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Chapter 9

Vascular Plants of the Strickland Basin, Papua New Guinea: Taxonomic and Vegetation Survey

Wayne Takeuchi

SUMMARY

The flora of the Strickland Basin is described from a rapid-assessment survey of its principal forest environments. Seven vegetation formations were identified and characterized from seven sampling sites over an elevational range from 515-3,315 m. A taxonomic inventory of the flora (based on 901 collection numbers and 276 sight enumerations) documented the presence of species-rich habitats of exceptional floristic value.

The checklist of catalogued taxa includes 757 tracheophytic plants (141 ferns and lycophytes, 11 gymnosperms, 72 monocots, and 533 dicots) from a total of 149 families and 427 genera. At least 15 species and one genus are new to science. The Strickland operations also yielded 29 other botanical records of major taxonomic and/or phytogeographic interest. The collective significance of these findings are distilled into a series of discursive observations and recommendations for management interventions. The stewardship opportunities inherent in isolated environments provide numerous avenues for future conservation action.

INTRODUCTION

Limestone environments in the Malesian paleotropics have long been associated with floristic rarity and endemism (Richards 1952, Whitmore 1984). This perception is reflected in modern estimates of Papua New Guinea's (PNG) southern limestone as an area in need of immediate inventory and conservation appraisal (Beehler 1993, Sekhran and Miller 1995). Also known as the Southern Fold Mts., the limestone district extends from Kutubu in the east to the Star Mts. in the west, encompassing the largest tract of karst topography in Papuasia (Löffler 1977). The interior parts of the karst biome are botanically unknown. Past speculations on the discovery potential of this vast region have been corroborated by surveys related to the Highlands Gas Project and the LNG Project (e.g. Takeuchi 2009a). The Conservation International RAP surveys of the Strickland Basin are the latest contribution to the historical trend of floristic discovery on calcareous substrates.

METHODS

Forest typing

All forest communities in PNG have been comprehensively mapped using aerial photography and GIS-based (Geographic Information System) typing algorithms (Saunders 1993a, b; Hammermaster and Saunders 1995a, b). From a total of 63 typing codes employed by the current PNG Forest Inventory Mapping System (FIMS), at least seven (Ga, Gi, Hm, L, LN, Mo, Sc) have been previously applied to the Strickland environments recently investigated by multidisciplinary survey. As a collateral activity to the taxonomic assessment, forest communities at each survey locality have been ground-truthed against the FIMS classification. Adoption

of the PNG mapping protocols serves as a basis for standardization of forest descriptions across New Guinea, facilitating direct comparisons with similar operations conducted independently of the Conservation International (CI) Rapid Assessment Program (RAP).

The floristic team (the writer and two assistants) examined a total of seven sites during the periods July 6-26, 2008, and September 4-23, 2009. Each of the sampling localities consisted of a base camp with an ad hoc network of access tracks into surrounding habitats. Botanical collections and forest observations were made around these camps in accordance with the procedures described below. The individual sites have been assigned the following designations according to the chronological order of their assessment:

Wanakipa (Tualapa) Survey (2008)
Site 1: Kai-ingri, Enga Province
5°34.442'S, 143°02.896'E, 3,315 m; July 6-9, 2008

Site 2: Tualapa, Southern Highlands Province
5°17.003'S, 142°29.849'E, 1,115 m; July 11-19 and 22-23, 2008

Site 3: Umgé, Southern Highlands Province
5°18.245'S, 142°30.704'E, 1,440 m; July 20-21, 2008

Site 4: Lagaiap River near Wanakipa Village, Southern Highlands Province
5°15.425'S, 142°31.297'E, 807 m; July 25-26, 2008

Muller Range Survey (2009)
Site 5: Gugusu, Western Province
5°43.751'S, 142°15.797'E, 515 m; September 4-10, 2009

Site 6: Sawetau, Western Province
5°39.397'S, 142°18.277'E, 1,587 m; September 11-17, 2009

Site 7: Apalu Reke, Southern Highlands Province
5°29.174'S, 142°18.117'E, 2,875 m; September 18-23, 2009

Botanical inventory

The Strickland reconnaissance was based on the same sampling procedures used in other rapid assessments (e.g. Mack 1998, Mack and Alonso 2000, Beehler and Alonso 2001, Richards 2007). In conformity with modern botanical surveys, vascular plants (ferns, gymnosperms, and angiosperms) were check-listed and vouchered by herbarium specimens, with particular attention directed to taxa of probable conservation interest. Species seen only in sterile condition were enumerated as sight records (in lieu of collection) if an identification could be made with certainty by the writer. This procedure (sight enumeration) was also applied to geographically widespread plants such as *Gymnacranthera farquehariana*, *Morinda umbellata*, *Pimelodendron amboinicum*, etc., since their collection would add nothing to the existing corpus of botanical knowledge.

Exploratory surveys of poorly-known areas are generally accompanied by high-volume collecting, in order to maximize specimen outputs from one-off operations. However because of the anticipated reporting schedule for the Strickland surveys, field procedures were necessarily adjusted to reduce the processing time associated with large collection sets. In addition to the greater reliance on sight check-listing, specimen volumes were consciously minimized through judicious selection. Plants of minor taxonomic significance were secured only in small sets. Cosmopolitan taxa are thus represented in the gatherings primarily as unicates or double sets. Only specimens pre-identified as floristic records were obtained in increments exceeding five replicates.

Collections were field-packed in 75% ethanol for processing at Lae Herbarium (LAE). All identifications (excepting orchids) were made by the author at LAE, using keys from the formal literature and/or by comparison to published descriptions. Orchids have been treated separately by N.H.S. Howcroft. Generic and family assignments generally follow the following sources: ferns and lycophytes (Kramer and Green 1990, Brummitt 1992), gymnosperms (Laubenfels 1988), and angiosperms (Angiosperm Phylogeny Group 1998, 2003). First sets and holotypes from the expeditionary collections will be deposited at LAE. Duplicates will be distributed in overall adherence to the LAE international sequence, with appropriate allowances for the presence of specialists at specific institutions.

RESULTS

Forest typing

Site 4 (Lagaiap River) was unfortunately established in an extensive area of anthropogenic regrowth, a vegetation category excluded from the FIMS classification. Disregarding the plant communities attributable to human activity, seven principal formations were documented by the Strickland expeditions. These are referable to the FIMS typing codes Ga, Gi, Hm, L, LN, Mo, and Sc. In the following discussion, each vegetation class is characterized and described in relation to the sampling sites on the survey schedule. Descriptive terminology follows Paijmans (1976) or Hammermaster and Saunders (1995a, b).

a. Uncategorized vegetation; anthropogenic early-successional forest.
Site 4 (Lagaiap River near Wanakipa).
The alluvial habitats around Wanakipa have been extensively modified by subsistence gardening for a considerable distance from the settlement and airstrip. The expedition's bivouac was located within the disturbance halo of degraded forest, an unfortunately inappropriate site for RAP assessment. A walk-through of the camp environs quickly established its status as an early successional forest. Although

scattered relict-emergents of *Pometia pinnata* were present on higher slopes, the Lagaiap environment was clearly dominated by low-statured regrowth characteristic of repetitively disturbed vegetation. Taxonomic compositions were indicative of multiple cycles of forest felling, with pronounced dominance by pioneer heliophytes such as *Artocarpus altilus*, *Elaeocarpus angustifolius*, *Glochidion* spp., *Macaranga* spp., *Trichospermum pleiostigma*, etc. Understories were depauperate, of little taxonomic interest (with the exception of an undercollected *Archidendron*), and comprised primarily of weedy or pantropical herbs associated with human activity. No plants of conservation significance were recorded during the three working days devoted to this habitat. Due to the exceptionally poor site quality, botanical collecting was suspended (only nine collections were taken from the area) and a local checklist was compiled from sight enumeration.

b. Hm; medium-crowned upland (hill) forest.

Site 2 (Tualapa) and site 5 (Gugusu), in part.

Forest class Hm is the most extensive and species-rich vegetation in Papua New Guinea (Louman and Nicholls 1995). Colline habitats subsumed by this typing code ordinarily generate the highest taxonomic counts of any forest type in PNG, especially near the pre-montane transition at ca. 1,000 m. However as a result of unfavorable phenologies and inclement weather, Strickland Hm environments failed to produce expected outcomes. At Tualapa, forest diversity also appears to have been adversely impacted by the 1997-1998 El Niño disturbance, judging from reports by village respondents and from high frequencies of successional genera. Although historical events are largely responsible for an unimpressive tree census, the absence of litter accumulation on the ground is probably a contributing factor. Tualapa substrates often lack the superficial layer of decomposing leaf debris typical of speciose forests. In West Malesian environments, overstory diversity is positively correlated with mycorrhizal-mediated nutrient cycling (Whitmore 1984). Although this relationship has not been studied in Papuasia, the absence of litter accumulation and its associated mycoflora would imply diminished nutrient availability and lower tree diversities.

Tualapa canopies were composed for the most part by *Lithocarpus celebicus* and *Syzygium versteegii*. Other commonly recorded forest trees were *Castanopsis acuminatissima*, *Gastonia spectabilis*, *Gymnostoma papuana*, *Omalanthus novoguineensis*, and *Semecarpus*. The dominance by species associated with disturbance is very atypical of tall-growth hill forest. In spite of the floristic depauperation, several remarkable species (*Harpullia mabberleyana*, *Hypserpa calcicola*, and *Kairoa endressiana*) were paradoxically discovered in the understory. An unusual occurrence record was also obtained for the rare *Triphasia brassii*, recorded for the first time outside of Central Province, and in an unexpected habitat (the species is normally found only in coastal scrub).

Gugusu (site 7, in foothills of the Muller Range) was more representative of the Hm forest class. Unlike Tualapa with its simplified physical structure, Gugusu canopies were composed of overlapping stories with varied compositions. The most important trees were *Astronia ledermannii*, *Bhesa archboldiana*, *Canarium*, *Celtis*, *Cryptocarya*, *Dysoxylum*, *Endiandra papuana*, *Flindersia*, *Helicia amplifolia*, *Inocarpus glabellus*, *Licuala*, *Lithocarpus celebicus*, *Myristica*, *Parinari papuana*, *Planchonella*, *Pseudobotrys cauliflora*, *Sloanea*, *Syzygium*, and *Vatica rassak*. *Spiraeopsis papuana*, ordinarily a species of the montane zone, was surprisingly common to elevations as low as 450 m. Myrsinaceae (*Ardisia*, *Discocalyx*, *Loheria*, *Maesa*) and Rubiaceae (*Cyclophyllum*, *Lasianthus*, *Psychotria*, *Urophyllum*) were dominant families in the near-ground internval.

c. L, LN; lower montane forest and lower montane forest with Nothofagus (small-crowned, above 1,000 m).

