News
EarthBeat



Kealoha Pisciotta, a cultural practitioner and longtime activist, sits on lava rock part of the way up Mauna Kea while giving an interview on the Big Island of Hawaii, on Saturday, July 15, 2023. Over the last 50 years, astronomers have mounted 13 giant astronomical observatories on Mauna Kea's summit. In 2019, Native Hawaiians including Piscioitta staged a year-long protest over construction of an additional telescope. (AP/Jessie Wardarski)

Deepa Bharath

View Author Profile

Audrey McAvoy

View Author Profile

The Associated Press

View Author Profile

Join the Conversation

Send your thoughts to *Letters to the Editor*. Learn more

December 28, 2023
Share on BlueskyShare on FacebookShare on TwitterEmail to a friendPrint

Shane Palacat-Nelsen's voice drops to a reverent tone as he tells the story of the snow goddess Poliahu who Native Hawaiians believe inhabits the summit of Mauna Kea, the highest point in Hawaii.

The tale, repeated in Hawaiian families over generations, speaks of a chief who yearned to court Poliahu but was stopped by her attendants guarding the sacred mountain top — the abode of the gods, cradle of creation and gateway to the divine.

Today, this sublime summit on Hawaii's Big Island is also treasured by astronomers as a portal to finding answers to the universe's many mysteries, creating varied — and sometimes incompatible — views on what's best for Mauna Kea's future.

The legendary chief eventually gained access to the summit on one condition: He was to step only on the same set of footprints left by the attendant escorting him up and down, said Palacat-Nelsen. He says it's a metaphor for why Mauna Kea must be protected from further human intrusion, pollution and erosion.

"You do not go up the sacred mountain unless you are called. You do not go up without a purpose."



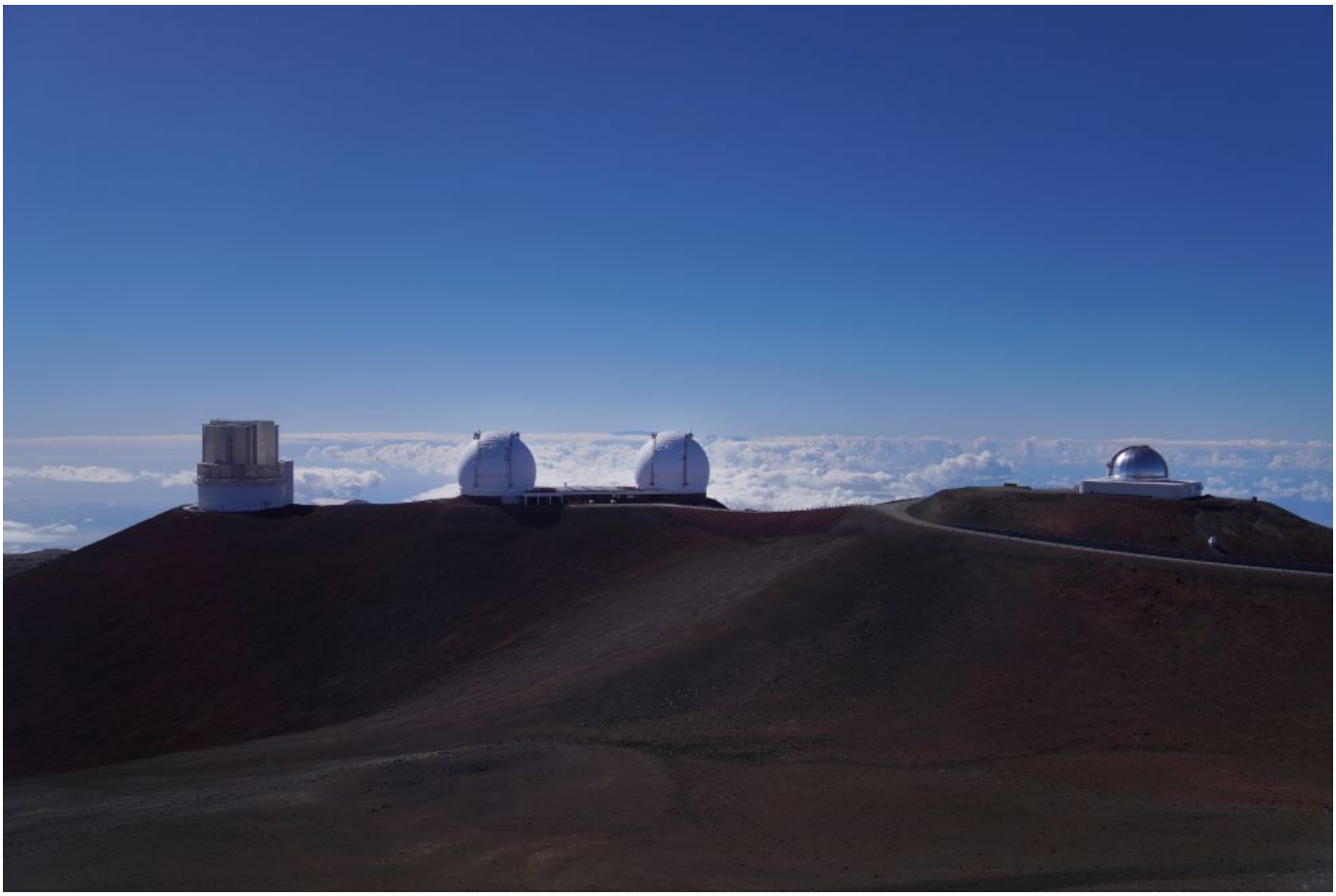
A foot trail leads to an "ahu," or ceremonial platform atop Pu'u Wekiu, an important summit to many Native Hawaiian cultural practitioners, on the sacred mountain Mauna Kea in Hawaii on Saturday July, 15, 2023. Along the slopes of this sacred mountain are ceremonial platforms, ancestral burial sites, and an alpine lake whose waters are believed to have healing properties. (AP/Jessie Wardarski)

