





Isabella Abbott wrote the book on Pacific algae and inspired a generation of young scientists





**O**n foraging trips with her mother, Isabella Aiona Abbott looked for sprigs

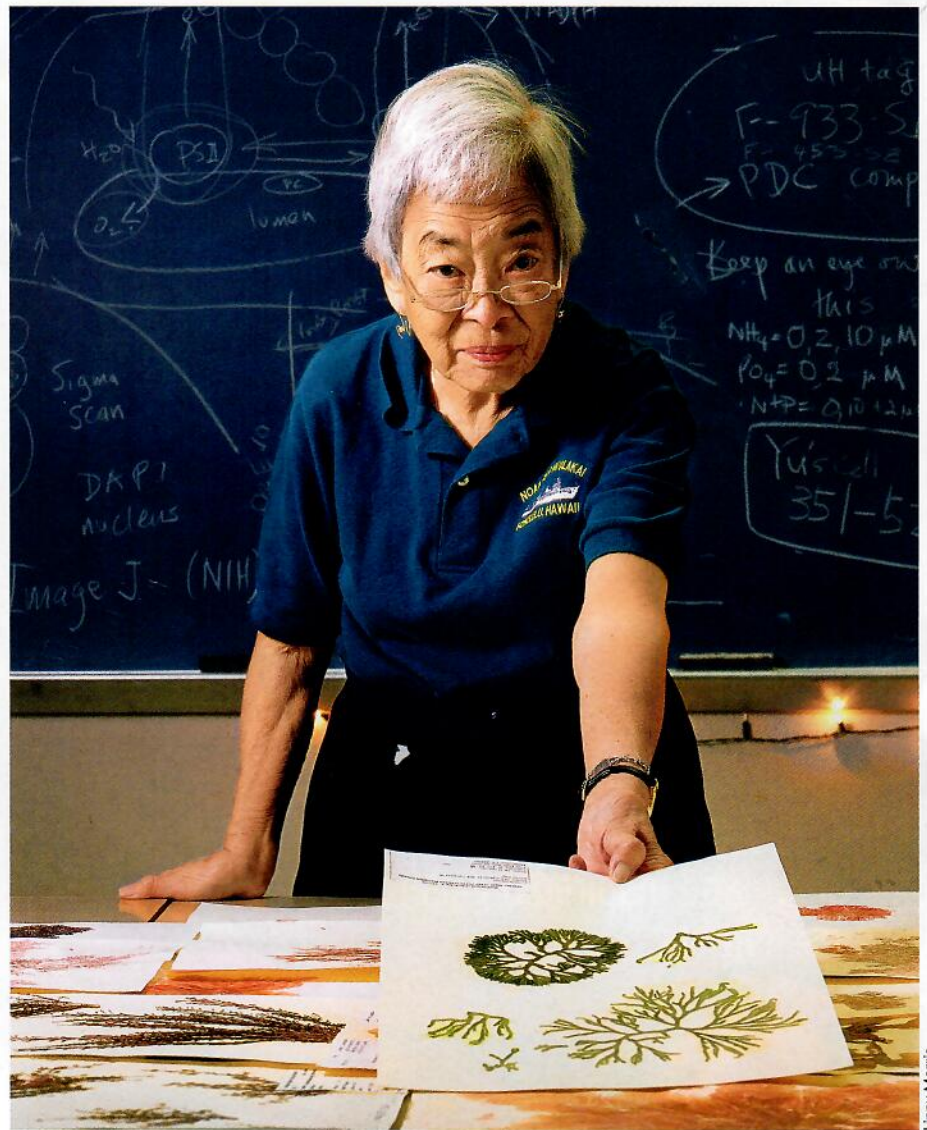
of edible limu (seaweed) adrift in the tide at Waikīkī. Back then, in the 1920s, there were no planes in the sky and only a few tourists on the beach. Waikīkī's first major hotel, the Moana Surfrider, was brand new; the Royal Hawaiian had yet to be built. Limu līpoa, a coveted golden-brown seaweed, still grew thick in the seabed here, and its fragrance carried a long distance on the wind.

