Environmental Initiatives

At

AHURA RESORTS

The Warm Heart Of Fiji.



Protecting Iconic Fijian Biodiversity

AHURA RESORTS is committed to the responsible stewardship of our precious natural environment, while providing world-class service and luxury to our guests.

The remarkable people and animals of the Fiji Islands make it a stunning global ecotourism destination. Our devotion to sustainability has never been stronger.

Come grow with us.





Adult Male

Adult Female

Our Story

The Fijian Crested Iguana, *Brachylophus vitiensis*, is a prehistoric and iconic resident of the Fiji Islands. This critically endangered species is found nowhere else on Earth. On Malolo Levu Island (where Ahura Resorts is located) this species was feared to be wiped out due to habitat loss and non-native predators. For 25 years, no scientist saw an iguana on the island. This changed on 13 October 2010. On that date, we unexpectedly found an injured adult female iguana at Likuliku Lagoon Resort. This iguana was immediately sent to nearby Kula WILD Adventure Park for veterinary care. Unfortunately, this iguana died shortly after arrival. But in a remarkable stroke of luck, leading iguana experts, Dr. Robert Fisher from the United States Geological Survey and Dr. Peter Harlow of Taronga Zoo happened to be visiting Kula Park when the iguana arrived. Incredulous, but with a glimmer of hope, they took the iguana to Suva where it is now part of the University of South Pacific museum collection. A tissue sample from the iguana specimen was soon sent to San Diego Zoo Global in the USA for DNA analysis. Six weeks later, the DNA results confirmed everyone's hopes. The specimen was a bona-fide Malolo Levu Island Crested Iguana. The species had been re-discovered.



Juvenile





Global partners (left to right): Dr. Robert Fisher (United States Geological Survey), Dr. Peter Harlow (Taronga Zoo), Adam Clause (University of Georgia), and Kim Lovich (San Diego Zoo Global)

The Ongoing Saga

To our delight, three months later, a staff found a baby male iguana at Malolo Island Resort. A young female then appeared at Likuliku Lagoon Resort early in 2011. Over the next few years, a handful of other iguanas trickled in, creating international interest in learning more about the population. But despite these rare, ad-hoc finds showing that iguanas still lived in the area, scientific surveys failed to produce any sightings in their natural habitat.

In collaboration with researchers from the United States Geological Survey, Taronga Zoo, and San Diego Zoo Global, Ahura Resorts took immediate steps to identify major threats that could be endangering the local iguana population. The first item on the agenda was to begin a non-native species control program, designed to reduce the numbers of feral cats, semi-feral dogs, and rats at Ahura Resorts. Our second goal was to restore the last few patches of tropical dry forest, which is the only known habitat for the treetop-dwelling Fijian Crested Iguana.

Three years after the start of these programs, in June 2015 another survey of the tropical dry forest areas on Ahura Resorts revealed six new iguanas. The programs were working. Two of these six iguanas were captured, DNA sampled, electronically tagged, and released back into their natural habitat. Since then, we have continued to monitor the wild populations, and have dedicated ourselves to iguana recovery. The stunning re-appearance of these living jewels has captured our imagination, and renewed the commitment of Ahura Resorts to environmental stewardship.



Dr. Robert Fisher conducting observations



First capture, tag and release iguana 2015





Dry Forest Habitat

Degraded Dry Forest

Tropical Dry Forest Restoration Program

Tropical dry forests grow in the rain-shadow regions of the Fiji Islands. This type of vegetation is among the most endangered ecosystems on the planet. Once, most islands in the Mamanuca island group were covered in tropical dry forest. But today, only 1% of this ecosystem remains. Most of it in the form of small isolated pockets. This forest supports the Fijian Crested Iguana and a host of other native animals. Diverse bird life call these forests home, including the Fiji Goshawk, Peregrine Falcon, White-throated Pigeon, Collared Kingfisher, Slaty Monach, and many more. With the loss of their habitat, these birds have declined much like the iguanas, and were not commonly seen at Ahura Resorts.

To address this problem, we began working with Dr. Peter Harlow of Taronga Zoo in Australia. Under Dr. Harlow's advisement, we kick-started a tropical dry forest restoration program. This program was designed to restore, increase and stitch together patches of forest, and manage invasive plant species that inhibit the growth of native tree species. Using the innovative 10-square-meter grid system, we began planting 12 species of tropical dry forest trees that are essential habitat for iguanas, birds, and other fauna. To support this restoration program, in 2012 we established a native plant nursery at Likuliku Lagoon Resort. It remains the only resort in Fiji to have such a nursery, and has since produced over 3,500 native trees that have been planted within the resort leases. In lockstep with this restoration program, we have seen a surge in the numbers of iguanas, birds, and other native reptiles at Ahura Resorts.



