i, you can get to know a bit more about her as she is this issue's highlighted staff member. When Jenny isn't surveying archeological sites in remote island valleys, she can be found hard at work contributing to the restoration and exhibit plans for Polynesian Hall.

Have you ever wondered about the plants that are used to create beautiful *lauhala* and *makaloa* woven items? If so, then the Amy Greenwell Garden article on page 12 will certainly answer your questions.

We are pleased to share two special exhibits with you this fall. *Creatures of the Abyss* is an exciting look into the mysterious world of the deep-ocean and offers experiences with a life-size giant squid and much more. *Fighting for Democracy: Who is the "We" in "We the People"?* comes to us from the Japanese American National Museum and explores the stories of seven individuals and their experiences during World War II. Both exhibits are on display the Castle Memorial Building through January. In addition, we've recently refreshed our picture gallery with exquisite botanical prints paired with actual plant specimens from the Museum's botany collection.

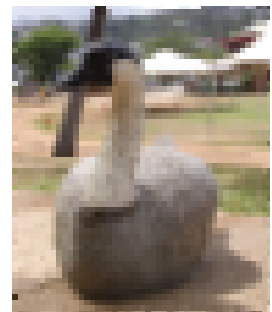
In closing, we'd like to thank outgoing board members Haunani Apoliona, Russell Okata, Dr. Lawrence Tseu, and Dr. Isabella Abbott who graciously served on Bishop Museum's board of directors for the past several years. They were instrumental in leading the Museum toward bigger and better achievements, and I am truly grateful for their consistent and generous guidance.

Aloha,

Timothy E. Johns
President & CEO

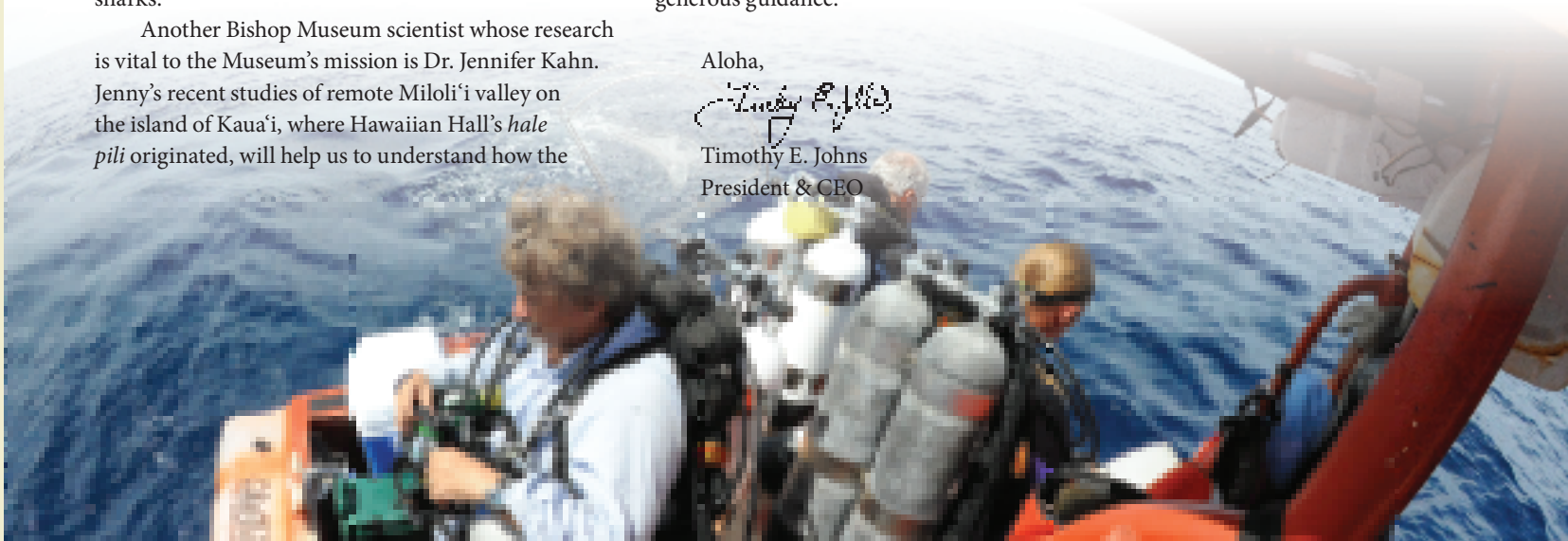


ASTC conference attendees join in demonstrating educational games, page 16.



Above: This larger-than-life replica of a *Nēnē*, along with five other creatures are new members to the Richard T. Mamiya Science Adventure Center, and part of a *keiki* creature naming contest, page 17.

Below: A team of researchers prepares to explore the unknown depths in the Papahānaumokuākea Marine National Monument. Photograph by Kelly Gleason, NOAA, page 8.



on exhibit

Creatures of the Abyss

September 29, 2010 – January 9, 2011 ~ Castle Memorial Building, First Floor

Journey to the most inaccessible ecosystem on Earth—the deep ocean! Descend to the deepest parts of the ocean and discover the extraordinary, mysterious, and downright strange creatures of the deep. Entangle yourself in the tentacles of a life-sized model of a colossal squid—the largest known species of squid, step inside the Bioluminescence Theatre and find out how deep ocean-dwelling creatures produce fantastic colored light shows to see and communicate in complete darkness, take virtual and interactive tours of a deep-sea hydrothermal vent, and much more! *Creatures of the Abyss* is supported in part by Coca-Cola, Diamond Head Self Storage, Horizon Lines, Island Air, and the John Young Foundation.



Fighting for Democracy: Who is the “We” in “We the People”?

October 16, 2010–January 23, 2011 ~ Castle Memorial Building, Second Floor

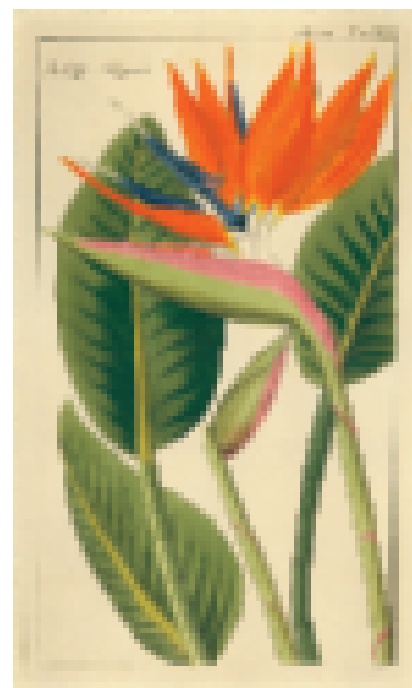
Fighting for Democracy is a national touring exhibit that uses World War II as a case study to begin discussion about how women and minorities have expanded the meaning of “we” in “we, the people.” It looks at the experiences of seven real people and traces their stories throughout the pre-war, war, and post-war periods as examples of the millions of Americans whose lives were affected by the war. *Fighting for Democracy* was developed by the National Center for the Preservation of Democracy, an educational program of the Japanese American National Museum funded through a Congressional appropriation and in partnership with the U.S. Army Center of Military History.