Wading knee-deep in the water, young Isabella learned that an array of tasty treasures grew just beneath the sea's surface. She listened to her mother discuss various limu species and swap recipes with friends: pālalahala, or sea lettuce, could be eaten fresh but was better in soup. Spongy green wāwa'iole was 'ono (delicious) when pounded with raw octopus. The ladies paid special attention to the limu huluhulu waena that grew on the rocks in front of Queen Lili'uokalani's former home. The queen loved this particular limu's fine, hair-like tufts so much that she transplanted it from Maui.

These early expeditions evolved into a lifelong passion for Isabella, later christened "the First Lady of Limu." The brilliant, tireless scholar brought centuries-old Hawaiian knowledge to the halls of Western academia. She was the first Native Hawaiian to earn a PhD in science, Stanford's first female biology professor and the world authority on Pacific marine plants—and that's just the first half of her career. If Isabella's credentials intimidated her students, a frosted slice of her seaweed cake reeled them back in.

**Isabella's father,** Loo Yuen Aiona, came from China in the late 1800s to work in the sugar cane fields of Hāna, Maui. His first wife gave him six sons; after her death, Loo Yuen asked the local matchmaker to find him a compatible wahine. Annie Kailihou was a schoolteacher who rode horseback to work every day from Hilo to Puna on Hawai'i Island. She moved to Hāna, married Loo Yuen and bore him a seventh son, Frank, and a daughter.

Isabella Kauakea Yau Yung Aiona Abbott was born in Hāna in 1919. Annie named the girl Isabella after a best friend, and Kauakea after the Hāna mist that rolls in from the sea. Friends would later nickname her Izzie, while her awestruck students deferred to Dr. Abbott. The Aiona family was trilingual; dad spoke Chinese



The lifelong passion of Isabella Aiona Abbott (seen above) was the study of limu—the Hawaiian word for marine algae. The first Native Hawaiian to earn a doctorate in science, Abbott led the way for both indigenous and women scientists who came after her. "When Gloria Steinem started the women's rights movement in the '60s and '70s," says Abbott's daughter Annie Foerster, "that opened the door for my mom because it pointed out to these big institutions what they were doing wrong."

with his business friends, English with the kids and Hawaiian with his wife when they wanted to shield something from their children. This subterfuge failed; the kids quickly picked up Hawaiian phrases but pretended not to understand.

The family moved to Honolulu when Isabella was three years old. Her father appreciated the girl's burgeoning intellect and allowed her to choose which schools she attended: Chinese or American, public or private. For high school she opted to board at Kamehameha, the all-girls school for children of Hawaiian ancestry. A 1934 newspaper clipping shows a 14-year-old Isabella on her way to represent Kamehameha in the *Star-Bulletin's* oratory contest. She's staring straight into the camera. Her wavy hair, on the edge of unruly, is

swept back from her forehead, and her polka-dotted blouse lends a touch of femininity to an otherwise fierce-looking teen.

She met her future husband on her first day of college at the University of Hawai'i at Mānoa. Thanks to surnames at the top of the alphabet, Isabella Aiona and Donald Abbott sat beside one another in freshman botany class. He was from Chicago and, like his classmate, already knew he wanted to study marine biology. They married in 1943 and pursued graduate degrees together—she in botany and he in zoology. While she investigated liagora, a type of calcified red algae, he specialized in tunicates, a.k.a. sea squirts. They complemented one another from the start.

In 1950 they both earned doctorates from the University of California at Berkeley.