Site 3 (Umgé) and site 6 (Sawetau).

Lower montane forest is present at two sites on the survey itinerary. Represented by typing codes L and LN, the formations involved are taxonomically and structurally intergrading. At Umgé and Sawetau the *Nothofagus*-emergent facies (LN) descends to at least 1,300 m, substantially below its normal elevational range (1,600-2,200 m; Hammermaster and Saunders 1995a,b). The occurrence on doline karst is arguably a determining factor in the observed shift in vegetation zones. Similar elevational anomalies on the southern limestone have been attributed to exceptionally high rainfalls on calcareous substrates (Takeuchi 2008a, b).

Nothofagus starkenborghii is the principal emergent species in the Strickland L/LN forest. Cunoniaceae, Elaeocarpaceae, Fagaceae, Lauraceae, Myrtaceae, Sphenostemonaceae, and Theaceae are important families in the canopy but adverse weather often interfered with the botanical assessment and the comprehensiveness of the arborescent inventory is thus unclear. Other than *Nothofagus*, the most frequently enumerated trees were *Cryptocarya* spp., *Gordonia papuana*, *Halfordia kendack*, *Kania eugenioides*, *Lithocarpus rufovillosus*, *L. schlechteri*, *Quintinia brassii*, *Sericolea pullei*, *Sphenostemon papuanus*, and *Syzygium* spp. *Pandanus* was locally dominant in the substage at Sawetau, but not at Umgé. Depending on local conditions, the most abundant genera in the understory were *Cyathea*, *Cyrtandra*, *Garcinia*, *Medinilla*, *Myrsine*, *Psychotria*, and *Saurauia*.

Because of site-specific factors, the low montane zone was the botanically richest environment. Several of the most unusual discoveries (*Barringtonia* sp. nov., *Begonia* sp. nov., *Fittingia* sp. nov., and *Psychotria* spp. nov.) were obtained from the L-class forest on doline karst, particularly at Sawetau.

d. Mo; Upper montane forest (UMF).

Site 1 (Kai-ingri) and site 7 (Apalu Reke), in part.

Site 1 is located within the Kaijende Highlands (surveyed in 2005) and is floristically identical to the communities (e.g., Omyaka) described in an earlier summary of that district (see Takeuchi 2007a). As noted therein, the upper

montane forest (UMF) includes forest types traditionally regarded as "subalpine" and is partly referable to the "mossy forest" or "elfin woodland" of most authors. Like Omyaka, all the taxa regarded as diagnostic for the UMF (in Hammermaster and Saunders 1995a, b) are present at Kai-ingri. Since the Kaijende vegetation has already been addressed in Takeuchi (2007a) their structural details will not be repeated here. Readers are directed to the relevant RAP publication (Richards 2007) for further information on Kaijende environments.

At site 7 (Apalu Reke) the UMF is considerably more fragmented than at Kai-ingri although taxonomic compositions are generally similar. Conifers (*Libocedrus papuana*, *Phyllocladus hypophyllus*, *Podocarpus* spp., *Dacrycarpus* sp., *Dacrydium imbricatus*, and *Prumnopitys amara* - in descending order of importance) are dominant in Apalu Reke canopies. As with most high-montane forests, Cunoniaceae, Myrsinaceae and Myrtaceae are also common. *Xanthomyrtus* is especially well-represented (6 spp., including a sp. nov.), but *Decaspermum* and *Syzygium* are surprisingly depauperate. Cunoniaceae (*Acsmithia reticulata*, *Schizomeria ilicina* and *Weinmannia fraxinea*) are visually prominent in isolated forest patches or in the tall scrub surrounding the forest proper. Unlike other subalpine habitats, *Eurya*, *Melicope* (except for *M. brassii*), and *Olearia* are relatively infrequent, their community position usurped by *Acronychia murina*. The latter species often forms impenetrable thickets along forest borders, usually in association with *Pittosporum pullifolium*.

A noteworthy permutation in the Muller Range UMF is the pronounced abundance of *Pandanus julianetti*, a conspicuous emergent in an otherwise conifer-dominant overstory. As a valued source of edible nuts to off-site landowners, pandans are a traditionally significant food resource. Anthropogenic management of this ethnobotanical asset may be responsible for the unusually high frequencies, despite the appearance of a seemingly pristine environment.

e. Ga, Gi, Sc; subalpine grassland and scrub.

Site 6 (Sawetau) and site 7 (Apalu Reke), in part.

At Apalu Reke the continuity of the UMF is repeatedly interrupted by open areas interpreted by the FIMS as montane grassland (Ga, Gi), or as subalpine scrub (Sc). Although these non-forested tracts can have the superficial appearance of a grassland, they are actually covered mainly by low-growing ferns (*Blechnum revolutum* and *Dicranopteris linearis*). Grasses are rarely present–in the fernland represented only by isolated culms of *Agrostis avenacea*, *Arundinella furva*, and *Imperata conferta*. A cushion grass (*Danthonia oreoboloides*) is restricted to boggy depressions scattered through the clear areas.

On hillocks and slopes, the herbaceous community grades into a microphyllous scrub (Sc) which is in turn transitional to the taller interior forest (Mo). The low-statured vegetation is a mosaic of interpenetrating strips, fingers, and islands whose elements are often below the mapping resolution of the FIMS and are thus collectively charted as composite entities (e.g., as "Mo/Ga/Sc"). At Apalu Reke, the physiognomic units can occur independently of obvious topographic or drainage controls. All montane communities of open-aspect (e.g., Ga, Gi) are regarded by the FIMS as manmade formations instigated or maintained by fire (Hammermaster and Saunders 1995). Anthropogenic derivation has historically been accepted by many authors (e.g., Brass 1941, Paijmans 1976, Wade and McVean 1969) but evidence for a natural origin was recently presented by Richards (2007) and Takeuchi (2007a) in relation to the Kaijende tree-fern savanna. Indications of fire influence (e.g., burn scars on tree stumps) were not seen in the Muller Range subalpine zone. The ecological status of the fernland there remains unclear.

At Apalu Reke, the open scrub is predominantly ericaceous. *Rhododendron* is the most significant genus with at least 11 species, including a new vireya (*Rhododendron* aff. *multinervium*) and distributional records for *R. dielsianum* var. *stylotrichum* and *R. disterigmoides* subsp. *disterigmoides*. Ericoid plants are also copiously represented by *Vaccinium amblyandrum* var. *amblyandrum*, *V*. cf. *finisterrae*, *V. schoddei*, *V. stellae-montis*, and *V. striicaule* var. *striicaule*. Among woody climbers, *Dimorphanthera alba*, *D. cornuta* var. *cornuta*, and *D. keysseri* are especially common in scrub-forest borders. With other families the most prevalent species are *Amyema wichmannii*, *Myrsine acrosticta*, *M. leucantha* (an unusual form with linear-elliptic leaves), *Styphelia suaveolens*, and *Trochocarpa dekockii*. The decumbent *Podocarpus brassii* var. *humilis* is a distinctive shrub in the fernland.

A boggy clearing (5°39.267' S, 142°18.887' E, 2,005 m) above Sawetau camp included many of the ericaceous and myrsinaceous taxa found in Strickland subalpine environments. At least 6 *Vaccinium* species were recorded from the Sawetau bog, with major range extensions for *V. hatamense*, *V. obatapaquiniorum* (second documented locality), *V. oranjense*, *V. sanguineum*, and *V. subulisepalum*.

Judging from the numerous floristic records obtained by the survey, the Strickland montane scrub is of considerable taxonomic and ecological interest. However in comparison to its woody constituents, herbaceous plants (non-orchidaceous) were uninteresting and mainly composed of pioneer taxa with wide distributions. In the Strickland scrub and bogs, there are apparently two distinct phytogeographic assemblages, conveniently separated by life form: 1) a group comprised mostly of endemic woody plants, usually epiphytes from the surrounding forest but facultatively terrestrial in the open vegetation, and 2) a wider-ranging component, mainly herbaceous and sometimes cosmopolitan, presumably coming in from more distant stations. This dichotomy is manifest in the Foja Mts. of Indonesian Papua (Takeuchi 2010a) and is possibly of general application to the subalpine biome in New Guinea.

Botanical inventory

The Strickland surveys have produced a total of 901 specimen numbers in replicate sets. There are at least 149 vascular plant families and 427 genera represented in the collective

Table 9.1. Taxonomic counts by vascular plant category (orchids excluded)

Group	Pteridophytes	Gymnosperms	Monocots	Dicots	TOTALS
Families	27	3	18	101	149
Genera	71	7	58	291	427
Species (including vars)	141	11	72	533	757

inventory (Table 9.1, 9.2). The vouchers are accompanied by 62 accessory samples bottled in spirit (mainly flowers with delicate structures), 31 leaf samples for DNA sequencing, and 24.1 gigabytes of high-resolution digital imagery (usually 3456 x 2304 pixels). In addition to the physical collections, the survey checklist includes 276 taxa enumerated by sight recognition. A total of 757 taxa have been identified thus far.

At least 15 species and 1 genus are taxonomic novelties. Thirteen of these species and the gen. nov. are entirely new to science (i.e., not previously collected or reported). Two novelties (*Macaranga* sp. nov. and *Psychotria defretesiana*) have been found before from other localities. The Strickland operations have also yielded 29 botanical records of taxonomic and/or distributional significance. The most noteworthy findings are briefly characterized in the following discussion.

Plants New to Science

Begoniaceae

Begonia sandsiana Takeuchi sp. nov. ined.

TYPE: PAPUA NEW GUINEA. Western Province, Muller Range, Sawetau (Expedition Camp 2), *Nothofagus*-emergent montane forest on doline karst, 5°39.610'S, 142°18.018'E, 1,450 m, 17 September 2009, *Takeuchi, Ama, & Gamui 24713* (holotype: LAE; isotypes: A, K).

Additional specimen examined: Western Province, Muller Range, Sawetau (Expedition Camp 2), *Nothofagus*-emergent montane forest on doline karst, 5°39.610'S, 142°18.018'E, 1,450 m, 13 September 2009, *Takeuchi, Ama, & Gamui 24622* (A, LAE).

