

The Nature
Conservancy



Hawai‘i and Palmyra

Mālama ‘āina
i ka huliau:
*Caring for the land
in a changing world*





'Ie 'ie in flower on O'ahu © Erik Tamura/TNC Photo Contest

Aloha mai kākou,

For most of my career, conservation required many hours of collecting data the old-fashioned way—people hiking and swimming miles to gather valuable information used to inform protection of our island home. While these methods worked well (and continue to do so), they limit the reach of our impact. Enter innovation. Adapting and innovating in conservation has allowed us to cover much more ground in a shorter amount of time, with fewer resources and more safety for our field crews.

Yesterday, scientists manually sorted through GPS data to identify plant species over an entire landscape. Today, we use artificial intelligence (AI) to sort through a lot of high-resolution aerial imagery. But innovation isn't just about using new technology, it's also about thinking creatively about how to use existing tools and collaborating with unconventional partners.

In this issue of our newsletter, we share the ways in which we leverage innovative tools and approaches to protect native species, restore native forests, adapt to climate change and protect coral reefs in Hawai'i and Palmyra.

On and around Palmyra Atoll, we are combining the use of artificial intelligence, drones and high-resolution aerial imagery to identify and count seabird species across the landscape. Over time, this data will help us track how native forest restoration is impacting seabird populations. We're also using AI and a large collection of aerial imagery on Kaua'i to identify invasive tree ferns in remote forests, partnering with Amazon Web Service to develop a cloud-based solution that automates this data collection. With these tools, we can deploy and track different weed control techniques to see what works best.

Partnerships are critical to this work. Working with the fishing industry, we're monitoring drifting Fish Aggregation Devices (dFADs) and retrieving those found near Palmyra waters before they damage coral reefs. We've also partnered with Woods Hole Oceanographic Institute and Siemens Technology on a Super Reefs Initiative to create three-dimensional virtual models of the coral reefs around Palmyra and Maui to demonstrate past, present and future changes to reefs due to changing ocean flows and temperatures. And to protect coral reefs more broadly across Hawai'i, we've worked with an insurance company to pioneer a new type of insurance policy to cover the cost of restoring reefs damaged by big storms.

Hawai'i has always been a place of innovation—from fishers and farmers pioneering ways to grow food, to ali'i (royalty) who welcomed the use of new inventions at 'Iolani Palace. We're constantly inspired by innovators past and present and we envision a future where creativity continues to push the boundaries of what is possible for protecting Hawai'i's and Palmyra's lands and waters for the benefit of nature and people.

All of this innovation in conservation would not be possible without bringing together people from different sectors and fields of study, and of course, without our donors and partners who support our work.



Ulalia Woodside Lee
© Elyse Butler

Mahalo nui loa,
Ulalia Woodside Lee

The Nature Conservancy



Protecting nature. Preserving life.

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The Nature Conservancy Hawai'i and Palmyra newsletter is the publication of The Nature Conservancy Hawai'i and Palmyra 923 Nu'uuanu Avenue Honolulu, Hawai'i 96817 Tel: (808) 537-4508 Fax: (808) 545-2019 Web: www.nature.org/HawaiiPalmyra

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The Nature Conservancy Hawai'i and Palmyra chapter is the local affiliate of The Nature Conservancy, an international, non-profit organization based in Arlington, VA.

The mission of The Nature Conservancy is to conserve the lands and waters on which all life depends.

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Cover: TNC volunteer launches a drone to monitor forest health in Waikamoi Preserve. © Bryan Berkowitz