10m x 10m Dry Forest Prototype at Likuliku Lagoon Resort



Native tree seedlings raised at Likuliku Lagoon Resort Nursery







Sialisi Rasalato – Group Environment Manager

Consolidation and Plans for the Future

With increasing sightings of wild iguanas, in 2016 we decided to sponsor a 3-month internship by Adam Clause, a Ph.D. student from the University of Georgia studying reptile conservation. This role was put in place to consolidate all our iguana data into a centralized database, while simultaneously expanding iguana surveys to other tropical dry forest patches in and near our resort lease boundaries.

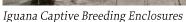
These surveys resulted in the discovery of two new subpopulations of iguanas. By the end of the internship in August 2016, a total of almost 30 individual wild iguanas had been documented across Ahura Resorts. Over half of these iguanas were juveniles, indicating a rapidly growing population. The conservation programs put in place five years earlier had clearly made a positive impact. From this expanded dataset, we began to re-evaluate our programs, and rationalize our direction for the future.

The clear need for ongoing specialist expertise soon motivated us to create a Group Environment Manager position at Ahura Resorts, the first of its kind in Fiji. We were immensely pleased when, in January 2017, Sialisi Rasalato accepted our offer for this position. Among Sia's many duties are to continue building our tropical dry forest nursery, oversee the restoration of this forest ecosystem, monitor the growing wild iguana population, manage our budding iguana captive breeding program, and maintain close relationships with our local and international partners and government bodies. Importantly, he has provided ongoing training and education to staff, guests, and local villagers regarding all of our environmental initiatives. This has built critical awareness and support for future endeavors across the island.

About Ahura Resorts

Ahura Resorts is the owning and management company for Likuliku Lagoon Resort and Malolo Island Resort, both located on Malolo Levu Island in the Mamanuca island group—25 kilometers (16 miles) from Nadi. We have been leading many targeted, iguana-related environmental initiatives on our resort leases since 2010 as part of an international team of biologists from the United States Geological Survey, San Diego Zoo Global, Taronga Zoo, Mamanuca Environment Society, and local community partners of Malolo Island, namely Yaro and Solevu villages.







Likuliku Lagoon Resort Management with hatchlings for release

PROGRAM AT A GLANCE

Fijian Crested Iguana Captive Breeding Colony

- All iguana cages under lock-and-key, and camera surveillance
- All iguana cages outfitted with cage ID and iguana ID signage
- Created an iguana data book, with profiles for every Ahura Resorts iguana
- First captive offspring hatched in 2017

Tropical Dry Forest Restoration

- Native tree/shrub species nursery at Likuliku Lagoon Resort
- Planted demonstration 10 m X 10 m restoration plots
- Monthly "Plant a Tree Day" activity for guests, staff, and village residents
- Over 3,500 trees planted to date
- Preliminary native plant species list developed for Ahura Resorts leases
- Advocated for local government prohibition against outdoor bush fires

Control of Non-native Predators

- Deployment of live cage traps for feral cats
- Zero-tolerance policy for free-ranging dogs on resort leases
- Bait stations for rat control
- Staff and guest surveillance and removal program for new cats, dogs, and rats



Kids Club education and outreach at Malolo Island Resort



Marine species conservation and ecosystem enrichment

PROGRAM AT A GLANCE (continued)

Education and Outreach

- Weekly live-animal demonstrations at Malolo Island Resort Kids Club
- Ongoing environmental training of Malolo Island Resort Kids Club staff
- Ahura Resorts environmental training for staff and village residents
- Distribution of in-room printed content for guest and staff awareness of environmental programs
- Weekly iguana talks at Likuliku Lagoon Resort
- Weekly "Medicine Walks" to promote awareness of Fijian ethnobotany
- Night time "Iguana Habitat Survey" participation

Reptile Counter-smuggling

- Profiles of known and suspected reptile smugglers shared with security staff
- Pre-arrival guest screening against list of known smuggler names and aliases
- "Mug shots" of known and suspected reptile smugglers shared with resort staff

Marine Protected Area

- On-going monitoring of marine ecosystem (abundance, age structure, species diversity, and spatial distribution)
- Monthly "Plant a Coral Day" activity involving guests, staff, and village residents
- Periodic replenishing of two in-house coral nurseries
- Monthly monitoring of seawater-quality indicator metrics

