

# **SUMMARY REPORT ON FORESTS OF THE MATAQALI NADICAKE KILAKA, KUBULAU DISTRICT, BUA, VANUA LEVU**

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## **INTRODUCTION**

I was approached by Dr. David Olson of the Wildlife Conservation Society (WCS) to assess the type, status and quality of the forest in Kubulau District, Bua, Vanua Levu. I initially spent 2 days, Friday (28/10/2005) afternoon and the whole of Saturday (29/10/2005), in Kubulau district. This invitation was the result of interest by some landowning family clans (mataqali) to protect part of their land and the offer by WCS to assist in reserving part of their land for conservation purposes. On Friday I visited two forest patches (one logged about 40 years ago and another old-growth) near the coast and Saturday walking through the forests in the center of the district.

Because of the scarcity of data obtained (and because the forest appeared suitable for my PhD research), I decided to return to the district for a more detailed survey of the northernmost forests of Kubulau district from Saturday (12/11/2005) to Tuesday (22/11/2005). Upon returning, I found out that the mataqali Nadicake Nadi had abandoned plans to set up a reserve and initiated steps to log their forests. Therefore, I decided to focus my research on the land of the mataqali Nadicake Kilaka only.

My objectives were the following:

- 1) to determine the types of vegetation present
- 2) to produce a checklist of the flora and, through this list, identify rare and threatened species in the reserve
- 3) to undertake a quantitative survey of the northernmost forests (lowland tropical rain forest) by setting up 4 permanent 50 × 50m plots
- 4) to assess the status of the forests
- 5) to determine the state and suitability of the proposed reserve
- 6) to assess possible threats to the proposed reserve.
- 7) to survey the thoughts and feelings of the community of Kilaka Village regarding the WCS project and setting aside an area as a reserve

## **METHODS**

During both visits I conducted a reconnaissance by walking through the forest, identifying dominant species and collecting species in flower or fruit. I also identified as many species as possible (some were only identified to generic level only) and obtained local names wherever possible. During my second visit I also set up four permanent 50 × 50m plots (see Fig. 1 for locations) marked with PVC pipes in lowland tropical rainforest of the northernmost corner of the intended reserve, in which I measured and identified every tree of 10cm or more in diameter.

Perceptions of the Kilaka Village community regarding the assistance provided by WCS and the idea of setting aside of forest for a reserve were determined by having formal and informal discussions while drinking kava. Although kava sessions unfortunately generally exclude young and female members of the community, it allows detailed discussions with male youths and older male members of the community, who are the group making discussions regarding land issues.

## RESULTS

### Vegetation

There are four primary vegetation types in Kubulau district; coastal vegetation (not surveyed), wetlands dominated by *Pandanus tectorius* (not surveyed), mesic forests and rain forest. Before commenting on the two latter forest types, I would like to draw attention to the presence of extensive wetlands, which are highly threatened in Fiji (Ash 1992). Although these have been highly impacted by local residents through draining and burning, restoration efforts could be worthwhile, considering their rarity in Fiji and that most of the remaining wetlands are severely disturbed.

In addition to these primary vegetation types, secondary types that were created anthropogenically, including plantations and gardens, pasture (grasslands maintained by cattle grazing), talasiga (grasslands maintained by burning) and secondary forest (that is at various stages of recovery after logging), are present. My survey focuses on “old-growth” forests and, therefore, the remainder of this section will focus on mesic and rain forests.

#### *Mesic Forest*

Mesic forest is the dominant forest type in the low-lying, near coastal areas of Kubulau and stretches along a rainfall gradient of lower rainfall near the coast and increasing rainfall inland. It hence provides a unique opportunity to study changes in climate and plant composition along a rainfall gradient. However, this forest has also suffered the most from logging, especially on the ridges, where *Dacrydium nidulum* and *Agathis vitiensis* are most abundant. Towards the coast *Intsia bijuga* (**vesi**) is a dominant component of this forest, as are *Fagraea gracillipes* (**buabua**), *Myristica castaneifolia* (**male**), *Kingiodendron platycarpum* (**cibicibi**), *Maniltoa* sp. (**cibicibi levu**), *Cynometra insularis* (**cibicibi lailai**), *Gymnostoma vitiense* (**cau**) and *Dacrydium nidulum* (**yaka**). Further inland (probably associated with greater rainfall) *Intsia bijuga*, *Fagraea berteriana* and *Kingiodendron platycarpum* decrease in importance, and *Gymnostoma vitiense* and *Dacrydium nidulum* become increasingly restricted to ridges, while *Endospermum robbianum* (**vulavula**), *Heritiera ornithocephala* (**savai**), *Agathis macrophylla* (**tahua mahadre**), *Sterculia vitiense* (**waciwaci**) and *Podocarpus neriifolius* (**bauwaka**) increase in importance.

#### *Rain Forest*

This is mostly found in the northern portion of Kubulau District at elevations of 200 m or more. Much of it is located on flat or gently sloping terrain but there are also steeper slopes. Dominant components of this forest are *Retrophyllum vitiense* (**tahua salusalu**), *Calophyllum* spp. (**damanu**), *Myristica* spp. (**male**, **malamala**), *Girouardia celtidifolia* (**masivau**), *Parinari insularum* (**sea**), *Semecarpus vitiensis* (**malawaci**), *Pagiantha thurstonii* (**tabua kei ra kalavo**) and *Syzygium* spp. (**yasiyasi**). Other important species include *Palaquium porphyreum* (**bauvudi**), *Garcinia myrtifolia* (**raubu**), *Firmania diversifolia* (**cara**), *Geissois imthurnii* (**vo'a**) and *Dysoxylum* sp. (**tarawau kei soqe**). This composition is somewhat different from rainforests on Viti Levu visited by me. On ridges *Agathis macrophylla*, *Dacrydium nidulum* and *Gymnostoma vitiense* may be common.

In the northernmost corner of Kubulau district and the reserve is an extensive plateau that has many of the species found in the rainforest but is dominated by *Atuna racemosa* (**maki'a**). *Girouardia celtidifolia* and *Fagraea gracillipes* (**buu**) are also abundant. This plateau also has an abundance of plants with stilt and prop roots, including *Physokentia rosea* (**niuniu**), *Crossostylis* spp. (no name

recorded), *Myristica macrantha* (**male**) and *Syzygium* sp. (**yasiyasi**). As flowing water and pools of standing water are very common, this could also be considered a wetland.

### Composition of Lowland Tropical Rainforest

A total of 839 trees belonging to 91 species in 43 families were encountered in the four plots totaling 1 ha. Their combined basal area (as calculated from the diameter at breast height (dbh)) was 45.6 m<sup>2</sup>. Dominant species in terms of basal area were the flowering plants *Myristica gillespieana*, *Parinari insularum* and *Calophyllum vitiense*, and the conifer *Retrophyllum vitiense* (Table 1). These four species are mostly canopy species (*M. gillespieana* is also abundant in the subcaopy). However, *Gironniera celtidifolia* was the most common tree, reflecting its high abundance in the understory (Table 2). Other common species include *Myristica gillespieana* and *Pagiantha thurstonii*.

**Table 1: The 30 most common species as measured by the basal area of individuals with a dbh of 10cm or more.**

SPECIES	FAMILY	Basal Area (sq.m)
<i>Myristica gillespieana</i>	Myristicaceae	4.130
<i>Retrophyllum vitiense</i>	Podocarpaceae	3.835
<i>Parinari insularum</i>	Chrysobalanaceae	3.143
<i>Calophyllum vitiense</i>	Clusiaceae	3.044
<i>Pagiantha thurstonii</i>	Apocynaceae	2.344
<i>Semecarpus vitiense</i>	Anacardiaceae	2.338
<i>Myristica castaneifolia</i>	Myristicaceae	1.622
<i>Gironniera celtidifolia</i>	Ulmaceae	1.588
<i>Geissois imthurnii</i>	Cunnoniaceae	1.439
<i>Garcinia myrtifolia</i>	Clusiaceae	1.364
<i>Dysoxylum quericifolium</i>	Meliaceae	1.350
<i>Palaquium porphyreum</i>	Sapotaceae	1.343
<i>Gymnostoma vitiense</i>	Casurinaceae	1.274
<i>Firmania diversifolia</i>	Sterculiaceae	1.201
<i>Xylopia pacifica</i>	Annonaceae	1.113
<i>Buchanania attenuata</i>	Anacardiaceae	0.920
<i>Elaeocarpus chelonimorphus</i>	Elaeocarpaceae	0.899
<i>Cynometra insularis</i>	Caesalpinaceae	0.853
<i>Syzygium rubescens</i>	Myrtaceae	0.779
<i>Sterculia vitiense</i>	Sterculiaceae	0.750
<i>Syzygium nidie</i>	Myrtaceae	0.711
<i>Heritiera ornithocephala</i>	Sterculiaceae	0.643
<i>Hedstroemia latifolia</i>	Rubiaceae	0.575
<i>Pouteria umbonata</i>	Sapotaceae	0.531
<i>Maniltoa minor</i>	Caesalpinaceae	0.507
<i>Dillenia biflora</i>	Dilleniaceae	0.505
<i>Garcinia sessilis</i>	Clusiaceae	0.489
<i>Haplolobus floribundus</i>	Burseraceae	0.423
<i>Syzygium leucanthum</i>	Myrtaceae	0.392
<i>Syzygium curvistylum</i>	Myrtaceae	0.378

**Table 2: The 30 most common species as measured by the number of individuals with a dbh of 10cm or more.**

SPECIES	FAMILY	FREQ.
<i>Gironniera celtidifolia</i>	Ulmaceae	130
<i>Myristica gillespieana</i>	Myristicaceae	60
<i>Pagiantha thurstonii</i>	Apocynaceae	53
<i>Garcinia myrtifolia</i>	Clusiaceae	36
<i>Parinari insularum</i>	Chrysobalanaceae	35
<i>Semecarpus vitiense</i>	Anacardiaceae	34
<i>Hedstroemia latifolia</i>	Rubiaceae	28
<i>Myristica castaneifolia</i>	Myristicaceae	28
<i>Calophyllum vitiense</i>	Clusiaceae	25
<i>Cynometra insularis</i>	Caesaplinaceae	23
<i>Dillenia biflora</i>	Dilleniaceae	20
<i>Firmania diversifolia</i>	Sterculiaceae	20
<i>Retrophyllum vitiense</i>	Podocarpaceae	20
<i>Geissois imthurnii</i>	Cunnoniaceae	16
<i>Syzygium nidie</i>	Myrtaceae	14
<i>Xylopia pacifica</i>	Annonaceae	14
<i>Dysoxylum quericifolium</i>	Meliaceae	13
<i>Heritiera ornithocephala</i>	Sterculiaceae	13
<i>Maniltoa minor</i>	Caesaplinaceae	13
<i>Syzygium rubescens</i>	Myrtaceae	13
<i>Syzygium curvistylum</i>	Myrtaceae	12
<i>Garcinia sessilis</i>	Clusiaceae	11
<i>Haplobolus floribundus</i>	Burseraceae	10
<i>Palaquium porphyreum</i>	Sapotaceae	9
<i>Pouteria umbonata</i>	Sapotaceae	9
<i>Premna protusa</i>	Verbenaceae	9
<i>Vavaea amicorum</i>	Meliaceae	9
<i>Alangium vitiense</i>	Alangiaceae	8
<i>Buchanania attenuata</i>	Anacardiaceae	8
<i>Syzygium brackenridgei</i>	Myrtaceae	8
<i>Syzygium leucanthum</i>	Myrtaceae	8