Of the 79 *Begonia* species from New Guinea, only 7 have male flowers with 4 tepals (viz., sect. *Diploclinium*; Sands, 2009). The new *Begonia* differs from other *Diploclinium* species primarily by its highly dissected leaves with white undersurfaces, and by the peculiar fruits with an extended cylindrical lobe. It may be related to *Begonia oligantha* of Irian Jaya, a species whose sectional placement remains unverified but probably referable to *Diploclinium* (Merrill and Perry 1943, Doorenbos et al. 1998, Sands 2009).

Ericaceae

Rhododendron sp. nov., aff. *multinervium* Sleumer

Specimens examined: Western Province, Muller Range, Apalu Reke (Expedition Camp 3), *Blechnum* fernland with patches of *Pandanus*-emergent mossy forest, 5°29.089'S, 142°18.083'E, 2,880 m, 19 September 2009, *Takeuchi, Ama, & Gamui 24741* (undistributed); 5°29.266'S, 142°18.167'E, 2870 m, 22 September 2009, *Takeuchi et al. 24863* (undistributed); 5°29.285'S, 142°18.029'E, 2,860 m, 23 September 2009, *Takeuchi et al. 24900* (undistributed).

Although closely allied to *Rhododendron multinervium*, the new vireya is clearly distinguished by larger flowers (to 8 cm long) subtended by conspicuous bracts, and by the presence of a scale indument along the entire length of the style. The showy inflorescence is strongly honeysuckle-scented. Although many exceptional plants were newly revealed by the survey, this stunning addition to subsection *Solenovireya* (see Argent 2006), surely ranks as one of the defining botanical discoveries of the 2009 expedition.

Lecythidaceae

Barringtonia jebbiana Takeuchi, Harvard Pap. Bot. 15 (1): 27, Figs. 1-3. 2010. TYPE: PAPUA NEW GUINEA. Western Province, Strickland drainage, Sawetau (Camp 2 bivouac), *Nothofagus*-emergent montane forest on doline karst, 5°39.610'S, 142°18.018'E, 1,450 m, 13 September 2009, *Takeuchi, Ama, & Gamui 24620* (holotype: LAE; isotypes: A, BO, CANB, K, L).

Barringtonia jebbiana (section *Barringtonia*) is one of five leptocaulous congeners in Papuasia and the only representative from the montane zone (cf. Payens 1967, Jebb 1991). The reduced 1–2(–4)-flowered inflorescence, inserted below the leaves, uniquely distinguishes the new species from other members of the leptocaul alliance. In contrast to all known *Barringtonia*, there are no staminodes in *B. jebbiana*. Filaments are inserted along the top of the staminal tube, at ± the same height, and not in the usual descending sequence (moving from the inner series to the other series). Because of the remarkable character states exhibited by *B. jebbiana*, an undescribed section may be involved, irrespective of the assignment indicated by current taxonomy (Takeuchi 2010b).

Table 9.2. List of plant species collected during 2008 and 2009 Muller RAP surveys.

Vascular Plant Group	Family	Scientific Name	Infraspecific Taxon	IUCN STATUS	Occurrence (X = collection made; S = sight record)						
					Site 1 Kai-ingri	Site 2 Tualapa	Site 3 Umgé	Site 4 Wanakipa	Site 5 Gugusu	Site 6 Sawetau	Site 7 Apalu Reke
ferns & lycophytes	Adiantaceae	*Syngramma schlechteri* Brause							S		
ferns & lycophytes	Adiantaceae	*Taenitis blechnoides* (Willd.) Sw.							X		
ferns & lycophytes	Adiantaceae	genus? nov., aff. *Pteridium*			X						
ferns & lycophytes	Aspleniaceae	*Asplenium acrobryum* H. Christ							S		
ferns & lycophytes	Aspleniaceae	*Asplenium foersteri* Rosenst.							S		
ferns & lycophytes	Aspleniaceae	*Asplenium nidus* L.							S		
ferns & lycophytes	Aspleniaceae	*Asplenium novoguineense* Ros. (Loxoscaphe)			X						
ferns & lycophytes	Aspleniaceae	*Asplenium pellucidum* Lam				X					
ferns & lycophytes	Aspleniaceae	*Asplenium phyllitidus* D. Don	subsp. *malesicum* Holttum			X			S		
ferns & lycophytes	Aspleniaceae	*Asplenium subemarginatum* Ros.				X					
ferns & lycophytes	Aspleniaceae	*Asplenium tenerum* Forst. f.				X			S		
ferns & lycophytes	Aspleniaceae	*Asplenium* sp.									X
ferns & lycophytes	Aspleniaceae	*Didymochlaena truncatula* (Sw.) J. Sm.							S		
ferns & lycophytes	Aspleniaceae	*Diplora d'urvillaei* (Bory) C. Chr.				X					
ferns & lycophytes	Athyriaceae	*Diplazium bantamense* Blume				X					
ferns & lycophytes	Athyriaceae	*Diplazium cordifolium* Blume							S		
ferns & lycophytes	Athyriaceae	*Diplazium decompositum* (Copel.) Parris				X					S
ferns & lycophytes	Athyriaceae	*Diplazium stipitipinnula* Holttum							S		
ferns & lycophytes	Athyriaceae	*Diplazium weinlandii* H. Christ								S	
ferns & lycophytes	Blechnaceae	*Blechnum deorso-lobatum* Brause								X	
ferns & lycophytes	Blechnaceae	*Blechnum hieronymi* Brause									X
ferns & lycophytes	Blechnaceae	*Blechnum keysseri* Rosenst.									X
ferns & lycophytes	Blechnaceae	*Blechnum orientale* L.								S	
ferns & lycophytes	Blechnaceae	*Blechnum revolutum* (Alderw.) C. Chr.									X
ferns & lycophytes	Cyatheaceae	*Cyathea hornei* (Baker) Copel.								S	
ferns & lycophytes	Cyatheaceae	*Cyathea microphylloides* Rosenst.									S
ferns & lycophytes	Cyatheaceae	*Cyathea perpelvigera* v.A.v.R.								X	
ferns & lycophytes	Cyatheaceae	*Dicksonia hieronymi* Brause									S
ferns & lycophytes	Davalliaceae	*Arthropteris articulata* (Brack.) C. Chr.				X			X		
ferns & lycophytes	Davalliaceae	*Arthropteris wollastonii* (Ridl.) Holttum							X		
ferns & lycophytes	Davalliaceae	*Davallia repens* (L. f.) Kuhn								S	
ferns & lycophytes	Davalliaceae	*Davallia solida* (G. Forst.) Sw.				X			S		

table continued on next page

Table 9.2. *continued*

Vascular Plant Group	Family	Scientific Name	Infraspecific Taxon	IUCN STATUS	Occurrence (X = collection made; S = sight record)						
					Site 1 Kai-ingri	Site 2 Tualapa	Site 3 Umgé	Site 4 Wanakipa	Site 5 Gugusu	Site 6 Sawetau	Site 7 Apalu Reke
ferns & lycophytes	Davalliaceae	*Leucostegia pallida* (Mett.) Copel.				X					
ferns & lycophytes	Dennstaedtiaceae	*Dennstaedtia* sp.							X		
ferns & lycophytes	Dennstaedtiaceae	*Histiopteris squamulata* Holttum								S	
ferns & lycophytes	Dennstaedtiaceae	*Pteridium aquilinum* (L.) Kuhn								S	
ferns & lycophytes	Dipteridaceae	*Dipteris conjugata* Reinw.							S	S	
ferns & lycophytes	Dryopteridaceae	*Polystichum keysserianum* Rosenst.			X						S
ferns & lycophytes	Dryopteridaceae	*Polystichum* sp.			X						
ferns & lycophytes	Dryopteridaceae	indet.								X	
ferns & lycophytes	Gleicheniaceae	*Dicranopteris linearis* (Burm. f.) Underwood									S
ferns & lycophytes	Gleicheniaceae	*Gleichenia bolanica* Ros.			X						
ferns & lycophytes	Gleicheniaceae	*Gleichenia hirta* Bl. var. *candida* (Rosenst.) Holttum				S				S	
ferns & lycophytes	Gleicheniaceae	*Gleichenia* sp., "*dicarpa-microphylla*" facies									X
ferns & lycophytes	Gleicheniaceae	*Gleichenia* sp.									X
ferns & lycophytes	Grammitidaceae	*Ctenopteris subsecundodissecta* (Zoll.) Copel.									X
ferns & lycophytes	Grammitidaceae	*Ctenopteris taxodioides* (Baker) Copel.									S
ferns & lycophytes	Grammitidaceae	*Ctenopteris yoderi* Copel.									X
ferns & lycophytes	Grammitidaceae	*Ctenopteris* sp., =*Prosaptia contigua* (Forst.) Presl								S	
ferns & lycophytes	Grammitidaceae	*Ctenopteris* sp.								X	X
ferns & lycophytes	Grammitidaceae	*Grammitis sumatrana* (Baker) Copel.								S	
ferns & lycophytes	Grammitidaceae	*Grammitis* sp. ?nov.									X
ferns & lycophytes	Grammitidaceae	*Oreogrammitis fasciata* (Blume) Parris							X		
ferns & lycophytes	Grammitidaceae	*Scleroglossum minus* (Fee) C. Chr.								X	
ferns & lycophytes	Grammitidaceae	indet.									X
ferns & lycophytes	Hymenophyllaceae	*Abrodictyum meifolium* (Bory ex Willd.) Ebihara & K. Iwats.							S	S	
ferns & lycophytes	Hymenophyllaceae	*Cephalomanes* sp.							S	S	
ferns & lycophytes	Hymenophyllaceae	*Crepidomanes aphlebioides* (H. Christ) I.M. Turner							S		
ferns & lycophytes	Hymenophyllaceae	*Crepidomanes intermedium* (Bosch) Ebihara & K. Iwats.							S		
ferns & lycophytes	Hymenophyllaceae	*Hymenophyllum pallidum* (Blume) Ebihara & K. Iwats.								S	
ferns & lycophytes	Hymenophyllaceae	*Hymenophyllum* sp.									X