Rare Botanical Illustrations Now on Display

Picture Gallery ~ Hawaiian Hall, 3rd Floor

There are over 26 million items in the Museum’s renowned collection, and a very small percentage of the collection is on display at any given time. Bishop Museum’s collection managers and exhibit staff have put together a new display in the Museum’s Picture Gallery to give visitors a peek at some of the more unique items in our Archives and Natural Science collections. The display features 19th century botanical prints from the Donald H. Angus collection alongside plant specimens from the Museum’s botany collection. The botanical illustrations displayed are evidence of European interest in world exploration and discovery, while the specimens themselves are important records that help scientists keep track of new species coming into the state.

When you visit the Picture Gallery you will notice that there are several new and exquisite 18th and 19th century oil paintings gracing the Gallery walls, *Eruption of Maunaloa November 5, 1880 as seen from Kawaihae* by Charles Furneaux, *Moku‘āweoweo Crater During Eruption of 1896* by D. Howard Hitchcock and a portrait of Queen Emma by William Cogswell are just a few of the new pieces on display. The change out in the Picture Gallery is breathtaking, so be sure to come by soon to admire the new display.



staff spotlight

Jennifer Kahn

Jenny first moved to Hawai‘i in 1993 from California, where she earned a Bachelor’s degree in Anthropology and History from the University of California, Berkeley. After Jenny received her Master’s degree in Archaeology from the University of Calgary and her Ph.D. in Anthropology at U.C. Berkeley, she became a permanent fixture in the Museum’s Anthropology department in 2007—traveling to New Zealand, the Society Islands, New Caledonia, and the Marquesas Islands, researching adze production and various stone working tools in addition to completing archaeology excavations at ancient house and temple site. Jenny was originally introduced to archaeology through fieldwork in the American Southwest, but discovered her true passion for Polynesian cultures through her professor and mentor at U.C. Berkeley, Patrick Kirch. Now a world renowned anthropologist, Kirch has strong ties to the islands and Bishop Museum. Born and raised in Hawai‘i, Dr. Kirch worked in the Museum’s Anthropology department from 1975 to 1984.

The summer of 2009 saw Jenny excavating in leeward Kohala as a part of Dr. Kirch’s Biocomplexity project, examining ancient coastal residences. Part of this work included analysis of shellfish and fish bones found in house sites, measuring changes in their size over time and linking those records to human impacts. She notes that the sizes of various food resources shrunk as locals inhabited and settled coastal Kohala. “If you went to the Northwestern Hawaiian Islands (the Papahānaumokuākea Marine National Monument) today, you’d probably find really big ‘opihi,” Jenny adds with a smile.

In 2009, Jenny also led a team of members from Hawai‘i State Parks and the Nā Pali Coast Ohana, to Miloli‘i, in the Nāpali district of Kaua‘i, where the iconic *hale pili* which now stands in Hawaiian Hall was originally taken in 1900. By investigating artifacts uncovered at the site, Jenny and her team helped to paint a picture of what the *hale pili* was used for, who it was used by, and when it was used. “The project really helped to put the house into context. It became part of a larger story. People have mentioned that when they visit the site or see the house in Hawaiian Hall they have their own personal connections and stories to tell. There is a lot of aloha there, and often times when we have school visits, the one thing the kids remember is the house.”

Currently, Jenny is preparing to guide a new project funded by a grant from the National Science Foundation with Dr. Kirch in French Polynesia. Slated to begin in June

2011, they will collaborate with specialists from Australia, New Zealand, and Hawai‘i, to examine how Polynesian societies were resilient in adapting to environmental changes and constraints. Jenny’s work draws interesting parallels to modern conservation issues facing island ecosystems like Hawai‘i. It is now known that societies in Eastern Polynesia had to find ways to modify their surroundings to better suit changes in their environment, just as today, we understand that preservation and sustainability efforts will be key to preserving balance in our own local ecosystems.

When she is not out in the field leading an excavation, you can find Jenny at the Museum, in the midst of the exciting new renovation of Polynesian Hall. When the Hall is finally finished, it will be home to over 600 new artifacts that have yet to be seen by the general public due to space and preservation concerns. Speaking about the collections, Jenny says, “Getting to know the photos and artifacts that we have in our collections has been really rewarding and has been a great way of staying in touch with the purpose that we need to take care of the cultural heritages of these people, and the importance of caring for people’s histories.”

Jenny makes it a point to recruit locals when she is out in the field working on a project, and fondly recalls a story about when her adoptive Tahitian family visited Bishop Museum. Her family was able to meet Dr. Sinoto, Bishop Museum icon, archaeological legend, and a virtual celebrity in Tahiti. She remembers the joy that the visit and viewing the Museum’s Tahitian artifacts, brought to her family. Jenny beams, “I love when we give tours and people from these cultures get to see the artifacts of their ancestors. It could just be simple things like a poi pounder, but it’s great to see their reactions to something.”

It’s the ability to be the medium that Jenny takes most pride in. “It’s meaningful to be the repository that gives people an idea of the connectedness of Polynesian cultures.”

Whether it’s through her invaluable work in the field to uncover and give meaning to the stories of Polynesia, or in bringing pieces of those cultural histories home in the form of artifacts to the Museum’s collections, Jenny is truly a testament to Bishop Museum’s mission to study, preserve, and tell the stories of the cultures and natural history of Hawai‘i and the Pacific.



cultural collections

Hale Pili

Above: Miloli'i Valley as it looks today.

Right: Historic photo of Miloli'i Valley. The *Hale pili* site is the house on the right.

A century ago, traditional *hale pili*, or grass houses, were rapidly disappearing from the Hawaiian landscape. Many factors contributed to this decline—increasing urbanization, the introduction of foreign concepts of house construction, access to imported building materials, as well as the loss of access to traditional materials. In 1900, William Brigham, then Director of the Bishop Museum, first considered exhibiting a grass house.

In a letter to G. N. Wilcox in March of 1900 he wrote that he feared that, “it will not be many years before there will not be a *hale pili* left on this island group.”

With the help of George Deverill, a photographer and former Kaua'i deputy sheriff, he set out on a quest for a traditional grass house. This quest took Deverill to the remote valley of Miloli'i in the Nā Pali district of Kaua'i, where he procured the frame of a *hale pili*. Portions of the house taken from Miloli'i stand proudly in Hawaiian Hall to this day. Reconstructed at least twice in 109 years, the house remains the last vestige of an authentic Hawaiian house built in a traditional style known to the world. At the time little attention was given to the site from which the house was taken, leaving us unaware as to how the house was used, what life was like for its residents, and when people lived there.”