Linny Morris



This made Isabella the first Native Hawaiian to hold a doctoral degree in science—the first of several glass ceilings she would smash. Don was offered teaching positions at Stanford, Yale and Columbia. He picked Stanford, and the pair moved down the coast to the Hopkins Marine Station, the university's laboratory on spectacular Monterey Bay. Despite having identical qualifications, Isabella couldn't land a job. Stanford had an anti-nepotism rule at the time: Only one family member could work in a department, and preference was given to men.

Isabella didn't waste time protesting that inequity. She kept studying limu along the shoreline as she had always done and was thrilled to acquaint herself with new Monterey species. She gave birth to a daughter and, a few years later, filled in at Hopkins as a lecturer. "Even though she couldn't be a full professor, she was still lecturing and doing all of the research required," says her daughter, Annie Foerster.

The Abbotts' small house in Monterey served as headquarters for visiting scientists. Don's research took him on sailing voyages from Mombasa to Singapore and beyond, and he often brought international colleagues home. There weren't any nearby motels then, so visitors camped out with the Abbotts. Annie remembers a Polish anthropologist who came once a year. He

worked for *National Geographic*, reporting on uncontacted Amazonian tribes; his slide shows of cannibals made an impression.

"My parents had this gift of hospitality," says Annie. Students regularly dropped by for dinner. Isabella was a fabulous cook who capably turned out lamb curries, spaghetti casseroles and shabu-shabu. True to her roots, she incorporated limu in numerous dishes, including a crowd-pleasing cake made with eggs, flour, crushed pineapple and diced *Nereocystis*, or bull kelp. By all accounts it was delicious—*Gourmet* magazine even featured the recipe in 1987.

The Abbotts may have been hospitable, but they didn't let their entertaining duties detract from their work. Both took the academic warning "Publish or perish" to heart and were constantly authoring scientific papers and books. "They always wanted to know more," says Annie. "They were curious. That's why they were at the top of their fields."

Still, it wasn't easy for Isabella to reach that top rung. For two decades she worked at Hopkins without a permanent position, teaching students and parsing the taxonomy of local marine flora alongside professor George Hollenberg. In 1966 they co-published a book detailing the algae of Monterey, adding fifty-five new species to the record. Hollenberg honored his colleague by naming an entire genus after her—

*Abbottella*, which means "little Abbott."