Point-of-Contacts

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Watch for Our Informational Signs

(Posted at Likuliku Lagoon and Malolo Island Resorts)

Likuliku Lagoon Resort **IGUANA SANCTUARY**



Malolo Iguana Facts

- 1. The Iguanas in Fiji are genetically island specific
- They are a stocky lizard with up to three white broad bands across it back. It is distinguished by tall spiny crest on its back.
- They can grow to a length of 75cm weighing up to 300gms and have a life span of up to 23 years in captivity. Research shows that in the wild this is about 8 to 15 years.
- The species was first identified in 1979 by John Gibbons at Yadua Taba island but then during the filming of Blue Lagoon in the Yasawa islands it was discovered they had a larger range.
- They are restricted to tropical dry forest found throughout the islands of Fiji.
 Dry forest is now considered one of the most endangered eco systems on the planet. Today isolated pockets of dry Forest exist on the islands.
- Iguanas are active during the day living in the upper reaches of the dry forest. They are well camouflaged and difficult to see during daylight. They are best observed at night when their white stomachs show through the vegetation under torchight.
- They have the ability to change colour from Green to Black when aroused or threatened. They will also expand their necks, bob their heads and will even pounce at the potential threat.
- They reproduce by laying eggs. Breeding season takes place between March and April with courling and mating started in January. They lay up to 4 to 6 eggs at a time which are laid in a dug out hole or burrow. Iguanas have one of the longest incubation of any reptile taking up to 9 months to hatch. The female comes down to lay the eggs and immediately returns to the treetops leaving the
- 10.Biggest threat to the iguana is the loss of its native forest habitat due to clearing, fires and increasing urbanization. Huge areas of Fiji's dry forest habeen cut down and destroyed for building purposes, agricultural clearing and burning. Other threats include the introduction of goats, feral cats, rats and mongoose that prey on the iguanas and the eggs and also compete with the iguanas for food.

A Disappearing Species

The Fijian Crested Iguana – Generic Latin name Brachylophus from Greek words BRACHYS meaning "short" and LOPHUS meaning "crest" or "plume". Three types of Iguana are found through the islands Fiji. The Fiji banded Iguana – Brachylophus bulabula. Lau Banded - Brachylophus fasciatus, and the Fijian Crested Iguana Brachylophus vitiensis.

Today the Fijian Iguana is classified as Critically Endangered (CR) on the IUCN Red List 2007 (1), and listed on Appendix I of CITES.

The Malolo Island Iguanas are of the crested variety Brachylophus vitiensis and were until 2010 considered extinct until an injured one was discovered behind Bure 44 at Likuliku Lagoon resort. It was sent to Kula Park on the main island for care but unfortunately the animal died shortly after arrival. The Curator of Kula Park advised visiting rese Robert Fisher of the US Geological Survey and Peter Harlow of Taronga Zoo of the find and they took the iguana to Suva where it is now part of the University of South Pacific Vertebrate collection. A tissue sample was taken from the iguana and sent to San Diego Zoo in the USA for DNA analysis. There was bittersweet excitement when six weeks later the results came back indicating it was a species that was thought to be extinct.

Discovery

Fortunately three months later another junior iguana was found at Malolo Island Resort and a second older iguana was found a few months later at Likuliku Lagoon Resort. Several more have since been found and seven are now held in captivity at Likuliku Lagoon Resort for observation and breeding purposes. They have all been DNA tested and of the original Malolo species

Despite these rare ad hoc finds that clearly indicated iguana presence in the area surveys undertaken to find more failed to produce any sightings in their natural habitat.

Working with researchers from the US Geological Survey, Taronga Zoo and San Diego Zoo immediate steps were taken by Ahura Resorts to identify major threats that could be inhibiting the presence of an iguana population. The first item on the agenda was to remove the local feral cat and rat populations and secondly introduce an on going dry forest reforestation program on the resort leases.

In June 2015, 3 years after these programs were implemented a survey of the dry forest areas was conducted and revealed six new iguanas. The program had worked. Two of the six iguanas were captured, DNA samples taken and then tagged and released back into

The Sanctuary
The preservation of these iguana's and the dry forest vegetation on Likuliku Lagoon Resort and Malolo Resort leases is an ongoing environmental initiative of Ahura Resorts in partnership with US Geological Survey, Taronga Zoo, San Diego Zoo and the and the Mamanuca Environment Society.









