



Fiji's coastal ecosystems boast some of the highest biodiversity in the world.

A CULTURE OF CONSERVATION IN FIJI

Fijian villages, nonprofits and government officials have built a lasting movement to protect ecosystems and fisheries across their archipelago. Now, as two decades of support for that effort by the David and Lucile Packard Foundation comes to an end, the community looks back at its accomplishments — and ahead to the conservation challenges that loom.

By Eli Kintisch

Fiji Profile

Three men went out fishing one night in Fiji; two returned. They had been heading to Cakaulevu, the third-longest reef system in the world. Known as the Great Sea Reef, its ecosystem teemed with sharks, fish, and turtles. But the men's boat sprung a leak and capsized. That April night in 2013, the third man tragically died in the waters of Macuata province, the territory for which he served as tribal chief. Aisea Katonivere was 57 years old. During three days of funeral rites, men in traditional dress stood guard with Fijian war axes as mourners brought traditional colored mats, pigs, fish, and turtles to Katonivere's village of Naduri. The nation's prime minister and military leaders gathered along with hundreds from the province's roughly 100 villages and beyond. Days later, Katonivere's

mourning brother Wiliame was named as the provincial Tui, or chief. At the ceremony for his selection as chief, Wiliame spoke humbly. "Lord make me an instrument of your desire," he told a reporter. Inside, he felt shock and the weight of expectations given the wide respect Aisea had enjoyed. "I never had the slightest idea I would be here," he said. Suddenly, 70,000 residents were relying on him to lead. For Fiji's conservation community, the transition to a new chief provoked particular anxiety. Known as the "fish basket of Fiji," Macuata provides around 60 percent of the seafood consumed in the South Pacific nation, whose habitats feature some of the greatest marine biodiversity in the world. It's a fish basket in decline: a survey of Cakaulevu in 2004 found commercial fish species in "very low numbers and small sizes,"¹ echoing studies across Fiji that have identified coastal ecosystems at risk. Over his 12 years as chief, Aisea had sought to safeguard that biodiversity against overfishing, earning a reputation as a "great conservation partner," as the World Wildlife Fund for Nature (WWF) called him.

Would Wiliame forge his own reputation as a protector of Macuata's natural richness? The question mattered because of Fiji's evolving environmental governance system. That arrangement, which has its roots in agreements and laws made before and during British colonial rule, balances local and national government control of natural resources. It links decisions made in Suva, the island nation's capital, with its 1,200 villages, led by Fijian chiefs like Wiliame. The national government's Fisheries and Justice ministries are legally responsible for executing the country's laws relating to fishing and conservation. Their police and fish wardens are spread out over the sprawling archipelago, empowered by national law to

monitor and defend the nation's coastlines and biodiversity. But Fiji's local leaders like Wiliame have just as much influence, if not more. They exert local control over fishing in Fiji's traditional fishing areas, or qoliqoli (pronounced "ngohl-ee ngohl-ee"). In that role, they oversee applications for fishing licenses, determine where and when fishing is allowed, and coordinate volunteer fish wardens to monitor the qoliqoli and fight poaching.

The task of balancing these two forms of control over land and coastline lies at the core of Fiji's conservation challenge. "The local communities and the government have to work together to make progress on restoring our

Macuata provides around 60 percent of the seafood consumed in the South Pacific nation, whose habitats feature some of the greatest marine biodiversity in the world.

ecosystems," says Kiniviliame Ravnoloa, a community representative in a Fijian village called Votua.

"The two systems are very complementary," says James Sloan, an attorney in Fiji whose law firm has received grants from the David and Lucile Packard Foundation, a California-based philanthropy. "But at the moment, they're not aligned."

Fiji's conservation system is not yet ready to meet the country's modern challenges. Local communities, whose conservation efforts have been funded through philanthropically supported nonprofits, have struggled to protect dwindling resources as the nation's population and economy have grown. The national government has only recently emphasized protecting

coastal fisheries and biodiversity. Agencies responsible for that task are underfunded compared to higher priorities like economic development.

To improve its conservation governance, can Fiji make partnerships work between local and national, traditional and modern? How should this rapidly developing island nation of more than 900,000 people protect its ecosystems while growing its economy? And what is the role of the civic sector, and its international funders, in that effort?

For two decades, these questions have faced both Fijian coastal communities and the international conservation groups that have sought to protect the nation's threatened reefs.

Since 1998, the Packard Foundation has given roughly \$12 million to conservation efforts in Fiji. Most of that funding has supported the nonprofit organizations, described in this article, who have sought over the last 20 years to work at various levels of governance to sustain coastal ecosystems. But in 2020, the Foundation's funding to Fiji will end, providing an opportunity now to evaluate how the conservation community there has evolved over two decades of philanthropy. (This article, funded by the Foundation, is part of that evaluation.)

In recent years, Fiji has emerged as a global conservation leader, influencing its regional neighbors, winning international acclaim, and showing leadership on major issues like climate change. But at home, it faces a mounting set of threats to its conservation goals. Communities have steadily increased their reliance on fish not only for food but as a cash source for daily needs like clothing, medical costs, and education.

A growing population's appetite for fish, an expanding tourist economy,

¹Jenkins, A., H. Sykes, P. Skelton, M. Fiu and E. Lovell. "Fiji's Great Sea Reef: the first marine biodiversity survey of Cakaulevu and associated coastal habitats." 2005.

and natural resource exports to Asia all contribute to overfishing, while pollution and climate change put additional stress on reefs. "Sometimes I think what I've been doing the last couple [years] is actually futile," says Kesaia Marama Tabunakawai, a longtime conservationist in Fiji who serves as Pacific Representative for WWF, a key Foundation partner there. She's not ready to give up on the country's rich biodiversity, she says, but the environmental threats Fiji faces can feel overwhelming. "I tend to still carry out the sense of plentiful, but I know that's not the situation."

The challenges that Wiliame Katonivere must confront are a microcosm of the larger issues at play in rapidly growing Fiji. So as the chief considered his stance, all eyes among Fiji's conservationists were on Macuata. Given the low income of his citizens, it's understandable that Katonivere's early moves focused on improving the economy of his region, populated largely by subsistence fishers and farmers. "My first focus is development," he said after taking over. That included jobs, building educational facilities, and, in the coastal realm, developing more facilities like ice plants that would encourage more fishing as opposed to less. "When he took the job he had a number of competing priorities," says Sandy Thompson, whose organization, the LEAD Centre for Not for Profit Leadership, has conducted leadership training in Fiji, funded by the Foundation. On conservation, in contrast to his brother, he was circumspect, leading Fiji's conservation community to wonder whether they would have a partner in the new Tui Macuata.