“The crew was provided with equipment and provisions to the remote site by helicopter, and Keao Nesmith, who has familial descendants from Miloli'i, opened up the valley to the team's work with a pule. The crew then began clearing the *hale pili* site of all its vegetation, in order to complete a detailed architectural map of the site. The plan view of the site shows how three main terraces formed the foundation. Component A was

the lowest terrace and had midden, the technical term for scattered food remains such as fish bone and shell, along its surface. Component B was a well-paved terrace with a stepping-stone walkway leading up to Component C. An historic photo taken by George Deverill in 1900 of the *hale pili* site suggests that the grass house

originally stood on Component C, which has a large rectangular flat bounded by paved areas. The excavations uncovered three postholes, the remains of where house posts were placed in the ground, along the eastern limit of Component C. These postholes were aligned, indicating that the team had found the remains of one of the walls where the original *hale pili* house stood. The diameter of the postholes, approximately 8 inches, correlates well with the size of the original house posts in the Bishop Museum *hale pili*. The excavations indicate that the posts were



placed about a foot apart from each other. The discovery of these postholes, in addition to the lean nature of the Component C deposits and the types of artifacts found, confirmed that the *hale pili* was situated on this terrace and suggest that it served as a sleeping house.

On the lower terrace, Component A, the team encountered dense deposits of shell, fishbone, and charcoal concentrations, suggesting that the residents of the *hale*

pili discarded or swept food remains from the upper terrace off the side onto the lower terrace. The remains of two fire pits which were used for cooking were also uncovered. One



of the most exciting finds was adjacent to these features, where the team recovered portions of a juvenile pig skeleton in a pit under the corner of the platform serving as the house foundation. These bones were not burnt, suggesting that they were placed as an offering, perhaps when the house platform was built by native Hawaiians, to ensure the success of the house and its residents. This type of “consecration” of residences was described by Native Hawaiian scholar David Malo in the nineteenth century.

Radiocarbon dating of wood charcoal found in the fire pits indicated that the house was likely first constructed and used in the early 1800s, while there is a distinct likelihood that earlier sites rest under the house foundation. The radiocarbon chronology correlated well with the artifact types found in the house excavations. Historic artifacts such as window and bottle glass, buttons fashioned from porcelain, bone, and metal, and metal nails were found with low frequency. The team also recovered traditional Hawaiian artifacts, such as fishhooks, scrapers, and items used in food preparation. The mix of traditional and historic items indicated that the house was occupied early in the post-contact period.

The preliminary analyses of the faunal remains (animal bones) highlight that residents of the house had access to rich marine resources available locally. Most of the fish were reef species, suggesting that the Native Hawaiians living there relied heavily on inshore reef fishing and shell collection for their daily subsistence. The recovery of pig bones and ipu (bottle gourd) remains, illustrate that animal and plant husbandry were also

practiced and were likely crucial to the survival of Hawaiians living on the isolated coast in the past.

Bishop museum, Hawai‘i State Parks, and the Nā Pali Coast Ohana continue to investigate the fascinating history of the Hawaiian settlement in Miloli‘i Valley and share the project results with the community. Most recently, in 2010, the Museum sponsored a visit to the *hale pili* site by the Hawai‘i Youth Conservation Corps where the group helped clear new sites on the beach flat and a rock shelter to develop a more complete view of Hawaiian settlement in the valley. Additional excavations at the *hale pili* site, and elsewhere in Miloli‘i Valley, are planned for 2011.

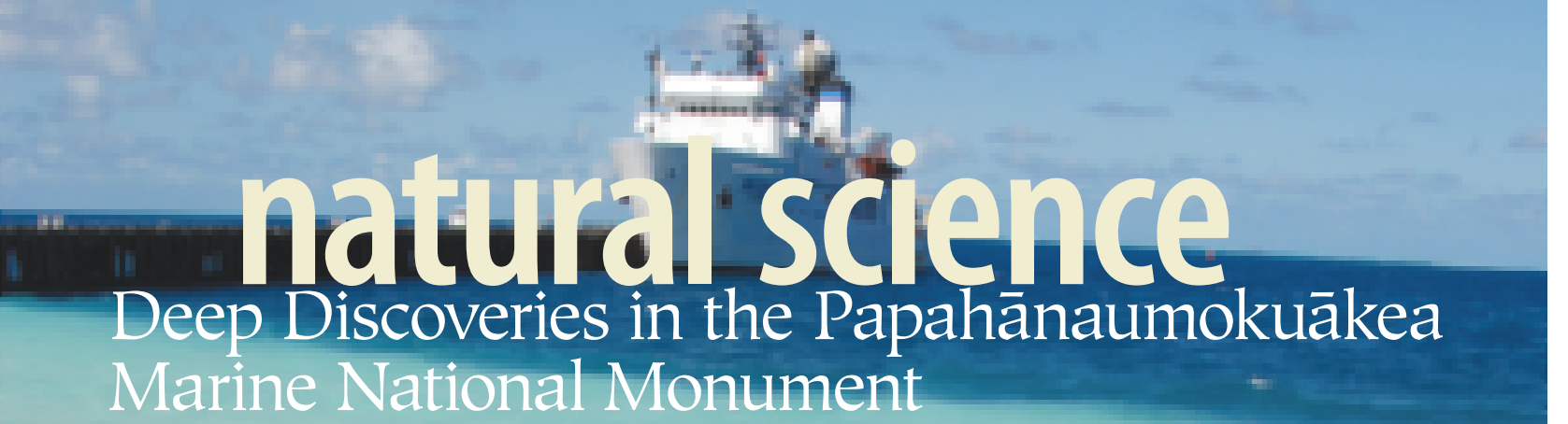
We thank the Hawai‘i Council for the Humanities, the Elsie Wilcox Foundation, and a private donation from Randy and Victoria Wichman which generously funded our research during 2009-2010.

References Cited: Malo, David. Hawaiian Antiquities—Moolelo Hawaii. Bernice P. Bishop Museum Special Publication 2. Honolulu: Bishop Museum.

Left: Jenny Kahn profiling an excavation unit.

Below: Three postholes of the *hale pili* found in our 2009 excavations.





natural science

Deep Discoveries in the Papahānaumokuākea Marine National Monument

By
Ichthyologist,
Richard L.
Pyle, Ph.D.

This page, bottom:
A Green Sea Turtle
(*Chelonia mydas*) on
the beach at Midway
Atoll looks out toward
the NOAA research
vessel *Hi'ialakai* at dock.
Photograph by Richard
L. Pyle.

Opposite page, top:
Richard Pyle tends to
juvenile Bandit Angelfish
(*Apolemichthys arcuatus*)
collected at Pearl and
Hermes Reef, destined
for display at the Waikiki
Aquarium. Photograph
by Raymond Boland,
NOAA.

Opposite page, bottom:
Richard Pyle (left), Greg
McFall (center), and
Corinne Kane (right),
prepare to dive into
the depths at Pearl
and Hermes Reef.
Photograph by Kelly
Gleason, NOAA.

