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Venture to Vanua Balavu: Collecting *Pritchardia thurstonii* in its Native Habitat

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The territorial waters of Fiji cover almost 250,000 square miles of the southwest Pacific Ocean, but just 3% of this is dry land, scattered over more than 300 islands.

Fifty-seven of these islands can be found in the Lau Group, which are themselves scattered over more than 44,000 square miles. These islands lie almost equidistant between the main island of Fiji (Viti Levu, home of the country's capital Suva and its international airport at Nadi) and the neighboring Kingdom of Tonga. As such, the islands of Lau have evolved a unique culture, comprising a blend of Polynesian (from the Tongan influence) and Melanesian (from the Fijian side). Remote and seldom visited by tourists, they remain a pristine corner of this quintessential South Pacific paradise.

Only a handful of the Lau islands are inhabited, and these are home to around 14,000 Fijians (approximately 2% of the population). The geology of the area differs from that of the majority of the other Fijian islands. Most of the Lauan islands are formed from masses of limestone, raised from depths of the ocean by volcanic activity to heights of over 300 m above sea level.

It is largely as a result of this unique geology that this group of islands is home to their very own indigenous palm, the fan palm *Pritchardia thurstonii* F.v. Mueller and Drude. *P. thurstonii* occurs on only a handful of islands in Lau (one of which is inhabited. The others are all tiny limestone islets, many mushroom-shaped). This palm seems to thrive in the apparently inhospitable environments of these small limestone islets, where the environment is hot and dry, with severe erosion from both waves and rain. Amazingly, the palms grow right down to the edge of the sea, and are subject to salt spray from large waves.

P. thurstonii was named after Sir John Bates Thurston, a planter who made the first herbarium collection of this palm in 1886 while visiting the "eastern islands [Lau Group]" of Fiji (*Thurston s.n.* [lectotype MEL, isolectotype K]). He also introduced many ornamental and economic plants to Fiji in a garden he established on Princes Road in Suva, which was later owned by the wealthy Hedstrom family, and is now home to the Australian Embassy. Thurston later became the first Governor of Fiji after the cession of Fiji to Great Britain in the late 19th century. He also has the honor of having Fiji's main botanical gardens named after him, Suva's Thurston Gardens, which are home to a very good collection of both native and non-native palms, including an infamous mature *Pelagodox henryanna* Becc. (Phillips 1996).

Until 1995, only four collections of *P. thurstonii* existed in herbarium collections worldwide. These included Thurston's original 1886 type collection, and three other collections made in 1924 and 1934. Edwin Horace Bryan Jr. collected *P. thurstonii* in 1924. Bryan was a member of the Whitney South Seas Expedition of the American Museum of Natural History, and had the opportunity to make plant collections in Fiji from July to September of 1924. Members of the Expedition went ashore on practically every island in Lau; and even today, some of Bryan's specimens represent the only herbarium material available from several of the seldom-visited Lau islands (Smith 1979). Bryan collected *P. thurstonii* on Ogea Driki (*Bryan 389* [BISH]) and Sovu Vanua Balavua (*Bryan 589* [UC, US]). Then in February 1934, during his first collecting trip to Fiji, Albert Charles Smith visited Fulanga and collected *P. thurstonii* (*Smith 1230* [A, BISH, UC]). For an account of

an A. C. Smith's first Fijian collecting trip, see Smith (1934).

P. thurstonii is a moderate-sized fan palm with a grey trunk up to 10 m high with costapalmate leaves, which do not form a crownshaft. The crown of arching leaves usually includes 15–20 leaves up to 1.2 m long. The interfoliar inflorescence is up to 3 m long and exceeds the leaves arching downward. Flowers are small, only 5–7 mm long, and a very distinct pale yellow color. The fruit is also small, about 7 mm in diameter, globose (round) in shape, and red at maturity.