At the family level, the Myristicaceae (3 species of *Myristica*) and Clusiaceae (species of *Calophyllum* and *Garcinia*) are dominant in terms of basal area (Table 3). Other important families in terms of basal area are the Podocarpaceae (represented only by *Retrophyllum vitiense*), Anacardiaceae (*Buchanania attenuata*, *Pleiogynium timoriense*, *Semecarpus vitiense*) and Chrysobalanaceae (almost entirely *Parinari insularum* with a single individual of *Atuna racemosa*). *Gironniera celtidifolia* is so abundant that the Ulmaceae is the most abundant family (Table 4). The Myristicaceae, Clusiaceae, Myrtaceae (several species of *Syzygium*) and Apocynaceae (*Pagiantha thurstonii* and *Alstonia costata*) are other abundant families.

**Table 3: The 20 most common families as measured by the basal area of individuals with a dbh of 10cm or more.**

FAMILY	Basal Area (sq.m)
Myristicaceae	5.866
Clusiaceae	5.208
Podocarpaceae	3.835
Anacardiaceae	3.291
Chrysobalanaceae	3.152
Myrtaceae	2.728
Sapotaceae	2.595
Sterculiaceae	2.594
Apocynaceae	2.478
Meliaceae	1.934
Ulmaceae	1.588
Cunnoniaceae	1.439
Caesalpinaceae	1.359
Casurinaceae	1.274
Annonaceae	1.163
Annonaceae	1.113
Elaeocarpaceae	0.899
Rubiaceae	0.606
Burseraceae	0.554
Dilleniaceae	0.505

**Table 4: The 20 most common families as measured by the number of individuals with a dbh of 10cm or more.**

FAMILY	FREQ.
Ulmaceae	130
Myristicaceae	91
Clusiaceae	77
Myrtaceae	63
Apocynaceae	58
Anacardiaceae	44
Sterculiaceae	38
Chrysobalanaceae	36
Caesalpinaceae	36
Meliaceae	33
Sapotaceae	32
Rubiaceae	29
Dilleniaceae	20
Podocarpaceae	20
Annonaceae	17
Cunnoniaceae	16
Burseraceae	12
Lauraceae	11
Anacardiaceae	10
Verbenaceae	9

## Flora

A total of 319 species in 223 genera and 99 families were recorded (Table 5). All taxa recorded are listed in appendix 1. This list is far from complete as several vegetation types (Coastal vegetation, wetlands and anthropogenically induced vegetation types were not sampled). In addition, I expect many additional taxa to be discovered in the lowland rain and mesic forests, once these have been more thoroughly investigated. Of the 319 recorded species 288 were indigenous to Fiji. The low number of introduced species is caused by the focus of my survey on native flora and vegetation. A total of 126 species were endemic to Fiji and 15 of those are restricted to Vanua Levu. The dicotyledons are the biggest taxon, contributing more than two-thirds of all species and more than 90% of all endemic species.

The most important plant discovered was the small tree *Zanthoxylum myrianthum* (Rutaceae), which is endemic to Vanua Levu and was recorded for the second time ever and for the first time in more than 50 years. In addition, the find of *Astronidium kasiensis* outside its only known and highly disturbed location in the Mt. Kasi region is important. Other relatively narrow endemics include *Veitchia filifera* (Arecaceae) *Parsonsia smithii* (Apocynaceae), *Cyrtandra harveyi* and *C. reticulata* (Gesneriaceae), *Medinilla kabii* (Melastomataceae), *Endospermum robbieanum*, *Macaranga membranacea* (both Euphorbiaceae), *Amaracarpus muscifer* and *Ixora coronata* (both Rubiaceae), which are endemic to Vanua Levu. *Balaka seemannii* and *Physokentia thurstonii* (both Arecaceae) are endemic to Vanua Levu and Taveuni, while *Cyathocalyx stenopetalus* (Annonaceae) *Cyrtandra dolichocarpa* (Gesneriaceae) are endemic to Vanua Levu and Rabi.

In addition, I identified 60 native taxa that were previously collected in the adjacent Mt. Kasi region and Wainunu Catchment but were not recorded in this study. Of those 42 were endemic, 29 to Fiji, 7 to Vanua Levu and six to either the Mt. Kasi region (*Caesaria myrsinoides* [Flacourtiaceae], *Elaeocarpus kasiense* [Elaeocarpaceae], *Mapania vitiensis* [Orchidaceae], *Mapania vitiensis* [Cyperaceae], *Metrosideros ochrantha* [Myrtaceae], *Phreatia flavovirens* [Orchidaceae]) or the Wainunu catchment (*Guioa capillacea* [Sapindaceae]). A search whether the 6 narrowly endemic species are present in the proposed reserve should be considered a priority as this would add great conservation value.

Four specimens collected are of special interest and potentially important records. While the appearance of the specimens suggests them to be unique taxa, proper identification are required to ascertain their identity. A specimen that I believe to belong to the genus *Terminalia* was collected in fruit in one of the plots in the lowland rain forest. If my perception is correct, this specimen represents a new species and the first non-coastal taxon with fleshy fruits. In addition, a specimen in the genus *Aglaia* was interesting as its leaves are covered with hairs, which is different from other species known in Fiji. Using the key in Pannell (1992), the species comes closest to *Aglaia tomentosa*, which is known only from New Guinea. An expert would need to determine whether the species is a first Fiji-record for *A. tomentosa*, a new taxon, or just a form of species already described from Fiji. Another interesting specimen was obtained in the genus *Dolicholobium*. Although the specimen was sterile, the indument corresponds most closely to *Dolicholobium aneityense*, which is believed to be endemic to Vanuatu. It will require fertile specimens and an expert in this genus to definitely identify the *Dolicholobium*.

**Table 5: Floristic Summary of the Flora of Kubulau.** Numbers in the column refer to the number of species. \* = percentage endemism (endemic species/ indigenous species × 100) is stated in paranthes behind the number of species. ^ = includes endemic species.

Taxon	Families	Genera	Species	Endemic*	Vanua Endemics	Levu Indigenous ^	Aboriginal Introductions	Recent Introductions
Ferns & Fern Allies	19	37	44	3 (6.8)	0	44	0	0
Gymnosperms	3	5	5	0	0	5	0	0
Dicotyledons	65	152	225	117(56.8)	12	206	4	15
Monocotyledons	12	39	45	6(18.2)	3	33	5	7
<b>TOTAL</b>	<b>99</b>	<b>233</b>	<b>319</b>	<b>126(43.8)</b>	<b>15</b>	<b>288</b>	<b>9</b>	<b>22</b>

### Status of Forests

Before commenting on the status of the forests on the land of the mataqali Nadicake-Kilaka, I need to point out that much of the present forest consists of patches of current plantations, plantations of the recent past (grassland), plantations and village sites of the distant past (secondary forest), and intact “old-growth” forest. A detailed survey of the entire land of the mataqali Nadicake-Kilaka should be undertaken to identify those patches. In my opinion proper management of used, recovering and old-growth areas is essential for the long-term protection of the remaining forests.

The status of the remaining and extensive forest patches is generally excellent. They include very large individuals of slow-growing conifers (and faster growing flowering plants), attesting to their age (table 6). Not only is an individual of *Agathis macrophylla* with about 1.5m in diameter the biggest tree that I have observed in Fiji, but also are many measurements in table 1 the largest recorded by me for the particular species. The population of *Retrophyllum vitiense* is by far the biggest that I have ever observed. In several forest fragments and on the plateau a high number (based on call frequency) of tree frogs was recorded. As frogs are good indicator species for forest health (C. Morrison, pers.com.), this also attests to the quality of the forest.

**Table 6: Maximum trunk diameters (dbh) of species on the land of the mataqali Nadicake-Kilaka, Kilaka, Kubulau, Bua.**

Species	Fijian Name	Family	Maximum dbh
<i>Agathis macrophylla</i>	tahua makadre	Araucariaceae	150.7
<i>Retrophyllum vitiensis</i>	tahua salusalu	Podocarpaceae	122.7
<i>Calophyllum vitiense</i>	damanu	Clusiaceae	90.7
<i>Maniltoa floribunda</i>	cibicibi levu	Caalpinaeae	90.2
<i>Dacrydium nidulum</i>	yaka	Podocarpaceae	82.2
<i>Syzygium</i> sp.	yasiyasi	Myrtaceae	81.7
<i>Endospermum macrophyllum</i>	vulauvula	Euphorbiaceae	80.2
<i>Gymnostoma vitiense</i>	cau	Casurinaceae	78.0
<i>Endospermum robbianum</i>	vulavula	Euphorbiaceae	71.2
<i>Buchanania attenuata</i>	talitali	Anacardiaceae	70.6
<i>Palaquium porphyreum</i>	bauvudi	Sapotaceae	69.4
<i>Calophyllum cerasiferum</i>	damanu drau lailai	Clusiaceae	66.3
<i>Dysoxylum quercifolium</i>	tarawau kei soqe	Meliaceae	63.5
<i>Myristica gillespieana</i>	male	Myristicaceae	62.7
<i>Xylopia pacifica</i>	oto	Annonaceae	59.0
<i>Parinari insularum</i>	sea	Chrysobalanaceae	58.8
<i>Palaquium</i> sp.	uru 2	Sapotaceae	58.2
<i>Geissois imthurnii</i>	vo'a	Cunnoniaceae	57.7
<i>Elaeocarpus chelonimorphus</i>	dravidravi	Elaeocarpaceae	57.3
<i>Sterculia vitiense</i>	waciwaci	Sterculiaceae	57.1
<i>Myristica macrantha</i>	male	Myristicaceae	54.0
<i>Myristica casatneifolia</i>	malamala	Myristicaceae	50.6
<i>Firmania diversifolia</i>	cara	Sterculiaceae	49.8
<i>Pagiantha thurstonii</i>	tabua mei ra kalavo	Apocynaceae	49.1
<i>Heritiera ornithocephala</i>	savai	Sterculiaceae	45.7
<i>Crossostylis pachyantha</i>	No name recorded	Rhizophoraceae	42.8
<i>Semecarpus vitiensis</i>	Malawaci	Anacardiaceae	42.6