Stretching for 1,200 miles, the Northwestern Hawaiian Islands are considered to be the most remote archipelago on the planet. They also constitute the Papahānaumokuākea Marine National Monument, which enjoys the highest form of marine protection by the U.S. government and, at nearly 140,000 square miles in size, is also the largest marine protected area in the world. Home to thousands of species, the waters surrounding these islands remain largely undisturbed by human encroachment; a fact that is immediately evident to anyone fortunate enough to swim along its pristine reefs. The special nature of this area was recently re-affirmed by the United Nations, which designated the Monument as a Natural World Heritage Site.”

My first visit to these islands was in 1989, as part of a team led by Bishop Museum’s senior Ichthyologist, Dr. John E. Randall. Our mission was to compile a checklist of the fishes of Midway Atoll, which lies near the northwestern tip of the archipelago and was the stage for one of the most pivotal battles of World War II. Our efforts during that and two subsequent visits were largely successful, but with one major caveat: our diving surveys were limited to a maximum depth of 30 meters (100 feet). This limit was imposed by two factors. First, we only had access to conventional scuba gear, which allows safe access to a maximum depth of about 50 meters (165 feet) before problems of “nitrogen narcosis” and decompression sickness (the “bends”) become serious. The second factor restricting our depth is best represented by this excerpt from our published checklist:

“On one calm day we located a small drop-off at 46 m (150 feet) with a depth recorder off the west side of the atoll and were preparing to dive at this site. Galapagos sharks up to an estimated 2 m (6.5 feet) in total length soon congregated around our boat. By the time we had counted more than 20, we prudently decided not to dive in the area.”

During the two decades that followed our first visit to Midway, I spent much of my time developing advanced diving equipment configurations and protocols involving specialized gas mixtures containing helium, which allow safe scientific exploration at depths of up to 150 meters (500 feet). Although I traveled extensively throughout

the tropical Pacific exploring so-called “mesophotic” coral ecosystems (coral-reef habitat at depths of 30–150 meters/100–500 feet), I never had the opportunity to use these techniques in the Northwestern Hawaiian Islands, and thus the mesophotic reefs of this region remained unexplored. That is, until last year, when I was contacted by my long-time friend and diving companion, Dr. Randall Kosaki.

Randall is NOAA’s Deputy Superintendent for Field Operations and Research for the Papahānaumokuākea Marine National Monument, and is a superb ichthyologist and diver. Determined to resolve the mystery of the mesophotic reefs in the Monument, Randall and I established a cooperative agreement between NOAA and Bishop Museum to utilize advanced mixed-gas diving techniques to access these depths, and to complete a fish checklist for each of the islands and reefs within the Monument.

We conducted the first collaborative expedition in 2009, and recently returned from the second exploratory expedition this summer. Both month-long cruises took place aboard the NOAA ship, *Hi'ialakai*, and hosted a series of important research activities—by the NOAA Monument, the University of Hawai‘i, Hawai‘i State Department of Land and Natural Resources, U.S. Fish and Wildlife Service, and Waikiki Aquarium—in addition to our own surveys of the mesophotic reefs.

Conducting deep dives using advanced mixed-gas techniques is a challenge anywhere, but particularly so in such a remote location. Fortunately, the *Hi'ialakai* is well-equipped to support advanced diving (including a full recompression chamber), and is blessed with an outstanding talented,

enthusiastic, and supportive crew. After loading the ship with dozens of large helium and oxygen cylinders, as well as special high-capacity double scuba cylinders and (literally) tons of additional gear, the ship departed O‘ahu and headed past Kauai and Ni‘ihau towards the north-west.

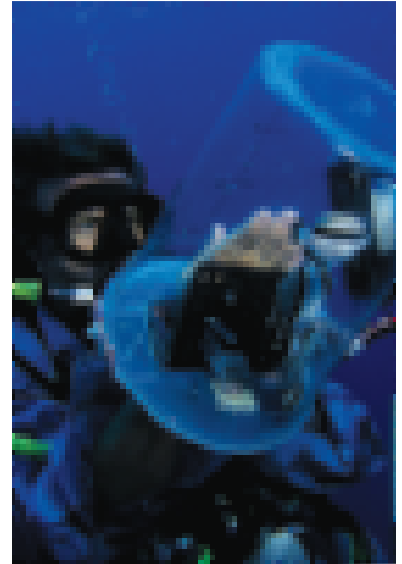
We were able to conduct initial exploratory deep dives at Nihoa, Mokumanamana (Necker), Laysan, French Frigate Shoals, Pearl and Hermes Reef, Midway, and Kure Atoll. Typically, scuba divers wear a single aluminum scuba cylinder containing 80 cubic feet of air, which will allow most divers to remain underwater at shallow depths for upwards of an hour. For our dives, which were usually conducted at depths of 60-70 meters (200-250 feet), we each carried *four* scuba cylinders—including two high-pressure steel cylinders containing as much as 240 cubic feet of “trimix” (a blend of helium, nitrogen and oxygen), as well as two additional side-mounted cylinders containing “nitrox” (oxygen-enriched air) and pure oxygen. Each deep diver also carried two decompression computers and a host of other special gear.

Each dive team consisted of three or four deep divers, as well as two or three support divers, a dive supervisor, and the NOAA boat driver (called a “coxswain”). In most cases, we were able to deploy two such teams per day. In spite of our multiple scuba cylinders, strict safety guidelines limited us to a maximum of about 20 minutes on the bottom for each dive.

To maximize our effectiveness and efficiency during our limited bottom-time, each diver had a very specific task. At least one of the deep divers was dedicated to

safety; keeping an eye on the other team members, and making sure we all remained within the limits of the dive plan. The safety diver usually carried a special electronic device that could send text messages to the dive supervisor in the boat. The other team members focused on collecting specimens, capturing video images, or conducting fish surveys (swimming for a measured distance and counting all the fishes).

When the time on the bottom was completed, the safety diver deployed an inflatable bright yellow buoy attached to a line on a reel. As the buoy rockets upward, the diver spools out line from the reel, so that when it reaches the surface, the support divers and dive supervisor know that the deep team is on the way up. Soon thereafter, the support divers descend down the line, and meet up with the ascending deep divers at a depth of about 30 meters (100 feet). To avoid decompression sickness, the deep divers must ascend slowly, taking an hour or more to reach the surface.





Above: Richard Pyle adjusts his video camera in preparation for a survey of fishes on a deep ledge near Nihoa. Photograph by Greg McFall, NOAA.

Right: Large fishes such as this *Hapu'upu'u* (Hawaiian Grouper, *Hyporthodus quernus*) are abundant in the protected waters of the Papahānaumokuākea Marine National Monument. Photograph by Greg McFall, NOAA.