Young taro patch at He'eia on O'ahu © Toni Parras/TNC

HAWAI'I 'IKE MANOMANO | HAWAI'I A PLACE OF COUNTLESS INNOVATION

When we think of innovations in Hawai'i, our thoughts swing to the future, but innovation has been a major element throughout Hawaiian history. Even before people, the richness and beneficent environment in Hawai'i allowed the plants and animals that arrived in the islands to proliferate into forms seen nowhere else on Earth; biological innovations that are textbook examples of adaptive evolution. That same richness encouraged Hawaiian culture to develop innovations in every aspect of society, from the development of more cultivated forms of taro, sweet potato, bananas and 'awa than any other place in the Pacific Ocean, to landscape-scale systems of agriculture in both wet and dry regions that allowed hundreds of thousands to thrive sustainably in our finite archipelago without ANY inputs from the rest of the world. Even into the Hawaiian Monarchy of the 1800s, excellence and innovation were the hallmarks of Kingdom—'Iolani Palace incorporated flush toilets, electricity and telephones when the U.S. Capitol was still using kerosene lamps and outhouses. Our conservation innovations of today and the future can well stand to benefit from the study of our amazing place and its history. Innovation has been and should always be part of Hawai'i.

– Sam 'Olu Gon III, Senior Scientist and Cultural Advisor



Taro plant, He'eia © Toni Parras/TNC

E KOMO MAI

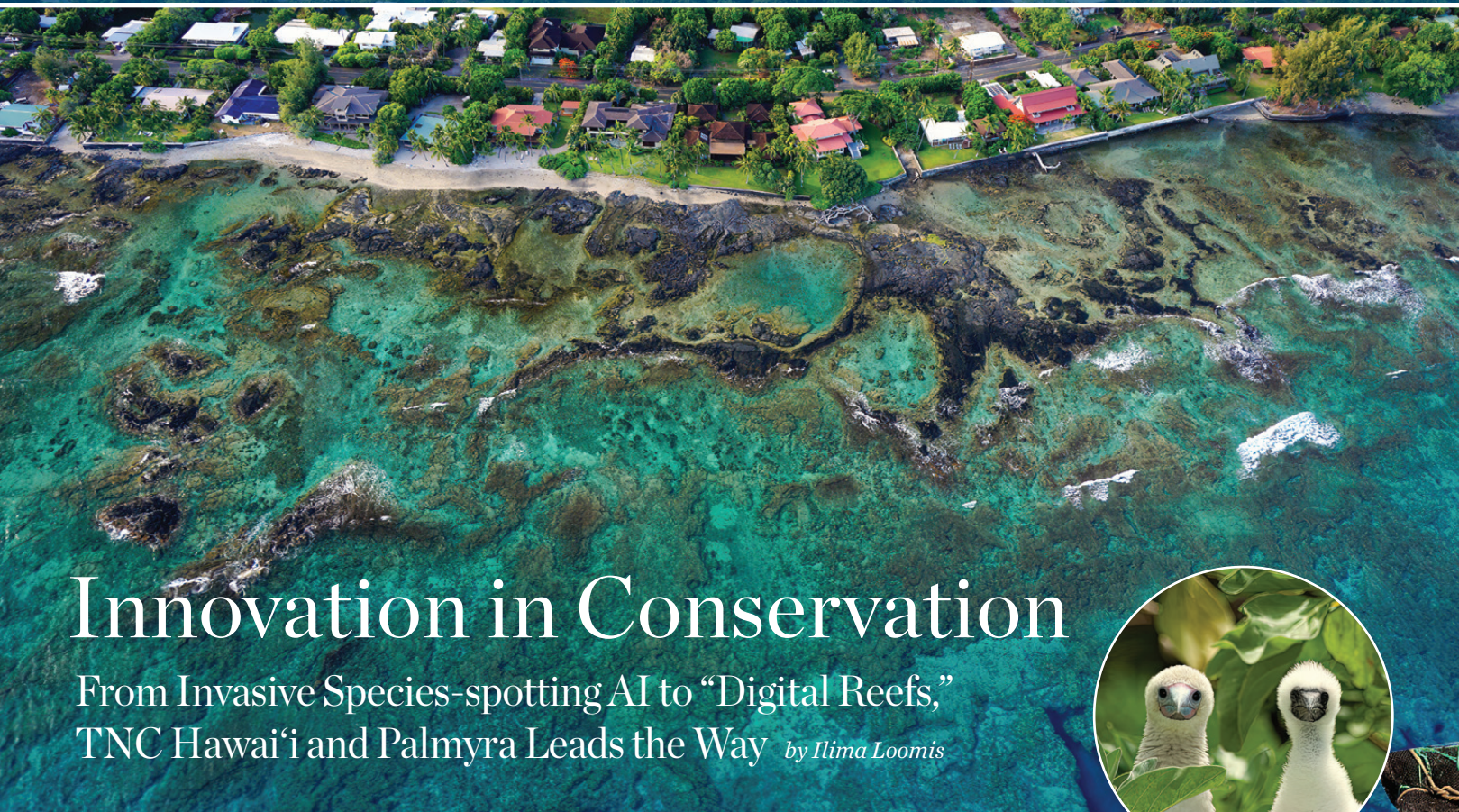
We welcome **Emily Fielding** as our new Marine Conservation Program Director, transitioning from her previous role leading marine conservation on Maui. Fielding is an established conservation leader whose commitment to collaboration and capacity building has empowered communities across Maui Nui to pursue co-management of the makai resources they rely upon for sustenance, cultural practices, recreation and coastal protection. We look forward to her vision, wisdom and strategic insight to help elevate our conservation agenda.