### Status of the Proposed Reserve

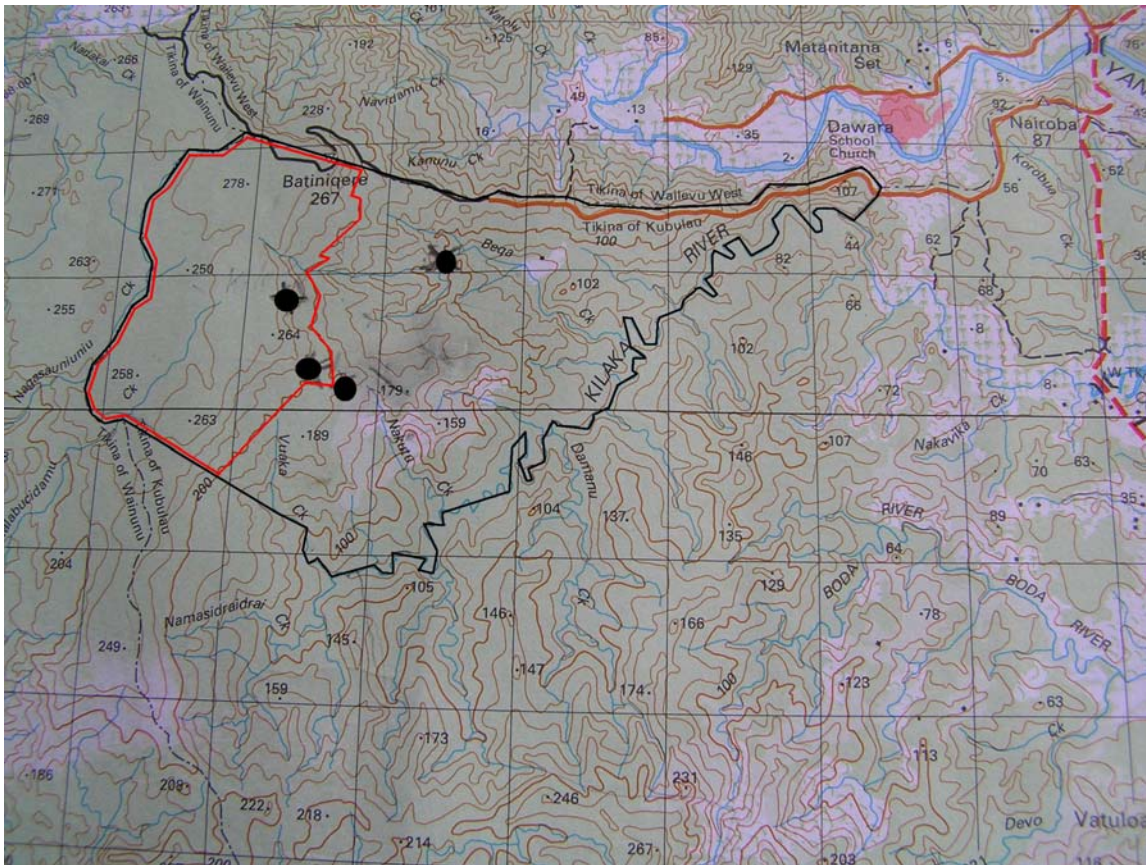
The proposed reserve will approximately straddle the 200m altitude line on its western side and elsewhere follow the boundaries of the mataqali Nadicake-Kilaka. It is ideally located in the sense that it protects a major area of the Kilaka River watershed and contains some of the best remaining forests. However, the plateau also includes areas that were heavily disturbed in the past. We saw an old village site and evidence of previous attempts of bauxite exploitation. However, vegetation is recovering quickly from these past disturbances. Of greater concern is the presence of a large, recently created plantation. Reportedly, this plantation was mistakenly created on land of mataqali Nadicake-Kilaka by the mataqali Nadicake-Nadi, but soon abandoned. Eventually vegetation should recover from this disturbance.

I believe that the proposed reserve should be extended to include most of the remaining patches of forest. This would allow protecting forest along a gradient of increasing rainfall from the western to the eastern end of the land of the mataqali Nadicake-Kilaka. However, such an extension would require a



detailed study of current and past land use and of the intentions and aspirations of members of the mataqali Nadicake-Kilaka, as large plantations are located east of the proposed reserve. Ideally this would result in a well-balanced, dynamic management plan that includes planted, barren (recovering) and protected areas, as well as improved farming practices.

**Fig. 1: Approximate boundary of the land of the mataqali Nadicake-Nadi (black line), approximate locations of 50 × 50 m permanent plots (black circles) and approximate boundary of the proposed reserve (red line).**



## Conservation Value

I believe that gazetting the proposed reserve should be considered a high conservation priority. This is based on the numerous endemic species in the reserve and the presence of vegetation types that are uncommon elsewhere in Fiji. Lowland tropical rainforests that have *Retrophyllum vitiense* as a dominant component are rare, as are still forested plateaus as that covering most of the intended reserve. In addition, if the reserve could be extended to include some of the southern parts of the land of the mataqali Nadicake-Kilaka, it could include the rain forest, mesic forest and the transition zone between these two forest types.

Several unique and very rare species were collected. *Zanthophyllum myrianthum* [Rutaceae] was collected only for the second time ever and now appears to be endemic to S Vanua Levu, a species of *Terminalia* [Combretaceae] that I believe to be new to science and would be the first non-coastal

species of the genus in Fiji with fleshy fruits, a species of *Aglaia* (aff. *tomentosa* in the appendix) [Meliaceae] that appears to be a new record for Fiji, and *Astronidium kasiensis* [Melastomataceae] which was previously believed to be endemic to Mt. Kasi and surroundings. The find of the latter species is of special significance, as there are several other species that have only been collected from Mt. Kasi and may therefore also be present in the reserve. These include *Caesaria myrsinoides* [Flacourtiaceae], *Elaeocarpus kasiense* [Elaeocarpaceae], *Mapania vitiensis* [Melastomataceae], *Metrosideros ochrantha* [Myrtaceae], and *Phreatia flavovirens* [Orchidaceae]. In addition, *Guioa capillacea* [Sapindaceae] has only been collected once in the adjacent Wainunu Catchment and may also occur in the reserve. Discovery of some of these species would greatly add to the conservation value of the reserve. Especially the discovery of *Metrosideros ochrantha*, which is feared to have been extirpated from Mt. Kasi due to mining activities (M.F. Doyle & M.V. Tuiwawa, personal communication), would be an important discovery. In short, the area has the potential to become one of the highest priority conservation sites in Fiji.

## Community Perception

1. The community is very happy with the initiative and efforts of the Wildlife Conservation Society.
2. There is a strong desire by the community to protect their remaining forests from logging because:
  - they want to keep their forest for future generations
  - they want to maintain the quality of their drinking water
  - they want to ensure that there are no water shortages in future
  - they want to protect their oceans and reefs, which could be severely impacted by siltation
  - they have seen and heard about many other places that now regret having logged their forests because the money was quickly spent
  - they hope to start an ecotourism project sometimes in the future
3. The community would appreciate more frequent and more detailed feedback on the research undertaken on their land

## Threats

### *Logging*

The major threat to the forests of Kubulau is logging. This is evident in the fact that only two **mataqalis**, Nadicake-Kilaka and Nadicake-Nadi, have not yet logged their forests, with the latter having just approved to log their forest. Most of the coastal forests, which is located on relatively flat terrain, have been clear-felled and only tiny fragments of intact mesic forest remain. The topography further inland is more rugged and has resulted in logging tracks following ridges (which usually also have the highest density of timber) and trees being removed on and along these tracks.

Because of the isolation of the district from the two major towns on Vanua Levu, Savusavu and Labasa, plantations (e.g. pine, mahogany) and paid employment are not likely to render good profit and the ocean and forest therefore present the major possible sources of income for inhabitants of the district. As a result there is continued interest in exploiting the remaining forest. However, there is also good awareness that logging in the forest impacts the ocean and freshwater resources and an initiative to declare protected forest areas to safeguard these valuable resources.

### *Agriculture*

Agriculture is of great importance to Fijian communities, as many are partially or entirely subsistence based. In addition there is increased commercial farming. Members of the mataqali Nadicake-Kilaka travel for 2 hours (by feet) or 30 minutes (by horse) to reach their plantations, several of which are located just east of the proposed reserve.

Therefore, agriculture could place increasing strain on the reserve, if the population of Kilaka village increases or if avenues to better market garden produce become available. It is therefore essential that proper management plans, which incorporate increasing demands, are now made. As mentioned before such management should include improved farming techniques and a system of protected and use areas.

## **RECOMMENDATIONS**

1. All possible assistance should be provided to the mataqali Nadicake-Kilaka to reserve the area they are intending to reserve. It includes some of the biggest remaining trees in Fiji.
2. A management plan should be designed for the land owned by the mataqali and located outside the proposed reserve. This would not only allow protecting forest along a rainfall gradient but should also ease pressure on the reserve. I suggest that the setting up of this management plan involves the following steps:
  - a detailed survey of the entire land of the mataqali Nadicake-Kilaka to determine patches currently and recently farmed, old village sites, old garden sites and “old-growth” forest. This could facilitate designing a dynamic management system of area of use, moderate use and total protection.
  - workshops about appropriate and sustainable farming techniques. Because the climber *Merremia peltata* is a major problem (prevents re-growth for 10 years or more), agroforestry may be a suitable farming system
  - determination of current human population growth rates and projection of future ratesThe above would be important initial steps towards sustainable farming and easing future pressure on the proposed reserve. All steps need to be carried out in close consultation with the community.

3. Avenues for income generating activities for the mataqali Nadicake-Kilaka should be set up. Although this will not generate as much as logging, it will provide some revenue to landowners. Three suggestions are listed below.
  - a. Research – having excellent, intact patches of forest remaining, the area provides an ideal place for research. The presence of many narrowly restricted endemic plant species makes the area a high priority area for plant and insect collection. A farmhouse is present east of the proposed reserve and could serve as a research station for interested scientists. As an immediate measure, all visiting scientists could be asked to hire 1 or 2 guides at a rate of \$20 per day.
  - b. Preferential Buying of Produce: Hotels or shop owners in Savusavu could be contacted, once the reserve and management plan are established, regarding preferentially purchasing produce (taro, cassava, kava) from a sustainably managed landscape. Generating Fair Trade products could be another option to get good prices and a reliable market for produce.