In most places, this decompression time can be extremely boring—especially when conducted hanging from a line in blue water. In the Northwestern Hawaiian Islands, however, the decompression time is anything but boring. Although our special dive equipment and breathing mixtures allowed us to overcome the limitation of conventional scuba gear we had during our first visits to Midway Atoll, we had no technological solution to the sharks. Indeed, on almost every dive, Galapagos sharks were omnipresent during the decompression. On one particularly memorable dive—at almost the exact same spot of our aborted Midway dive in 1989—I lost count at **over 80** Galapagos sharks surrounding us! Thankfully, it turns out that our “prudence” two decades before was probably not necessary, because although the sharks are certainly curious, we never felt threatened by them at any time. And sharks were not the only visitors to keep us entertained during the decompression. Schools of Ulua (giant trevally, *Caranx ignobilis*), Kawakawa (*Euthynnus affinis*), Ahi (Yellowfin tuna, *Thunnus albacares*), Opelu (Mackerel scad, *Decapterus macarellus*), and the occasional Ono (Wahoo, *Acanthocybium solandri*) would also visit us regularly.

In spite of our short bottom times, the results from our deep diving can only be described as spectacularly successful. We recorded a total of 169 new records of fishes from various islands within the Monument, representing an average increase of 14% in the total known fish fauna for each island. We also collected specimens of an undescribed species of butterflyfish (*Prognathodes* n.sp.). This new butterflyfish, first discovered in the main Hawaiian Islands at depths of about 120 meters (400 feet) or more, was found

as shallow as 45 meters (150 feet) during our dives in the Northwestern Hawaiian Islands. Several other species normally found in excess of 100 meters (330 feet) in the main Hawaiian Islands, were encountered at half this depth during our deep dives. This trend may be due to the fact that the cooler waters of the Northwestern Hawaiian Islands are comparable to temperatures found at greater depths farther south, in the main islands.

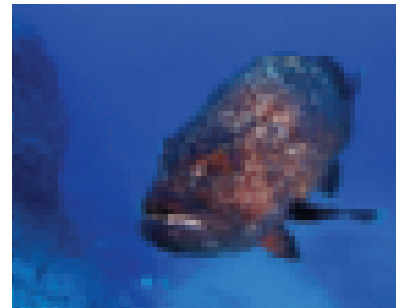
Another remarkable discovery we made during these expeditions was what appears to be deep-water “nursery” grounds, where certain reef areas are dominated by juveniles of several different fish species. Most known fish nurseries are found in shallow areas, such as lagoons and estuaries. As far as we know, these are the first-ever recorded deep-reef nurseries.

Although there are fewer total numbers of species among the Northwestern Hawaiian Islands, the species that do occur there are disproportionately represented by “endemics”—species that are found **only** within the Hawaiian Archipelago, and nowhere else on Earth. Whereas a little

over twenty percent of the total reef and shore fishes in Hawai‘i are endemic, this number increases to 49% for the shallow reefs of Northwestern Hawaiian Islands.

Our surveys of the deep reefs in that area show even higher representation by endemic species—perhaps the highest levels of endemism of any marine environment on the planet.

As with any kind of scientific research, our preliminary investigations have raised more questions than they have answered. This is what makes science—and especially biology—so exciting! With every new discovery, more mysteries reveal themselves, and those new mysteries invite further exploration. We have really only begun to understand the nature of the marine life inhabiting the Papahānaumokuākea Marine National Monument, and so many questions remain unanswered. How do the fish species assemblages change as one moves northward through the archipelago? Do other marine organisms show similar patterns? If fishes normally found at 120 meters (400 feet) venture up as shallow as 45 meters (150 feet), then what will we find at greater depths in the Northwestern Hawaiian Islands? A world of discovery awaits!



the press

Two New BMP Offerings for the Fall!

Malo, Kamakau, Kepelino, ʻŪi. The writings of these authors are the foundation of knowledge for many who have studied Hawaiian culture.

However, their works comprise a small percent of the material published in the 1800s and early 1900s, a most prolific time in history for Hawaiian writers. In his latest book, *Mai Paʻa I Ka Leo*, Hawaiian language scholar Puakea Nogelmeier shows us the wealth of resources that have been eclipsed by what he refers to as the Hawaiian canon.

From 1834 to 1948, Hawaiian writers filled 125,000 pages in nearly 100 different newspapers with their writings. The contents of those papers represent a period when noted historians, expert genealogists, skilled storytellers, and cultural specialists were numerous, and their knowledge was intentionally recorded in print for their contemporaries and for generations of the future.

The other ninety-nine percent of the Hawaiian published material is still largely uncharted, but steps have been taken to make these resources accessible. Archival files are being made into searchable text, translations are being generated, and new reference tools are available on-line. While these new directions are in process, Nogelmeier points out that the most important change is the dismantling of the long-standing mindset that the little fraction that has been available is sufficient.

Caren Keʻala Loebel-Fried has created another stunning children's book with her signature block prints. *Legend of the Gourd* delves into the past to reveal how the people of the Kamāʻōa Plain came to be known as the Children of the Gourd. Readers follow in the footsteps of the chief as he makes his way from Kamāʻōa to Kapuʻa, guided by a tiny green vine sprouting from the burial cave of the chiefess. What he finds at the end of his journey brings him back from the grief of losing his wife and solidifies the future of his people.



For those on the Kamāʻōa Plain, the *ipu* was considered an ancestor. A gourd would be placed by the head of a woman during a difficult birth so the ancestor could help with the delivery. The *ipu* ʻawaʻawa type, especially, was cared for like a child—tended throughout its growing, blossoming, and fruiting periods. When the young fruit appeared, it was nurtured, protected, and watched closely, until it was ready to pick and be dried. To keep others from stealing a prized gourd growing on the vine, it would be given an ancestor's name.

Like a womb, the gourd contained the seeds of life. In this legend, as the gourd vine spread its tendrils throughout the Kamāʻōa Plain, so too did the chiefly lines of the people populate the land in the days of ancient Hawaiʻi. Loebel-Fried beautifully depicts the love story between the two *aliʻi* and the miracle that comes to pass after a tragic death.

Mai Paʻa I Ka Leo will be available in late September at Bishop Museum's Shop Pacifica and other fine booksellers throughout the islands. *Legend of the Gourd* will be available in late October.

Mai Paʻa I Ka Leo: Historical Voice in Hawaiian Primary Materials, Looking Forward and Listening Back, by M. Puakea Nogelmeier. Hardcover, \$26.95; softcover \$16.95. Available September 2010.

Legend of the Gourd, adapted & illustrated by Caren Keʻala Loebel-Fried; Hawaiian translation by Kaliko Beamer-Trapp. Hardcover, \$16.95. Available October 2010.

the garden

Wetland Sedges

Right: This close-up shows details of *pāwehe* that made Ni'ihau mats prized possessions of the *ali'i*.

Below: A *makaloa* mat in progress shows the long culms of the weaving stock used for mats. Most *makaloa* is only a foot or so tall, but for mat weaving, culms three feet long or longer are desirable.

The coastal plants section at Amy Greenwell Garden includes a small wetland display, a bog garden with basalt gravel chips over a pond liner and no visible water on the surface. Planted in the gravel are three wetland sedges with important cultural uses. *'Aka'akai* (*Schoenoplectus tabernaemontani*), *makaloa* (*Cyperus laevigatus*), and *kohekohe* (*Eleocharis calva*) are all resources for weavers.