In 1995–96 we were fortunate enough to be living in Fiji's capital of Suva. One of us (DF) was living the student life working on a MSc studying the unique palms of Fiji (Fuller 1997), while the other (EJ) was working as an account manager for a marketing and PR firm in Suva. As part of DF's thesis research it was important to gather up-to-date field data and make new collections of all indigenous Fijian palms. Thus, a trip to Vanua Balavu had been planned for sometime in 1996 before we both left the paradise of Fiji to return to life in the UK. A local friend and fellow IPS member Rob Stone had recommended Vanua Balavu because he had seen *P. thurstonii* in great numbers on the Sovu Islets while captain of his tuna boat. Rob was also kind enough to put us in touch with long-time contacts on Vanua Balavu, which proved invaluable.

In order to visit the Lau Group, one needs to be an invited guest, as tourists aren't generally allowed without prior arrangements. We had arranged through Rob's contacts to stay with the brother of the chief of Lomaloma village (the island's main village) in his guesthouse for the princely sum of around $10 per night.

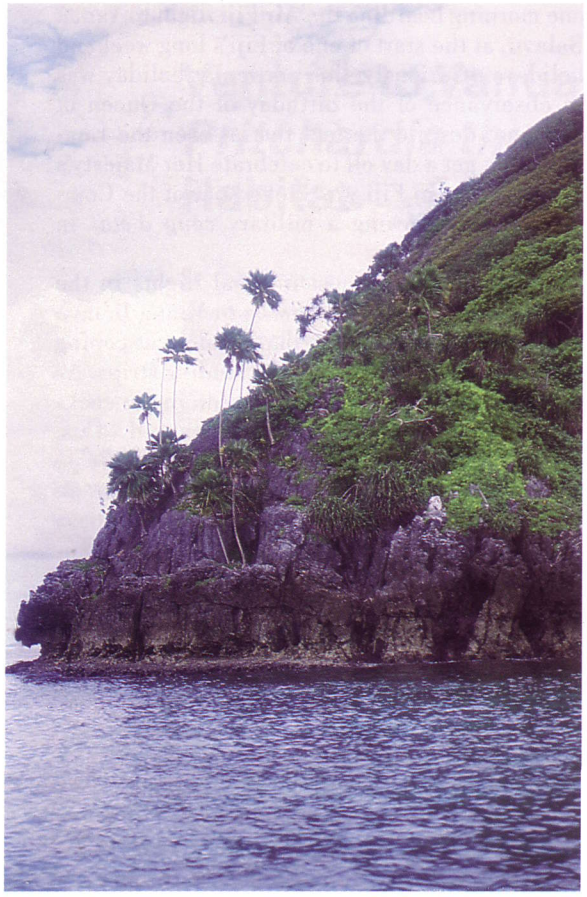
Until quite recently, the islands of Lau were only accessible after a long sea voyage, or on infrequent copra-collecting ships. However, since the late 1970s, four of the islands of Lau have been served by regular air service from Nausori on the main island of Viti Levu. These include Vanua Balavu, in whose lagoon lie the tiny Sovu Islets, which are home to this elusive palm. Inquiries were made through the office of Air Fiji, one of two airlines operating in this part of Fiji, and so we were booked on one of the three weekly flights to Vanua Balavu for late February 1996. Fulanga and Ogea Driki remain accessible only by charter boat or charter amphibious plane.

And so it was that we found ourselves early one morning boarding the Air Fiji flight to Vanua Balavu, at the start of one of Fiji's long weekend holidays. (Curiously, this particular holiday was in observance of the birthday of the Queen of England, despite the fact that a) even the English don't get a day off to celebrate Her Majesty's birthday and b) Fiji was kicked out of the Commonwealth following a military *coup d'etat* in 1987.)