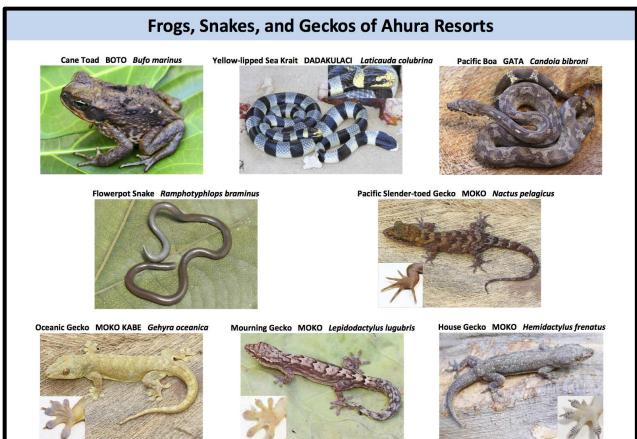


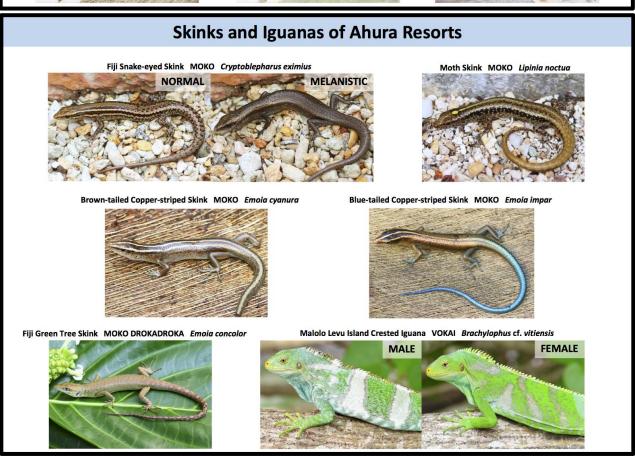




Robert Fisher - US Geological survey giving Adi Wadigi a general health assessment.

Ahura Resorts Amphibian and Reptile Field Guide





Scope of Fijian Crested Iguana Environmental Initiatives at Ahura Resorts

Overview

Since 2007, Ahura Resorts has been spearheading environmental initiatives on Malolo Levu Island. Beginning in 2010 with our re-discovery of Fijian Crested Iguanas, these initiatives grew rapidly in scope. Today, Ahura Resorts' environmental commitment is unrivalled among Fijian resorts. The lynchpin behind our environmental ethic is the iconic Fijian Crested Iguana. Ahura Resorts' dedicated focus on this species and its habitat has been highly collaborative, and we are grateful for generous partner support. Our team includes international collaborators from the United States Geological Survey, San Diego Zoo Global, Taronga Zoo, and The University of Georgia, along with vital regional partners at the Mamanuca Environment Society, Yaro Village, and Solevu Village. In keeping with Ahura Resorts' award-winning standards for world-class service and luxury, our goal is to showcase a new model for environmental responsibility to the Fiji resort community. Already, several of our projects are being implemented by other stakeholders across the Mamanuca island group. We are grateful for your support as we strive to preserve our precious natural environment, while also improving the Fijian ecotourism economy.

Introduction

The Fijian Crested Iguana, *Brachylophus vitiensis*, is native only to Fiji. It is listed as Critically Endangered by the International Union for the Conservation of Nature (IUCN). The IUCN is a globally-recognized organization that calls attention to threatened species. In the Mamanuca island group, to which Malolo Levu Island belongs, the Fijian Crested Iguana is known to survive on only three islands. Available forest on these three islands represents less than 10% of the species' former range in the Mamanuca group. After such a dramatic decline, it is no surprise why the species is so endangered. We view the Fiji Crested Iguana as a conservation flagship. It is a remarkable jewel that roots most of our environmental initiatives at Ahura Resorts.

Tropical dry forest habitat is essential to the survival of the Fiji Crested Iguana. This type of forest historically covered the islands in the Mamanuca group, but is now one of the most endangered ecosystems on Earth. Across Fiji, only about 1% of tropical dry forest is still intact. Restoration of this forest will not only increase vital habitat for iguanas and other Fijian wildlife, but will also improve water quality both on land and in the ocean. Furthermore, our hope is that forest restoration will boost ecotourism in the beautiful Mamanuca group, thus benefitting the local Fijian economy. We are devoted to making this restoration a grassroots exercise. We regularly offer training events to local Fijian residents. Through this training, these stakeholders can develop their own expertise, take ownership of the initiatives, and apply their knowledge to other islands and sites as needed.