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Table 9.2. *continued*

Vascular Plant Group	Family	Scientific Name	Infraspecific Taxon	IUCN STATUS	Occurrence (X = collection made; S = sight record)						
					Site 1 Kai-ingri	Site 2 Tualapa	Site 3 Umgé	Site 4 Wanakipa	Site 5 Gugusu	Site 6 Sawetau	Site 7 Apalu Reke
ferns & lycophytes	Hymenophyllaceae	*Mecodium* sp.									X
ferns & lycophytes	Lindsaea Group	*Lindsaea bakeri* (C. Chr.) C. Chr.							X		
ferns & lycophytes	Lindsaea Group	*Lindsaea obtusa* J. Sm.				X			S		
ferns & lycophytes	Lindsaea Group	*Lindsaea pulchell*a (J.J. Sm.) Mett. ex Kuhn				X				X	
ferns & lycophytes	Lindsaea Group	*Lindsaea repens* (Bory) Thwaites	var. *sessilis* (Copel.) Kramer				X				
ferns & lycophytes	Lindsaea Group	*Lindsaea rosenstockii* Brause								S	
ferns & lycophytes	Lindsaea Group	*Lindsaea tenuifolia* Blume							X		
ferns & lycophytes	Lindsaea Group	*Sphenomeris chinensis* (L.) Maxon				X			S		
ferns & lycophytes	Lindsaea Group	*Tapeinidium longipinnulum* (Ces.) C. Chr.							S	S	
ferns & lycophytes	Lomariopsidaceae	*Bolbitis heteroclita* (Presl) Ching							S		
ferns & lycophytes	Lomariopsidaceae	*Bolbitis quoyan*a (Gaudich.) Ching							S		
ferns & lycophytes	Lomariopsidaceae	*Elaphoglossum* sp.							S	S	
ferns & lycophytes	Lomariopsidaceae	*Lomagramma sinuata* C. Chr.							S		
ferns & lycophytes	Lomariopsidaceae	*Lomariopsis intermedia* (Copel.) Holttum							S		
ferns & lycophytes	Lomariopsidaceae	*Teratophyllum articulatum* (J. Sm.) Mett.								S	
ferns & lycophytes	Lycopodiaceae	*Huperzia phlegmaria* (L.) Rothm.				X			S		
ferns & lycophytes	Lycopodiaceae	*Huperzia squarrosa* (Forst. f.) Trevis.				X					
ferns & lycophytes	Lycopodiaceae	*Lycopodiella cernua* (L). Pic. Serm.							X		
ferns & lycophytes	Lycopodiaceae	*Lycopodium clavatum* L.									X
ferns & lycophytes	Lycopodiaceae	*Lycopodium volubile* G. Forst.								S	
ferns & lycophytes	Marattiaceae	*Angiopteris evecta* (Forst.) Hoffm.							S		
ferns & lycophytes	Marattiaceae	*Marattia* sp.							S		
ferns & lycophytes	Oleandraceae	*Nephrolepis lauterbachii* Christ								X	
ferns & lycophytes	Oleandraceae	*Nephrolepis* sp.							S	S	
ferns & lycophytes	Oleandraceae	*Oleandra cuspidata* Baker							X	X	
ferns & lycophytes	Oleandraceae	*Oleandra sibbaldii* Grev.					S			S	
ferns & lycophytes	Oleandraceae	*Oleandra werneri* Ros.				S					
ferns & lycophytes	Ophioglossaceae	*Ophioglossum pendulum* L.							S		
ferns & lycophytes	Plagiogyriaceae	*Plagiogyria egenolfioides* (Baker) Copel.	var. *decrescens* (C. Chr.) Zhang & Noot.								X
ferns & lycophytes	Polypodiaceae	*Aglaomorpha drynarioides* (Hook.) Roos				X					
ferns & lycophytes	Polypodiaceae	*Aglaomorpha heraclea* (Kunze) Copel.								S	

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Table 9.2. *continued*

Vascular Plant Group	Family	Scientific Name	Infraspecific Taxon	IUCN STATUS	Occurrence (X = collection made; S = sight record)						
					Site 1 Kai-ingri	Site 2 Tualapa	Site 3 Umgé	Site 4 Wanakipa	Site 5 Gugusu	Site 6 Sawetau	Site 7 Apalu Reke
ferns & lycophytes	Polypodiaceae	*Aglaomorpha hieronymi* (Brause) Copel.				X					
ferns & lycophytes	Polypodiaceae	*Aglaomorpha parkinsoni* (Baker) Parris & Roos				X					
ferns & lycophytes	Polypodiaceae	*Belvisia mucronata* (Fee) Copel.				X			S	S	
ferns & lycophytes	Polypodiaceae	*Belvisia novoguineensis* (Rosenst.) Copel.								S	
ferns & lycophytes	Polypodiaceae	*Drynaria rigidula* Bedd.							S		
ferns & lycophytes	Polypodiaceae	*Microsorum papuanum* (Baker) Parris							S		
ferns & lycophytes	Polypodiaceae	*Goniophlebium demersum* (Brause) Rödl-Linder								S	S
ferns & lycophytes	Polypodiaceae	*Goniophlebium percussum* (Cav.) Wagner & Grether						X			
ferns & lycophytes	Polypodiaceae	*Lemmaphyllum accedens* (Bl.) Donk				X			S	S	
ferns & lycophytes	Polypodiaceae	*Microsorum linguiforme* (Mett.) Copel.							S		
ferns & lycophytes	Polypodiaceae	*Microsorum membranifolium* (R. Br.) Ching				X			S	X	
ferns & lycophytes	Polypodiaceae	*Microsorum papuanum* (Baker) Parris							S		
ferns & lycophytes	Polypodiaceae	*Microsorum punctatum* (L.) Copel.							S	S	
ferns & lycophytes	Polypodiaceae	*Pyrrosia piloselloides* (L.) Price							S		
ferns & lycophytes	Polypodiaceae	*Pyrrosia* sp.							S	S	
ferns & lycophytes	Polypodiaceae	*Selliguea albidosquamata* (Bl.) Parris									S
ferns & lycophytes	Polypodiaceae	*Selliguea costulata* (Ces.) Wagner & Grether								X	X
ferns & lycophytes	Polypodiaceae	*Selliguea enervis* (Cav.) Ching				X					X
ferns & lycophytes	Polypodiaceae	*Selliguea hellwigii* (Diels) Hovenkamp								X	
ferns & lycophytes	Polypodiaceae	*Selliguea plantaginea* Brackenr.			X						S
ferns & lycophytes	Polypodiaceae	genus nov. (*Crypsinus* facies, pinnate)				X					
ferns & lycophytes	Psilotaceae	*Psilotum complanatum* Sw.					X				
ferns & lycophytes	Psilotaceae	*Psilotum nudum* (L.) P. Beauv.							S		
ferns & lycophytes	Pteridaceae	*Pteris moluccana* Bl.						S	S		
ferns & lycophytes	Pteridaceae	*Pteris warburgii* Christ				S			X		
ferns & lycophytes	Pteridaceae	*Pteris* sp., "tripartita group"			X						
ferns & lycophytes	Schizaeaceae	*Lygodium versteegii* H. Christ							S		
ferns & lycophytes	Schizaeaceae	*Schizaea dichotoma* (L.) J. Sm.							S	S	
ferns & lycophytes	Schizaeaceae	*Schizaea digitata* (L.) Sw.							S		

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Table 9.2. *continued*

Vascular Plant Group	Family	Scientific Name	Infraspecific Taxon	IUCN STATUS	Occurrence (X = collection made; S = sight record)						
					Site 1 Kai-ingri	Site 2 Tualapa	Site 3 Umgé	Site 4 Wanakipa	Site 5 Gugusu	Site 6 Sawetau	Site 7 Apalu Reke
ferns & lycophytes	Selaginellaceae	*Selaginella* cf. *angustiramea* Muell.				X				S	S
ferns & lycophytes	Selaginellaceae	*Selaginella* cf. *velutina* Ces.							S		
ferns & lycophytes	Selaginellaceae	*Selaginella* sp.							S	S	
ferns & lycophytes	Tectaria Group	*Tectaria decurrens* (Presl) Copel.							S		
ferns & lycophytes	Tectaria Group	*Tectaria menyanthides* (Presl) Copel.							S		
ferns & lycophytes	Thelypteridaceae	*Coryphopteris* sp.								S	S
ferns & lycophytes	Thelypteridaceae	*Macrothelypteris* sp.				X					
ferns & lycophytes	Thelypteridaceae	*Parathelypteris beddomei* (Baker) Ching			X	X					S
ferns & lycophytes	Thelypteridaceae	*Plesioneuron marattioides* (Alston) Holtt.								X	
ferns & lycophytes	Thelypteridaceae	*Plesioneuron* sp.								S	
ferns & lycophytes	Thelypteridaceae	*Pneumatopteris superba* (Brause) Holtt.								S	
ferns & lycophytes	Thelypteridaceae	*Sphaerostephanos multiauriculatus* (Copel.) Holttum				X					
ferns & lycophytes	Thelypteridaceae	*Sphaerostephanos* sp. A							X		
ferns & lycophytes	Thelypteridaceae	*Sphaerostephanos* sp. B								X	
ferns & lycophytes	Vittariaceae	*Antrophyum* cf. *plantagineum* (Cav.) Kaulf.							S	S	
ferns & lycophytes	Vittariaceae	*Haplopteris elongata* (Sw.) Crane							S		
ferns & lycophytes	Vittariaceae	*Haplopteris scolopendrina* (Bory) Presl							S		
ferns & lycophytes	Vittariaceae	*Loxogramme* sp.								X	
ferns & lycophytes	indet. A								X		
ferns & lycophytes	indet. B									X	X
gymnosperms	Cupressaceae	*Libocedrus papuana* F. Muell.									X
gymnosperms	Gnetaceae	*Gnetum gnemon* L.				X			S		
gymnosperms	Podocarpaceae	*Dacrycarpus* sp.									S
gymnosperms	Podocarpaceae	*Dacrydium imbricatus* (Blume) de Laub.									X
gymnosperms	Podocarpaceae	*Phyllocladus hypophyllus* Hook. f.									S
gymnosperms	Podocarpaceae	*Podocarpus brassii* Pilger	var. *humilis* de Laub.								X
gymnosperms	Podocarpaceae	*Podocarpus brassii* Pilger	var. *brassii*								S
gymnosperms	Podocarpaceae	*Podocarpus neriifolius* D. Don							S		
gymnosperms	Podocarpaceae	*Podocarpus* sp. A									S
gymnosperms	Podocarpaceae	*Podocarpus* sp. B									S
gymnosperms	Podocarpaceae	*Prumnopitys amara* (Blume) de Laub.									S