Villages, fish, and rights

A journey by fishing boat to Cakaulevu reveals the intimate,



Photo: © Laniana Dibe courtesy of James Sloan

Fishers like Laniana Dibe can provide food and some income for their families by catching mud crabs.

dynamic relationship that coastal villages in Fiji have with the sea. The sunlight sparkles off the waves as we approach the reef, which lies a few miles from the coconut trees that line Macuata's shore here. Wearing a snorkel and mask, Laitia Tamata Jr., with WWF, inspects the reef in a series of dives. Lifeless white corals dot the seascape, evidence of a bleaching event probably caused by recent typhoons, which dump hot water on Fiji's shores. Tamata grew up seeing teeming, frenzied sea life in Fiji's coastal waters. Once topside, he shakes his head. "The reef is in trouble," he says. Josateki Manatua, from nearby Raviravi village, remembers when big fish used to come right to the beach. But now, to find big ones, fishers must leave the coast, travel miles away, and dive deep.

Nearby, a small mangrove forest rises from a sandbar where a few men walk along the shore with bamboo spears. One lets fly, and after his spear strikes the surface of the water

with a metallic twang, a silvery barracuda is trapped, flopping around helplessly. Laniana Dibe, meanwhile, enters the mangrove thicket and begins climbing over one low branch after another until she spots a disturbance in the wet sand. With a knife, she extracts a bakera, or mud crab, from the muck and binds the crab's arms with bark peeled from a tree. She stores it in her long red traditional skirt, called a sulu, folded into a basket. If she doesn't feed them to her family, the crabs will fetch about \$10 per kilogram. Locals and tourists alike enjoy this species in spicy curries in the closest city, Labasa.

The group gathers in a clearing within the mangrove forest for a lunch on the sandbar. The men roast the fish they caught over a bed of hot coals. The women lay out plates and side dishes of taro, tomato, fruit, and coconut on banana leaves. Soon, everyone is laughing and eating, paying little mind to the poisonous sea snakes that dot the surrounding mangroves.

Wiliame Katonivere — known here by his chiefly title of Tui Macuata — controls these waters. The sea lies at the core of national identity in Fiji, a nation whose 1.3 million-square-mile territory is 98 percent ocean. The two biggest ethnic groups that make up the modern state — indigenous Fijians, known as the iTaukei, and Indo-Fijians, whose ancestors were brought to the islands as indentured laborers during British colonial rule — rely on the ocean for food and, to some extent, for livelihood. Half the country engages in subsistence fishing, and about one in 20 Fijian jobs is related to the seafood industry.²

But the two ethnic groups enjoy very different rights when they fish. Among the iTaukei's societal advantages is the fact that their clans and villages own 88 percent of Fiji's land and essentially all of its nearshore fishing rights. Indo-Fijians must pay for the right to fish in areas where iTaukei own fishing rights; they're not allowed to own coastal resources. Not surprisingly, land tenure issues have fueled political instability between the two groups in the past.

Fiji's dual governance system balances traditional authority at the local level with Western-style democracy rooted, on the national level, in British common law. Complicating matters are different ownership arrangements for inland and shore areas. While iTaukei clans exercise control over most of the country's landmass, the Fijian government owns all coastal areas, though the iTaukei do control the fishing rights in most such areas. The arrangement dates back to 1874, when Fijian ruler Cakobau signed a "deed of Cession" with the United Kingdom, handing over ownership of islands, waters, and reefs to the colonial power. When Fiji gained independence in 1970, the new Fijian government assumed control of the country, and subsequent versions of the country's constitution maintained national authority over the coastal waters.

Local control, local conservation

In 1996, women in a village on Viti Levu, Fiji's largest island, were struggling to find clams known as kaikoso that the village had relied upon for generations. The community, called Ucunivanua, consulted with researchers from the Institute of Applied Science (IAS) at the University of South Pacific in Suva. Together,



Macuata's 70,000 residents include Alisi Dauvere, seen here gleaning along the Macuata coast.

they created a zone within their qoliqoli in which no harvesting was allowed. Other such local collaborations to protect Fijian coastal fisheries followed, and four years later, at a conference sponsored by the Packard and MacArthur Foundations, regional experts would dub such projects "locally managed marine areas." The term "LMMA," as they came to be called, refers to marine areas under local management, with the dual goals of improving livelihoods and protecting habitats.

The LMMA idea soon became a movement that spread rapidly across the archipelago. When the Packard Foundation arrived in Fiji in 2000, aiming to protect the rich tropical biodiversity found in its reefs, IAS was one of the only organizations doing marine conservation there. Though the Foundation's original intention was essentially to preserve biodiversity by helping to create protected marine areas, its staff quickly realized the appeal and potential power of the LMMA approach, which emphasized livelihoods as well. Soon, handfuls and then dozens of communities were interested in creating and maintaining LMMAs on their coastlines. "The LMMA concept started to spread beyond anyone's expectations," wrote Bernd Cordes, the Foundation's program officer when the early work was funded.

Why did the movement take off with such force? "The key element is that the communities are in control," wrote Alifereti Tawake, one of the pioneers of the movement, in a 2007 presentation describing the first decade of the project.³ The movement offered individual villages not only the appealing prospect of local control of conservation management but also alignment with deep Fijian traditions involving communities, fishing, and land rights. Its structure aligned well with the governance structure within villages, where chiefs governed qoliqolis but also worked to achieve consensus. Unity was often solidified through customary practices. One was sharing kava, a popular drink made from the mildly narcotic pepper root and drunk in formal ceremonies before negotiating important issues. "Every community member would come together, they would drink a cup of kava, and they would say that they've agreed," Tawake says. "That is the [key] of enforcement because people will show respect, and their belief is that if they break that agreement, something bad will happen to them."

² "Combined NZ-Fiji patrols inspect six vessels for illegal fishing." *Fiji Times*. June 26, 2018.

³ Tawake, Alifereti, and Hoffmaister, Juan (2009) *Adaptation in Locally Managed Marine Areas in Fiji*. In: 2009 State of the World: Into a Warming World. The Worldwatch Institute, pp. 90-91.



Suliana Soloi is among Fiji's women fishers who access coastal fisheries by gleaning at low tide.