“I am honored and privileged to lead this important work,” Fielding shares. “The passion and commitment of our team, partners, kūpuna and community inspires me every day. Together, we can restore Hawai'i's makai resources and effectively manage them on behalf of present and future generations.”

We also welcome **Dr. Eric Conklin** into his new role as Marine Science Director for both Hawai'i Marine and Palmyra programs. In this new role, Eric manages both the Hawai'i and Palmyra Marine Science Teams and will work to build on the strength of both teams to provide cutting edge conservation science to inform, evaluate and improve the effectiveness of our conservation actions. This new position also enhances our ability to find and take advantage of the synergies across these teams, as they work to understand and provide insight into shared conservation challenges.

“These two teams are full of brilliant, dedicated and inspiring scientists that are providing information critical for ensuring the conservation work that we do builds on the lessons learned from the past and contributes to a sustainable future,” says Conklin. “I am humbled to be a part of these teams and able to help them in their work.”





Innovation in Conservation

From Invasive Species-spotting AI to “Digital Reefs,” TNC Hawai‘i and Palmyra Leads the Way *by Ilima Loomis*



Healthy coral reefs absorb up to 97 percent of a wave’s energy, protecting communities and property along Hawai‘i’s coasts. © C. Wiggins

Seabirds, like this adult red-footed booby and chick, are an important part of island ecosystems. © Alex Wegmann/TNC

Spotting a patch of invasive tree ferns in an aerial photo of Kaua‘i rainforest seems like a nearly impossible task, requiring someone to pick out the plant’s subtly unique shade of green from a vast and varied green background. But it might be just the job for a computer powered by artificial intelligence.

In fact, the project, a partnership with Amazon Web Services, could help The Nature Conservancy gain the upper hand in the ongoing battle against invasive species. Where it previously took expert human eyes weeks or longer to search aerial photos for signs of pests, AI could potentially spot an invasive Australian tree fern or scaly fern in a few hours. That means ground crews could start mitigation efforts sooner, before the plants have time to spread.

It’s just one example of how TNC is not only using technology to help protect the unique ecosystems of Hawai‘i and Palmyra, but also leading the way for innovation in conservation worldwide.

“New technological advancements are transforming our society daily,” says Trevor Taylor, TNCHP Conservation Director. “TNC is working hard to identify innovative ways of applying these tools, to

accelerate and amplify our conservation impact so that we can better protect and restore the lands and waters upon which all life depends.”

From sensors rugged enough to work in a rain forest, to computer models helping build more resilient reefs, to novel financing tools for ecosystem restoration, TNC is constantly exploring how innovative tools and technology can help solve today’s greatest conservation challenges across different ecosystems and environments.

“It’s really important that we’re incorporating technology and innovation as much as possible so we can do the best work we can with the fewest resources possible,” says Alison Cohan, TNCHP Terrestrial Director. “The conservation needs should drive the technology, so we’re working with the tech companies to develop the right solutions.”

Hawai‘i’s extreme environments make it an ideal location to innovate and adapt technology to conservation work. “Our native watersheds are really, really rugged,” says Cohan. “They’re incredibly hard to get to, so even deploying the technology is expensive. Connectivity is a huge issue. The weather can be gnarly. So

the more we can automate with things like rugged sensors, that provide connectivity and have batteries that last a long time, it’s not only saving resources, it’s also keeping our crews safer.”

