



## Voyages of Rediscovery and Discovery

by Randolph Fillmore

Thousands of years ago, people indigenous to the Pacific Islands traveled in large sea-going canoes, covering huge expanses of ocean. Exploring, trading, and settling newly found islands, including today's Hawaiian Islands, these people carried their culture with them. Through the centuries, many of those cultural traditions, and even the materials and skills necessary to build seagoing canoes and

navigate voyages by the stars, sun, ocean waves, and currents, were nearly lost to Westernization and technical modernization.

Beginning in the 1970s, however, methods for building the canoes and the art and science of “wayfinding,” a traditional navigation system using natural sources rather than modern navigational technologies, were rediscovered when the Polynesian Voyaging Society (PVS) was established. Thanks to the people dedicated to keeping the culture alive, the Mālama Honua Worldwide Voyage, a three-year, worldwide voyage by two sea-going canoes – Hōkūle‘a and Hikianalia – “sister stars of gladness,” became a reality.

### **Rediscovery – Creating global relationships**

“Mālama Honua, the Hawaiian name for this journey, means ‘to care for our Earth,’” said Nainoa Thompson, PVS president. “The purpose for the voyage was to engage communities worldwide on practicing how to live sustainably, creating global relationships, inspiring others to care for our island Earth, and sharing indigenous Polynesian culture.”

Over three years, they covered 100,000 nautical miles, visited 23 countries, and stopped at 150 ports-of-call. Trained in Honolulu by PVS, 245 participating crew members, from all walks of life, rotated out of the ports-of-call and helped to spread important messages about culture, tradition, the importance of integrating cutting-edge marine science with historical knowledge, and environmental sustainability.

Hōkūle‘a, just over 63 feet long, carried 12-13 crew members and covered over 40,000 nautical miles. Hikianalia, 72 feet in length, sailed 60,000 nautical miles with a 14-16 person crew. The canoe used sustainable solar and wind energy and was also equipped with communications technologies for global connectivity. Powered not only by wind but also by photovoltaic-driven electric motors, Hikianalia served as a floating classroom and science center.

### **Discovery – Science at sea**

To strengthen the scientific and marine conservation messages emerging from the Mālama Honua Worldwide Voyage, Thompson reached out to the University of Hawai‘i at Mānoa (UH Mānoa) prior to embarking on the voyage. Dr. Robert H. Richmond, research professor and director of the Kewalo Marine Laboratory, suggested collecting plankton, including fish larvae, along the way. One important task was to genetically analyze the samples to, as Richmond noted, “support the message that the oceans connect rather than separate the islands of the Pacific.”

At different times during the day and night, the crews collected plankton in small nets towed behind Hikianalia and Hōkūle‘a. The samples were analyzed using microscopes and iPhone scopes; images of the plankton were then uploaded to the internet so that scientists around the globe could compare the plankton samples with other samples collected elsewhere. By better understanding the

tiny organisms, which serve as the base of the ocean food web, marine scientists can better understand the movements of fish and other marine resources.

The scientific work also included (among other studies) water analysis of temperature, salinity, pH, oxygen, and chlorophyll, to help understand the health of the oceans; marine debris and plastic pollution research, to study what microorganisms are colonizing plastic fragments; and fish DNA and population research.

Haunani Kane, an apprentice navigator aboard Hōkūle‘a as well as a PhD student in geology and geophysics at UH Mānoa, led several of the on-board science projects. Just as tradition and science were side-by-side on the worldwide voyages, tradition and science came together for Kane, as well. During the voyage, she blogged frequently about the crew’s scientific work and also fielded science-based questions from school children by uplinked video.

“What we tried to do with each of these projects is to break them down to the simplest concepts, talk to people about them in basic terms, and try to relate it to their culture, explaining why it’s important,” said Kane.