In common with most internal flights in the country, the aircraft to ferry us to Vanua Balavu was a Twin Otter, a make that is adept at coping with even the roughest of grass landing strips. As we boarded, our pilot could be seen in the cockpit, checking his flight plan. He turned to us, eyes bloodshot and weary, and inquired, "We go to Labasa today?" We all panicked slightly as we realized we must be on the wrong flight (Labasa is the main town on Fiji's second island, in an entirely different direction from Vanua Balavu). "Errr, we thought we were going to Vanua Balavu?" The pilot checked his flight plan and sighed. There was a long pause and then he started to nod his head. "*Io* [yes]. We go to Labasa tomorrow." Thus reassured, we taxied down the luxuriously smooth tarmac of Nausori airport and were soon airborne, leaving behind us the rain-soaked island of Viti Levu.

An hour and a half later, the island of Vanua Balavu and its surrounding islets came into view. These islands were named "The Exploring Isles" by Captain Charles Wilkes in 1840, after the official title of his famous U.S. Exploring Expedition (Derrick 1957). From the air, the main island looks something like a boomerang. We could see that it was covered in lush grassy hills with sheer limestone cliffs, giving way in places to sandy, coconut palm (*Cocos nucifera*)-fringed coves. The surrounding lagoon could be seen stretching out for several miles—clear, still turquoise waters broken eventually by the reef, identified by a thin line of surf in the distance.

Our landing was surprisingly smooth given the fairly rudimentary runway. On disembarking, we soon determined that our ride to town was waiting for us, in the form of a tractor and trailer. (Fortunately for us, one member of our group, Chris, had spent two years working in a Fijian village as a Peace Corps teacher, and was fluent in Fijian. While Fijians all learn English at school, the official language of the country, any efforts to converse in Fijian are greatly welcomed.)



1. *Pritchardia thurstonii* dominates the vegetation on Sovu Levu.

The journey to the main village, Lomaloma, took around 20 minutes. Along the way we saw hundreds, maybe thousands of coconut palms. Lomaloma was Fiji's first port, regularly visited by sailing ships trading in the Pacific. In its heyday during the 1860s and 70s, it had many hotels, shops, and Fiji's first botanical gardens. Today, little remains of its grandeur—there are no hotels, and the botanical gardens have largely reverted to their natural state (although we noticed a few cultivated individuals of both *P. thurstonii* and *P. pacifica* palms on the site of the old botanical gardens, now used as school playgrounds).

Just one store remains, selling essential items only, and there are no banking facilities to be found anywhere in the Lau group. However, the village was immaculately kept, with manicured lawns and flowering bushes planted at regular intervals along the road. The single-story houses were whitewashed and the roofs constructed either from traditional thatch or the increasingly popular corrugated iron, painted in bright colors. The village runs along the seashore and coconut palms dominate, swaying in the breeze to complete the picture—one that could grace the cover of any tourist brochure. Brightly colored fishing boats were moored in the bay, and men and women could be seen searching the low tide mark for sea urchins (a delicacy when baked over hot coals).

In addition to its store, Lomaloma has one school, a rugby pitch, and two churches. It also has a cooperatively owned copra mill, which makes the whole village smell of coconut. Coconut oil became an important commodity in the mid-19th century, as demand for edible oils expanded to Europe. Lauans had been producing coconut oil for domestic consumption, as well as for their trade with Tongans, long before this commodity was in demand in Europe. By the mid-19th century, a barter-type exchange was set up, whereby coconut oil was traded by Fijians for iron, cloth, etc. supplied by European traders. Copra is still one of the islands' most important products, although trade has suffered recently from the international decline in copra prices (Bayliss-Smith et al. 1988).

Our driver took us to the home of our hosts *Ratu* Delai Lomaloma (*Ratu* is a Fijian title given to people of chiefly status) and his wife Ilisapeci (the Fifian form of Elizabeth, pronounced Elisapethi). Our accomodation was a traditional style *bure* (house) with thatched roof, although the rounded roof bore more relation to a Tongan house (or *fale*) than a Fijian *bore*. In fact, the Tongan influence on the local culture is very apparent. In the mid-19th century, Tongans conquered the island and built the village of Sawana next to Lomaloma. Fifth-generation Tongan descendants still live in Sawana. Tongan place names are common throughout the Lau Group, and a uniquely Lauan dialect has developed, a sort of Fijian with sprinklings of Tongan pronunciation.