Mauna Kea is a dormant 14,000-foot shield volcano. In Native Hawaiian lore, it is the first-born son of the sky father and earth mother. The mountain's dry atmosphere and limited light pollution make for a perfect location to study the skies — one of just a handful on the planet.

Over the past 50 years, astronomers have mounted a dozen giant telescopes on the summit, with several yielding exalted discoveries, like proving the Milky Way has a supermassive black hole at its center. That particular research led to a Nobel Prize in Physics in 2020.

The proliferation of observatories has troubled many Native Hawaiians, who have pushed back. In their view, such construction is polluting the sacred mountain top,

eroding the environment and depleting natural resources. In 2019, thousands came out to protest a proposed $2.65-billion Thirty Meter Telescope project near the summit. This protest catalyzed the passage of a new state law transferring jurisdiction of the mountain to a new stewardship authority comprising scientists and Native Hawaiian cultural practitioners.



From left, Subaru Telescope, W.M. Keck Observatory, and the NASA Infrared Telescope Facility sit on the summit of Mauna Kea in Hawaii, on Saturday, July 15, 2023. Over the last 50 years, astronomers have mounted 13 giant telescopes on Mauna Kea's summit. In 2009, they proposed an even larger Thirty Meter Telescope, which spurred lawsuits and protests by Native Hawaiian activists. (AP/Jessie Wardarski)

No side wants to reduce this debate to a culture-versus-science conflict because Hawaiian spirituality embraces science, or studying the physical world, and many astronomers respect Hawaiian culture. Some observatory staff and cultural practitioners are taking small, tentative steps toward new dialogue, but overcoming

the cavernous divide will involve difficult conversations and understanding different perspectives.

For many, the mountain is a temple

Mauna Kea, translated literally as "white mountain," has the same progenitors — Wakea and Papahanaumoku — as the Hawaiian people, according to stories, prayers and chants. After volcanic eruptions sent lava bubbling up from the ocean floor, it took more than a million years to form, growing into the tallest mountain on Earth when measured from its base in the Pacific Ocean.

The summit soars 13,796 feet (4,205 meters) above sea level, evoking an ethereal feeling as fluffy clouds swaddle its cinder cones and blanket its reddish, almost Mars-like soil. On a clear day, Mauna Loa, one of the world's most active volcanoes, is visible.

Advertisement

Climbing Mauna Kea is like peeling the layers of an onion, says Kealoha Pisciotta, a cultural practitioner and longtime activist. The sacred mountain's slopes are dotted with ceremonial platforms, ancestral burial sites and Hawaii's lone alpine lake, whose waters are believed to possess healing properties.

"The higher you go, the closer your heart is to the heavens," she says. "(The gods) can see you, feel you, hear you. The protocol is silence because we don't need to be speaking in akua's (creator's) house. We need to be listening."

Building and bulldozing on or near the summit threatens the people's sacred connection to the land, Pisciotta said. In her spiritual practice, she considers the mountain and all aspects of creation such as fish, coral, trees and animals to be like older siblings.