Sedges are grass-like plants. Papyrus and nutgrass (or more properly, nutsedge), are well known sedges. The three sedges in our garden are found in coastal marshes in Hawai'i. All are indigenous—that is, they are found as natives in other places as well as in Hawai'i. *Makaloa* and *'aka'akai* are found all over the world, even in cooler places like Northern California (*makaloa*) and Hokaido, Japan (*'aka'akai*). *Kohekohe* has a very unusual distribution. It is found only in the Pacific Northwest, and in Hawai'i.

'Aka'akai resembles a giant onion, and the Hawaiian word is used to describe onions as well as for the bulrush. The culms of *'aka'akai* (upright stems of grasses and sedges) can grow to 10 feet or more, and are thick, and

suitable for coarse weaving. Mats woven from *'aka'akai* might be used to underlie a stack of finer mats that serve as a bed or *lauhala* mats to protect them from the rough floor of a *hale*.

Makaloa, another sedge growing in our wetland display, has much smaller, finer culms, and mats woven from *makaloa* were highly prized. Peter Buck, Bishop Museum's Director from 1936 to 1951, studied weaving throughout Polynesia and the Pacific. He called *makaloa* mats "the finest mats in the Pacific." There are mats woven from *lauhala* in Bishop Museum with as many as 16

wefts, or woven strands, per inch, but *makaloa* mats are even finer, and one *makaloa* item, a *malo*, currently in the Museum's collection and sometimes associated with Liloa and the rise of 'Umi, has over 30 wefts per inch.

Makaloa weaving was most famously practiced on Ni'ihau, where conditions were perfect for growing weaving stock with long culms, and the dry, windy climate was good for curing and storing *makaloa*. In Ni'ihau, the



most prized mats, called *moena pāwehe*, were decorated with bands of geometric patterns. These patterns were produced by using the deep red or black sheaths from the base of another sedge found in the Amy Greenwell Garden wetland display, *kohekohe*. The papery sheaths of *kohekohe* were overlaid on the foundation weave of *makaloa* to make the famous patterned mats of Ni'ihau.

Makaloa items were passed by the tribute system to the *ali'i*, and might have been used as the top mats on the bed of a chief or chiefess. Beds were commonly made by stacking a dozen or so *lauhala* mats, with the coarsest on the bottom and the finest mats on top. Commoners might sleep on fine *lauhala* mats, but two very special mats were reserved for only the *ali'i*: mats of *hīnano* (woven from the soft, fragrant bracts of the male inflorescence of a *hala* tree), and *makaloa* mats.

By the end of the 19th century, *makaloa* weaving was no longer practiced. The demand for *makaloa* mats dwindled, the supply of *makaloa* suitable for weaving diminished as grazing animals invaded the wetlands of Ni'ihau and other places, and the number of weavers decreased until *makaloa* weaving became a lost art. In the 1990s, with support from the Native Hawaiian Culture and Arts Program, Garden staff worked with Kona weaver Elizabeth Maluihi Lee on relearning the practice of weaving, and with U.S. Geological Survey scientists on determining optimum conditions for growing *makaloa*. Now thanks to that effort, and to the work of many others throughout the islands, the tradition has been revived. There are a dozen or more weavers working with *makaloa*, and from time to time one can find beautiful hats or fans woven with *makaloa*, using ancient techniques.



legacies

Appreciated Assets? Yes, they do still exist!

Even in today's economy, many people find that they own assets that are appreciated in value. Perhaps you purchased a rental property thirty years ago or bought stock in the early days of what turned out to be a very successful company. While the asset may not be worth as much today as it was a year and a half or two years ago, its current market value still exceeds its cost basis.

If this is true in your case, it may make sense for you to use these assets to make your year-end charitable gifts. When you give appreciated property such as stocks, bonds, mutual fund shares and real estate, you receive a double-tax advantage: the charitable deduction is for the full fair market value of the property and there is no capital gains tax owed on the appreciated portion of the property.

For example, *Ms. B., whose adjusted gross income is \$250,000, contributes stock having a fair market value of \$50,000 and a cost basis (also called "tax basis") of \$10,000. She is subject to a combined federal and state income tax marginal rate of 40% and a combined capital gain tax rate of 21%.*

She can deduct the entire \$50,000 on her tax return for the year in which the gift is made, saving \$20,000 in income taxes ($40\% \times \$50,000$). In addition, Ms. B. is not taxed on any of the capital gain in the stock, as she would have been had she sold the stock.

The net cost of giving the stock compared to selling it and retaining the proceeds is:

SELL STOCK	
Proceeds	\$50,000
Tax on gain	\$8,400
After-tax proceeds	\$41,600
GIVE STOCK	
Income tax savings	\$20,000
NET COST OF \$50,000 GIFT	
\$41,600 – \$20,000	\$21,600

You may hold appreciated stock that you feel will go up even more in value and that you want to retain. In that case, use the stock to make the gift and then use the cash you would have donated to replace the shares of the desired stock. At the end of the day, you have the same investment but with a stepped-up cost basis. If and when you choose to sell the stock down the road, your taxable gain will be lower than it otherwise would have been, saving you money on any capital gains tax that is owed. This particularly makes sense in light of the real possibility that the capital gains tax rate will increase in the year 2011.

Bishop Museum also accepts gifts of real estate. The same tax advantages to making gifts with appreciated stock apply to gifts of appreciated real estate. In some cases, your benefits will be even greater as capital gain attributable to depreciation is subject to a higher capital gains tax rate of 25%.

RECEIVING PAYMENTS FOR LIFE

While many gifts of appreciated property are made outright to the Museum, you can choose to make a gift and retain income from the donated asset. Such a gift might actually increase your cashflow and help provide lifetime security. There are two options available through the Bishop Museum: 1) the charitable gift annuity, and 2) the charitable remainder trust. In each case, you make a charitable gift and receive payments (fixed or variable) for your lifetime. At the end, whatever remains of your contribution is used for the purpose you designate. In addition to the payments you receive, you would also be entitled to an income tax deduction that would reduce federal and state income taxes.

One last note: If you hold property that has depreciated in value, it is always better to sell the property and give the proceeds to the Museum. In that way, you will be able to claim the capital loss on your tax return and use it to offset other income.

For more information on making gifts of appreciated property, please email plannedgiving@bishopmuseum.org or call (808) 848-4161. It would be our pleasure to assist you in making the gift that is right for you.

archives

Bishop Museum Archives holds a rich collection of diverse historic materials from Hawai'i and the Pacific. Photographs, manuscripts, audio recordings, films and videos, artwork, and maps are all available during the Archives' public hours. No appointments are necessary during these times, and everyone is welcome. The archivists will help you to use the materials, whether you're engaged in serious research or you'd just enjoy seeing the collections. Copies of most of the Archives' treasures can be ordered in different formats. Bishop Museum Archives is located on the 2nd floor of Pāki Hall. Public Hours: Wednesday–Friday: 12 noon to 4 p.m.; Saturday: 9 a.m. to 12 noon (closed on long weekends).