Management tools the LMMAs applied also had roots in iTaukei practices. Declaring temporary fishing bans, for example, built on the traditional iTaukei application of the tabu (pronounced "tambu"), a halt or restriction on fishing announced by chiefs, typically lasting 100 days. (They're one type of "periodically harvested closure," as they're known in the scientific and policy literature.) Tabus were usually called by traditional leaders after consultation with their members, with the aim of building up stocks of fish or seafood before harvests for upcoming festivals or funerals. LMMAs also served in some communities to protect sacred sites.

The partners from outside the villages that helped create LMMAs included major conservation groups, like WWF and Wildlife Conservation Society (WCS), but also officials from several government agencies. The partners would conduct workshops in villages in which the community members developed plans for managing their marine resources. "It was the first time in which villagers

actually had outsiders that were really delving more than superficially into their problems, that were in it for the long term," says fisheries expert Bob Gillett, a Foundation grantee in Suva.

Using those management plans, the communities and their partners enacted a variety of schemes. Closed areas that could be harvested periodically were the most common, but other approaches included permanently closed areas as well as bars on certain fishing gear or practices. Stacy Jupiter, the Melanesia regional director of WCS, says that the LMMA approach succeeded because it was "non-prescriptive" and "adaptable to a range of conditions" over time. Donors, conservationists, and government officials, meanwhile, read approvingly in academic papers that citizens in remote Fijian villages could collect data, make collective decisions regarding protecting resources, and sometimes, protect fisheries or marine habitats.

The LMMA approach was striking and unconventional, says Cordes. The Foundation deserves credit

for "experimenting with new ideas" says Tawake. "[T]hey would provide support that no traditional donor would provide." And the Foundation went deep. Between 2002 and 2007, Foundation funding of roughly \$100,000 per year supported 10 staff at the university — individuals who met with villagers, created management plans, and coordinated growth and communication within the network. The Foundation's support expanded later with the creation of the Fiji Locally Managed Marine Area network, or FLMMA, a Fijian non-profit organization. Based in Suva, FLMMA offered coordination and support to the burgeoning network, including workshops, buoys, and monitoring equipment.

By 2009, more than 250 LMMAs had been established, covering more than a quarter of Fiji's inshore area, and the movement won international acclaim. From simple roots with IAS and a few dozen villages, the movement had grown more complex, involving multiple international nonprofits operating in Fiji. The nonprofits established long-

term relationships in specific areas: WWF in Macuata, through a partnership with Aisea Katonivere, for example, and WCS in Kubulau on the island of Vanua Levu. The Foundation's decision to provide funding year after year in Fiji, without stated end-dates to its support for marine conservation, allowed staff to make long-term commitments and plans with communities. "If you knew that you're only having two or three years of funding, then all your plans and thinking beyond that you can't talk about," says Tabunakawai.

The movement nurtured well-trained, well-connected leaders. "Other benefits of the LMMA movement may not have been as quantifiable as the total area of protected shoreline," says Thompson. She values the movement's network of connected communities. "I saw the learning network working," she recalls. In training sessions she led, she says, "I saw people sharing with one another. I'm not sure what you could have done to quantify that as an outcome." Another impact is the growth of a cadre of strong Fijian individuals in the civil sector. "In Fiji, some of the most effective [civic] leaders have been in the conservation sector," Thompson says.

The pioneering work on LMMAs inspired similar efforts across the Pacific and beyond. In 2005, building on the growth of the network, Fiji's government made a pledge to protect 30 percent of its nearshore marine environment by 2020. (The government now interprets that pledge to include its full Exclusive Economic Zone, defined as areas within 230 miles of Fijian coasts.) That was the first such promise by a Pacific Island nation, and it spurred other regional initiatives, like the Micronesia Challenge, in which five other Pacific Island nations pledged similar protections. The movement has reverberated even further. Community members and conservationists in Madagascar visited Fiji's LMMA sites and left inspired: MIHARI,

Madagascar's LMMA network, now includes 150 communities comprising 64 associations managing coastal areas.

Limits to local

The LMMA movement made history in the global conservation community and was a runaway success in Fiji, but its story shows the limits of community management. LMMAs put nongovernmental organizations (NGOs), funded by the Foundation and other external donors, in a position to provide services that governments traditionally provide, like creating conservation and resource management programs, supporting village enforcement efforts, and collecting data. Under the LMMA arrangement, "NGOs had the manpower, they had the funding to complement what little work the Ministry of Fisheries was doing at the time," says Margaret Tabunakawai-Vakalalabure, Tabunakawai's daughter and the current coordinator of the FLMMA network.

Communities and their NGO partners lack many of the resources and powers that government agencies have.

But communities and their NGO partners lack many of the resources and powers that government agencies have. Within the villages, says Tabunakawai-Vakalalabure, a particular weakness was lack of consistent focus on monitoring, governance, and enforcement with clear rules. In 2005, for example, WWF's Tabunakawai received an odd request from Aisea Katonivere, then Tui Macuata. Conservation efforts in a series of LMMA sites were underway in the province, but the chief didn't know how many fishing licenses he should give out that year. Ask the fisheries

department for catch data, suggested Tabunakawai. But they both knew the department's numbers were suspect at best.

The government's poor data on coastal fisheries was indicative of a larger problem: limited engagement of Fijian national authorities in coastal fisheries management. Over the years, the government has not assumed a prominent role in LMMA governance, much less taken on the larger job of real coastal fishery management. At the beginning of the movement in the early 2000s, says Tabunakawai-Vakalalabure, the idea was that communities and the NGOs were actually going to "work together with the government" to manage fisheries. Fijian politicians touted LMMAs internationally as a point of pride, and government officials participated in the network's meetings, but protecting coastal fisheries resources wasn't an important priority of the government.

Then national politics poisoned the relationship between the government and the conservation community. In 2005 a proposed "Qoliqoli Bill" in Parliament contributed to tensions between the iTaukei and other ethnic groups in Fiji who lack indigenous rights, including Indo-Fijians. The legislation would have transferred legal ownership of customary fishing grounds from the Fijian state to iTaukei chiefs, and it was opposed by tourism operators, many of whom were Indo-Fijian. But it received public support from some of Fiji's conservation leaders. Among them was Tawake, who says it would have empowered "communities to be able to take the responsibility in managing their fisheries" for future generations. The furor over the bill added to an already tense situation, contributing to a conflict that led to a subsequent military-backed coup in 2006, the country's fourth in 20 years. The unsteady political situation led to "distrust on both sides," says Tawake, opening a period in which conservationists, including Foundation

officials, and the government largely steered clear of one another.