Other innovative TNC projects in Hawai‘i and Palmyra include:

DIGITAL REEFS

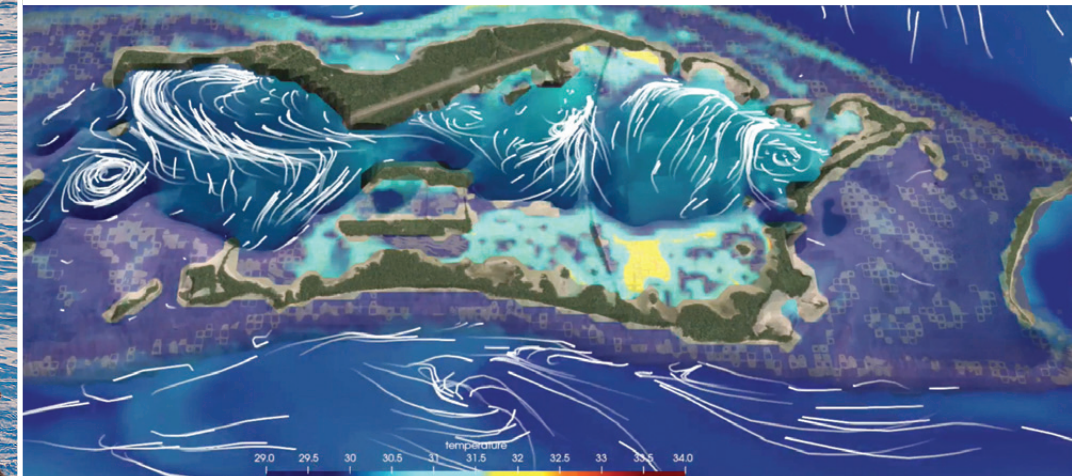
A 3D virtual replica of coral reefs allows researchers and reef managers to simulate different environmental conditions and conservation actions, and then see their outcomes. For example, coral restoration practitioners can virtually plant corals and see where currents will carry their offspring—using hydrodynamic models developed by our partners at Woods Hole Oceanographic Institution. The world’s first “digital reef” is being developed at Palmyra, with similar models in the works for Olowalu on Maui and other important reefs around the globe.

REEF INSURANCE

TNC worked with an insurance broker to develop the first policy for nature in



Invasive tree ferns identified with red dots on a high-resolution aerial image taken of remote forests on Kauai. © Resource Mapping Hawaii



A snapshot of flow and temperature around Palmyra Atoll from the Digital Twin © Digital Reefs



Monitoring allows researchers to recover drifting FADs, like this one near Palmyra Atoll. © Kydd Pollock/TNC

the U.S. It will provide a near-immediate payout to repair Hawai‘i’s coral reefs in the event of a major storm. This tool will provide funding for restoration and repair of coral reefs, enabling a quick response when time is of the essence.

MONITORING SEABIRDS

In 2022, managers launched a seabird monitoring project at Palmyra Atoll, which includes using AI to analyze high-resolution aerial imagery taken by a drone to detect and identify seabirds across the landscape. This technology opens new doors for conservation science and can be adapted for use in other locations.

TRACKING FADS

When Fish Aggregation Devices drift away from fishing areas, they can cause unintended impacts on wildlife. In a program launched with commercial tuna fishery partners, TNC monitors

drifting FADs around Palmyra, collecting biomass data to better understand their impacts on ocean ecosystems, and giving staff the chance to intercept the devices before they become grounded on fragile coral reefs.

FISHKIT

Working with a handful of communities in Hawai‘i and other parts of the globe, The Nature Conservancy developed software to help support local management of small coastal fisheries. Programmers are now updating the software so that it can be applied to fisheries worldwide.

Ultimately, TNC’s focus on technology and innovation is about finding new ways to be effective environmental stewards and community partners, says Emily Fielding, TNCHP marine conservation director.