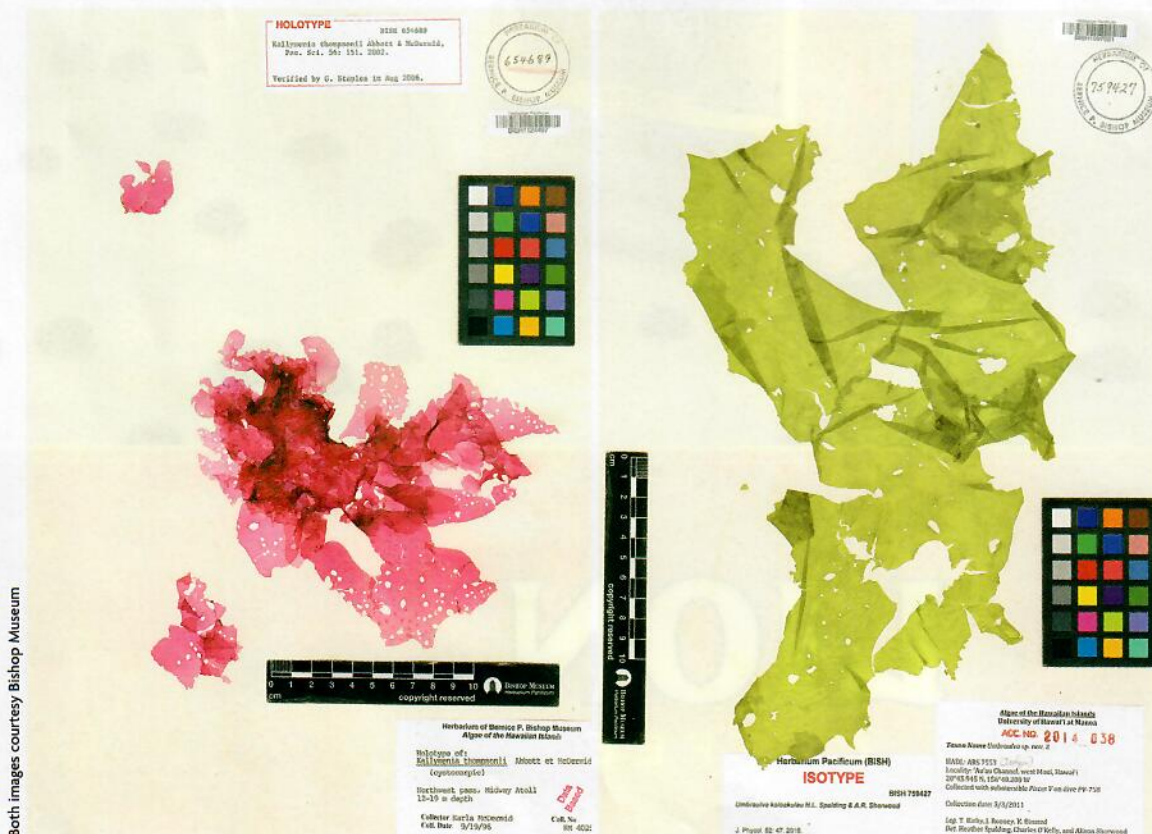
Taxonomy, the naming and classification of life forms, is the foundation of Western biology and has parallels in Hawaiian tradition. Early Hawaiian botanists assigned plants names that relayed information about species' growth forms or habitat preference. They also assigned names honoring the relationships between seemingly disparate species. Limu kala, for example, is a favorite food of the kala, or unicornfish; both have spiky protrusions.

In the course of her research, Isabella realized that her Hawaiian ancestors knew their marine plants intimately. She interviewed scores of kūpuna (elders) to document their disappearing knowledge. The results took the shape of a small book, *Limu: An Ethnobotanical Study of Some Hawaiian Seaweeds*, published in 1974.

That same year, Stanford finally promoted the steadfast scholar, allowing her to bypass the normal tenure track. Isabella became the school's first minority full professor and the first female full professor of biology. Two years later she published *Marine Algae of California*, an 827-page encyclopedia lauded as the definitive guide to Pacific coast algae.

During this busy period, Isabella learned she had breast cancer. Annie, who was then 16 years old, remembers her mother saying, "Don't worry, I'm going to beat

Throughout her career, Abbott described dozens of new species of Pacific algae, like the bright red *Kallymenia thompsonii* (seen at far left) from Midway Atoll, and helped to gather them into the world's largest collection of Hawaiian and tropical Pacific marine algae, now part of the Herbarium Pacificum at Honolulu's Bishop Museum. But her approach to limu wasn't narrowly scientific; Abbott was interested in ethnobotany—how native cultures relate to the plants growing in their environment. The name for the green kōloakūlāu (*Umbraulva kōloakūlāu*) endemic to Maui (seen at left) came to cultural practitioner Kalani Souza in a dream—a traditional Hawaiian way of imparting names.