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Table 9.2. *continued*

Vascular Plant Group	Family	Scientific Name	Infraspecific Taxon	IUCN STATUS	Occurrence (X = collection made; S = sight record)						
					Site 1 Kai-ingri	Site 2 Tualapa	Site 3 Umgé	Site 4 Wanakipa	Site 5 Gugusu	Site 6 Sawetau	Site 7 Apalu Reke
monocots	Araceae	*Alocasia lauterbachiana* (Engl.) A. Hay				X					
monocots	Araceae	*Alocasia macrorrhizos* (L.) G. Don							S	S	
monocots	Araceae	*Alocasia nicolsonii* Hay								S	
monocots	Araceae	*Colocasia esculenta* (L.) Schott				S		S			
monocots	Araceae	*Pothos* sp.				S			S	S	
monocots	Araceae	*Rhaphidophora* sp.							S		
monocots	Araceae	*Schismatoglottis* sp.							X		
monocots	Araceae	*Spathiphyllum schlechteri* (Engl. & K. Krause) Nicolson							X		
monocots	Arecaceae	*Calyptrocalyx* sp.							X		
monocots	Arecaceae	*Caryota rumphiana* Martelli				S		S	S		
monocots	Arecaceae	*Hydriastele costata* F.M. Bailey				S			S		
monocots	Arecaceae	*Licuala* sp.							X		
monocots	Arecaceae	*Linospadix* sp.								X	
monocots	Bromeliaceae	*Ananas comosus* (L.) Merr.						S			
monocots	Cannaceae	*Canna indica* L.						S			
monocots	Commelinaceae	*Amischotolype mollissima* Hassk						S	S		
monocots	Commelinaceae	*Commelina diffusa* Burm. f.						S			
monocots	Commelinaceae	*Floscopa scandens* Lour.						S			
monocots	Commelinaceae	*Pollia thyrsiflora* (Blume) Steud.							S		
monocots	Corsiaceae	*Corsia purpurata* L. O. Williams					X				
monocots	Corsiaceae	*Corsia unguiculata* Schltr., or aff.					X				
monocots	Costaceae	*Costus speciosus* (Koen.) J. Sm.							S		
monocots	Costaceae	*Tapeinochilos ananassae* (Hassk.) K. Schum.							X		
monocots	Cyperaceae	*Cyperus diffusus* Vahl				X			S		
monocots	Cyperaceae	*Cyperus kyllingia* Endl.				X		S			
monocots	Cyperaceae	*Fimbristylis* sp.									X
monocots	Cyperaceae	*Gahnia javanica* Zoll. & Mor. ex Mor.									X
monocots	Cyperaceae	*Scirpus crassiusculus* (Hook.) Benth.							X		
monocots	Cyperaceae	*Scirpus subtilissimus* (Boeck.) S.T. Blake							X		X
monocots	Cyperaceae	*Scleria polycarpa* Boeck.				X		S	S		
monocots	Cyperaceae	genus indet.									X
monocots	Juncaceae	*Juncus effusus* L.									S
monocots	Juncaceae	*Juncus prismatocarpus* R. Br.									S
monocots	Heliconiaceae	*Heliconia papuana* Kress						X			

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Table 9.2. *continued*

Vascular Plant Group	Family	Scientific Name	Infraspecific Taxon	IUCN STATUS	Occurrence (X = collection made; S = sight record)						
					Site 1 Kai-ingri	Site 2 Tualapa	Site 3 Umgé	Site 4 Wanakipa	Site 5 Gugusu	Site 6 Sawetau	Site 7 Apalu Reke
monocots	Hemerocallidaceae	*Geitonoplesium cymosum* A. Cunn.								S	
monocots	Iridaceae	*Sisyrinchium pulchellum* (R. Br.) F. Muell.									X
monocots	Laxmanniaceae	*Cordyline fruticosa* (L.) A. Chev.						S	S	S	
monocots	Liliaceae	*Astelia alpina* R. Br.									S
monocots	Liliaceae	*Dianella ensifolia* (L.) DC.							S		
monocots	Liliaceae	*Dianella* sp. ?nov.								X	X
monocots	Pandanaceae	*Freycinetia* spp.							S	S	
monocots	Pandanaceae	*Pandanus julianetti* Martelli									S
monocots	Pandanaceae	*Pandanus* spp.							S	S	
monocots	Poaceae	*Agrostis avenacea* Gmelin									X
monocots	Poaceae	*Centotheca latifolia* (Osb.) Trin.							S		
monocots	Poaceae	*Chionochloa archboldii* (Hitchc.) Conert									S
monocots	Poaceae	*Chrysopogon aciculatus* (Retz.) Trin.						S			
monocots	Poaceae	*Danthonia oreoboloides* (F.v.M.) Stapf									X
monocots	Poaceae	*Imperata conferta* (Presl) Ohwi						X			X
monocots	Poaceae	*Isachne* sp.								S	S
monocots	Poaceae	*Leptaspis urceolata* (Roxb.) R. Br.							S		
monocots	Poaceae	*Lophatherum gracile* Brongn.				X					
monocots	Poaceae	*Mischanthus floridulus* (Labill.) Warb.			X						X
monocots	Poaceae	*Nastus productus* (Pilg.) Holtt.					X		X	S	
monocots	Poaceae	*Oplismenus* sp.							S	S	
monocots	Poaceae	*Paspalum longifolium* Roxb.				X					
monocots	Poaceae	*Pennisetum macrostachyum* (Brogn.) Trin.						S			
monocots	Poaceae	*Poa* sp.									S
monocots	Poaceae	*Saccharum officinarum* L.						S			
monocots	Poaceae	*Thysanolaena maxima* (Roxb.) O.K.				X					
monocots	Poaceae	*Zea mays* L.						S			
monocots	Triuridaceae	*Sciaphila* sp.					X				
monocots	Zingiberaceae	*Alpinia calycodes* K. Schum.							S		
monocots	Zingiberaceae	*Alpinia* sp., sect. *Dieramalpinia*							X		
monocots	Zingiberaceae	*Alpinia* sp. A							X		
monocots	Zingiberaceae	*Alpinia* sp. B								X	
monocots	Zingiberaceae	*Etlingera* sp.							S		

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Table 9.2. *continued*

Vascular Plant Group	Family	Scientific Name	Infraspecific Taxon	IUCN STATUS	Occurrence (X = collection made; S = sight record)						
					Site 1 Kai-ingri	Site 2 Tualapa	Site 3 Umgé	Site 4 Wanakipa	Site 5 Gugusu	Site 6 Sawetau	Site 7 Apalu Reke
monocots	Zingiberaceae	*Hornstedtia scottiana* (F. Muell.) K. Schum.							S		
monocots	Zingiberaceae	*Pleuranthodium* sp.							S		
monocots	Zingiberaceae	*Riedelia corallina* Valeton							S		
monocots	Zingiberaceae	*Riedelia subalpina* Royen									X
monocots	Zingiberaceae	*Riedelia* sp.							S	S	
dicots	Acanthaceae	*Hulemacanthus* cf. *densiflorus* Bremek.				X					
dicots	Acanthaceae	*Ruellia* sp. (Leptosiphonium)						X			
dicots	Acanthaceae	genus indet.				X					
dicots	Actinidiaceae	*Saurauia conferta* Warburg				X					
dicots	Actinidiaceae	*Saurauia* aff. *conferta* Warburg (not the sp.)			X						
dicots	Actinidiaceae	*Saurauia schumanniana* Diels, or aff.								X	
dicots	Actinidiaceae	*Saurauia* sp. A								X	
dicots	Actinidiaceae	*Saurauia* sp. B								X	
dicots	Anacardiaceae	*Rhus caudata* Lauterb.								X	
dicots	Anacardiaceae	*Rhus taitensis* Guill.						S			
dicots	Anacardiaceae	*Semecarpus magnificus* K. Schum.				X					
dicots	Anacardiaceae	*Semecarpus* sp. A							X		
dicots	Anacardiaceae	*Semecarpus* sp. B				X					
dicots	Annonaceae	*Annona muricata* L.						S			
dicots	Annonaceae	*Haplostichanthus longirostris* (Scheff.) van Heusden				X					
dicots	Annonaceae	*Pseuduvaria* sp.				X					
dicots	Annonaceae	genus indet.							X		
dicots	Apiaceae	*Oenanthe javanica* DC.									X
dicots	Apiaceae	*Centella asiatica* (L.) Urb.						S			
dicots	Apiaceae	*Hydrocotyle sibthorpioides* Lamarck			X						S
dicots	Apocynaceae	*Alyxia* sp.									X
dicots	Apocynaceae	*Cerbera floribunda* K. Schum.						S			
dicots	Apocynaceae	*Hoya* sp.							S		
dicots	Apocynaceae	*Papuechites aambe* (Warb.) Markgr.				X					
dicots	Aquifoliaceae	*Ilex archboldiana* Merr. & Perry									X
dicots	Araliaceae	*Gastonia spectabilis* (Harms) Philipson				X					
dicots	Araliaceae	*Mackinlaya celebica* (Harms) Philipson				S			S		

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Table 9.2. *continued*

Vascular Plant Group	Family	Scientific Name	Infraspecific Taxon	IUCN STATUS	Occurrence (X = collection made; S = sight record)						
					Site 1 Kai-ingri	Site 2 Tualapa	Site 3 Umgé	Site 4 Wanakipa	Site 5 Gugusu	Site 6 Sawetau	Site 7 Apalu Reke
dicots	Araliaceae	*Mackinlaya schlechteri* (Harms) Philipson							X		
dicots	Araliaceae	*Osmoxylon novoguineense* (Scheff.) Becc.							S		
dicots	Araliaceae	*"Schefflera" dentata* Frodin									X
dicots	Aristolochiaceae	*Aristolochia* sp.				X	X				
dicots	Asteraceae	*Adenostemma lavenia* (L.) Kuntze							S		
dicots	Asteraceae	*Ageratum conyzoides* L.						S			
dicots	Asteraceae	*Bidens pilosa* L.				X		S			
dicots	Asteraceae	*Blumea arfakiana* Martelli				X			X		
dicots	Asteraceae	*Blumea riparia* (Bl.) DC.							S		
dicots	Asteraceae	*Blumea sylvatica* (Bl.) DC.				X					
dicots	Asteraceae	*Conyza* sp.				X					
dicots	Asteraceae	*Crassocephalum crepidioides* (Benth.) S. Moore						S			
dicots	Asteraceae	*Emilia prenanthoidea* DC.				X					
dicots	Asteraceae	*Erechtites valerianifolia* (Wolf) DC.						S			
dicots	Asteraceae	*Olearia durifolia* Koster			X						
dicots	Asteraceae	*Olearia heterotricha* Mattf.			X						
dicots	Asteraceae	*Olearia platyphylla* Mattf.	var. *platyphylla*		X						
dicots	Asteraceae	*Olearia platyphylla* Mattf.	var. *cinerea* (Mattf.) Koster		X						
dicots	Asteraceae	*Olearia rufa* Koster									X
dicots	Asteraceae	*Olearia spectabilis* Koster									X
dicots	Asteraceae	*Olearia* sp.								S	?S
dicots	Asteraceae	*Sonchus aspe*r (L.) Hill			X						
dicots	Asteraceae	*Tetramolopium ciliatum* Mattf.									X
dicots	Asteraceae	*Tetramolopium macrum* (F. Muell.) Mattf.	var. *glabrescens* Koster								X
dicots	Asteraceae	*Vernonia arborea* Ham.	var. *obovata* S. Moore			X					
dicots	Asteraceae	*Vernonia cuneata* Less.				X				S	
dicots	Balanophoraceae	*Balanophora papuana* Schltr.					X			S	
dicots	Balsaminaceae	*Impatiens hawkeri* Bull				S	S			S	
dicots	Begoniaceae	*Begonia kaniensis* Irmscher								S	
dicots	Begoniaceae	*Begonia pinnatifida* Merr. & Perry							X		
dicots	Begoniaceae	*Begonia pseudolateralis* Warb.							X		
dicots	Begoniaceae	*Begonia* sp. nov.								X	
dicots	Begoniaceae	*Begonia* sp. A							X		