For all of their popularity, LMMAs ended up facing serious limitations once established, and they required considerable support. LMMAs are “living functional systems that need maintenance,” says Stuart Green, regional advisor for the Foundation. Yet the network of sites was provided little such support. Reliant on NGOs for assistance and in some cases funding, many communities gave up on conservation plans after a few years or had little wherewithal to enforce them. Researchers studying an LMMA in the village of Navakavu near Suva, for example, noted that disciplining villagers who fished within restricted areas “is a bone of contention between the wardens in favor of punishment and the rest of the community, concerned with keeping good social relations.”⁴ Poachers from outside the community who were caught could not be legally disciplined, the study noted, since the closed area was not officially recognized by the national government.

Those limitations are among the reasons that the approach has mostly failed to protect coastal fisheries and the ecosystems on which they rely. Fiji has failed to achieve the goal of 30 percent protection by 2020 — a goal that LMMAs were supposed to help reach. Of Fiji’s 410 qoliqolis and roughly 150 active LMMAs, there are only four marine protected areas that are closed to fishing and are recognized by Fiji’s national government. Those areas comprise just 8 percent of Fiji’s coastal waters, a tiny percentage of the total area within Fiji’s EEZ. While in Madagascar and other places the LMMA movement led to more substantive protections, says Cordes, “In Fiji, it stalled.”

More importantly, there’s also little evidence that LMMAs lead to lasting, sustainable improvements in fisheries.⁵ Some of the projects, surely, have yielded conservation benefits: four villages in the Korolevu-i-wai



district near Suva created their LMMA in 2002 after they noticed their fish stocks had declined. Since 2007 the community has maintained several closed areas as well as bans on coral extraction and on the use of poison and other destructive fishing practices. “We’ve gotten our coral cover back,” says Kiniviliame Ravonoloa, who works for FLMMA as a district representative. Clam and mangrove restoration projects have also seen results, he says.

But a 2017 assessment of eight periodic closures within LMMAs found that only three “were moderately successful” in sustaining the biomass of fished species, while “one provided biodiversity benefits” for the ecosystem as a whole. Although periodic closure sites “may afford short-term protection to heavily targeted species,” concluded the study, which was funded by the Packard Foundation, the approach “should not be used as a broad-scale strategy for biodiversity conservation in Fiji.”⁶

In sum, LMMAs were an important foundation for the conservation

movement, but they weren’t enough. By building on traditional Fijian practices, the movement had significant cultural resonance, but those practices were historically more socially and culturally motivated and not necessarily designed to manage resources sustainably.⁷ “The LMMA approach had proven insufficient by itself to deal with modern conservation threats,” says John Claussen, Program Officer of the Foundation’s Western Pacific program. “LMMAs alone are not a conservation panacea.” Given the large scale of the problem and mounting threats, managing at a hyper-local level is “unlikely to adequately sustain fish populations and fisheries and achieve conservation goals,” WCS and 50 Reefs wrote in a 2017 report.⁸ Local management should be supplemented with focused investments in addressing fishing threats through management opportunities.” This pointed to the need to complement bottom-up approaches at the LMMA level with greater engagement from the government and science-based management practices.

⁴ Hubert, Antonin. “Use of Fishermen Perception in Participative Resources Management: Case study in Navakavu (Fiji).” CRISP. 2007.

⁵ Jupiter, Stacy D. et al. “Locally-managed marine areas: multiple objectives and diverse strategies.” *Pacific Conservation Biology* 20.2 (2014).

⁶ Jupiter, Stacy D. et al. “A social-ecological systems approach to assessing conservation and fisheries outcomes in Fijian locally managed marine areas.” *Society & Natural Resources* 30.9 (2017): 1096-1111.

⁷ Foale, S., P. Cohen, S. Januchowski-Hartley, A. Wenger, and M. Macintyre. “Tenure and taboos: origins and implications for fisheries in the Pacific.” *Fish and Fisheries* 12 (2011): 357-369.

With these limitations of the LMMA approach in mind, the conservation community came together for a 2014 meeting that the Foundation hosted in Suva. There Claussen, who two years before had replaced Cordes as program officer, addressed the group. He pushed grantees who had focused on LMMAs for more than a decade to provide “concrete examples of how fisheries management is better not just in your community but in Fiji as a whole,” recalls James Sloan, the attorney. There were few responses, and considerable resentment, in the room. “It was a sense of reality check,” says Sloan.

It’s one thing for communities to look after their own resources, but as external forces pile up — poachers, Asian buyers, climate change, pollution — a more cohesive approach that included top-down management by the national government was needed. “We had realized that we had to pivot the focus of our funding strategy,” recalls Claussen.

The new focus was to be on *co-management*, a popular theory of natural resource management implemented in communities around the world. Central to the concept is the premise that local communities, governments, and third parties — often NGOs — can together manage natural resources better than any one party operating on its own. That’s important for Fiji given the overlapping national and local authorities that wield power over coastal waters. The Foundation and its partners decided to target Macuata — and the Northern Division in which it sits — given its outsized role in commercial fishing and existing work there by nonprofits. But efforts by policymakers in Suva would be just as important. “Communities can’t do it by themselves,” says Claussen, “so it is important that government work with them.”

Ministering to the fish

But that’s proven hard. On paper, this new approach would entail engaging the national government in sustainable management of natural resources. But on the ground along Fiji’s shores, it would mean regulating the flow of millions of tons of fish each year. And that would need to happen not just along the coasts where the fish are caught but also in the markets where they are purchased. It would mean collecting

But historically, the Fijian national government hasn’t heavily focused on protecting coastal fisheries resources, so change requires political and policy reform. A stroll along the busy and somewhat grimy docks in Suva on a Friday morning makes clear the antiquated state of Fiji’s coastal fishing rules and their lax enforcement. A strong aquatic odor indicates the fish market is open. There, on ice, sit dozens of varieties of colorful reef fish, as well as larger open ocean species. Men in small boats pass colorful bundles of their catch up to vendors working the stalls.



A growing population’s appetite for fish, expanding tourism, and exports to Asia are each contributing to overfishing in Fiji.

data from fisheries locally, informing regulations written by bureaucrats in Suva, and expanding nonprofits’ work from supporting communities to also informing policymaking. It would position the government as overseer — overseeing, as it were, the threatened supply of reef fish as well as the rising demand.