"When they diminish our ancestors and our elder siblings, they diminish us, our life force and our existence. And that's the reason people are saying no," she said, referring to adding more telescopes.



Kealoha Pisciotta, a cultural practitioner and longtime activist, lays offerings before praying at an "ahu," or ceremonial platform, part of the way up Mauna Kea in Hawaii, on Saturday, July 15, 2023. Along the slopes of this sacred mountain are ceremonial platforms, ancestral burial sites, and an alpine lake whose waters are believed to have healing properties. (AP/Jessie Wardarski)

Palacat-Nelsen, who served on the working group that laid the foundation for the new authority, says to protect the mountain and preserve the summit's sacredness, people must step out of their silos with open hearts and minds, ready to have uncomfortable conversations.

Looking to the sky for answers

John O'Meara, who moved to Hawaii to become the chief scientist at Keck shortly before the 2019 protest, is now a key player in that dialogue. He's learning about the strong connection many Native Hawaiians have to Mauna Kea.

O'Meara is fascinated by the similarities between spirituality and astronomy.

"We are fundamentally asking the same questions, which are: Where are we? Where did we come from? And where are we going? There is a deep connection to the universe … which is the thing that we should be focusing on," he said.

Doug Simons, director of the University of Hawaii's Institute for Astronomy, points to the opening lines of the Kumulipo, a centuries-old Hawaiian creation chant, which describes a scene strikingly similar to what astronomers believe existed during the Big Bang.



Offerings of sea salt, coconuts and plants adorn an "ahu," a ceremonial platforms, at 9,000 feet elevation on Mauna Kea in Hawaii on Saturday July, 15, 2023. Along the slopes of this sacred mountain are ceremonial platforms, ancestral burial sites, and an alpine lake whose waters are believed to have healing properties. (AP/Jessie Wardarski)

"When fundamental space altered through heat/When the cosmos altered, turning inside out," begins the chant, according to a translation by Larry Kimura, a Hawaiian language expert. It continues a few lines later: "Then began the slime that established a physical space/The source of impenetrable darkness, so profound/The source of fathomless power, reincarnating itself."

The chant continues for 2,000 more lines, detailing the birth of coral, seaweed, fish, trees and, eventually, people.

The Kumulipo's description of a dark, eternal form of energy from which everything emerges sounds to Simons like dark energy, which astronomers believe predated the universe. Scientists can observe dark energy, which is causing the universe to expand at an accelerated rate, by studying dark matter — invisible to the naked eye, but detectable through the study of distortions in galaxy shapes.

Mauna Kea's telescopes are at the forefront of discoveries about this dark energy thanks to their "exquisite image quality," Simons said.



A ceremonial platform used by Native Hawaiian cultural practitioners called an "ahu," at 9,000 feet elevation on Mauna Kea in Hawaii on Saturday July, 15, 2023. Along the slopes of this sacred mountain are ceremonial platforms, ancestral burial sites, and an alpine lake whose waters are believed to have healing properties. (AP/Jessie Wardarski)

It's a cultural and spiritual struggle

Lanakila Mangauil, a Native Hawaiian spiritual practitioner, was around 9 when he first stepped on the mountain for snow play at the lower elevations. His family never went to the summit.

"One of the important spiritual practices on Mauna Kea is our absence," he said. "We stay off it because it is sacred."

When he first ascended the mountain for ceremony, he was a high school senior and climbed with two of his friends. They stopped at altars, prayed near the upper cinder cones, offered chants and dance.

Mangauil does not like to use the word "religion" to describe his spiritual practice. Hawaiians don't have a central religion, he said, but spiritual practices born of different communities, families and environments.

"Our spiritual practice is not faith-based, it is knowledge-based," he said. "Our gods and goddesses are scientific observations."

For example, to understand the deities of Mauna Kea is to understand the mountain's environment and climate, Mangauil said.



Demonstrators gather to block a road part of the way up Hawaii's tallest mountain, Monday, July 15, 2019, in Mauna Kea, Hawaii, to protest the construction of a giant telescope on land that some Native Hawaiians consider sacred. After the 2019 protest against a proposed Thirty Meter Telescope near the summit, the state of Hawaii passed a law, which gives both scientists and spiritual practitioners a say in the future of the mountain. This has led to small steps toward new dialogue.(AP/Caleb Jones)

Poliahu is the snow goddess, sister of Pele, the goddess of volcanoes and denizen of neighboring Mauna Loa. Lilinoe is the goddess of fine mist. Waiau presides over the mountain's subterranean reservoirs. Lake Waiau, associated with the god Kane, is where some Native Hawaiians bury their children's umbilical cords. Its water is collected and used for healing and ceremonies. The summer solstice is an important ritual Mangauil observes on Mauna Kea as is a Makahiki ceremony in the fall, which marks the start of the Hawaiian new year.