In November of 2016, the IUCN Iguana Specialist Group held their annual meeting in nearby Musket Cove, on Malolo Lailai Island. The conference brought together leading iguana scientists and conservationists

from around the globe. Ahura Resort's ongoing environmental work featured prominently in the conference's proceedings, placing an international spotlight on the importance of our projects.

Since 2010, we have been pursuing four separate environmental initiatives that are directly related to iguana conservation. In the sections that follow, we discuss these four projects individually.

Fijian Crested Iguana Surveys in the Mamanuca Islands

In 2010, Ahura Resorts staff re-discovered Fijian Crested Iguanas on Malolo Levu Island. For over 25 years, no iguanas had been seen on the island by scientists. This unexpected find brought renewed scientific interest in learning more about the iguanas' distribution. Not only on Malolo Levu Island, but also across the entire Mamanuca island group. Understanding where iguanas still live in the wild is an important first step, and will help with long-term conservation planning. Since 2011, our team has completed dozens of nighttime surveys for iguanas.

To date, our surveys have revealed about a half-dozen small, isolated populations of iguanas on Malolo Levu Island. These include growing populations at Likuliku Lagoon Resort and Malolo Island Resort. The majority of these iguanas have been DNA tested, and fitted with tiny electronic tags for monitoring purposes. We have also created a comprehensive iguana photographic portfolio. This portfolio allows us to visually identify and track individual iguanas over time.

In addition to Malolo Levu Island, our team recently surveyed for iguanas on four other islands in the Mamanuca group. We completed these surveys under approval and support from local landowners and lessees, often with participation from regional stakeholders. Unfortunately, we did not discover any iguanas on these islands, despite the presence of some tropical dry forest patches. Other threats (such as feral cats) seem to have killed off any iguanas that were left. These findings have emphasized how special it is that Malolo Levu Island still supports Fiji Crested Iguanas.

Moving forward, we plan to continue doing iguana surveys throughout Malolo Levu Island and nearby islands as opportunities arise. We also hope to expand our Malolo Levu Island surveys to cover every patch of tropical dry forest left on the island. Furthermore, by repeating surveys of known populations, we can estimate how many iguanas are present and monitor their health. Ahura Resorts guests interested in participating in nighttime iguana surveys are encouraged to inquire with resort staff.

Fijian Crested Iguana Captive Colony at Likuliku Lagoon Resort

Soon after the re-discovery of Fijian Crested Iguanas at Ahura Resorts, we established an iguana captive assurance colony at Likuliku Lagoon Resort. Captive assurance colonies protect endangered animals from threats in the wild, and are an effective emergency conservation method. Captive assurance colonies also play a critical role as an educational tool. The visibility of the captive animals offers a chance to promote local and international awareness of imperiled wildlife. From 2011–2015, we placed nearly all iguanas found on the resort leases into this captive colony, protecting them until we could learn more about the status of the wild population.

Once we improved the security of the wild iguanas through ongoing control of non-native predators (see next section), we changed the purpose of our captive colony. Instead of being an assurance colony, it is now a breeding colony. This breeding colony serves two purposes. First, to quickly produce offspring for release back to the wild. And second, to foster a personal connection between people and the iguanas. We now maintain about eight Fijian Crested Iguanas as long-term members of our captive colony. These are all reproductively mature adults, and are housed as four male/female pairs. Each iguana was originally collected from Malolo Levu Island. Except in extraordinary circumstances, we do not plan to expand this colony to include more wild-collected adults. Our position is that, with ongoing habitat restoration efforts and control of non-native predators, the best place for most iguanas is the wild.

In August 2017, we successfully hatched our first two baby iguanas. This joyous event marked the first time in the world that captive Fijian Crested Iguana eggs hatched naturally without using an incubator. This is a testament to our naturalistic enclosures. The cages give the iguanas a comfortable environment that closely resembles their treetop habitat. The innovative design of our large enclosures, which feature entire live shrubs, exposure to natural weather conditions, and direct access to deep soil for egg laying, is unique for captive Fiji Crested Iguanas worldwide. These design features have been incorporated as best-practice recommendations for captive iguanas in Fiji, which is outlined in the IUCN Fijian Iguana Recovery Plan.