As the fishing grounds close to Suva have become fished out over the last five years, says Margaret Tabunakawai-Vakalalabure, fishers are using more powerful boats to gather fish from further out.

A former fisheries officer within the Ministry, she serves as a guide to the

⁸Wildlife Conservation Society and 50 Reefs. “Coral Reef Conservation Solution-Scape White Paper” 2017.

fish on offer, most of which were caught underwater the night before by spear and flashlight. A greenish fish called Ulavi (parrotfish) is a popular choice, as is a barbed variety called Ta (unicorn fish). Both go for



Communities want to manage their resources sustainably, says Margaret Tabunakawai-Vakalalabure, coordinator of the Fiji Locally Managed Marine Area Network.

approximately US\$4 per pound, while US\$1 will buy about three heads of giant tuna, caught by line and used in soups. By the sidewalk, groups of women sell crustaceans like crab and clams by the heap.

In her previous job as a senior officer at the Fisheries Ministry, Tabunakawai-Vakalalabure explains, she regularly helped inspect the market, overseeing checks for licenses and whether the species and sizes of fish being sold were legal under the law. That law is the 1941 Fisheries Act, which experts and the Ministry say is outdated in a number of ways. The minimum sizes are too small, for starters, say scientists. “We are not allowing them to grow to their mature size, to the reproductive stage,” says Tabunakawai-Vakalalabure. That

means catching them has, over time, depleted the population. The second problem is that the current fines — about US\$20 for selling undersized fish — are too small to affect behavior.

A fish with black spots on its tail, called Kabatia, which is popular for big weekend family meals, sits in the stall, no more than 30 cm long. “[It’s] very much below reproductive age,” she says of the species, also known as thumbprint emperor. “But it is a delicacy at this size compared to when it gets bigger.” Ta, the unicorn fish on sale here, are also dangerously undersized, she says.

The 1941 Fisheries Act has set the status quo for decades. What’s unusual, though, is that the Minister of Fisheries is now trying to change the rules. Until recently, in fact, there wasn’t a stand-alone Minister of Fisheries at all. The Ministry was formed only three years ago, breaking free from its previous incarnation as a half of Fiji’s Ministry of Fisheries and Forests. Since taking the job, Minister Semi Koroilavesau has been visiting coastal communities, listening to nonprofit groups, consulting with scientists, and, crucially, tightening environmental regulations, leading to conflict with industry. He’s been aided by Foundation support to local groups to conduct legal analysis and provide technical assistance to officials in the government and other institutions, including advice on monitoring, rules, and enforcement.

As a developing country, Fiji is still establishing its basic environmental regulations. An important step was 2005’s landmark Environment Management Act, which created a modern framework for regulating the environmental impact of development and industry. But rules are meaningless if the regulators don’t enforce them. And with overfishing rampant, there’s plenty for Koroilavesau to regulate, says the Ministry’s Director of Fisheries, Aisake Batibasa-ga, who reports to Koroilavesau.

“He is coming in at the right time,” says the senior bureaucrat.



Fiji’s government has recently turned its attention to regulating its coastal fisheries and ecosystems.

The last two years have seen steady progress: creation of the Fisheries Ministry, Koroilavesau’s appointment, and his relatively aggressive policies since becoming Minister. He’s made the biggest impact, arguably, with new restrictions and management plans he’s put into motion. One target has been bottom-dwelling creatures called sea cucumbers. Known in processed form as beche de mer, the animals are highly sought after in Asia, driving an export market in Fiji that has decimated populations of most species. It’s an economically important fishery for Fiji’s coastal settlements, where hundreds of thousands of Fijians rely on it for income. But it’s also a deadly one. To find the species, Fijians sometimes use an underwater breathing apparatus, which in repeated, well-publicized cases has led to casualties due to the bends. A 2016 survey by WCS found that as many as 40 fishers have been injured or killed during sea cucumber harvests.⁹

Local communities have failed to regulate the sea cucumber harvest to make it sustainable or safe. So in 2016, soon after taking the job, Koroilavesau announced a ban on the breathing apparatus used in the harvest. When, the following year, the ban had failed to revive the

⁹ “Mangubhai, Sangeeta et al. “Value chain analysis of the wild caught sea cucumber fishery in Fiji.” 2016.

species' numbers — or to keep villagers safe — he announced a temporary ban on the sale and export of the sea cucumber itself. Now the Ministry is developing a national plan to manage that fishery, which is Fiji's second largest in value behind tuna. Such a plan would be the first-ever nationwide management document to cover a specific species. The Ministry staff finalizing it has received timely input from WCS, says country director Sangeeta Mangubhai. The group was aided by the Foundation's "flexibility," which allowed the nonprofit to "quickly move funds towards" that priority, publishing an academic study of the fishery last year. And the Ministry has initiated action on the ground: a police raid in Labasa in early 2018, for example, yielded hundreds of pounds of dried sea cucumber and several arrests. "Our officials have been monitoring this illegal activity for some time and wanted to conduct a raid to provide proof, concrete evidence," Koroilavesau told a Fijian paper.

A visit to a Macuata village shows how the ban is impacting communities. Peeking out from the palm trees along the Macuata coast lies Raviravi village, where roosters call out while

kids play in the grass, darting between low-slung wooden structures with corrugated metal roofs and a few satellite dishes. The village headman, a spokesperson for the village chief, greets our party in a colorful patterned shirt, common in Fiji, and a black sulu skirt down to his ankles.

While sea cucumber are dangerous to collect, the economic benefits of the fishery are real. Josateki Manatua, a fish warden in the village, says the beche de mer ban is a good idea, since it will save lives. "Two boys from the village died at a diving spot not far from here," he says gravely. They succumbed to the bends after collecting the valuable organism. But the village now finds itself in a financial hole, says villager Alanieta Raravitu. Funds from the fishery had helped finance construction projects and shore up village savings.



Sea cucumbers are Fiji's second largest fishery in value behind tuna.

New data, new rules

Since the Ministry has poor information about coastal fisheries, Foundation staff have hoped that co-management can promote direct links to local communities and fishers to help close the data gap, giving bureaucrats numbers they can use to make policy. In 2012, villagers told Laitia Tamata Jr., the representative of WWF, that despite a series of site closures across Macuata over the previous five years, fish were still becoming more scarce. The Foundation funded Jeremy Prince, an Australian biologist, to study the problem.