This is also a political and cultural issue for younger Hawaiians like Mangauil who considers himself a product of the Hawaiian Renaissance. Prior generations lost their language as well as culture and religious practices after the U.S.-backed overthrow of the monarchy in 1893.

"We are reestablishing our spiritual relationship with the land, which was disrupted by colonization."

Finding a way through dialogue

Not all Native Hawaiians hold Mauna Kea sacred in a religious sense, including Makana Silva, an astronomer who grew up on Oahu and was raised Catholic. He is now a post-doctoral fellow at the Los Alamos National Laboratory in New Mexico studying black holes and gravitational waves, and visited Mauna Kea's summit for the first time three years ago.



Visitors walk to an observation point near the Mauna Kea visitors center at 9,000 feet in Mauna Kea, Hawaii on Saturday July, 15, 2023. (AP/Jessie Wardarski)

Despite his personal religious beliefs, he is certain that the mountain contains what Hawaiians call "mana" — the spiritual life force that permeates the universe. Silva described a moment when he and his friend stood by Lake Waiau "in peace, silence and awe."

He believes astronomy on the mountain should thrive so there is a place for Hawaiians to perpetuate their legacy of innovation.

"We have a responsibility to future generations to leave behind these new inventions so they can go places you and I have never been able to dream of," Silva said.

The future of astronomy on the mountain will in large part be decided by the Mauna Kea Stewardship and Oversight Authority, which is taking over managing the mountain from the University of Hawaii. It will determine whether to renew the university's 65-year lease for the summit lands, which is due to expire in 2033, and subleases for lands used by all the mountain's telescopes.



The summit of Mauna Kea on the Big Island of Hawaii, on Saturday, July 15, 2023. Mauna Kea was born after a series of volcanic eruptions from the ocean floor created

new land. Over a million years, it grew into the tallest mountain on earth when measured from its base in the Pacific Ocean to its summit soaring 13,796 feet (4,205 meters) above sea level. (AP/Jessie Wardarski)

Simons is concerned about the consequences if the leases aren't renewed in time. The existing master lease says the telescopes must be dismantled and the land under them restored to their original states by 2033 if the lease is not renewed.

"The potential loss of Mauna Kea astronomy…would be catastrophic," Simons said, adding that this would mean a tremendous loss of knowledge and opportunities for Hawaii's budding astronomers.

Palacat-Nelsen doesn't believe astronomy on the summit will end any time soon. But he does see the lease being renewed at a much higher price than the $1 a year the University of Hawaii pays now.

"You have to pay the best price for the best view," he said.

He holds out hope for better understanding between the two communities. He recently invited a handful of Keck astronomers and officials to his family's "heiau" or place of worship on Big Island.



Elders Billy Keliiokalani Freitas, left, and Kini Palmyra Kaleilani in Mauna Kea, Hawaii on Saturday, July 15, 2023 put their hands together creating a symbol of support and solidarity for protecting Mauna Kea and for those blocking construction of a new telescope on the mountain. The symbol was birthed out of protests over the planned Thirty Meter Telescope. Freitas was one of the elders arrested during the 2019 protests. (AP/Jessie Wardarski)

Rich Matsuda, Keck's interim director and an engineer, was part of that group. He said the experience shed light on the extensive preparation required to enter a sacred space, such as leaving one's everyday troubles and anxieties outside, which can be challenging. He has since followed similar protocols when traveling to the summit and believes they could be shared more broadly with other telescope workers.

Palacat-Nelsen said such efforts by observatories give him hope that people will become more mindful of their footprints on Mauna Kea, like the legendary chief who visited the snow goddess. Palacat-Nelsen is grateful to his ancestors for preserving and maintaining Mauna Kea so current generations have the opportunity to experience the divine. He wonders if he can do that for posterity.

"Can they speak about me in that way 200 years from now?" he asks. "I hope."



The sacred mountain of Mauna Kea on the Big Island of Hawaii, on Monday, July 17, 2023. Mauna Kea was born after a series of volcanic eruptions from the ocean floor created new land. Over a million years, it grew into the tallest mountain on earth when measured from its base in the Pacific Ocean to its summit soaring 13,796 feet ((4,205 meters) above sea level. (AP/Jessie Wardarski)