### **Rediscovering the art and science of ‘wayfinding’**

Besides messages about the importance of environmental sustainability and marine science, the wa‘a (canoe) crews also carried messages about the value of ancient wisdom, such as traditional navigation using nature’s resources, a method called wayfinding. Traditional wayfinding across expanses of ocean without modern technologies, such as the sextant, compass, or today’s global positioning systems (GPS), relies on signs provided by nature. Hōkūle‘a’s first voyage from Hawai‘i to Tahiti in 1976 was guided by traditional navigator Mau Pialug from Satawal in Micronesia. This voyage marked the first time in 600 years that a voyaging canoe had traveled between the two islands by wayfinding.

Thompson explained that the “star compass” is used as the foundation for navigation. “We have Hawaiian names for the houses of the stars – the places where they come out of the ocean and go back into the ocean,” he said. “If you can identify the stars, and if you have memorized where they come up and go down, you can find your direction. The star compass is a mental construct to help you memorize what you need to know to navigate.”

### **Educational ports-of-call**

In American Samoa, Kelley Anderson Tagarino, an extension agent with the University of Hawai‘i Sea Grant College Program based at the American Samoa Community College (ASCC), organized a “talk story” session with three of the wa‘a crew and a student guest who shared their experiences and offered an overview of the voyage. According to Tagarino, there are no traditional navigators or canoes left in American Samoa, so having Hōkūle‘a visit was important to remind people, especially the youth, of their proud heritage. “While marine science was important, the Hōkūle‘a worldwide

voyage was about much more than this,” said Tagarino. “The message carried by the wa‘a was that the Earth is our island, the only one that supports life, and just as islanders love and care for their own home island, so too must the world community come together as one to support our island Earth. With the challenges of climate change facing the next generation, the Hōkūle‘a voyage hopes to reconnect people to their roots and train a new generation of navigators, to help us navigate through the challenges ahead.”

She also noted that when the students were told about the scientific aspects of the voyages, they began to understand better how the ocean around them drives climate patterns and daily weather. Many of the questions raised by students were focused on traditional navigation and the crew experience, in terms of “where do you sleep, what do you eat?” But they also had questions about marine science, which, according to Tagarino, was directly tied to the voyage as scientists aboard Hikianalia conducted science lessons in real-time. “Having Rex Lokeni, a former ASCC student on the voyage, come talk to us was a pretty big event,” she said. “In the islands, there are no separating impacts between land and sea. They are deeply intertwined and must be understood, and he really inspired many of our students to reconnect with the ocean.”

### **Homecoming...but the voyage continues**

On Saturday, June 17, 2017 Hōkūle‘a and Hikianalia made their historic return to Hawai‘i, coming to port at O‘ahu’s Magic Island. The homecoming was celebrated with a cultural welcoming ceremony followed by an all-day celebration shared by the community.

“This voyage was the realization of decades of hard work and planning on behalf of the Polynesian Voyaging Society crew, our partners, and friends around the world,” said Thompson. “Watching Hōkūle‘a crest the waves of O‘ahu’s south shore as she returned home, much like the canoes of our ancestors, was a once-in-a-lifetime experience. We were overwhelmed with emotion at all we have accomplished during this historic voyage, and we look forward to setting sail on the next chapter together.”

Hōkūle‘a, the Polynesian Voyaging Society’s first traditional voyaging canoe, was launched in 1975. In Hawaiian, Hōkūle‘a means “star of gladness,” the name for Arcturus, the fourth brightest star in the sky. Hikianalia, named after the Hawaiian name for the star



Spica, was launched in 2012. While Hikianalia had her own sail plan for most of the world-wide voyage, she and Hōkūle a began – and ended – the historic voyage side-by-side, not unlike their sister star namesakes.

In 2018, the Mālama Honua Worldwide Voyage continued as Hōkūle a, Hikianalia, and their crew members visited community ports around Hawaii to celebrate homecoming, deliver important messages about sustainability, and help keep rediscovered traditional Polynesian culture and wisdom alive.

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