Shortly after arriving we approached our hosts' main house, and having been invited in (after removing our shoes—it is considered very rude to wear footwear inside any building), we presented the Ratu with a *sevusevu* (a ritual present) of dried *yaqona*. *Yaqona*, or kava as it is more commonly known, is an infusion prepared

2. *Pritchardia thurstonii* along the shore on Sovu Levu.

3. Close-up of *Pritchardia thurstonii* on Sovu Lailai.

from the mildly narcotic root of *Piper methysticum.* As paying guests, there was no obligation for us to make such a presentation. However in Fijian tradition, it is customary for any guest to make such an offering, and the gesture is greatly appreciated. Kava is prepared in the ceremonial *tanoa* bowl. The powdered root, wrapped in a piece of cloth, is mixed with water to produce a liquid that looks like muddy bath water (and tastes not too dissimilar). The drink is passed around in *bilos*—cups made from half a coconut shell. After a couple of *bilos*, one feels disinclined to do anything much, other than sit and talk.

Dinner that evening set the tone for our stay. Fijians are generally not renowned for their gourmet cooking, and on the main islands in particular, the traditional diet of fresh fish and fresh vegetables is spurned in favor of tinned fish, corned beef and easy-cook noodles. Mercifully, this trend has yet to spread to Vanua Balavu. We were presented with a feast of reef fish, fresh from the sea and baked in coconut milk, with breadfruit, *dalo* (a starch-filled tuber) and *rourou* (similar to spinach). There was food enough for a small army, and Ilisapeci urged us to second and third helpings, exclaiming that we would surely never find husbands or wives if we didn't put on some weight. (In Fiji, big is beautiful—a refreshing change from the diet-obsessed western world.)

Over dinner we discussed our plans for collecting *P. thurstonii. Ratu* Delai suggested that his brother, Timo (short for Timoci), who owned a fishing boat, might be able to take us out to the Sovu Islets the following day. Permission had first to be sought from our hosts' cousin, whose family owns the island. In Fiji, the ease with which you can get things done is very much a question of who you know. But as long as you know someone you'll probably get by—everyone seems to be related somehow. Such permission was duly sought and obtained. We had already found that obtaining permission for trips like

these tended to be a formality. However, the Fijian culture is steeped in ritual and tradition, and failure to observe the etiquette could cause serious offense.

We negotiated with Timo for our trip to the islets. He agreed to take us out to the islets for around $50, in his 18-foot fishing boat powered by a single 25-horsepower engine. Alarmed by the whiteness of our skin and the intensity of the sunshine, Ilisapeci insisted on lending us each one of her home-made hats, woven locally from *Pandanus*. As the sun bore down on us during the two-hour outward trip we all took shelter under our hats, which we tied on with sarongs to prevent the sea breeze from whipping them off us.

As we approached the islets, we could begin to make out clusters of the fan palms we had come to see. It soon became apparent that there was no shortage of these palms, which dominated the vegetation on two of the three tiny islets (Fig. 1). Each islet had razor-sharp limestone cliffs, and the shore was undercut by wave action which had formed a shelf above the tide zone, from which palms apparently grew out of the bare rock. The largest of the three islands (Sovu Levu) was very steep, measuring less than 500 meters long while reaching an elevation of over 100 meters.

We stopped the boat a few feet from the shore of Sovu Levu, but the actual shore was about 2 meters above the boat and with waves crashing around us in the shallow water, so Timo pulled the boat out from the shore about 10 meters distance. Thus, DF had to swim for the island carrying his boots and shirt in a plastic bag and try climbing up the extremely sharp, undercut limestone shoreline. Having managed to get to the first ledge wearing only sport sandals, he then changed into proper hiking boots. While sitting on the ledge it became apparent why the locals don't spend much time on Sovu Levu, as a massive swarm of starved mosquitoes descended and started biting. Quickly, DF climb up to the second level ledge and found a spot where he could reach the top of a palm growing on the bottom ledge below. He was able to make a collection of a complete inflorescence with flowers in bud and two leaves. Retreating down the ledges proved harder than going up, so he dropped the specimen in the water and jumped in swimming for the mosquito free zone of the boat, pulling the now wet specimen with him.