Beginning in 2014, with the blessing of the new chief, Prince trained local fishers on sampling techniques, and together they chose 20 species on which to focus. Over the next 18 months, a team of fishers sampled 33 reefs from villages across the qoliqoli, measuring 5,226 fish in all. The research included releasing fish if they were immature and dissecting some to determine whether they had reached sexual maturity and therefore could reproduce. (Tamata recalls how unusual it was for villagers to



The village of Raviravi in Macuata relies on nearby fisheries for food and income.



Reports by the Wildlife Conservation Society, led by country director Sangeeta Mangubhai, have influenced Fijian policy on fisheries ranging from mud crabs to sea cucumbers.

ever release fish they'd just caught. "The first one to release the fish, he actually kissed the fish," he says, laughing. "He said you only see this on [overseas] TV series.")

The data the team collected depicted a fishery in decline. Prince focused on a metric called spawning potential ratio, which measures how severely fishing has affected a population's ability to reproduce. A potential ratio of 0 percent indicates that fishing has obliterated a species' ability to create a new generation; fisheries managers say populations require a ratio of 20 percent to simply replace themselves, and ideally above 30 percent to maintain healthy numbers. But the team in Macuata found that Kasala, or camouflage grouper, had a potential of only 3 percent. Other key species, like ta and ulavi, had potentials of 7 percent and 24 percent, respectively. Fishers were catching fish before they had a chance to reach reproductive age, Prince concluded. When fish warden Josateki Manatua from the Macuata

village of Raviravi examined fish during the study, he was "really surprised" to see with his own eyes that the fish they were catching were immature. In the past he'd been worried about commercial fishing vessels depleting the reef, he says. But the experience made clear that local fishing had a substantial impact too.

Back in Suva, the work on fish sizes is informing the Minister's team as it reviews the basic rules that govern Fijian fishing licenses, permits, and catch rules, including minimum size limits. In June 2018, the government announced perhaps its boldest step on coastal conservation. Building on a public awareness campaign called 4FJ, led by cChange, a nonprofit in Fiji supported by the Foundation, the Fisheries Ministry enacted a ban on the fishing, sale, and export of 27 species of coral grouper, known as kawakawa, and red coral sea trout, called donu, during the peak four summer months of spawning. Studies had shown that the majority of the spawning sites for the two

fish were either declining or gone. The hope is that the ban, which falls during the breeding season, will allow many of the species to recover. The Ministry also extended a 10-year ban on the capture of sea turtles for another decade after it expired in late 2018.

When the Minister announced the ban on scuba gear for collecting sea cucumbers, he relied in part on a WCS report on the topic. "We are able to arm the Minister with the science," says Mangubhai.

Sangeeta Mangubhai, of WCS, says the Minister routinely engages with the expertise of Fiji's conservation NGOs. "He's very interactive," she says, noting that he retweets her tweets, and, more importantly, calls on her group for input on important issues. When the Minister announced the ban on scuba gear for collecting sea cucumbers, he relied in part on a WCS report on the topic. "We are able to arm the Minister with the science," she says. Her work is filling a tangible gap: of 280 staff at the Ministry of Fisheries, only a handful work on inshore fisheries; 57 work on offshore fisheries, whose main commercial value to Fiji is in the export market.

To change the culture at the Ministry has required not only different officials with different attitudes but also a change to the structure of the organization. A report coauthored by Gillett in 2014 analyzing the fisheries department called for a "new approach" to coastal fisheries management. Gillett's analysis informed subsequent workshops that the Foundation supported and that connected Fisheries officials with outside experts to brainstorm what that approach might be. That process led

to support for a new Inshore Fisheries Management Division within the Ministry. In 2017, with the Prime Minister's support, Minister Koroilavesau created and secured initial funding for the division. "This is something we've been pushing for 20 years," says Tabunakawai-Vakalalabure.

A new focus on inshore fisheries

On a hot April afternoon, in a dusty office space on the west side of Suva, 35-year-old Richard Veeran sits working on his laptop with a single colleague, a friendly consultant funded by the New Zealand government. The two of them constitute the government's new Inshore Fisheries Management Division. Veeran has an aggressive agenda for his first year: set up systems to collect and analyze fisheries data, create a research program, and develop a strategy for increasing compliance with fisheries rules.

He has been aided by the country's nonprofit sector. His office boasts little furniture other than a bookshelf full of reports from WCS and other conservation NGOs. "I'm not here to please everyone," Veeran says firmly, though with a smile. As of May 2019, the division boasts 24 staff, including a dozen officers tasked with collecting fisheries data.

That will help add enforcement heft to the evolving regulatory regime. But regulating Fiji's inshore fisheries will also require active cooperation from far flung fisheries. Qoliqoli fish wardens, who are recognized by the Fisheries Ministry but armed with little more than ID cards, are instructed to respond to poaching by gathering evidence and contacting the police. "But we have no phone to call the police, no camera to take clear evidence," says Josateki Manatua, a warden in Raviravi village. That leaves wardens ill-prepared to counter often better-equipped

poachers. In 2016, near Mali island in Macuata, poachers entered a zone the community had closed to fishing. After the wardens displayed their ID cards, they say, they tied the poachers' boat to theirs with rope and were towing them back to the village when another boat, allied with the poachers, arrived. The new arrivals threatened the wardens with a speargun and cut the rope to allow the bandits to escape. The case was reported to police but remains awaiting a magistrate's ruling; a Ministry of Fisheries official says there may not be enough evidence to prosecute. "Luckily, no one was injured," says Seru Moce, an elder in Mali.

The Ministry's resources for fighting poaching in Macuata? In his office, Joji Vuakaca, a senior Ministry of Fisheries officer in the region, says his three patrol boats are tasked with covering a region several times larger than Macuata, and two are slower than the poachers' boats. "We're doing our best," he says, gazing warily at a map of the vast territory under his jurisdiction.

Fijian policymakers elsewhere in the government are trying to protect coastal resources. In 2014, the Foundation's partners worked to create "Conservation Officer" positions focused on protecting natural resources within the Fijian Ministry of iTaukei Affairs, which serves iTaukei communities across the archipelago. "The iTaukei communal governing structure goes from family to village to tribe to province," says Brooke Langston, a former U.S. Peace Corps Response Volunteer who helped create the program. "The theory was that people would support conservation if you could plug into that structure." The country's 14 provinces now have 14 conservation officers, helping with projects ranging from properly locating pigsties to managing the Vatu-i-Ra Seascape, a marine protected area that spans the ocean between Fiji's two biggest islands. Packard's support was "well-timed and well-executed," says Langston,

who called the support "an incredibly strong foundation for a successful conservation program."