- c. Ecotourism: This is probably the most difficult option at present because the remoteness of the area, the long distance from the village to good forest sites and the waterfall, the bad condition of the road and the wet weather. However, a well-planned project, involving horseback rides to the waterfall (at the south-eastern boundary of the land of the mataqali Nadicake-Kilaka) in the morning, may be an option in the future. If a sustainably managed landscape can be set up, tourists may be interested in seeing this also.
4. Frequent and detailed feedback to landowners about any activities on the land of the mataqali Nadicake-Nadi needs to be provided. In my experience this should be done orally whenever possible, rather than by reports, which are only read by few people.
5. An intensive search for the six narrow endemics reported only from the Mt. Kasi region & the Wainunu (see above) should be undertaken in the proposed reserve. The discovery of any of these would greatly increase the conservation value of the reserve.
6. Efforts to add parts of the Wainunu Catchment to the reserve should be undertaken, as the present reserve is relatively small.

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**APPENDIX 1: Preliminary annotated species checklist for the proposed Kilaka Reserve, including species that were previously collected (Smith 1979-96) in the adjacent Wainunu Catchment and Mt. Kasi region (listed as other possible species).**

**PTERIDOPHYTA (Ferns and Fern Allies)**

**Psilopsida**

PSLIOTACEAE

*Psilotum nudum* (L.) Beauv.

Indigenous ground herb. Tropics and subtropics.

**Lycopsida**

LYCOPODIACEAE

*Huperzia subtrifoliata* (Brownlie) Holub

Synonym: *Lycopodium subtrifoliatum* Brownlie

Endemic epiphyte and known from Viti Levu and Vanua Levu.

*Lycopodiella cernua* (L.) Pichi-Serm.

Synonym: *Lycopodium cernuum* L.

**Kilaka Name:** yalewa nini

Indigenous ground herb. Tropics and subtropics.

SELLAGINELLACEAE

*Selaginella breynoides* Baker

Endemic ground herb collected from Viti Levu and Vanua Levu.

**Filicopsida**

ADIANTACEAE

*Stenochlaena palustris* (Burm.) Bedd.

**Kilaka Name:** wa midri

Indigenous. India to Australia and Polynesia

*Taenitis pinnata* (J.Sm.) Holtt. var. *polypodioides* (Baker) Holtt.

Species is indigenous to Fiji, occurring in Australia and Melanesia. The variety is endemic to Fiji.

ASPIDIACEAE

*Tectaria* sp.

Indigenous. Observed in the field, no specimens collected.

ASPLENIACEAE

*Asplenium amboinense* Willd.

Indigenous. Malaysia to Fiji. Climbing fern.

*Asplenium australasicum* Hook.

Indigenous. South Pacific. Epiphytic bird's-nest fern

*Asplenium bipinnatifidum* Baker

Indigenous. Fiji and Vanuatu. Climbing epiphyte.

*Asplenium cuneatum* Lam.

Indigenous. Tropics. Short-creeping epiphyte.

ATHYRIACEAE

*Callipteris prolifera* (Lam.) Bory

Synonym: *Diplazium proliferum* (Lam.) Thouars

Indigenous. Tropical Africa to Samoa.

*Diplazium esculentum* (Retz.) Sw.

Indigenous. Tropical Asia to Pacific Islands.

*Diplazium harpeodes* Moore

Indigenous. Fiji to Polynesia. Terrestrial.

## BLECHNACEAE

*Blechnum orientale* L.

Indigenous. Tropical Asia to the Pacific.

## CYATHEACEAE

*Cyathea hornei* Copel.

Indigenous. New Guinea to Fiji.

*Cyathea lunulata* (G.Forst.) Copel.

Indigenous. Marianas and Carolines to Samoa

## DAVLLIACEAE

*Davallia solida* (G.Forst.) Sw. var. *fejeensis* (Hook.) Notenb.

Synonym: *Davallia fejeensis* Hk.

Indigenous, epiphytic fern. The variety is endemic to Fiji.

*Davallia solida* (G.Forst.) Swartz var. *solida*

Indigenous, epiphytic fern.

*Nephrolepis biserrata* (Sw.) Schott

Indigenous. Terrestrial. Pantropical.

*Nephrolepis hirsutula* (G.Forst.) Presl

Indigenous. Terrestrial. Tropical Asia to the Pacific Islands.

*Nephrolepis tuberosa* (Bory ex Willd.) Presl

Indigenous, mostly epiphytic. Masacrenes to the Pacific.

*Oleandra neriiformis* Cav.

**Kilaka Name:** sova ni gata

Indigenous. Tropical Asia to Samoa. Epiphyte.

## DENNSTAEDTIACEAE

*Orthopteris tenuis* (Brack.) Brownlie

Indigenous, terrestrial fern. South Pacific.

## GLEICHENIACEAE

*Dicranopteris linearis* (Burm.) Underw.

**Kilaka Name:** qato

Indigenous. Tropics and subtropics.

## HYMENOPHYLLACEAE (filmy ferns)

*Hymenophyllum affine* Brack.

Endemic epiphyte. Collected from several high islands.

*Cephalomanes boryanum* (Kunze) Copel.

Synonym: *Trichomanes boryanum* Kunze

Indigenous, mostly terrestrial herb. Vanuatu, Fiji, Samoa. Most common in ephemeral stream beds and along stream banks.

*Crepidomanes endlicherianum* (Presl) P.S.Green

Synonym: *Trichomanes endlicherianum* Presl

Indigenous. Epiphytic climber. South Pacific.

*Selenodesmium dentatum* (Bosch) Copel.

Synonym: *Trichomanes dentatum* Bosch

Indigenous. New Caledonia, Fiji and Polynesia. Most common in ephemeral stream beds and along stream banks.

*Nesopteris intermedia* (Bosch) Copel.

Synonym: *Trichomanes intermedium* Bosch

Indigenous terrestrial herb. Common along stream banks. New Guinea to Samoa.

## LOMARIOPSISACEAE

*Lomagramma polyphylla* Brack.

Indigenous. Santa Cruz Islands to Tonga.

## MARATTIACEAE

*Angiopteris evecta* (G.Forst.) Hoffm.

Indigenous. From SE Asia into the Pacific. Large terrestrial fern that produces leaves from a short, massive, fleshy base.

*Marattia smithii* Mett. ex Kuhn

Indigenous. Vanuatu, Fiji and Samoa. Large terrestrial fern that produces leaves from a short, massive, fleshy base.

#### POLYPODIACEAE

*Dipteris conjugata* Reinw.

Indigenous. Thailand to Fiji.

*Drynaria rigidula* (Sw.) Bedd.

Indigenous. Malaya and Sumatra to Australia and Polynesia.

*Lemmaphyllum accedens* (Bl.) Donk

Indigenous. Malaysia to Polynesia.

*Microsorium mebranifolium* (R.Br.) Ching

Synonym: *Phymatosorus nigrescens* (Bl.) Pichi-Serm.

**Kilaka Name:** drau basaga

Indigenous. SE Asia to Polynesia.

*Polypodium subauriculatum* Bl.

Synonym: *Gonioplebium subauriculatum* (Bl.) Pr.

Indigenous epiphyte. Tropical Asia to the Pacific.

*Pyrrosia lanceolata* (L.) Farw.

Synonym: *Pyrrosia adnascens* (Sw.) Ching

Indigenous. SE Asia to Polynesia.

#### SCHIZAEACEAE

*Lygodium reticulatum* Schkuhr

Indigenous. Vanuatu, Queensland, Fiji, Polynesia.

*Schizaea dichotoma* (L.) Smith

Indigenous. South Pacific and Indian Ocean.

#### THELYPTERIDACEAE

*Pronephrium rubinerve* (Mett.) Holtt.

Indigenous. New Ireland to Fiji.

#### VITTARIACEAE

*Anthrophyum alatum* Brack.

Indigenous. New Caledonia to Tahiti.

*Haplopteris elongata* (Sw.) E.H.Crane

Synonym: *Vittaria elongata* Sw.

Indigenous. Tropical Asia to Polynesia.

*Monogramma acrocarpa* (Holtt.) D.L.Jones

Synonym: *Vaginularia angustissima* (Brack.) Mett.

Indigenous epiphyte. Fiji and Vanuatu.

#### GYMNOSPERMS (cone-bearing plants)

##### Coniferales (conifers)

#### ARAUCARIACEAE

*Agathis macrophylla* (Lind.) Mast.

Synonym: *A. vitiense* (Seem.) Benth. & Hook.f. ex Drake

**Kilaka name:** tahua tina

Other Common Fijian name: dakua makadre

Indigenous. Santa Cruz Islands, Vanuatu and Fiji.

#### PODOCARPACEAE

*Dacrydium nidulum* de Laub.

**Kilaka name:** yaka

Indigenous. SE Asia to Fiji.

*Podocarpus nerifolius* D.Don

**Kilaka name:** bauwaka

Other Common Fijian name: kuasi

Indigenous. SE Asia and Pacific.

*Retrophyllum vitiense* (Seem.) C.N.Page

Synonym: *Decussocarpus vitiensis* (Seem.) de Laub.

**Kilaka name:** tahua salusalu

Indigenous. Malesia and Melanesia

## Gnetales

### GNETACEAE

*Gnetum gnemon* L.

**Kilaka name:** bele sukau, bele ni suka

Indigenous. SE Asia to Fiji.

## ANGIOSPERMS (flowering plants)

### Monocotyledones

#### AGAVACEAE

*Cordyline terminalis* (L.) Kunth

Synonym: *Cordyline fruticosa* L.

**Kilaka name:** qai ni Viti

Likely to be an aboriginal introduction to the Pacific but widely naturalized.

#### ARACEAE

*Alocasia macrorrhiza* (L.) G.Don

Probably and aboriginal introduction. India to the Pacific.

*Colocasia esculenta* L.

Aboriginal introduction. Trop. Asia. Commonly planted in food gardens.

*Epipremnum pinnatum* (L.) Engl.

**Kilaka Name:** yalu

Indigenous. SE Asia into the Pacific.

#### ARECACEAE

*Balaka seemannii* (H.Wendl.) Becc.

**Kilaka Name:** balaka

Endemic. Vanua Levu and Taveuni.

*Cocos nucifera* L.

**Kilaka Name:** niu

Indigenous. Cosmopolitan.

*Physokentia thurstonii* (Becc.) Becc.

**Kilaka Name:** niuniu

Endemic. Vanua Levu and Taveuni.

*Veitchia filifera* (H.Wendl.) H.E.Moore

**Kilaka Name:** niuniu

Endemic. Widespread in Vanua Levu

#### CYPERACEAE

*Fimbristylis dichotoma* (L.) Vahl.

Pantropical. Native or an ancient introduction.