“We absolutely have to keep innovating to address the challenges of the present—and the future,” she says. “In terms of technology, we want to stay abreast of all the innovations that are constantly happening in our world, and explore how they can help us better protect our natural resources.”

Strengthening Our Organization

In 2017, TNCHP’s Ihupani Advisory Council was inaugurated with five members, the sixth joining in 2018. In Hawaiian, “ihupani” means “expert, wise person, wisdom,” so it is fitting that this group is made up of previous board members. This February, we inducted two additional members, Paul Alston and Nate Smith. Paul joined the board in 2014 and served as Chair from 2019 to 2022, and Nate joined the Board in 2009 and served as Chair from 2016 to 2019.

Director of Philanthropy Lori Admiral acknowledges that TNC’s strength as a non-profit comes in part from the board. “Continuing to harness knowledge from Ihupani members after their formal board terms end adds resiliency to our organization,” she says. “The Council has championed successful fundraising initiatives, demonstrating that they are a foundational part of our past and our future as well.”



TNCHP staff and trustees gather to celebrate new Ihupani members. © Steven Mecca/TNC

INTRODUCING OUR NEW PHILANTHROPY STAFF MEMBERS



As our new Grant Writer, **Christy Potvin** brings 15 years of grant writing experience, from employment in the healthcare industry and Tribal government to freelance opportunities for many nonprofits. Being raised with a deep appreciation of the woods, swamps, rivers and lakes within northwestern Wisconsin, she is passionate about nature and is thrilled to use her talents for our chapter.



We also welcome **Ali Peterson** to our team as our Philanthropy Coordinator. Ali brings direct experience as database administrator at the Aloha Council, Boy Scouts of America, where she held a similar role. Originally from Oregon, she enjoys spending time in nature and experiencing the world through hiking, photography, travel and cuisine.

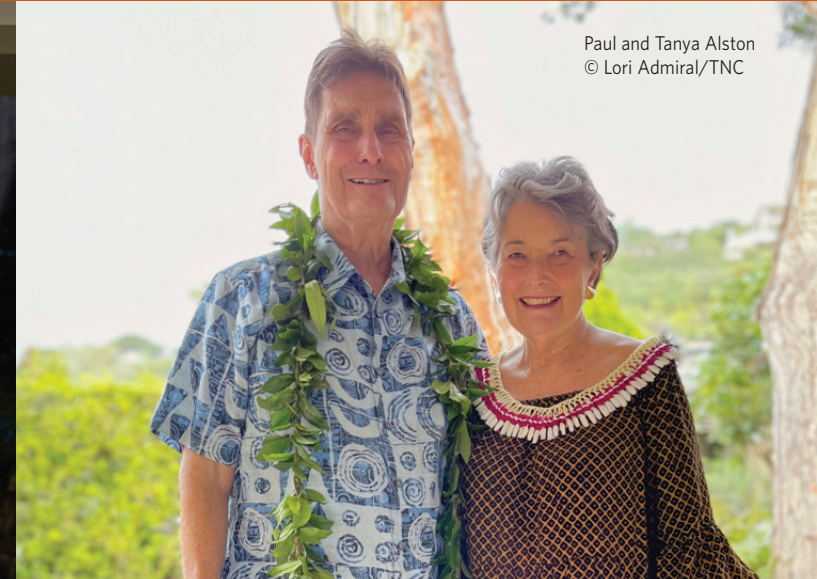


Our new Associate Dir of Philanthropy, **Zach Horton**, previously worked with TNC’s Texas and Caribbean programs for nearly 8 years. He worked most recently in Hawai’i with the Hawai’i Island Land Trust. Zach brings nearly 20 years of fundraising experience to his role with us and is excited to focus his expertise near his home in Hilo on Hawai’i Island.

Ensuring Resiliency for Future Generations



Ulalia Woodside Lee with Nate Smith (left) and Paul Alston (right) © Lori Admiral/TNC



Paul and Tanya Alston © Lori Admiral/TNC

Nature As Our Kin

TNC co-sponsored a reception with UH Manoa for Dr. Robin Wall Kimmerer, author of *New York Times* bestseller *Braiding Sweetgrass*. At her talk, she shared a message speaking from her heart as a member in the Citizen Band Potawatomi, a scientist, professor and mother. She believes that the best way for us to care for our lands is to weave together traditional ecological knowledge and science with Western science in a reciprocal relationship.