Photo: © cChange

"We need to have conservation entrenched into the society," says Macuata Paramount Chief Wiliame Katonivere, known as Tui Macuata.

Officials hope that public sentiment can aid their efforts. Koroilavesau hails cChange, the nonprofit in Fiji that designed and led the "4FJ" public campaign beginning in 2014 to discourage the eating of kawakawa or donu from June to September, the peak of the species' spawning period. By enlisting religious figures, celebrities, and the public on traditional and social media, cChange created a national effort to encourage people to avoid the fish during the campaign. Fijians posted selfies — some used the #4FJ hashtag — athletes posed with their pledges written on cardboard fish, and 15,000 people publicly signed on to the campaign. #4FJ laid the groundwork for the government's announcement in 2017 that it would ban the fishing and sale of the fish in 2018. (A 2017 poll conducted by cChange showed that 93 percent of the public supported the coming ban.) Fewer sightings of the endangered fish in fish markets suggest that shifting opinions sparked behavioral changes as well.



Photo: © Getty Images

The 4FJ public campaign discourages the eating of kawakawa (grouper) or donu (coral trout) from June to September, the peak of the species' spawning period.

"It is a huge impact in our effort to try to regenerate these two species," says Koroilavesau. "If there's no market, then we won't have this illegal harvest," adds Veeran.

Still, despite the public support — and the fact that the banned fish makes up only 10 percent of the annual Fijian catch — the response to the ban has shown how top-down regulation can conflict with the economic needs of local communities. When Prime Minister Voreqe Bainimarama toured the Bua region a few weeks after the ban was implemented, a group of fishers complained to him about the ban. "We have our boats to pay, hire-purchase payments to take care of, bills to pay for, and the ban on the 27 species will affect our business now," one fisher told him.

Macuata: an experiment and a legacy

The co-management experiment is well underway along the rich green shores of Macuata, where the framework's connected elements are in place: local management of coasts through iTaukei authority over

qoliqolis; fisheries data collected to inform policy; nonprofits supporting both local community conservation and government policymakers; and regulations on fishing on the books, with Fiji's Ministry of Fisheries responsible for enforcement.

Institutions and systems matter, but the leaders who make up those systems are also important. Which is why, when his brother died and Wiliame Katonivere assumed the title of Tui Macuata, his views on conservation were so important. The chief sits in his office in Labasa, on a major island in northern Fiji, his muscular frame hunkered behind a wide desk. The office is less official in appearance than it is functional: maps, receipts, business cards. Here he meets with any outsider hoping to do business in the nearly 800-square-mile province, from miners to fish buyers to scientists. Katonivere's previous identity was as a businessman in a royal family; now he's responsible for Macuata's economic wellbeing.

He welcomes a delegation from the Foundation, who huddle around the table. The visit has amounted to a farewell tour, as the Foundation had announced in 2016 that it would be ending its funding in the Western Pacific as it focused on countries "that together offer greater poten-

tial" to improve the health of the global ocean. But in Fiji, Macuata is the place where all the pieces of the Foundation's strategy are coming together.

Making local traditional leadership an important partner in conservation means relying on local traditional leaders — like Katonivere. In the last two years, say NGOs, Katonivere has embraced the mantle of conservation his brother carried before him. "Tui Macuata has got a hold of the vision and has come around," says Tamata of WWF.

The co-management experiment is off to a good start. Before the Fijian government created a seasonal ban on grouper, representatives of villages in the qoliqoli that Katonivere controls endorsed their own one-year ban on the catching of Kasala, later expanded to include Ta. (Now the ban has been reduced to the four-month summer breeding season, in line with the national summer ban, though the two are not formally linked.) Katonivere supported the national ban in the press, if not enthusiastically. "I know a lot of people are having Kasala," he acknowledged. "The onus is on the Department of Fisheries as the paramount player in ensuring that requirements are adhered to."

After Packard: Foundation grantees look ahead



- cChange is preparing a campaign called Set Size, which builds on the #4FJ campaign by expanding to include minimum sizes of all fish.
- FLMMA's new "100% Solution" seeks to improve village conservation efforts by better linking coastal and inland areas as well as connecting management at the village, district and provincial levels.
- Siwatibau and Sloan continues to work to increase Pacific Islanders' involvement in decision making for good oceans governance.
- WCS is working to reduce runoff of sediments and pollution to tackle water-related diseases in the Vatu-i-Ra Seascape.
- WWF is creating a \$115 million project to protect the Great Sea Reef.

Katonivere is also partnering with WWF to develop rules within the province to limit the size of fish, framing the new rules in the business terms he thinks his fishers will appreciate. "If you want value for your money, you should catch big fish," he tells them. Meanwhile, he says, outreach efforts by WWF through workshops and consultations have had "a quite huge impact," he says, changing "the way people talk and the way people think." Data on the decline of the kawakawa "has made us realize, oh yes, what you're saying is true." At district or village meetings, for example, residents have suggested limiting the number of fishing licenses issued, a step that Katonivere says would have been unheard of before. In early 2019, Katonivere asked representatives from within the qoliqoli to use the income from license fees to support coastal conservation, for example for cash allowances, training,

or equipment for fish wardens who have until now worked as volunteers. In the future, Katonivere wants to create rules modeled on schemes he's seen in the United States, wherein licensed fishers must leave and return to the same dock to allow accurate inspection of their catch. He's also created new restrictions on issuing business licenses for the selling of fish in local markets, which, along with the Fisheries Ministry, he oversees. Those restrictions have given fishers priority so they can sell their catch directly instead of selling to middlemen who give them lower prices.

"We have the traditional leadership," says Katonivere, "and we have the modern leadership — these rights, this law When you put these two together, this is where the challenges come." Katonivere has sought to draw clear lines. By Fijian law, for example, a resident of Macuata's biggest city,

Labasa, has the right to fish in the qoliqoli that Katonivere controls. But after becoming chief, Katonivere found that fishers exercising such rights, usually to sell, often poached in closed areas or used banned equipment. So Katonivere ruled that such fishers had to obtain a commercial license, which tends to be more costly, and had to agree to conditions he specified. "Because these ownership rights are shared, it's incredibly important to involve both parties in the management of those resources," says Sloan, the attorney.