*Hypolytrum nemorum* subsp. *vitiense* (C.B.Clarke) T.Koyama

Indigenous. The species is widespread but the subspecies is restricted to Fiji and the West Carolines.

*Kyllinga polyphylla* Willd. ex Kunth.

Synonym: *Cyperus aromaticus* Mattf. & Kükenth.

English Name: Navua sedge

Recent introduction. Tropical Africa, Madagascar and Mauritius.



*Scleria polycarpa* Boeck.

Indigenous. Ranges from Samoa and Tonga, through Melanesia, Marianas, and the Carolines to NE Australia.

Other possible species:

*Mapania vitiensis* (Uittien) T.Koyama (endemic to Mt. Kasi region)

*Rhynchosperma corymbosa* (L.) Britton (indigenous; Mt. Kasi region)

#### DIOSCORACEAE

*Dioscorea pentaphylla* L.

Other Common Fijian Names: tokulu, kaile tokatolu.

Probably an aboriginal introduction. Cultivated for its edible tubers.

*Dioscorea* sp.

Probably an aboriginal introduction. Cultivated for its edible tubers.

#### FLAGELLARIACEAE

*Flagellaria indica* L.

**Kilaka name:** wa laki

Indigenous. SE Asia to the Pacific.

#### JOINVILLEACEAE

*Joinvillea plicata* (Hook.f.) Newell & Stone subsp. *plicata*

Indigenous. The species is restricted to Solomon Islands, Vanuatu, New Caledonia, Fiji and Samoa.

#### ORCHIDACEAE

*Appendicula reflexa* Bl.

Indigenous. India to Tonga and Samoa.

*Bulbophyllum* spp.

Indigenous. At least 2 species of *Bulbophyllum* (likely to be different from the ones listed below) were observed but could not be identified because they were not flowering.

*Calanthe* cf. *triplicata* (Willemet) Ames

**Kilaka Name:** varavara

Indigenous. S China and India to the Marquesas.

*Dendrobium platygastrium* Reichenb.f.

Indigenous. Solomon Islands, Vanuatu, New Caledonia, Fiji and Tonga

*Dendrobium tokai* Reichenb.f. ex Seem.

Indigenous. Fiji and Tonga.

*Flickingeria comata* (Bl.) A.Hawkes

Indigenous. SE Asia to Samoa.

*Hetaeria whitmeei* Reichenb.f.

Indigenous. New Caledonia, Fiji, Tonga and Samoa.

*Oberonia heliophila* Reichenb.f.

Indigenous. Solomon Islands, Vanuatu, Fiji and Samoa.

*Spathoglottis pacifica* Reichenb.f.

**Kilaka Name:** varavara

Indigenous. Vanuatu, Fiji, Wallis and Futuna and Samoa.

*Spathoglottis plicata* Bl.

**Kilaka Name:** varavara

Indigenous. India to Tonga, Niue and Samoa.

*Taeniophyllum fasciola* (Forst.f.) Seem.

Indigenous. Widespread throughout the insular Pacific.

*Taeniophyllum* sp.

Indigenous. Could not be identified to species level (not flowering).

*Tropidia effusa* Reichenb. f.

Indigenous. Fiji and Samoa.

Other possible species:

*Bulbophyllum trachyanthum* Kraenzl. (indigenous; Mt. Kasi region)

*Bulbophyllum simmondsii* Kores (endemic; Mt. Kasi region)

*Cryptostylis arachmites* (Bl.) Hassk. (indigenous; Wainunu catchment)

*Dendrobium mohlianum* Reichenb. (indigenous; Mt. Kasi region)

*Dendrobium vagans* Schlechter (indigenous; Wainunu catchment)  
*Eria bulbophylloides* C.Schweinf. (endemic; Mt. Kasi region)  
*Malaxis comans* C.Schweinf. (endemic to Vanua Levu; rare [2 collections from Bua province]; Wainunu catchment)  
*Oberonia equitans* (Forst. f.) Mutel (indigenous; Wainunu catchment)  
*Phreatia flavovirens* Kores (endemic; known only from single collection from Mt. Kasi)  
*Pseuderia amithiana* C.Schweinf. (endemic; Mt. Kasi region)  
*Thrixspermum graeffei* Reichenb.f. (indigenous; Mt. Kasi region)

#### PANDANACEAE

*Freycinetia caudata* Hemsl.

**Kilaka name:** wa vuka

Endemic and recorded from several high islands.

*Freycinetia impavida* (Hombr. & Jacq.) Stone

**Kilaka name:** wa vuka

Indigenous. Vanuatu, Fiji, Marquesas and Society Islands.

*Pandanus tectorius* Warb. var. *pulposus* Warb.

Synonym: *P. pyriformis* Gaud.

**Kilaka Name:** vadra

Indigenous and probably an aboriginal introduction in the case of some cultivars. Mostly found in coastal regions.

*Pandanus* sp.

A different species of *Pandanus* was observed on the plateau, which is to be included in the proposed reserve. Numerous tree frogs were heard calling in stands of this species. Unfortunately none of the trees was in flower or fruit, preventing identification of the species.

Other possible species:

*Freycinetia hombronii* Mart. (indigenous; Mt. Kasi region)

#### POACEAE

*Arundo donax* L.

**Kilaka Name:** gasau ni vavalagi

Recent introduction. Tropical Asia and the Mediterranean area.

*Bambusa vulgaris* Schrad.

Recent introduction. Africa.

*Brachiaria mutica* (Forssk.) Stapf

Recent introduction. North Africa.

*Centosteca lappacea* (L.) Desv.

Fijian Names: luna, bitubitu, duvuduvu

Indigenous or an aboriginal introduction. SE Asia, China, Pacific areas and tropical Africa.

*Digitaria setigera* Roth

Indigenous or aboriginal introduction. S.E. Asia to Polynesia.

*Eriochloa procera* (Retz.) L.M.Hubb.

Recent introduction. SE Asia and tropical Africa.

*Miscanthus floridulus* (Labill.) Warb.

**Kilaka Name:** gasau

Indigenous. Indian Ocean through Malesia to the Society Islands.

*Panicum maximum* Jacq.

Tropical Africa, an early introduction into Fiji, now naturalized and widespread.

*Paspalum paniculatum* L.

Recent introduction. Trop. America.

*Pennisetum polystachyon* (L.) Schult.

Recent introduction. Central America.

#### SMILACEAE

*Smilax vitiensis* (Seem.) DC.

Other Common Fijian Name: wa rusi

Indigenous. Vanuatu, Fiji and Tonga. Climber.

#### ZINGIBERACEAE

*Alpinia boia* Seem.

Endemic. High islands only. Giant herb, probably the biggest ginger in the world.

*Alpinia parksii* (Gillesp.) A.C.Sm.  
Endemic. High islands only.

## Dicotyledones

### ALANGIACEAE

*Alangium vitiense* (A.Gr.) Baill. ex Harms  
Endemic. Many islands.

### ANACARDIACEAE

*Buchanania attenuata* A.C.Sm.  
**Kilaka Name:** talitali  
Endemic. Several high islands.

*Mangifera indica* L.  
**Kilaka Name:** maqo  
Early European introduction. India.

*Pleiogynium timoriense* (DC.) Leenh.  
**Kilaka Name:** manawi damu  
Indigenous. Malesia to Fiji and Tonga.

*Semecarpus vitiensis* (A.Gray) Engl.  
**Kilaka Name:** malawaci  
Indigenous. Fiji and Tonga.

### ANNONACEAE

*Cyathocalyx insularis* A.C.Sm.  
**Kilaka Name:** mahosoi ni veihacuhacu  
Endemic. Viti Levu and Kandavu. First record for Vanua Levu.

*Cyathocalyx stenopetalus* A.C.Sm.  
**Kilaka Name:** mahosoi ni veihacuhacu  
Endemic. Vanua Levu and Rabi.

*Cyathocalyx suaveolens* A.C.Sm.  
**Kilaka Name:** mahosoi ni veihacuhacu  
Endemic. Viti Levu, Vanua Levu and Taveuni.

*Polyalthia loriformis* Gillesp.  
Endemic. Viti Levu, Ovalau and Vanua Levu.

*Xylopia pacifica* A.C.Sm.  
**Kilaka Name:** oto  
Endemic. Several high islands.

Other possible species:

*Cyathocalyx vitiensis* A.C.Sm. (endemic to Vanua Levu, collected from Wainunu Catchment and Mt. Kasi area)

### APIACEAE

*Centella asiatica* (L.) Urb.  
Indigenous or aboriginal introduction. Pantropical and subtropical.

### APOCYNACEAE

*Alstonia pacifica* (Seem.) A.C.Sm.  
**Kilaka name:** drega mei ra lago  
Indigenous. Solomon Islands to Samoa.

*Alstonia costata* (G.Forst.) R.Br.  
Synonyms: *Alstonia vitiensis* Seem., *Alstonia montana* Turrill  
Indigenous.

*Alyxia stellata* (J.R. & G.Forst.) Roem. & Schult.  
Indigenous. Pacific.

*Cerbera manghas* L.  
Indigenous. Malesia to Tuamotus and Pictairn.

*Pagiantha thurstonii* (Horne ex Baker) A.C.Sm.  
**Kilaka Name:** tabua mei ra kalavo

Endemic. Several high islands.

*Parsonsia* cf. *smithii* Markgr.

Endemic to Vanua Levu.

*Tabernaemontana pandacaqui* Lam.

Synonym: *Ervatamia obtusiuscula* Markgr.

Indigenous. Pacific.

#### ARALIACEAE

*Polyscias multijuga* (A.Gray) Harms

Indigenous. Fiji, Tonga and Horne Islands.

*Schefflera vitiensis* (A.Gray) Seem.

Endemic. Many islands.

Other possible species:

*Plerandra grandiflora* A.C. Sm. (endemic to Vanua Levu; Mt. Kasi region)

#### ASCLEPEDIACEAE

*Hoya australis* R.Br.

**Kilaka Name:** wa bibi

Indigenous. NE Australia to Tonga and Samoa.

*Hoya diptera* Seem.

**Kilaka Name:** wa bibi

Endemic. Viti Levu, Vanua Levu and Taveuni.

*Tylophora brackenridgei* A.Gray

Endemic. First record for Vanua Levu. Also known from Viti Levu and Ovalau.

#### ASTERACEAE

*Erechtites valerianifolia* (Wolf) DC.

Recent introduction. Central and South America.

*Mikania micrantha* H.B.K.

Introduced in the early 1900's. Tropical America.

#### BURSERACEAE

*Canarium harveyi* Seem. var. *harveyi*

**Kilaka Name:** titi vula

Indigenous. Solomon Islands to Samoa, Tonga and Niue.

*Canarium vitiense* A.Gray

Indigenous. Solomon Islands to Samoa.