To promote ecotourism and education, we advertise our breeding colony to all guests at Likuliku Lagoon Resort. We have also established a weekly iguana-themed environmental program at Malolo Island Resort, using one long-captive adult male iguana as a living ambassador for the species. This same iguana, named "Malolo" after the island and resort where he was found, also attends presentations to Ahura Resorts staff. Many of these staff are long-time residents of Yaro and Solevu Villages on Malolo Levu Island, so these presentations spark much-needed stakeholder appreciation.

Control of Non-Native Mammals at Ahura Resorts

Following our 2010 re-discovery of Fijian Crested Iguanas, Ahura Resorts began a control program for feral cats, semi-feral dogs, and rats. These non-native, invasive mammals are not pets. Rather, they are wild or semi-wild animals that pose a health risk to people and to native Fijian wildlife. They can transmit diseases and parasites (like fleas) to resort staff and guests. They prey upon many kinds of rare invertebrates, birds, and lizards—including iguanas. Free-ranging cats and dogs attack and kill pregnant female iguanas that climb down from the treetops to lay their eggs in the soil. If a pregnant iguana is lucky enough to escape being eaten, her newly-hatched babies are also vulnerable to death by cats or dogs. The decline and near-extinction of iguanas from Malolo Levu Island is due, in large part, to the predatory instincts of these invasive mammals. Free-ranging cats and dogs are simply incompatible with iguanas.

Our mammal control program continues to be implemented at both Likuliku Lagoon Resort and Malolo Island Resort. These control efforts have proved quite successful. We have removed dozens of cats and dogs, and probably hundreds of rats over the years. These mammals are now rarely seen at Ahura Resorts.

Pending island-wide eradication of these destructive invasive mammals, or the installation of a mammal-proof fence, our control efforts will remain ongoing. We continue to strategically place humane live traps for cats, have a zero-tolerance policy for feral dogs at Ahura Resorts, and have a rat invasion monitoring

protocol that includes bait stations. Constant vigilance is required to keep our small wild iguana populations safe from these mammals. We ask guests to help us keep watch for newly-arrived pests. If you see a cat, dog, or rat during your stay, please contact staff immediately.

Tropical Dry Forest Restoration at Ahura Resorts

Airplane flyovers of Malolo Levu Island, together with Google Earth satellite photos, show that very little native tropical dry forest is left on Malolo Levu Island. Remnant patches are generally small (less than 10 hectares, or 25 acres) and isolated from one another among grassland and scrubby growth of ironwood or nokonoko trees. This damaging shift away from tropical dry forest has occurred on the majority of the islands in the Mamanuca island group. Restoration of this forest is an urgent conservation priority in this part of Fiji. We are excited to share our team's successful restoration protocols with other island stakeholders, for regionally impactful conservation.

Wildfires are the biggest reason for the loss of tropical dry forest in the Mamanuca island group. Fire is not a natural form of disturbance in this ecosystem. Repeated fires quickly destroy tropical dry forest, and prevent it from regenerating. Fortunately, advocacy by Ahura Resorts and our team of partners recently led to the regional government enacting a law against setting wildfires. We are hopeful that this law, which imposes substantial fines against those who violate it, will stop wildfire on Malolo Levu Island. In the meantime, we actively maintain firebreaks that protect Ahura Resorts from the danger of wildfires. No fire has ever crossed our firebreaks. For now, iguana populations on our leases are safe from their last bits of habitat being burned.

On our fire-sheltered leases, we are also taking steps to speed the regrowth of tropical dry forest. Since Likuliku Lagoon Resort's groundbreaking in 2005, we have maintained a nursery area with staff dedicated to its operation. We currently support live, potted stock of almost 20 native tropical dry forest species at this nursery. Most of these species are known to be preferred food plants for the Fijian Crested Iguana, which is a strict herbivore. We have also established two large raised beds for tropical dry forest seed propagation. In total, we have planted over 3,500 tropical dry forest trees and shrubs at Ahura Resorts.

More widely, our tropical dry forest nursery has also produced stock for tree planting initiatives at Yaro and Solevu villages. These initiatives are led by the village Natural Resource Committees, in consultation with the Mamanuca Environment Society. Pending survey work to reveal iguana presence/absence from remnant patches of tropical dry forest near those villages will inform the urgency of this program.

Likuliku Lagoon Resort guests interested in learning more about tropical dry forest restoration are encouraged to visit our demonstration restoration plots. These 10 meter by 10 meter plots model a manageable approach to successful tree planting, and showcase the proper ratios of the different species. If interested, please speak to resort staff so that they can direct you to these plots, or schedule a personalized tour.