The Foundation and the nonprofits it has funded have been an important presence for two decades, says Katonivere. But he knows "everything has to come to an end." Philanthropists come and go, he adds, but "government is there to stay. I'm thankful that the government is coming in. It's like they're setting up the apparatus for the community to use once the funder goes," he says. "It's like WWF or Packard can go and sit there and look back and say, 'There, that's our footprint.'"

Elsewhere in Fiji, two decades of work by conservationists and their local partners have created an entire movement where before there was none. "A whole community of individuals and organizations now wake up thinking about the health of Fiji's oceans that didn't before," says Bernd Cordes. That movement has created strong awareness in coastal communities for the need for conservation, first through the LMMA framework and increasingly through links to government, NGOs, and scientists.

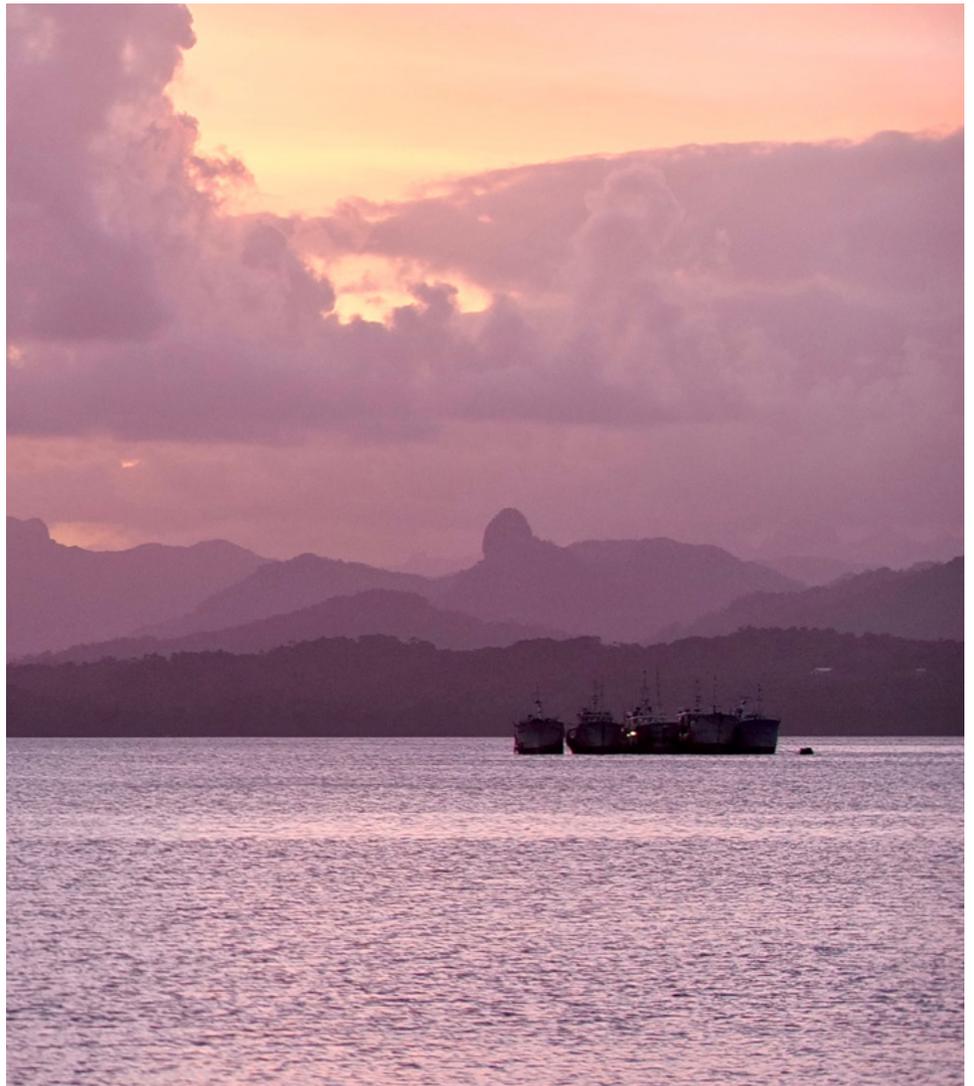
Up until now, says Kesaia Tabunakawai, environmental NGOs in Fiji have offered services the government wasn't providing, as they largely did during the height of the LMMA movement. And they've guided government policymakers by offering expertise in science and policy, as they are currently doing. In the future, she says, she hopes groups will assume a third role outside of

the halls of power: “Play the bad guy.” That would mean serving as the kind of adversarial environmental groups usually found in Western democracies and “jumping down on the things that they’re not doing.”

“Government and the communities aren’t that far apart. They both want the same thing: they want sustainable fisheries, they want to be able to catch fish, they want fisheries for subsistence.”

The vibrant NGO sector is being joined now by a steadily maturing corps of policymakers in national, regional, and local government. For James Sloan, policy decisions by Minister Korilavesau reveal a healthy willingness to listen to experts in the NGO community that the Foundation has helped support. “We’re not there yet, but great steps have been taken, great decisions have been taken,” he says. But in a relatively young democracy whose citizens have experienced repeated military coups, it is crucial for the decision-making process to remain inclusive, he says. “Government and the communities aren’t that far apart. They both want the same thing: they want sustainable fisheries, they want to be able to catch fish, they want fisheries for subsistence.”

For all the progress that Fiji has made in conservation, the risks in the future are substantial. Foreign investment, particularly from China, is steadily increasing, bringing new sources of pollution, runoff and, potentially, overfishing. Ocean warming, acidification, and the global trade in reef fish continue to pose risks. But communities want to manage their resources in a sustainable way as they gain economic power, says FLMMMA’s Tabunakawai-Vakalalabure.



Two decades of progress in conservation in Fiji have created an impressive legacy, though formidable challenges remain.

“They are doing it for the future generation . . . It is a lot of collaboration, co-management being the key word in communities, government, and NGOs all working together.” Her mother, Tabunakawai, is somewhat less optimistic. “Everybody’s talking about conservation, wanting to do things about conservation. At the same time, they’re fishing more than ever.” But the response can’t be despair, she says. “We have to keep moving forward, doing the best we can.”

Nurturing a conservation mindset among young Fijians is the best way to ensure that progress, says Katonivere. “We need to have conservation entrenched into the society,” he says. Protecting Fiji’s environmental

future will require not just leaders and nonprofit organizations who protect fisheries and reefs but also citizens who embrace the effort in their daily lives. □

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