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Table 9.2. *continued*

Vascular Plant Group	Family	Scientific Name	Infraspecific Taxon	IUCN STATUS	Occurrence (X = collection made; S = sight record)						
					Site 1 Kai-ingri	Site 2 Tualapa	Site 3 Umgé	Site 4 Wanakipa	Site 5 Gugusu	Site 6 Sawetau	Site 7 Apalu Reke
dicots	Begoniaceae	*Begonia* sp. B								X	
dicots	Begoniaceae	*Symbegonia* sp. ?nov.								X	
dicots	Bignoniaceae	*Pandorea pandorana* (Andr.) Steenis	subsp. *pandorana*						S		
dicots	Bignoniaceae	*Tecomanthe dendrophila* (Bl.) K. Schum.							S		
dicots	Bignoniaceae	*Tecomanthe volubilis* Gibbs								X	
dicots	Bixaceae	*Bixa orellana* L.						S			
dicots	Burseraceae	*Canarium acutifolium* (DC.) Merr.				X					
dicots	Burseraceae	*Canarium maluense* Lauterb.							S		
dicots	Burseraceae	*Canarium vitiense* A. Gray							S		
dicots	Cardiopteridaceae	*Pseudobotrys cauliflora* (Pulle) Sleumer							X		
dicots	Caricaceae	*Carica papaya* L.						S			
dicots	Caryophyllaceae	*Drymaria cordata* (L.) Willd. ex Roemer & Schult						S			
dicots	Casuarinaceae	*Gymnostoma papuana* (S. Moore) L.A.S. Johnson				S			S		
dicots	Celastraceae	*Perrottetia alpestris* (Bl.) Loesener	subsp. *moluccana* (Bl.) Ding Hou				X				
dicots	Chloranthaceae	*Ascarina* sp.								S	S
dicots	Chloranthaceae	*Chloranthus erectus* (Buch.-Ham.) Verdc.								X	
dicots	Chloranthaceae	*Sarcandra glabra* (Thunb.) Nakai				X	X				
dicots	Clusiaceae	*Calophyllum* spp.				S			S	S	
dicots	Clusiaceae	*Garcinia* cf. *archboldiana* A.C. Smith								X	
dicots	Clusiaceae	*Garcinia* cf. *assugu* Lauterb.								X	
dicots	Clusiaceae	*Garcinia* sp., sect. *Cambogia*							X		
dicots	Combretaceae	*Terminalia* sp.							S		
dicots	Coriariaceae	*Coriaria papuana* Warb.								S	
dicots	Cornaceae	*Alangium villosum* (Bl.) Wangerin	subsp. *ferrugineum* (C.T. White) Bloembergen			X					
dicots	Cucurbitaceae	*Citrullus vulgaris* Schrad.						S			
dicots	Cucurbitaceae	*Cucumis sativus* L.						S			
dicots	Cucurbitaceae	*Zehneria* sp.							S		
dicots	Cunoniaceae	*Acsmithia reticulata* (Schltr.) Hoogland									X
dicots	Cunoniaceae	*Ceratopetalum succirubrum* C.T. White		V			X				
dicots	Cunoniaceae	*Pullea* sp.									S

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Table 9.2. *continued*

Vascular Plant Group	Family	Scientific Name	Infraspecific Taxon	IUCN STATUS	Occurrence (X = collection made; S = sight record)						
					Site 1 Kai-ingri	Site 2 Tualapa	Site 3 Umgé	Site 4 Wanakipa	Site 5 Gugusu	Site 6 Sawetau	Site 7 Apalu Reke
dicots	Cunoniaceae	*Schizomeria ilicina* (Ridl.) Schltr.								X	
dicots	Cunoniaceae	*Spiraeopsis papuana* (Pulle) L.M. Perry				X			X		
dicots	Cunoniaceae	*Weinmannia fraxinea* (D. Don) Miq.									X
dicots	Daphniphyllaceae	*Daphniphyllum gracile* Gage	var. *gracile*		X					S	
dicots	Datiscaceae	*Octomeles sumatrana* Miq.						S	S		
dicots	Dichapetalaceae	*Dichapetalum* sp.							S		
dicots	Dilleniaceae	*Dillenia montana* Diels								S	
dicots	Dilleniaceae	*Tetracera nordtiana* F. Muell.						S	S		
dicots	Dipterocarpaceae	*Vatica rassak* (Korth.) Blume							S		
dicots	Droseraceae	*Drosera peltata* Thunb.	subsp. *peltata*		X						X
dicots	Ebenaceae	*Diospyros* sp.				X			S		
dicots	Elaeagnaceae	*Elaeagnus triflora* Roxb.				X					
dicots	Elaeocarpaceae	*Aceratium* sp.							S	S	
dicots	Elaeocarpaceae	*Elaeocarpus culminicola* Warb.								S	
dicots	Elaeocarpaceae	*Elaeocarpus dolichostylus* Schltr.	subsp. *collinus* Coode							X	
dicots	Elaeocarpaceae	*Elaeocarpus sepikanus* Schltr.				X					
dicots	Elaeocarpaceae	*Sericolea pullei* (Lauterb.) Schltr.			X					X	X
dicots	Elaeocarpaceae	*Sloanea* cf. *forbesii* F. Muell.					X				
dicots	Elaeocarpaceae	*Sloanea* spp.					S		S	S	
dicots	Epacridaceae	*Styphelia suaveolens* (Hooker) Warburg			X						X
dicots	Epacridaceae	*Trochocarpa dekockii* (J.J. Sm.) H.J. Lam			X						X
dicots	Ericaceae	*Dimorphanthera alba* J.J. Sm.									X
dicots	Ericaceae	*Dimorphanthera alpina* J.J. Sm.	var. *alpina*		X						
dicots	Ericaceae	*Dimorphanthera cornuta* J.J. Sm.	var. *cornuta*		X						X
dicots	Ericaceae	*Dimorphanthera dekockii* J.J. Sm.	var. *pubiflora* Sleumer		X						
dicots	Ericaceae	Dimorphanthera keysseri (Diels) Stevens			X						X
dicots	Ericaceae	*Diplycosia rupicola* Sleumer			X					X	X
dicots	Ericaceae	*Rhododendron beyerinckianum* Koord.			X						X
dicots	Ericaceae	*Rhododendron commonae* Foerster									X
dicots	Ericaceae	*Rhododendron dielsianum* Schltr.	var. *stylotrichum* Schltr.								X

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Table 9.2. *continued*

Vascular Plant Group	Family	Scientific Name	Infraspecific Taxon	IUCN STATUS	Occurrence (X = collection made; S = sight record)						
					Site 1 Kai-ingri	Site 2 Tualapa	Site 3 Umgé	Site 4 Wanakipa	Site 5 Gugusu	Site 6 Sawetau	Site 7 Apalu Reke
dicots	Ericaceae	*Rhododendron disterigmoides* Sleumer	subsp. *disterigmoides*								X
dicots	Ericaceae	*Rhododendron* (close to) *disterigmoides* Sleumer subsp. *Disterigmoides*	subsp. *disterigmoides*							X	X
dicots	Ericaceae	*Rhododendron englerianum* Koord.							X		
dicots	Ericaceae	*Rhododendron gracilentum* F. Muell.									X
dicots	Ericaceae	*Rhododendron inconspicuum* J.J. Sm.								X	X
dicots	Ericaceae	*Rhododendron konori* Becc.				X					
dicots	Ericaceae	*Rhododendron nummatum* J.J. Sm.									X
dicots	Ericaceae	*Rhododendron scabridibracteum* Sleumer			X						
dicots	Ericaceae	*Rhododendron zoelleri* Warb.				X					
dicots	Ericaceae	*Rhododendron* sp. nov., aff. *multinervium* Sleumer									X
dicots	Ericaceae	*Rhododendron* sp. A									X
dicots	Ericaceae	*Rhododendron* sp. B									X
dicots	Ericaceae	*Vaccinium acrobracteatum* Sleumer				X					
dicots	Ericaceae	*Vaccinium amblyandrum* F. Muell.	var. *amblyandrum*								X
dicots	Ericaceae	*Vaccinium* (close to) *finisterrae* Schltr.									X
dicots	Ericaceae	*Vaccinium hatamense* Becc.								X	
dicots	Ericaceae	*Vaccinium obatapaquiniorum* Takeuchi, or aff.								X	
dicots	Ericaceae	*Vaccinium reticulato-venosum* Sleumer								X	
dicots	Ericaceae	*Vaccinium sanguineum* Schltr.								X	
dicots	Ericaceae	*Vaccinium schoddei* Sleumer									X
dicots	Ericaceae	*Vaccinium stellae-montis* Sleumer			X						X
dicots	Ericaceae	*Vaccinium striicaule* Sleumer	var. *striicaule*		X						X
dicots	Ericaceae	*Vaccinium striicaule* Sleumer	var. *adenodes* Sleumer		X						
dicots	Ericaceae	*Vaccinium subulisepalum* J.J. Sm.								X	
dicots	Ericaceae	*Vaccinium* sp., aff. *'oreomyrtus-oranjense* group"								X	
dicots	Euphorbiaceae	A*calypha hellwigii* Warb.	var. *mollis* (Warb.) K. Schum. & Lauterb.			X				S	
dicots	Euphorbiaceae	*Antidesma excavatum* Miq.							X	X	
dicots	Euphorbiaceae	*Antidesma* sp.					X				