Both images courtesy Bishop Museum





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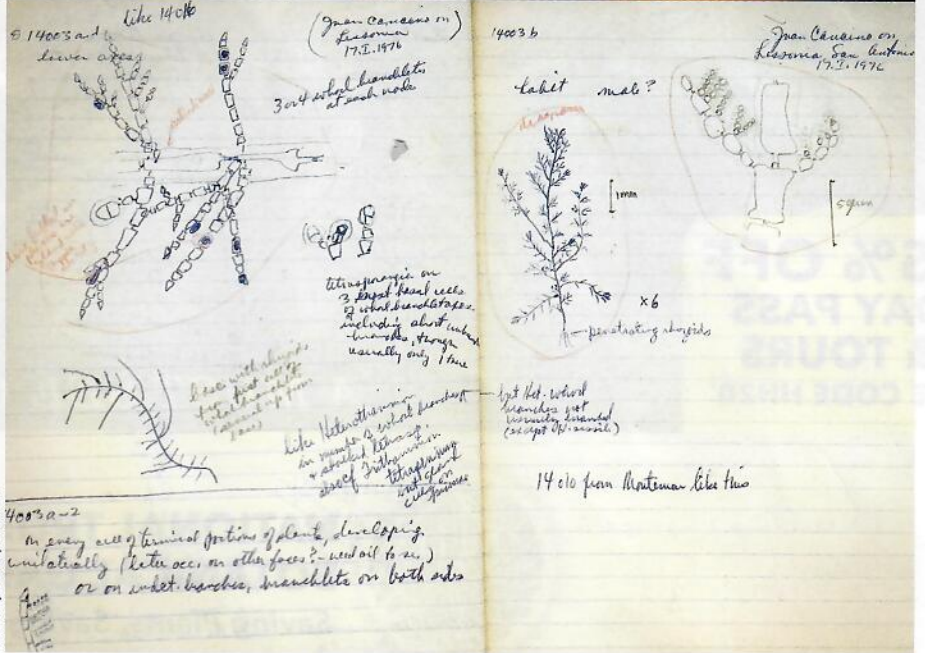


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## Hawai'i's First Lady of Limu



Matt Mallams



Courtesy Bishop Museum

Abbott, who would have celebrated her hundredth birthday this year, was universally admired by her students and colleagues, among them Roy Tsuda, a phycologist (a scientist who studies algae), seen on the facing page, top, in Bishop Museum's Herbarium Pacificum. Facing page middle: preserved algae specimens Abbott collected. Facing page bottom: Abbott's slim but authoritative book on Hawaiian ethnobotany. Above top: Slides of Hawaiian algae in the Herbarium Pacificum. Above: A page from one of Abbott's field journals.

this." In that era, radical mastectomies were the only known cure. "They took out everything: muscles, breasts, rib meat," Annie says. "But it worked. My mom was a forty-year cancer survivor. The more I think about it, the more I appreciate her. She was one of a kind."

In 1982 the Abbotts retired and returned to Hawai'i, where Isabella started her second career as an ethnobotanist. She had been researching the traditional Hawaiian usage of plants for decades, and she could now turn her full attention to the subject.

She joined the University of Hawai'i as the Wilder Professor of Botany, an endowed professorship awarded to prestigious educators. Her classes were hands-on, experiential and highly popular. She encouraged students to grow Hawaiian plants and practice making baskets or kapa (bark cloth). She regularly brought food to class, including her famous seaweed cake.

"Hawaiian students just adored Izzie," says Celia Smith, co-director of the university's marine biology graduate program. "Her ability to connect with them transcended academics. When she talked about





All images: Matt Mallams

collecting plants, she was sharing stories of her childhood." Celia first met Isabella as a grad student; they later became colleagues and close friends. "She taught Botany 105 but was also clearly a force in the marine plant program. You couldn't avoid her." Students who tried failed; the fearsome Dr. Abbott—who stood little more than five feet tall—was known to call students at home if they missed class.

The early '80s was an exciting time to be teaching in Hawai'i; the Hawaiian cultural renaissance was in full swing. "It was an era when people's pride in being Hawai-