Dr. Robin Wall Kimmerer and Executive Director Ulalia Woodside Lee © Lara Siu/TNC

Dr. Kimmerer suggests a shift away from thinking about the world as a natural resource to thinking of nature as our kin, honoring the gifts given by our relatives. This too is the basis of Hawaiian cultural values, with people being part of—and not separate from—nature.

TNCHP Executive Director Ulalia Woodside Lee shares, “The Hawaiian saying *malama kekahi i kekahi* (we must take care of each other) includes plants and animals as our kin; exactly in line with Dr. Kimmerer’s thoughts.”

TNC is a natural fit for Paul and Tanya Alston, who have supported our work for almost four decades through membership, donations, volunteer leadership and as members of our Legacy Club, helping to protect nature for future generations.

Paul joined the Board of Trustees in 2014 and brought with him deep experience as a real estate attorney in Hawai’i, connecting conservation-minded landowners to properties with distinct natural resources. He served as Board Chair from 2019 to 2022 championing Diversity, Equity, Inclusion and Justice goals and has challenged trustees and staff to focus on ambitious and sometimes difficult issues to help grow the chapter’s reach and relevance.

Tanya grew up on a dairy farm on Hawai’i Island. Her childhood adventures, both mauka and makai (mountain and ocean), shaped her early love of nature. Tanya shares, “It is important to us both to understand there are things we can’t change, but then also put our time into helping organizations work on what we can change. Working with many organizations in Hawai’i, we find that TNC allows us to be connected to different places across the islands that we can help ensure are preserved.”

Paul is pleased by the practical approach TNC takes, and they both agree that there is an inherent responsibility to act both

here in Hawai’i and globally. Paul notes, “Sometimes you need to experience a project to fully understand how it impacts both the area where it is located and the broader environment.”

This happened for Paul while learning more about the chapter’s projects. Paul says “I didn’t fully understand why staff was working at an atoll 1,000 miles away from Hawai’i. It’s so remote. But when I visited Palmyra Atoll, it was easy to see that resiliency is best studied at a place free from population and industry stressors. Lessons can be gathered more quickly in lightly touched areas and applied to less pristine locations in hopes of bringing them back into balance.”

They see that collaboration among researchers on Palmyra Atoll as well as TNC’s work with communities and other public and private partners in Hawai’i enables efficient solutions.

What brings Paul and Tanya hope are younger people engaging in our work, learning how TNC combines cultural knowledge and science.

TNCHP Director of Philanthropy Lori Admiral says, “We are fortunate to have donors like Paul and Tanya, who share their expertise and passion for protecting nature and championing the importance of ensuring resiliency for future generations.”

Palmyra’s remote location makes it an ideal place to study the resiliency of coral reefs. © Tim Calver



nature.org/HawaiiPalmyra



Advocating for Conservation

On March 8, TNC Hawai'i and Palmyra trustees and staff convened at the Hawai'i State Capitol in Honolulu for an Advocacy Day. Attendees met with legislators to talk about TNC's work in Hawai'i and government funding and policies that support our vital conservation work with partners. The trustees and staff highlighted TNC's support for a visitor green fee, community-based coastal management and Hawai'i's vanishing forest birds.

With the State Legislature fully reopened for the first time since the COVID pandemic began, Advocacy Day was an opportunity to reacquaint or introduce TNC to the legislators. TNC is an active advocate for State policies and funding to support conservation throughout Hawai'i, and connecting with legislators about our work is key to helping them understand how the policy and funding they debate and vote on impacts conservation and communities.



Senate President Ron Kouchi (left) meets with TNCHP Board of Trustees Chair Anne Carter, Executive Director Ulalia Woodside Lee, and staff Nicolai Barca and Anthony Ching to talk about conservation in Hawai'i. © Cory Lum



TNCHP leadership, staff and trustees attend Advocacy Day at the Hawai'i State Capitol to meet with legislators and discuss priority conservation work. © Cory Lum