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Table 9.2. *continued*

Vascular Plant Group	Family	Scientific Name	Infraspecific Taxon	IUCN STATUS	Occurrence (X = collection made; S = sight record)						
					Site 1 Kai-ingri	Site 2 Tualapa	Site 3 Umgé	Site 4 Wanakipa	Site 5 Gugusu	Site 6 Sawetau	Site 7 Apalu Reke
dicots	Euphorbiaceae	*Aporosa papuana* Pax & Hoffm.							X		
dicots	Euphorbiaceae	*Aporosa* sp.								X	
dicots	Euphorbiaceae	*Breynia cernua* (Poir.) Muell. Arg.								S	
dicots	Euphorbiaceae	*Claoxylon* sp.									S
dicots	Euphorbiaceae	*Codiaeum* aff. *finisterrae* Pax					X				
dicots	Euphorbiaceae	*Codiaeum* sp.								X	
dicots	Euphorbiaceae	*Galearia celebica* Koord. var. *celebica*							S		
dicots	Euphorbiaceae	*Glochidion angulatum* C.B. Rob.				X					
dicots	Euphorbiaceae	*Glochidion chondrocarpum* Airy Shaw, or aff.							X		
dicots	Euphorbiaceae	*Glochidion fulvirameum* Miq.				X					
dicots	Euphorbiaceae	*Glochidion galorii* Airy Shaw				X					
dicots	Euphorbiaceae	*Glochidion macrocarpum* Bl.								S	
dicots	Euphorbiaceae	*Glochidion novoguineens*e K. Schum.						X	S	S	
dicots	Euphorbiaceae	*Glochidion phyllochlamys* Airy Shaw					X				
dicots	Euphorbiaceae	*Glochidion welzenii* Takeuchi								X	
dicots	Euphorbiaceae	*Glochidion* sp., aff. "*dumicola-oogynum facies*"									X
dicots	Euphorbiaceae	*Macaranga* cf. *albescens* Perry								X	
dicots	Euphorbiaceae	*Macaranga aleuritoides* F. Muell.						S	S	S	
dicots	Euphorbiaceae	*Macaranga densiflora* Warb.						X			
dicots	Euphorbiaceae	*Macaranga papuana* J.J. Sm.							S		
dicots	Euphorbiaceae	*Macaranga reiteriana* Pax & Hoffm.								S	
dicots	Euphorbiaceae	*Macaranga tessellata* Gage								S	
dicots	Euphorbiaceae	*Macaranga* sp. nov. A, *Dioica* Group								X	
dicots	Euphorbiaceae	M*allotus paniculatus* (Lam.) Müll. Arg.						S			
dicots	Euphorbiaceae	*Manihot esculenta* Crantz						S			
dicots	Euphorbiaceae	*Omalanthus nervosus* J.J. Sm.									X
dicots	Euphorbiaceae	*Omalanthus novoguineensis* (Warb.) K. Schum.				X				S	
dicots	Euphorbiaceae	*Phyllanthus archboldianus* Airy Shaw & Webster						X			
dicots	Euphorbiaceae	*Phyllanthus ciccoides* Müll. Arg.								S	
dicots	Euphorbiaceae	*Phyllanthus clamboides* (F. Muell.) Diels				X					
dicots	Euphorbiaceae	*Pimelodendron amboinicum* Hassk.						S	S		

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Table 9.2. *continued*

Vascular Plant Group	Family	Scientific Name	Infraspecific Taxon	IUCN STATUS	Occurrence (X = collection made; S = sight record)						
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dicots	Euphorbiaceae	genus indet.							X		
dicots	Fabaceae	*Arachis hypogaea* L.						S			
dicots	Fabaceae	*Archidendron* cf. *lucyi* F. Muell.							S		
dicots	Fabaceae	*Archidendron* (closest to) *sessile* (Scheff.) de Wit						X			
dicots	Fabaceae	*Cassia alata* L.						S			
dicots	Fabaceae	*Dahlbergia* sp.						S			
dicots	Fabaceae	*Inocarpus glabellus* Adema							X		
dicots	Fabaceae	*Intsia bijuga* (Colebr.) Kuntze		V					S		
dicots	Fabaceae	*Maniltoa* spp.				S		S	S		
dicots	Fabaceae	*Milletia pinnata* (L.) Panigrahi						S			
dicots	Fabaceae	*Mimosa pudica* L.						S			
dicots	Fabaceae	*Mucuna schlechteri* Harms					X				
dicots	Fabaceae	*Phaseolus vulgaris* L.						S			
dicots	Fabaceae	*Pueraria pulcherrima* (Koord.) Koord.-Schumacher						S	X		
dicots	Fabaceae	*Rhynchosia acuminatissima* Miq.					X				
dicots	Fagaceae	*Castanopsis acuminatissima* (Bl.) A. DC.				S				S	
dicots	Fagaceae	*Lithocarpus celebicus* (Miq.) Rehder				X			S		
dicots	Fagaceae	*Lithocarpus rufovillosus* (Markgrf.) Rehder					S				S
dicots	Fagaceae	*Lithocarpus schlechteri* Markgraf					S		S	S	
dicots	Fagaceae	*Nothofagus starkenborghii* Steenis					S			X	
dicots	Flagellariaceae	*Flagellaria indica* L.				S		S	S		
dicots	Gentianaceae	*Gentiana ettingshausenii* F. Muell.			X						X
dicots	Gesneriaceae	*Aeschynanthus* sp. A				X			X		
dicots	Gesneriaceae	*Aeschynanthus* sp. B								X	
dicots	Gesneriaceae	*Aeschynanthus* sp. C									X
dicots	Gesneriaceae	*Agalmyla* sp.							X		
dicots	Gesneriaceae	*Cyrtandra bracteata* Warb.							X		
dicots	Gesneriaceae	*Cyrtandra* cf. *decurrens* de Vriese							X		
dicots	Gesneriaceae	*Cyrtandra fusco-vellea* K. Schum.								X	
dicots	Gesneriaceae	*Cyrtandra hispidissima* Schltr.								X	
dicots	Gesneriaceae	*Cyrtandra* sp. A, sect. Geodesme								S	
dicots	Gesneriaceae	*Cyrtandra* sp. B				X					
dicots	Goodeniaceae	*Scaevola oppositifolia* R. Br.				S		S	S		
dicots	Haloragaceae	*Gonocarpus halconensis* (Merr.) Orchard								S	

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Table 9.2. *continued*

Vascular Plant Group	Family	Scientific Name	Infraspecific Taxon	IUCN STATUS	Occurrence (X = collection made; S = sight record)						
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dicots	Haloragaceae	*Gunnera macrophylla* Bl.			X					S	
dicots	Hernandiaceae	*Hernandia ovigera* L.						S			
dicots	Hypericaceae	*Hypericum papuanum* Ridl.			X						
dicots	Icacinaceae	*Rhyticaryum longifolium* Lauterb. & K. Schum.				X			S		
dicots	Juglandaceae	*Engelhardia rigida* Bl.				X					
dicots	Lamiaceae	*Callicarpa longifolia* Lam.						S			
dicots	Lamiaceae	*Clerodendrum buruanum* Miq.							X		
dicots	Lamiaceae	*Geunsia pentandra* (Roxb.) Merr.						S			
dicots	Lamiaceae	*Hyptis capitata* Jacq.						S			
dicots	Lamiaceae	*Ocimum gratissimum* L.						S			
dicots	Lamiaceae	*Premna serratifolia* L.						S			
dicots	Lamiaceae	*Stachytarpheta jamaicensis* (L.) Vahl						S			
dicots	Lauraceae	*Actinodaphne nitida* Teschner				S			S		
dicots	Lauraceae	*Cinnamomum* sp.				X					
dicots	Lauraceae	*Cryptocarya* sp. A, *"multipaniculata* group"				S			S		
dicots	Lauraceae	*Cryptocarya* spp.				S	S		S	S	
dicots	Lauraceae	*Endiandra* cf. *papuana* Lauterb.; "*papuana-glauca* group"							X		
dicots	Lauraceae	*Litsea ledermannii* Teschner				X					
dicots	Lauraceae	*Litsea* spp.					S			S	
dicots	Lauraceae	*Persea americana* L.						S			
dicots	Lecythidaceae	*Barringtonia jebbiana* Takeuchi								X	
dicots	Lecythidaceae	*Barringtonia josephstaalensis* Takeuchi							X		
dicots	Lecythidaceae	*Planchonia papuana* Merr. & Perry						S			
dicots	Loganiaceae	*Fagraea ceilanica* Thunb.					X		S	S	
dicots	Loganiaceae	*Fagraea dolichopoda* Gilg & Bened.								X	
dicots	Loganiaceae	*Fagraea elliptica* Roxb.						S	S		
dicots	Loganiaceae	*Fagraea racemosa* Jack						S	S		
dicots	Loganiaceae	*Geniostoma rupestre* J.R. & G. Forst.					X				
dicots	Loganiaceae	*Geniostoma* sp.							S		
dicots	Loganiaceae	*Neuburgia corynocarpa* (A. Gray) Leenh.						S	S		
dicots	Loranthaceae	*Amyema wichmannii* (Krause) Danser			X						X
dicots	Loranthaceae	*Decaisnina* cf. *hollrungii* (K. Schum.) Barlow							S		