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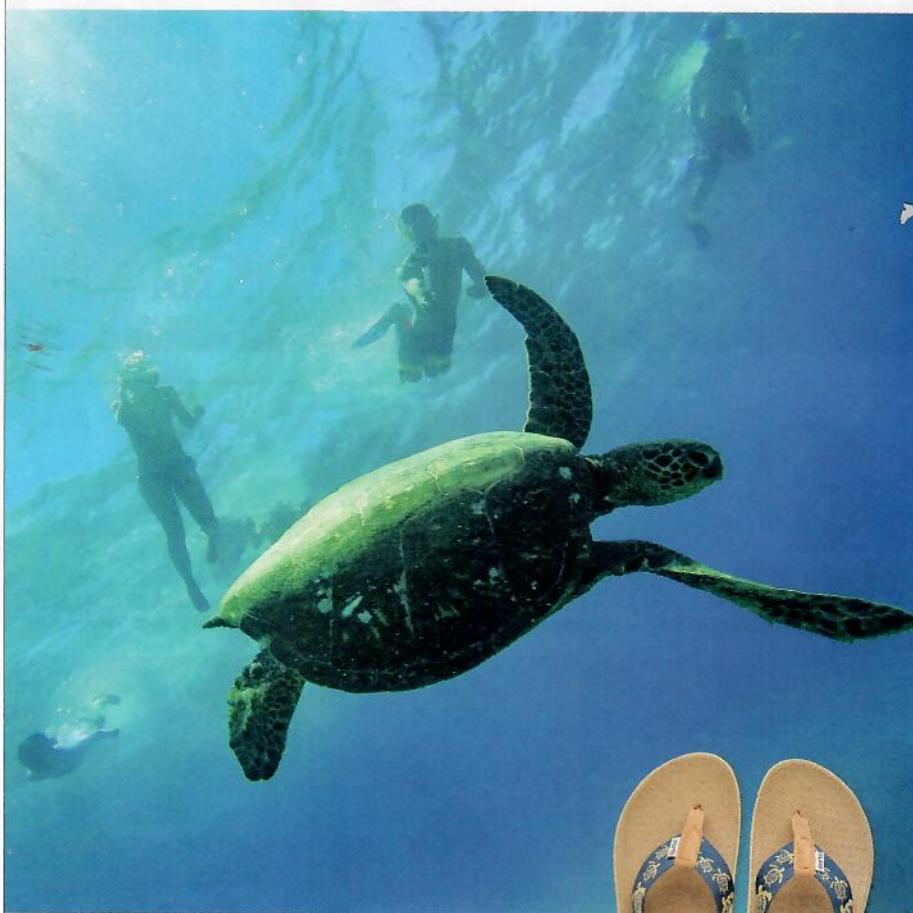
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## Hawai'i's First Lady of Limu

ian was palpable," says Celia. Isabella was lucky to have something meaningful to focus on when tragedy struck. Just four years into retirement, at age 66, Don passed away from cancer. Despite this tragedy, Isabella continued their habit of entertaining fellow academics and publishing as often as possible.

In 1992 she published *Lā'au Hawai'i*, the first comprehensive Hawaiian ethnobotany textbook. The beautifully illustrated book describes how early Hawaiians used plants to build canoes, fabricate clothing and make medicine. Meticulously referenced chapters cover hula, weaponry and religion. It's a remarkable blend of scientific and cultural knowledge. She described it as "a Western scientist's viewpoint of the Hawaiian way of doing things." In a filmed interview, she elaborated: "Why is this necessary? So that Hawaiians are not put in second- or third-class status of native people who don't know anything. Hawaiian culture is unbelievably sophisticated."

Altogether, Isabella penned eight books and over 150 scientific papers. She discovered and named more than two hundred new species. She served on the advisory boards of Bishop Museum, the Kaho'olawe Island Reserve Commission and her alma mater, Kamehameha Schools. The National Oceanic and Atmospheric Administration asked her to name its new research ship. She called it *Hi'ialakai*, which roughly translates to "embracing the sea's pathways." "I kept thinking of little reef fishes that poke around here and there," she said at the time. "That's what this ship does, poke around." It's what she did, too, throughout her long career.