By the 1930s, Honolulu was a prime destination spot for celebrities. Well-known film stars like Shirley Temple, Charlie Chaplin, Paulette Goddard, and Groucho Marx lounged on Waikiki Beach. This photo taken by Tai Sing Loo catches

baseball legend Babe Ruth batting balls on the sand fronting the Outrigger Canoe Club with the Moana Hotel visible in the background. Curley Cornwell, far left, and Gilbert Paoa (in black trunks) are among this crowd of appreciative fans.

benefit events

12th Annual Ulupono Awards



Bishop Museum President & CEO Timothy Johns, Trustee Boyd Mossman, and Board Chair Dr. Charman Akina at the 2010 Ulupono Awards.

On September 23rd, Bishop Museum recognized its most generous supporters at the annual Ulupono Awards, sponsored by the Halekūlani Hotel. The Museum is honored to recognize these individuals, foundations, and corporations whose philanthropic support is helping us to be *ulu pono*—to thrive and be successful.

Honorees included:

Philanthropist of the Year

Suzanne M. Avina

Chairman's Award

David C. Hulihe'e
Bert A. Kobayashi

Partners of the Year

Harold K. L. Castle
Foundation
Horizon Lines
John R. Halligan
Charitable Fund

Pacesetter Award

Atherton Family Foundation
Harold K. L. Castle Foundation
Hawai'i Community Foundation –
Moonglow Fund
Office of Hawaiian Affairs

5th Annual Morton's Benefit Dinner

For the fifth consecutive year, Morton's the Steakhouse Honolulu played host to a successful benefit on behalf of Bishop Museum's Picture Gallery and Art Restoration Fund. Roughly one hundred guests enjoyed delicious Morton's fare and classic martinis and viewed rarely-shown items from the Museum's renowned collection of 18th and 19th century art. Special thanks go to Janet Henderson, Michael Horikawa, Jim & Marilyn Pappas, Mary McGrath Philpotts, and Alice Robinson who adopted paintings through the benefit event. These adoptions will underwrite the restoration of the paintings and prepare them for eventual display in the Museum's Picture Gallery on the 3rd floor of Hawaiian Hall.



Board Vice Chair Watters Martin, Jr. and President and CEO Timothy Johns present a gift to Morton's General Manager, Michael Wilson (center).

MAMo Winter Arts Market and Member's Mahalo Day at Shop Pacifica December 4, 2010 from 9 a.m.–5 p.m.



ARTS MARKET

To celebrate the holiday season, Bishop Museum is pleased to announce a unique arts and crafts market featuring the works of Native Hawaiian artists, along with make-and-take crafts, holiday gift selections, and live music inside Shop Pacifica. Featured artists will include: Maile Andrade (one-of-a-kind velvet scarves), Alani Apio (*umeke*), Audrey Wagner (featherwork/jewelry), Umi

Kai (carved necklaces, fishing implements), Leinaala Kai (*lauhala* crafts, ornaments), Kaha Toledo (weaponry, hair picks, necklaces), and more.

MEMBER'S MAHALO

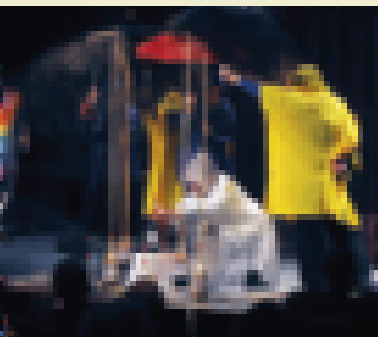
As a special *mahalo* for supporting the Museum throughout the year, Bishop Museum members will receive an additional 10% discount (a total discount of 20% for general members and 25% for premier members) on most Shop Pacifica merchandise, as well as additional discounts on Bishop Museum Press titles (30% for general members and 35% for premier members).

GIFT MEMBERSHIPS

Bishop Museum gift membership packages will also be available, and make wonderful holiday gifts to share your love of the Museum with family and friends. Pick up a special bonus gift with the purchase of any Bishop Museum Gift Membership Package over \$120 (Patron level and above).

Admission to the Arts Market is free, and shoppers will receive a coupon for \$3 off museum admission with any Arts Market or Shop Pacifica purchase. For more information or to order a gift membership package online, visit www.bishopmuseum.org.

Annual Association of Science–Technology Centers Conference



Above: ASTC attendees enjoy a science education demonstration.

Right: Exhibitors at the 2010 ASTC conference.

From October 2–5 2010, Bishop Museum hosted the annual Association of Science–Technology Centers (ASTC) conference. However, it became a permanent science center site in November 2005, with the opening of the Richard T. Mamiya Science Adventure Center. The term was first applied to a museum in October 1962, when Pacific Science Center opened its doors in Seattle, Washington. Ontario Science Center in Toronto and Exploratorium in San Francisco, two other outstanding examples of this new breed of museum, opened in 1969.

The science center concept was a radical one at the time: that a museum could be a place where visitors explore the concepts of science through deeply interactive exhibits and programs, rather than an institution that is primarily based on collections or research. Bishop Museum has been a leading example of a collections and research-based institution for a century. However, it became a permanent science center site in November 2005, with the opening of the Richard T. Mamiya Science Adventure Center. With its Hawaiian focus, this permanent facility is unique in the science center world: it is the first science center completely devoted to the science of a single region.

The science center phenomenon has spread around the world since those early days of the 1960s. ASTC does aim for worldwide impact. And, in fact, the Honolulu conference was the first time that the annual ASTC conference occurred off the North American continent. The ASTC conference brought 1,000 science center professionals to Honolulu, and was a great opportunity to share Bishop Museum with staff from

around the globe and for its staff and volunteers to share ideas and “best practices” with those guests.

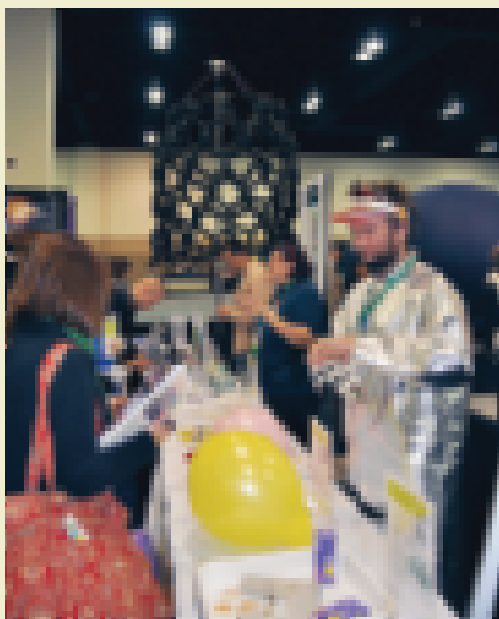
ASTC took place at the Hawai‘i Convention Center from Saturday, October 2 through Tuesday, October 5, 2010. Bishop Museum hosted several sessions, including a welcome *lū‘au* on Saturday,

October 2 and a Museum open house day on Monday, October 4. The theme of the conference was “Ho‘okele: To Navigate,” and used Polynesian navigation as a metaphor for attendees’ own challenges and accomplishments in navigating the museum field. Appropriately, Navigator Nainoa Thompson gave the keynote address.