*Haplobus floribundus* (K.Schum.) Lam subsp. *salomonensis* (C.T.White) Leenh.

**Kilaka Name:** titi

Indigenous. New Britain to Fiji and Samoa.

#### CAESALPINACEAE

*Caesalpinia* sp.

**Kilaka Name:** soni

Indigenous.

*Cynometra insularis* A.C.Sm.

**Kilaka Name:** cibicibi

Endemic and known from several high islands.

*Intsia bijuga* (Colebr.) Kuntze

Indigenous. Madagascar through tropical Asia to Samoa and Tonga.

*Kingiodendron platycarpum* B.L.Burt

Indigenous. Solomon Islands to Fiji.

*Maniltoa floribunda* A.C.Sm.

Endemic. Several islands.

*Maniltoa minor* A.C.Sm.

Endemic. First record for Vanua Levu. Recorded from seven other islands.

*Storckiella vitiensis* Seem.

Endemic. Viti Levu, Vanua Levu, Kandavu and Ovalau.

CASURINACEAE

*Gymnostoma vitiense* L.A.S.Johnson

**Kilaka Name:** cau

Other Common Fijian Names: velau, caukuro

Endemic. Recorded from several high islands.

CHRYSOBALANACEAE

*Atuna racemosa* Raf.

**Kilaka Name:** makita

Indigenous. Malesia to Caroline Islands, Tonga and Samoa.

*Parinari insularum* A.Gray

**Kilaka Name:** sea

Indigenous. Fiji, Tonga, Samoa and Wallis.

CLUSIACEAE

*Calophyllum cerasiferum* Vesque

**Kilaka Name:** tamanu drau lailai

Endemic to Fiji.

*Calophyllum leptocladum* A.C.Sm. & S.Darwin

**Kilaka Name:** tamanu drau veimama

Endemic. Infrequent and recorded from several high islands.

*Calophyllum neo-ebudicum* Guill.

**Kilaka Name:** tamanu

Indigenous. New Britain and Solomon Islands to Samoa, Tonga and Niue.

*Calophyllum vitiense* Turrill

**Kilaka Name:** tamanu drau levu

Endemic. Several high islands.

*Garcinia adiantha* A.C.Sm. & S.Darwin

Endemic. Viti Levu and Vanua Levu.

*Garcinia myrtifolia* A.C.Sm.

**Kilaka Name:** raubu

Indigenous. Fiji, Tonga and Samoa.

*Garcinia pseudoguttifera* Seem.

**Kilaka Names:** burau, vusavusa

Indigenous. Vanuatu, Fiji and Tonga.

*Garcinia sessilis* (Forst.f.) Seem.

Indigenous. Santa Cruz Islands and Fiji.

COMBRETACEAE

*Terminalia* sp.

**Kilaka Name:** tavola ni veikau

Likely to be endemic

*Terminalia* sp. nov.

**Kilaka Name:** vacea ni veikau

Likely to be an endemic new species. Only fruits are available and flowering specimens need to be collected.

CONNARACEAE

*Connarus pickeringii* A.Gray

**Kilaka Name:** wa masimasi

Endemic. Many islands.

CONVOLVULACEAE

*Ipomoea indica* (Burm.) Merr.

Indigenous. Pantropical.

*Merremia peltata* (L.) Merr.

**Kilaka Name:** viliyawa

Indigenous. Indian Ocean islands to the Society Islands in Polynesia and to Pohnpei and Kosrae in Micronesia.

## CUNONIACEAE

*Geissois ternata* A.Gray

**Kilaka Name:** vo'a

Endemic and previously only known from medium altitudes (500-900m) in northern and central Viti Levu. First record for Vanua Levu.

*Geissois inthurnii* Turrill

**Kilaka Name:** vo'a

Endemic. Several high islands.

Other possible species:

*Weinmannia richii* A. Gr. (endemic; Nadi Bay & Ndama area)

## DILLENIAACEAE

*Dillenia biflora* Martelli

**Kilaka Names:** kulukulu

Indigenous. Fiji and Vanuatu.

## ELAEOCARPACEAE

*Elaeocarpus chelonimorphus* Gillesp.

**Kilaka Name:** dravidravi

Endemic. Viti Levu, Vanua Levu, Taveuni and Kandavu.

*Elaeocarpus storckii* Seem.

Endemic. Viti Levu, Vanua Levu and Ovalau.

*Elaeocarpus* sp.

**Kilaka Name:** malamala

Likely to be an endemic.

Other possible species:

*Elaeocarpus cassinoides* A.Gray (endemic; collected from Wainunu catchment)

*Elaeocarpus kasiense* A.C.Sm. (endemic, collected only from Mt. Kasi)

*Elaeocarpus laurifolius* A.Gray (endemic to Vanua Levu; collected from Yanawai River)

## EUPHORBIACEAE

*Acalypha repanda* Muell.Arg. var. *denudata* (Muell.Arg.) A.C.Sm.

Species is indigenous (New Guinea to Tonga and Samoa) but the variety is endemic to Fiji where it has been collected from Viti Levu, Vanua Levu, Ovalau, Wakaya and the Yasawas.

*Aleurites moluccana* (L.) Willd.

**Kilaka Name:** sikeci

Aboriginal introduction. Native to Malesia.

*Baccaurea stylaris* Muell.Arg.

**Kilaka Name:** roro damu

Endemic and known from several high islands.

*Bischofia javanica* Blume

Indigenous. India and China into the Pacific.

*Endospermum macrophyllum* (Muell.Arg.) Pax & Hoffm.

**Kilaka Name:** vulavula

Endemic. Several high islands.

*Endospermum robbianum* A.C.Sm.

**Kilaka Name:** vulavula

Endemic to Vanua Levu.

*Glochidion amentuligerum* (Muell.Arg.) Croizat

**Kilaka Name:** molau

Endemic. Vanua Levu and eastern Viti Levu.

*Glochidion cordatum* Seem.

Endemic and known from several high islands.

*Glochidion* sp.

**Kilaka Name:** molau

Likely to be endemic.

*Macaranga membranacea* Muell.Arg.

**Kilaka Name:** mama

Endemic to Vanua Levu.

*Macaranga vitiensis* Pax & Hoffm.

Endemic. Viti Levu and Vanua Levu.

*Phyllanthus heterodoxus* Muell.Arg.

Endemic. Species only known from Vanua Levu and Fulaga.

Other possible species:

*Croton microtiglium* Burk. (indigenous; Mt. Kasi)

*Glochidion brunnescens* A.C.Sm. (endemic, seemingly rare; Mt. Kasi)

#### FABACEAE

*Desmodium* sp.

Recent introduction.

*Inocarpus fagifer* (Parkins.) Fosberg

**Kilaka Name:** ivi

Indigenous. Malesia into the Pacific.

*Strongylodon lucidus* (Forst.f.) Seem.

Indigenous. New Guinea and Queensland to the Society Islands.

Other possible species:

*Mucuna stanleyi* C.T.White (indigenous, Wainunu)

#### GESNERIACEAE

*Cyrtandra dolichocarpa* A.Gray

Endemic to Vanua Levu and Rabi.

*Cyrtandra harveyi* Seem.

Endemic to Vanua Levu.

*Cyrtandra reticulata* G.W.Gillett

Endemic to Vanua Levu.

#### GOODENIACEAE

*Scaevola floribunda* A.Gray

Endemic. Several islands.

*Scaevola taccada* (Gaertn.) Roxb.

Indigenous. Tropical Asia to Hawaii.

#### HERNANDIACEAE

*Hernandia olivacea* Gillesp.

Endemic and known from several high islands.

#### ICACINACEAE

*Medusanthera vitiensis* Seem.

Endemic. Several high islands.

#### LAURACEAE

*Cryptocarya constricta* Allen

Endemic. Not common and only known from Viti Levu and Vanua Levu.

*Cryptocarya fusca* Gillesp.

**Kilaka Name:** vorovoro

Endemic. Viti Levu and Vanua Levu.

*Cryptocarya hornei* Gillesp.

**Kilaka Name:** cibicibi tagane

Indigenous. Fiji and Tonga.

*Endiandra elaeocarpa* Gillesp.

Indigenous. Fiji, Samoa and Tonga.

*Endiandra gillespiei* A.C.Sm.

**Kilaka Name:** titi

Endemic. Several high islands.

*Litsea pickeringii* (A.Gray ex Seem.) Benth & Hook. ex Drake

Endemic and known from several large islands.

Other possible species:

*Litsea mellifera* A.C.Sm. (endemic; Collected in Wainunu Catchment)

#### LEEACEAE

*Leea indica* (Burm.f.) Merr.

Indigenous. India to Fiji.

#### LECYTHIDACEAE

*Barringtonia* sp.

**Kilaka Name:** vutu ni vanua

Likely to be endemic but the species could not be identified because the plant was sterile

#### LINACEAE

*Durandea vitiensis* Stapf

Endemic and previously only recorded in SE Viti Levu. First record for Vanua Levu.

#### LOGANIACEAE

*Fagraea berteriana* A.Gray ex. Benth.

**Kilaka Name:** buabua

Indigenous. New Guinea into the Pacific.

*Geniostoma macrophyllum* Gillesp.

Endemic. Viti Levu, Vanua Levu and Ovalau.

*Geniostoma uninervium* A.C.Sm. & Stone

Endemic. Viti Levu, Vanua Levu, Taveuni and Ovalau.

*Neuburgia corynocarpa* (A.Gray) Leenh.

Indigenous. Pacific.

Other possible species:

*Geniostoma vitiense* Gilg. & Benedict (indigenous; Mt Kasi region)

#### LYTHRACEAE

*Cuphea carthagenensis* (Jacq.) Macbr.

Recent introduction. Tropical America.

#### MALPHIGIACEAE

*Hiptage myrtifolia* A.Gray

Endemic. Several islands.

#### MALVACEAE

*Hibiscus tiliaceus* L. subsp. *tiliaceus*

**Kilaka Name:** vau

Indigenous. Pantropical and subtropical. Seen growing as a liana in the forest.

*Hibiscus rosa-sinensis* L.

Cultivated throughout the world.

*Sida acuta* Burm.f.

Recent introduction. Tropical America.

*Sida rhombifolia* L.

Recent introduction. Pantropical.

*Urena lobata* L.

Recent introduction. Pantropical.

#### MELASTOMATACEAE

*Astonidium confertiflorum* (A.Gray) Markgraf<sup>E</sup>

Endemic. Several high islands.

*Astonidium kasiense* A.Gray

Endemic and apparently restricted to the Mt. Kasi area.

*Clidemia hirta* (L.) D.Don

Recent introduction. Tropical America.

*Medinilla heterophylla* A.Gray

Endemic. Several high islands.

*Medinilla kambikambi* A.C.Sm.