Despite her tremendous personal accomplishments, Isabella's greatest legacy might be the other minds she inspired. She taught thousands of students and kept track of those she felt had special promise. Hawaiian language professor Puakea Nogelmeier was one of them. They met and became friends while serving on the University of Hawai'i's nascent Hawaiian Studies Council. "It was a volatile and contested zone, with wild shouting matches," says Puakea. "Izzie Abbott was the president and carried out that role with great dignity and resolve. She was a little powerhouse. She absolutely floored me with how she held space."

When Puakea sought to pursue a PhD in anthropology, Isabella wanted to be on his advisory committee. "It was hard to squeeze a botanist in," he says. "So she was in my cheering section." One day she



called to inquire how his dissertation was progressing. He confessed that he was stalled. "Why don't you come to my house for dinner and tell me about it?" she said. They ate and talked. Afterward she said, "Come again next week and bring what you've worked on." This went on every Wednesday night for a year and a half until he finished. "She never canceled, and she never read it ... just asked great questions," he says. "She was an incredible mentor that way."

In her later years her eyes began to fail. "We shared my magnifying glass," Puakea laughs. Though arthritis gnarled her hands, she kept working with her microscope and puttering in her kitchen. "Her knuckles were swollen to the size of ping-pong balls," Puakea remembers. "But she never, ever complained."

One of Isabella's last graduate students, Ryan Okano, was a reluctant scholar from Hilo. Originally he wanted to study 'ōhi'a trees, but after talking with Isabella he gravitated toward limu. "Most times you have to have an existing relationship with a professor, but she took me on. I heard she accepted every local student who applied that year."

Isabella encouraged Ryan to survey the coastline he grew up on. Over two years he collected intertidal algae samples from South Hilo. He discovered new species, which he gave to his professor to describe. "She showed me how to be humble and how to learn," he says, "Not just with your eyes, but also by noticing how things feel, taste and smell."

Ryan took ten years to complete his PhD. During that time he'd visit Isabella at home, cut her grass and join her for lunch. They'd talk about his dissertation beneath the Hawaiian flag quilt she inherited from her mother. Once, he brought her live 'ōpihi (limpets), and she squealed with delight. In October 2010 she was too sick to make it to his thesis defense. But afterward a group of students went to her house to celebrate. She died a week later at the age of 91.

"She was the single most influential person in my life," says Ryan. "She taught me to try your hardest to be your best. Don't let your ethnicity or gender hold you back." He never intended to pursue a career in science. Today he's a biologist with the Hawai'i Division of Aquatic Resources, responsible for watershed restoration, stream monitoring and limu outreach. His children will grow up searching for seaweed in the tide and finding species their father helped name. **HH**

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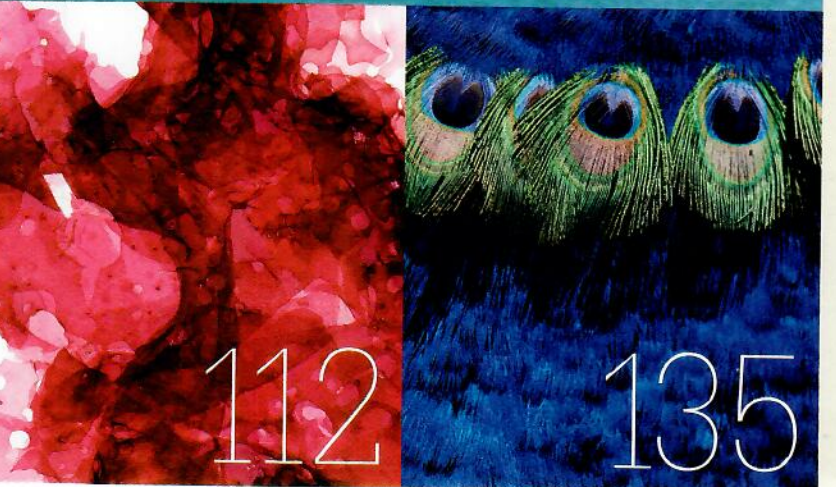


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