In addition to providing a wonderful opportunity to meet colleagues from around the world and share ideas, ASTC provided a powerful incentive for the Museum to put its best foot forward. As you walk around

the Museum this fall, you will notice upgrades such as restored sidewalks and freshly painted buildings. There are a host of new and spiffed-up exhibits in the Science Adventure Center. The Science on a Sphere globe in the planetarium lobby has bright new projectors. All of these upgrades can be attributed in good measure to preparing our Museum for the ASTC conference.

A reminder: since Bishop Museum is a member in good standing of the ASTC world, your Bishop Museum membership also gets you in to many of our sister ASTC institutions around the world at no cost! This includes the three museums mentioned in this article (Exploratorium, Pacific Science Center, and Ontario Science Center) and dozens of others in the U.S. and in other lands. Check out this ASTC site for a full list: <http://www.astc.org/members/passlist.htm>.



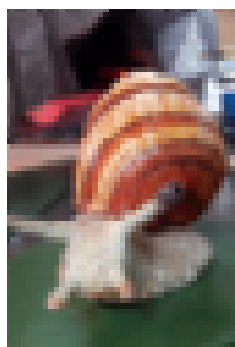
Creatures Contest — Calling All Keiki!

Name the new creatures in the Richard T. Mamiya Science Adventure Center! Bishop Museum has added seven larger-than-life creatures to enhance the Science Adventure Center. These new additions to the Museum's 'ohana are replicas of their real-life counterparts, and will educate and enlighten visitors of all ages. The new creatures, which are currently on display, are an adult and juvenile *Nēnē*, a Rosy Wolfsnail, a native Tree Snail, a Happy Face Spider, a native Hawaiian Monk Seal, and a seven foot-long *Wēkiu* bug. Each of these new creatures needs a name and Bishop Museum is hosting an essay contest to name them.



To enter the contest, choose one creature and submit a brief essay (no more than 200 words) explaining why the name you've chosen is the best. Your essay must include at least one interesting fact about that animal (for example: where it lives, what it eats, whether it's endangered, etc.). If you wish to name more than one creature, please submit a separate essay for each one. Please include your name, address, phone number, and email with your essay.

All *keiki* ages 17 & under are eligible to enter; essays must be received by 5:00 p.m. on Monday, November 15, 2010. Winners will be announced in the January 2011 edition of our *Ka 'Elele* Journal.



Winners will receive a Complimentary Family Day at the Museum (for four), including a Behind-the-Scenes Tour of Bishop Museum's Entomology Department, as well as a pizza party lunch! They will also participate in a photo opportunity with their creature.

The winning names will be inscribed onto permanent plaques and hung in the Richard T. Mamiya Science Adventure Center for all to enjoy!

TO ENTER:

Please include your name, address, phone number, and email on your essay and send it our way!

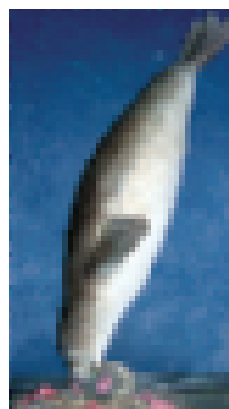
1) Mail to:

Bishop Museum's
Name the Creatures
Contest, 1525 Bernice
St., Honolulu, HI
96817

2) Email to:

creaturescontest@bishopmuseum.org

3) Fax to: (808) 847-4203



New additions to the Museum's 'ohana:

The *Wēkiu* bug is a flightless seed bug that is endemic to Hawai'i. *Wēkiu* are well adapted to cold environments like the summit region of Mauna Kea, where they thrive at altitudes above 12,000 feet (3,650 m) and can survive long periods in temperatures as low as 0 degrees Fahrenheit (-18C).

O'ahu Tree Snails are a subfamily of snails endemic to the Hawaiian Islands. All 40 species of these nocturnal, fungus grazing tree snails are listed as endangered due to predation by introduced pests like rats, and the Rosy Wolfsnail.

The Rosy Wolfsnail is a carnivorous pest species that was introduced intentionally in Hawai'i to try to control another invasive snail species: the giant African land snail. Wolfsnails are fast, voracious hunters, and quickly decimated the native Hawaiian tree snail population.

Happy Face Spiders are endemic to Hawai'i. They are quite small, as adults only reach about 0.2 inches (5 mm) in length. The markings on the abdomen of Happy Face Spiders vary in color, pattern shapes, and size. Some look more like happy faces than others.

The Hawaiian Goose, or *Nēnē*, is endemic to Hawai'i. In 1778, there were approximately 25,000 *Nēnē* throughout the Hawaiian Islands. But due to hunting, and introduced predators like the Small Asian Mongoose and cats, the *Nēnē* population was down to 30 individuals by 1952. Today, the *Nēnē*, although still listed as a threatened species, has seen a large portion of the species return to the wild on the islands of Hawai'i, Maui, Moloka'i, and Kaua'i.

The Hawaiian Monk Seal, also known as *Ilio-holo-i-ka-uaua*, is an endangered species of seal endemic to Hawai'i. Officially designated an endangered species in 1976, the total population of monk seals in the world is around 1,100 individuals, as of 2010. On June 11, 2008, the Hawaiian Monk Seal was declared Hawai'i's official state mammal.



mahalo

To Our Supporters

On behalf of the Board of Directors, staff, and volunteers of Bishop Museum, we wish to recognize and thank those who contributed to Bishop Museum between June 21, 2010 and August 31, 2010. Mahalo for your support of the Museum.

In Support of the Annual Fund

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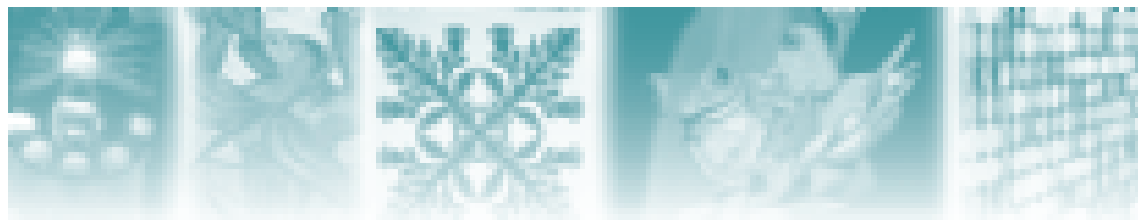
Ka 'Elele is a quarterly publication of:

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If you have questions about this issue of *Ka 'Elele*, please contact the Bishop Museum Development Office at 848-4170.

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A deep diving place indeed.

A topic that requires deep thinking.

Selection #1022 from Mary Kawena Pukui's *'Ōlelo No'eau: Hawaiian Proverbs and Poetical Sayings*, Bishop Museum Press, 1983.