Endemic to Vanua Levu.



*Melastoma denticulatum* Labill.

Indigenous. Solomon Islands to Society Islands.

Other possible species:

*Memcydon vitiense* A.Gr. (indigenous; Wainunu region)

#### MELIACEAE

*Aglaia basiphylla* A.Gr.

Synonyms: *A. elegans* Gillesp.; *A. greenwoodii* A.C.Sm.; *A. ventusa* A.C.Sm.

**Kilaka Name:** waicavucavu

Endemic. Several islands. The specimen collected is of *A. greenwoodii*, which is now synonymised into *A. basiphylla*.

*Aglaia* aff. *tomentosa* Teijsm. & Binned.

**Kilaka Name:** waicavucavu

Likely to be a new species record for Fiji. This species of *Aglaia* is hairy and similar to *Aglaia tomentosa*, which is known from Papua New Guinea only.

*Aglaia vitiensis* A.C.Sm.

Synonyms: *Aglaia axilliaris* A.C.Sm.; *A. vitiensis* A.C.Sm. var. *vitiensis*; *A. vitiensis* A.C.Sm. var. *minor* A.C.Sm.

**Kilaka Name:** waicavucavu

Endemic. Several islands. Specimens that previously were considered *A. axilliaris* and *A. vitiensis* var. *vitiensis* (**Kilaka Name:** waicavucavu levu) were collected.

*Dysoxylum gillespieanum* A.C.Sm.

Endemic. Viti Levu and Vanua Levu.

*Dysoxylum quercifolium* (Seem.) A.C.Sm.

**Kilaka Name:** tarawau kei soqe

Endemic. Previously only reported from Viti Levu. First record for Vanua Levu.

*Dysoxylum richii* (A.Gray) C.DC.

**Kilaka Name:** tarawau kei soqe

Endemic. Many islands.

*Vavaea amicorum* Benth.

**Kilaka Name:** cevua

Indigenous. Fiji and Tonga.

*Vavaea harveyi* Seem.

**Kilaka Name:** cevua

Endemic. Several high islands.

Other possible species:

*Aglaia greenwoodii* A.C.Sm. (endemic; Wainunu catchment)

*Dysoxylum lenticellare* Gillesp. (endemic; Wainunu catchment)

*Dysoxylum seemannii* Gillesp. (endemic; Mt. Kasi region)

#### MENISPERMACEAE

*Pachygone vitiensis* Diels

Indigenous. Fiji and Tonga.

#### MIMOSACEAE

*Acacia richii* A.Gray

**Kilaka Name:** qumu

Endemic. Viti Levu and Vanua Levu.

*Entada phaseoloides* (L.) Merr.

**Kilaka Name:** wa lai

Indigenous. Tropical Asia into the Pacific.

*Mimosa pudica* L.

Recent introduction. A pantropical weed that originated from South America.

*Serianthes melanesica* Fosberg

**Kilaka Name:** vaivai ni Viti

Indigenous. Santa Cruz Islands to Tonga and Samoa.

#### MONIMIACEAE

*Hedycarya dorstenoides* A.Gray

Indigenous. Fiji and Tonga.

## MORACEAE

*Ficus barclayana* (Miq.) Summerh.

Endemic. Recorded from many islands.

*Ficus fulvo-pilosa* Summerh.

Endemic. Recorded from many islands.

*Ficus greenwoodii* Summerh.

Endemic. Recorded from many islands.

*Ficus obliqua* Forst.f.

Indigenous. Celebes to Australia, Fiji, Tonga, Niue and Samoa

*Ficus pritchardii* Seem.

**Kilaka Name:** masi ni ulu 'oa

Endemic. Recorded from many islands.

*Ficus smithii* Horne ex Baker

**Fijian Name:** nunu ke

Indigenous. Melanesia.

*Ficus theophrastoides* Seem.

Endemic. First record for Vanua Levu. Previously known from Viti Levu, Ovalau and Qamea.

*Ficus vitiensis* Seem.

**Kilaka Name:** lolo

Endemic. Recorded from many islands.

*Malaisia scandens* (Lour.) Planch.

Indigenous. SE Asia to Fiji and Tonga.

Possible species present:

*Strebulus anthropophagorum* (Seem.) Corner (indigenous; collected from Wainunu catchment)

## MYRISTICACEAE

*Myristica castaneifolia* A.Gray

**Kilaka Name:** malamala

Endemic. Viti Levu, Vanua Levu, Taveuni and Ovalau.

*Myristica gillespieana* A.C.Sm.

**Kilaka Name:** male

Endemic. Several high islands.

*Myristica grandifolia* A.DC.

Endemic. Viti Levu, Vanua Levu, Taveuni and Ovalau.

Other possible species:

*Myristica macrantha* A.C.Sm. (endemic; collected in Wainunu Catchment)

## MYRSINACEAE

*Maesa persicifolia* A.Gray

**Kilaka Name:** vere ni vanua

Endemic. Viti Levu, Vanua Levu and the Yasawas.

*Rapanea myricifolia* (A.Gray) Mez

**Kilaka Name:** sagale ni vanua

Indigenous. Fiji and Samoa.

*Tapinosperma grande* (Seem.) Mez

Endemic. Viti Levu, Vanua Levu, Kandavu and Gau.

*Tapinospermum capitatum* (A.Gray) Mez

Endemic. Several high islands.

Other possible species:

*Maesa tabacifolia* Mez (indigenous; Wainunu Catchment)

## MYRTACEAE

*Decaspermum vitiense* (A.Gray) Nied.

Endemic. Many islands.

*Psidium guajava* L.

**Kilaka Name:** guava

Recent introduction. Tropical America.

*Syzygium brackenridgei* (A.Gray) C.Muell.

**Kilaka Name:** yasiyasi damanu

Indigenous. Fiji and Tonga.

*Syzygium corynocarpum* (A.Gray) C.Muell.

Indigenous. Fiji, Tonga, Niue, Wallis and Futuna and Samoa.

*Syzygium curvistylum* (Gillesp.) Merr. & L.M.Perry

Indigenous. Fiji and Samoa. Has stilt roots.

*Syzygium decussatum* (A.C.Sm.) Biffin & Craven

Synonym: *Cleistocalyx decussatus* A.C.Sm.

**Kilaka Name:** yasiyasi moli

Endemic. Viti Levu and Vanua Levu.

*Syzygium eugenioides* (Merr. & L.M.Perry) Biffin & Craven

Synonym: *Cleistocalyx eugenioides* Merr. & L.M.Perry

Endemic. Viti Levu, Vanua Levu and Gau.

*Syzygium fijiense* L.M.Perry

**Kilaka Name:** yasiyasi

Endemic.

*Syzygium* cf. *leucanthum* L.M.Perry

**Kilaka Name:** yasiyasi kavika

Endemic. Viti Levu, Vanua Levu and Kandavu.

*Syzygium malaccense* (L.) Merr. & L.M.Perry

**Kilaka Name:** kavika

Aboriginal introduction. SE Asia.

*Syzygium nidie* Guill.

**Kilaka Name:** yasiyasi drau lailai

Indigenous. Fiji and Vanuatu. First record for Vanua Levu.

*Syzygium neurocalyx* (A.Gray) Christoph.

**Kilaka Name:** yasiyasi

Indigenous. Fiji, Tonga, Horne Islands and Samoa. Has stilt roots.

*Syzygium rubescens* (A.Gray) C.Muell.

**Kilaka Name:** yasiyasi

Endemic. Viti Levu, Vanua Levu and Ovalau.

Other possible species:

*Metrosideros ochrantha* A.C.Sm. (endemic to Mt. Kasi region)

*Syzygium amicum* (A.Gray) C.Muell. (endemic; Mt. Kasi region)

*Syzygium dubium* (L.M.Perry) A.C.Sm. (endemic to Vanua Levu; Wainunu catchment)

*Syzygium effusum* (A.Gray) C.Muell. (indigenous; Mt. Kasi region)

*Syzygium simillimum* Merr. & L.M.Perry

*Syzygium seemannii* (A.Gray) Biffin & Craven (Synonyms: *Cleistocalyx seemannii* (A.Gray) Merr. & L.M.Perry, *Cleistocalyx ellipticus* (A.C.Sm.) Merr. & L.M.Perry, *Cleistocalyx kasiensis* A.C.Sm.; endemic; Mt. Kasi and Wainunu region)

## OCHNACEAE

*Brackenridgea nitida* A.Gray

**Kilaka Name:** belebele

Endemic. Viti Levu, Vanua Levu and Rabi.

## OLEACEAE

*Jasminum didymum* Forst.f. subsp. *didymum*

Indigenous. N Australia and Timor to Society Islands.

*Jasminum simplicifolium* Forst.f. subsp. *simplicifolium*

Indigenous. Australia to Tonga. The subspecies occurs in Fiji and Tonga.

## PASSIFLORACEAE

*Passiflora aurantia* Forst.f.

Indigenous. Eastern New Guinea to Australia, Samoa, Tonga and Niue.

## PEPPEROMIACEAE

*Peperomia* sp.

Almost certainly endemic.

## PIPERACEAE

*Macropiper puberulum* Benth.

Indigenous. Pacific.

*Piper aduncum* L.

Introduced and now a widespread weed. Native of Tropical America.

*Piper methysticum* Forst.f.

Widely cultivated because the roots are used as a traditional beverage. Most likely an aboriginal introduction.

*Piper* sp.

Indigenous. The specimen was sterile and could not be positively identified.

## POLYGALACEAE

*Polygala paniculata* L.

Recent introduction. Tropical America.

## PROTEACEAE

*Turrillia vitiensis* (Turrill) A.C.Sm.

Endemic. Viti Levu, Vanua Levu, Kandavu, Ovalau and Taveuni.

## RHAMNACEAE

*Alphitonia zizyphoides* (Spreng.) A.Gray

Indigenous. Vanuatu to Society Islands.

*Ventilago vitiensis* A.Gray

Indigenous. Fiji, Tonga and Cook Islands.

## RHIZOPHORACEAE

*Crossostylis pachyantha* A.C.Sm.

Synonym: *C. harveyi* Benth.

Endemic. Viti Levu and southern Vanua Levu.

## ROSACEAE

*Rubus moluccanus* L.

**Kilaka Name:** soni

Indigenous. From Himalayas to Fiji.

## RUBIACEAE

*Amaracarpus muscifer* A.C.Sm.

**Kilaka Name:** baka ni Viti

Endemic to Vanua Levu.

*Dolicholobium* cf. *aneityense* Guill.

**Kilaka Name:** wainikosi

This species has so far only been recorded from Vanuatu. However, the indumentum of the sterile specimen collected is similar to that of the species as described and photographed by Smith (1988, pg. 167).