We circled Sovu Levu in boat and did a census of mature trees, counting over 300 adult trees on this one tiny islet (Fig. 2). However, it was noticeable the lack of immature trees and seedlings, indicating that recruitment may occur rarely or over a long period of time.

Next, we broke for lunch on the beach of the second largest islet called island Sovu Lailai, which was also home to a colony of blue-faced boobies. These birds have rarely seen people and were nesting in bushes at eye level. They seemed entirely unperturbed by our presence, allowing us to photograph them from a few feet away. One immature youngster bore an uncanny resemblance to Sesame Street's Big Bird (though not quite the same color).

After lunch we took some time to snorkel just off the island. The reef contained some of the most beautiful soft corals anyone of us had seen, with a multitude of fish in all myriads of color and a profusion of giant blue clams. These flawless corals provided a dramatic contrast to many of the dead and grey sections of reef that can be found close to some of Fiji's tourist resorts, where damage from reef walkers and careless divers has killed off large quantities of coral. The sight of a small reef shark sent us scurrying back to the beach.

Sovu Lailai only had a small number of *P. thurstonii* trees growing on it and these were not the dominate tree species, as this is a flatter islet with richer soil due to the nesting bird colony, this seemed to make sense (Fig. 3). The majority of the 25 or so adult trees were growing on the steeper north side of the islet.

After our lunch break we headed to the third and smallest Sovu islets, which is called Sovu Lailai Lailai. This islet is even steeper than Sovu Levu, but about one-third as big and completely dominated by *Pritchardia* palms. The first level of the limestone was less than a meter up, but was deeply undercut by the ocean waves. Three of us scurried up this time to the first ledge of the islet. Unfortunately we found the rest of the limestone cliffs on these islet to be impenetrable and so we couldn't make another collection. We noted that next time we would need to bring a ladder and some proper climbing gear in order to reach the palms safely.

Once back in the boat from Sovu Lailai Lailai, we could see an enormous thunderhead storm gathering on the horizon. Timo, turned the boat around and headed back for Lomaloma as quick-

ly as the small engine would take us. However, just minutes into our journey, the storm was upon us and we all got thoroughly drenched. The small boat seemed at times to be in danger from filling with rain water, and we took turns frantically bailing out as much of the water as we could using whatever receptacle came to hand.

Luckily, the sun soon reemerged and the rest of our stay was dry and bright. We spent our other days on Vanua Balavu exploring the main island and chartering Timo and his boat to take us to the Bay of Islands—another smattering of stunning mushroom shaped islets covered in lush vegetation including the cycad species *Cycas rumphii* f. *seemannii*. The only other palm species we saw on Vanua Balavu other than coconuts was *Veitchia joannis* growing on the highest slopes of Korolevu the tallest peak, which reaches about 250 m in elevation. One fascinating thing we did observe on Vanua Balavu was fruit bats feeding on the flowers of the coconut palms.

At the end of our trip we found ourselves reluctant to return to the (relative) hustle and bustle of Suva. Ilisapeci and Delai escorted to us to the airport, where we had to endure the indignity of being publicly weighed before we could board the aircraft. We tried to blame it on the scales, but it appeared that we had each managed to gain a few pounds during our short stay, thanks to our hosts' breadfruit and coconut fish. As our Twin Otter aircraft trundled down to the end of Vanua Balavu's grass airstrip, we waved farewell to Ilisapeci and Ratu Delai who stood grinning by the side of the runway, delighted that they had managed to substantially improve our marriage prospects in such a short space of time.

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