*Dolicholobium latifolium* A.Gray

Endemic. Several high islands.

*Geophila repens* (L.) I.M.Johnst.

Indigenous. Pantropical.

*Gynochtodes epiphytica* (Rech.) A.C.Sm. & S.Darwin

Indigenous. Fiji, Tonga, Niue and Samoa.

*Ixora coronata* A.C.Sm.

Endemic to southern Vanua Levu.

*Hedstromia latifolia* A.C.Sm.

**Kilaka Name:** drumadruma

Endemic. Vanua Levu, Taveuni, Gau and Yacata.

*Hydnophytum grandiflorum* Becc.

**Kilaka Name:** vale ni toto

Endemic. Several high islands.

*Ixora maxima* Seem.

Endemic. Viti Levu, Vanua Levu and Koro.

- Ixora pubiflora* A.C.Sm.  
Endemic. Viti Levu and Vanua Levu.
- Ixora vitiensis* A.Gray  
Endemic. Several high islands.
- Mussaenda raiatensis* J.W.Moore  
**Kilaka Name:** vobo damu  
Indigenous. Vanuatu to Society Islands.
- Mastixiodendron robustum* A.C.Sm.  
**Kilaka Name:** yatuvu  
Endemic. Vanua Levu and Viti Levu.
- Morinda citrifolia* L.  
**Kilaka Name:** kura  
Indigenous. Indo-Malesia and the tropical Pacific.
- Morinda* sp.  
Indigenous or endemic. This climber was observed but sterile and therefore not collected.
- Neonauclea forsteri* (Seem. ex Havil.) Merr.  
**Kilaka Name:** vacea ni wailevu  
Indigenous. Solomon Islands to the Society Islands.
- Ophiorrhiza leptantha* A.Gray  
**Kilaka Name:** lewa nini  
Indigenous. Fiji and Horne Islands.
- Psychotria archboldiana* Fosberg  
Endemic. First record for Vanua Levu. Also reported for Viti levu and Kandavu.
- Psychotria brackenridgei* A.Gray  
Endemic. Many islands.
- Psychotria storckii* Seem.  
Endemic. Several high islands.
- Psychotria tephrosantha* A.Gray  
Endemic. Many islands.
- Readea membranaceae* Gillesp.  
Indigenous. Viti Levu, Vanua Levu and Taveuni.
- Spermacoce assurgens* Ruiz & Pavon  
Recent introduction. Tropical America.
- Tarenna sambucina* (Forst.f.) Dur. ex Drake  
**Kilaka Name:** vakacaredavui  
Indigenous. Tropical Pacific.
- Timonius affinis* A.Gray  
**Kilaka Name:** togo ni vanua  
Indigenous. Santa Cruz Islands, Fiji and Samoa.
- Other possible species:
- Antirhea inconspicua* (Fosberg) Merr. & L.M.Perry (endemic; Wainunu catchment)
- Gardenia anapetes* A.C.Sm. (endemic to SW Vanua Levu; Mt. Kasi region)
- Ixora harveyi* (A.Gray) A.C.Sm. (endemic; Mt. Kasi region)
- Mastixiodendron flavidum* (Seem.) A.C.Sm. (endemic; Mt. Kasi region)
- Pelagodendron vitiense* Seem. (endemic; Wainunu catchment)
- Psychotria forsteriana* A.Gray (indigenous; Wainunu catchment)
- Psychotria furcans* Fosberg (endemic; Mt. Kasi region)
- Psychotria pachyantha* A.C.Sm. (endemic; Mt. Kasi region)
- Psychotria parvula* A.Gray (endemic; Mt. Kasi region)
- Squamellaria imberbis* (A.Gray) Becc. (endemic to Vanua Levu; Mt. Kasi region)
- Tarenna seemanniana* A.C.Sm. & A.C.Darwin (endemic; Mt. Kasi region)

#### RUTACEAE

- Euodia hortensis* J.R. & G.Forst.  
Aboriginal introduction. Pacific.
- Melicope cucullata* A.C.Sm. var. *robustior* (A.C.Sm.) A.C.Sm.  
**Kilaka Name:** drautolu  
Endemic. Many islands.
- Micromelum nintum* (Forst.f.) Seem.

**Kilaka Name:** qiqila

Indigenous. Malesia to Tonga, Niue and Samoa.

*Sacromelicope petiolaris* (A.Gray) A.C.Sm.

Endemic. Viti Levu, Vanua Levu and Kandavu.

*Zanthoxylum myrianthum* (A.C.Sm.) Waterm.

**Kilaka Name:** manawi vula

Endemic. This is only the second record of the species, the only other being from the southern base of the Macuata Range (Vanua Levu) in 1947.

Other possible species:

*Melicope vitiensis* (A.C.Sm.) A.C.Sm. var. *vitiensis* (endemic; Wainunu Catchment)

SAPINDACEAE

*Elattostachys falcata* (A.Gray) Radlk.

**Kilaka Name:** drausasa

Indigenous. Vanuatu to Tonga, Niue and Samoa.

*Pometia pinnata* J.R. & G.Forst.

**Kilaka Name:** dawa

Indigenous. Philippines and Celebes to Tonga, Niue and Samoa.

Other possible species:

*Cupaniopsis vitiensis* Radlk. (endemic; Wainunu Catchment)

*Guioa capillaceae* A.C.Sm. (endemic and collected only once from the Wainunu River valley in 1934)

SAPOTACEAE

*Burckella* cf. *fijiense* (Hemsl.) A.C.Sm. & S.Darwin

**Kilaka Name:** bau loa

Endemic. Several high islands.

*Burckella* sp.

**Kilaka Name:** bauvudi vula

Likely to be endemic.

*Palaquium* sp. 1

**Kilaka Name:** uru

Indigenous or endemic.

*Palaquium* sp. 2

**Kilaka Name:** uru

Indigenous or endemic.

*Palaquium porphyreum* A.C.Sm. & S.Darwin

**Kilaka Name:** bauvudi

Endemic. Viti Levu and Vanua Levu.

*Pouteria membranacea* (L.J.Lam) Baehni

Synonym: *Planchonella membranacea* L.J.Lam

**Kilaka Name:** nunu ke

Indigenous. Fiji and Tonga. The vernacular name is likely to be the result of the species being mistaken for *Ficus smithii*, which it resembles in habit, bark colour and sap. Even the leaves appear similar from the distance.

*Pouteria umbonata*

Synonym: *Planchonella umbonata* (P.Royen) A.C. Sm.

**Kilaka Names:** calavia, bau

Endemic. Viti Levu, Vanua Levu and Taveuni. The most recent review accepts *Pouteria* as the correct name for the genus and applies to all species formerly placed in the genus *Planchonella*. I am not aware of the correct authorship for this species and *Pouteria smithii* (below).

*Pouteria* cf. *vitiense* (Gillespie) O.Deg.

Synonym: *Planchonella vitiense* Gillespie

Endemic. Viti Levu, Vanua Levu, Kandavu and Gau.

Other possible species:

*Palaquium fidjiense* Pierre ex Dubard (endemic; Mt. Kasi)

*Palaquium hornei* (Hartog ex Baker) Dubard (endemic; Wainunu catchment)

*Pouteria smithii* (Synonym: *Planchonella smithii* (P.Royen) A.C.Sm.) (endemic; Wainunu River)

SAURAUACEAE

*Saurauia rubicunda* (A.Gray) Seem.

**Kilaka Name:** cau boi ni noke  
Endemic. Several high islands.

#### SIMAROUBACEAE

*Amaroria soulemanooides* A.Gray

**Kilaka Name:** ko rara  
Endemic. Several islands. The genus is also endemic to Fiji.

#### STERCULIACEAE

*Commersonia bartramia* (L.) Merr. <sup>1</sup>

**Kilaka Name:** sea  
Indigenous. SE Asia to Micronesia and Polynesia.

*Firmania diversifolia* A.Gray

**Kilaka Name:** cara  
Endemic Several high islands.

*Heritiera ornithocephala* Kosterm.

**Kilaka Name:** savai  
Indigenous. Fiji, Tonga and Niue.

*Sterculia vitiensis* Seem.

**Kilaka Name:** waciwaci  
Endemic. Viti Levu and Vanua Levu.

#### TILIACEAE

*Grewia crenata* (J.R. & G.Forst.) Schinz & Guill.

Indigenous. New Caledonia and Vanuatu to Society Islands.

*Trichospermum richii* (A.Gray) Seem.

**Kilaka Name:** mako  
Indigenous. Fiji and Samoa.

#### ULMACEAE

*Gironniera celtidifolia* Gaud.

**Kilaka Name:** masivau  
Indigenous. Philippines and Moluccas to Samoa.

*Trema cannabina* Lour.

Indigenous. India into the Pacific.

#### URTICACEAE

*Dendrocnide harveyi* (Seem.) Chew

**Kilaka Name:** salato  
Indigenous. Fiji, Tonga, Niue and Samoa.

*Elatostema vitiense* (Wedd.) A.C.Sm.

Endemic. Recorded from many islands.

*Elatostema* sp.

Likely to be endemic. The species could not be identified.

*Leucosyke corymbulosa* (Wedd.) Wedd.

Indigenous. Pacific.

*Pipturus argenteus* (Forst.f.) Wedd. var. *lanosus* Skottsb.

Indigenous. SE Asia into the Pacific.

#### VERBENACEAE

*Faradaya ovalifolia* (A.Gray) Seem.

Endemic. Several high islands.

*Gmelina vitiensis* (Seem.) A.C.Sm.

Endemic. Several high islands.

*Lantana camara* L.

Recent introduction. West Indies.

*Premna protusa* A.C.Sm. & S.Darwin

**Kilaka Name:** yaro  
Endemic. Several high islands.

*Stachytarpheta urticaefolia* (Salisb.) Sims

Recent introduction. Tropical America.

Other possible species:

*Faradaya vitiensis* Seem. (endemic; Wainunu catchment)

#### VIOLACEAE

*Agatea violaris* A.Gray f. *violaris*

Indigenous. New Guinea to Tonga.

#### VITACEAE

*Cayratia seemanniana* A.C.Sm.

Endemic. Viti Levu, Vanua Levu, Ovalau and Moturiki.

Species in other families that may occur in the reserve:

DEGENERIACEAE-*Degeneria vitiense* I.W.Bailey & A.C.Sm. (endemic; collected from Wainunu Catchment)

DICHAPETALACEAE-*Dichapetalum vitiense* (Seem) Engl. (indigenous; Mt. Kasi region)

FLACOURTIACEAE-*Caesaria myrsinoides* Sleumer (endemic; only known from type collection from Mt. Kasi)

THYMELAECEAE-*Phaleria glabra* (Turr.) Domke (indigenous; Mt. Kasi)