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Table 9.2. *continued*

Vascular Plant Group	Family	Scientific Name	Infraspecific Taxon	IUCN STATUS	Occurrence (X = collection made; S = sight record)						
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dicots	Magnoliaceae	*Magnolia candollii* (Bl.) H. Keng	var. *candollii*			X					
dicots	Magnoliaceae	*Magnolia tsiampaca* (L.) Figlar & Noot.							S		
dicots	Malvaceae	*Abroma augusta* L.						S			
dicots	Malvaceae	*Commersonia bartramia* (L.) Merr.						S			
dicots	Malvaceae	*Hibiscus rosa-sinensis* L.						S			
dicots	Malvaceae	*Hibiscus* sp.				S		S			
dicots	Malvaceae	*Microcos* sp.				S		S	S		
dicots	Malvaceae	*Sida rhombifolia* L.									S
dicots	Malvaceae	*Sterculia macrophylla* Vent.				S					
dicots	Malvaceae	*Sterculia schumanniana* (Lauterb.) Mildbr.				X					
dicots	Malvaceae	*Theobroma cacao* L.						S			
dicots	Malvaceae	*Trichospermum pleiostigma* (F. Muell.) Kosterm.				X					
dicots	Malvaceae	*Triumfetta* sp., "*nigricans-pilosa*" facies				X					
dicots	Malvaceae	*Urena lobata* L.				X					
dicots	Melastomataceae	*Astronia ledermannii* Mansf.							X		
dicots	Melastomataceae	*Beccarianthus* sp.								X	
dicots	Melastomataceae	*Dissochaeta angiensis* Ohwi				X					
dicots	Melastomataceae	*Dissochaeta schumannii* Cogn.							S		
dicots	Melastomataceae	*Medinilla dentata* Veldk.								X	
dicots	Melastomataceae	*Medinilla sogerensis* Bak. f.								X	
dicots	Melastomataceae	*Medinilla* sp. A, "*quadrifolia* group"				X					
dicots	Melastomataceae	*Medinilla* sp. B, sect. *Heteroblemma*							S		
dicots	Melastomataceae	*Medinilla* sp. C							X		
dicots	Melastomataceae	*Medinilla* sp. D								X	
dicots	Melastomataceae	*Medinilla* sp. E								X	
dicots	Melastomataceae	*Memecylon* cf. *schraderbergense* Mansf.				X					
dicots	Melastomataceae	*Memecylon* sp.					X				
dicots	Melastomataceae	*Poikilogyne cordifolia* (Cogn.) Mansf.								S	
dicots	Meliaceae	*Aglaia agglomerata* Merr. & Perry		NT					S		
dicots	Meliaceae	*Aglaia argentea* Bl.				X			S		
dicots	Meliaceae	*Aglaia sapindina* (F. Muell.) Harms				X			X		
dicots	Meliaceae	*Aphanamixis polystachya* (Wall.) R.N. Parker							S		

table continued on next page

Table 9.2. *continued*

Vascular Plant Group	Family	Scientific Name	Infraspecific Taxon	IUCN STATUS	Occurrence (X = collection made; S = sight record)						
					Site 1 Kai-ingri	Site 2 Tualapa	Site 3 Umgé	Site 4 Wanakipa	Site 5 Gugusu	Site 6 Sawetau	Site 7 Apalu Reke
dicots	Meliaceae	*Chisocheton lasiocarpus* (Miq.) Valeton							X		
dicots	Meliaceae	*Dysoxylum arborescens* (Bl.) Miq.				X					
dicots	Meliaceae	*Dysoxylum brevipaniculum* C. DC.							X		
dicots	Meliaceae	*Dysoxylum gaudichaudianum* (A. Juss.) Miq.							S		
dicots	Meliaceae	*Dysoxylum parasiticum* (Osb.) Kosterm.							X		
dicots	Meliaceae	*Dysoxylum setosum* (Span.) Miq.								X	
dicots	Meliaceae	*Dysoxylum* variabile Harms				X			S		
dicots	Meliaceae	*Dysoxylum* sp.									X
dicots	Menispermaceae	*Hypserpa calcicola* Takeuchi				X					
dicots	Menispermaceae	*Stephania japonica* (Thunb. ex Murr.) Miers							S		
dicots	Monimiaceae	*Kairoa endressiana* Takeuchi & Renner				X					
dicots	Monimiaceae	*Kibara* sp.								S	
dicots	Monimiaceae	*Levieria squarrosa* Perkins			X					S	S
dicots	Monimiaceae	*Palmeria arfakiana* Becc.			X					X	
dicots	Monimiaceae	*Palmeria brassii* Philipson					X				
dicots	Monimiaceae	*Palmeria* sp.								S	
dicots	Monimiaceae	*Steganthera hirsuta* (Warb.) Perkins								S	S
dicots	Monimiaceae	*Steganthera hospitans* (Becc.) Kaneh. & Hatus.				X					
dicots	Monimiaceae	*Steganthera* sp.								X	
dicots	Moraceae	*Ficus adenosperma* Miq.								X	
dicots	Moraceae	*Ficus bernaysii* King							S		
dicots	Moraceae	*Ficus camptandra* Diels				X					
dicots	Moraceae	*Ficus edelfeltii* King					X				
dicots	Moraceae	*Ficus glandulifera* (Wall. ex Miq.) King				X					
dicots	Moraceae	*Ficus gul* Lauterb. & K. Schum.				X			S		
dicots	Moraceae	*Ficus histricicarpa* Warb.					X				
dicots	Moraceae	*Ficus hypophaea* Schltr. ex Diels				X					
dicots	Moraceae	*Ficus pungens* Reinw. ex Bl.							S		
dicots	Moraceae	*Ficus subcuneata* Miq.				X					
dicots	Moraceae	*Ficus subulata* Bl.				X					
dicots	Moraceae	*Ficus subulata* Bl.	var. *gracillima* (Diels) Corner				X				
dicots	Moraceae	*Ficus wassa* Roxb.							S		

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Table 9.2. *continued*

Vascular Plant Group	Family	Scientific Name	Infraspecific Taxon	IUCN STATUS	Occurrence (X = collection made; S = sight record)						
					Site 1 Kai-ingri	Site 2 Tualapa	Site 3 Umgé	Site 4 Wanakipa	Site 5 Gugusu	Site 6 Sawetau	Site 7 Apalu Reke
dicots	Moraceae	*Streblus glaber* (Merr.) Corner							X		
dicots	Moraceae	*Streblus urophyllus* Diels									X
dicots	Myristicaceae	*Gymnacranthera farquhariana* Warb.						S			
dicots	Myristicaceae	*Horsfieldia subtilis* (Miq.) Warb.						S			
dicots	Myristicaceae	*Horsfieldia* sp.							X		
dicots	Myristicaceae	*Myristica lancifolia* Poir.				S					
dicots	Myristicaceae	*Myristica subalulata* Miq.				X					
dicots	Myristicaceae	*Myristica* spp.							S	S	
dicots	Myrsinaceae	*Ardisia dasyneura* Mez, or aff.				X					
dicots	Myrsinaceae	*Ardisia* sp. A, subg. *Tinopsis*					X				
dicots	Myrsinaceae	*Ardisia* sp. B							X		
dicots	Myrsinaceae	*Conandrium polyanthum* (Lauterb. & K. Schum.) Mez				S				S	
dicots	Myrsinaceae	*Discocalyx latepetiolata* (Mez) Sleumer								X	
dicots	Myrsinaceae	*Discocalyx pygmaea* Kaneh. & Hatus., or aff.							X		
dicots	Myrsinaceae	*Embelia cotinoides* (S. Moore) Merr.								S	
dicots	Myrsinaceae	*Fittingia headsiana* Takeuchi					X				
dicots	Myrsinaceae	*Fittingia* sp.							S		
dicots	Myrsinaceae	*Loheria reiniana* (Jacobs) Sleumer							X	X	
dicots	Myrsinaceae	*Maesa haplobotrys* F. Muell.							S		
dicots	Myrsinaceae	*Maesa protracta* F. Muell.				X					
dicots	Myrsinaceae	*Myrsine acrosticta* (Mez) Pipoly									X
dicots	Myrsinaceae	*Myrsine cacuminum* (Mez) Pipoly			X					X	
dicots	Myrsinaceae	*Myrsine leucantha* (K. Schum.) Pipoly									X
dicots	Myrtaceae	*Decaspermum alpinum* Royen									S
dicots	Myrtaceae	*Decaspermum bracteatum* (Roxb.) A.J. Scott				X			S	S	
dicots	Myrtaceae	*Kania eugenioides* Schltr.					S			X	
dicots	Myrtaceae	*Octamyrtus behrmannii* Diels				X					
dicots	Myrtaceae	*Octamyrtus pleiopetala* Diels								X	
dicots	Myrtaceae	*Psidium guajava* L.						S			
dicots	Myrtaceae	*Syzygium alatum* (Lauterb.) Diels			X						X
dicots	Myrtaceae	*Syzygium claviflorum* (Roxb.) Cowan & Cowan, or aff.				X					
dicots	Myrtaceae	*Syzygium effusum* (A. Gray) C. Muell.					S		S	?S	

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Table 9.2. *continued*

Vascular Plant Group	Family	Scientific Name	Infraspecific Taxon	IUCN STATUS	Occurrence (X = collection made; S = sight record)						
					Site 1 Kai-ingri	Site 2 Tualapa	Site 3 Umgé	Site 4 Wanakipa	Site 5 Gugusu	Site 6 Sawetau	Site 7 Apalu Reke
dicots	Myrtaceae	*Syzygium fastigiatum* (Bl.) Merr. & Perry					X				
dicots	Myrtaceae	*Syzygium* aff. *fastigiatum* (Bl.) Merr. & Perry				X					
dicots	Myrtaceae	*Syzygium* aff. *goniopterum* (Diels) Merr. & Perry				X					
dicots	Myrtaceae	*Syzygium malaccense* (L.) Merr. & Perry				X	X		S	S	
dicots	Myrtaceae	*Syzygium richardsonianum* Merr. & Perry				X				S	
dicots	Myrtaceae	*Syzygium versteegii* (Laut.) Merr. & Perry				X					
dicots	Myrtaceae	*Syzygium* sp. nov. (angled FR)							X		
dicots	Myrtaceae	*Syzygium* sp. A							X		
dicots	Myrtaceae	*Xanthomyrtus bryophila* Diels									X
dicots	Myrtaceae	*Xanthomyrtus compacta* (Ridley) Diels			X						
dicots	Myrtaceae	*Xanthomyrtus humilis* Merr. & Perry									X
dicots	Myrtaceae	*Xanthomyrtus montivaga* A.J. Scott									X
dicots	Myrtaceae	*Xanthomyrtus papuana* Merr. & Perry									X
dicots	Myrtaceae	*Xanthomyrtus scolopacina* (Ridley) Diels									X
dicots	Myrtaceae	*Xanthomyrtus* sp. nov., aff. *compacta* (Ridley) Diels									X
dicots	Nepenthaceae	*Nepenthes ampullaria* Jack					S				
dicots	Nepenthaceae	*Nepenthes mirabilis* (Lour.) Druce				S			S		
dicots	Nyctaginaceae	*Pisonia longirostris* Teijsm. & Binn.						S	S		
dicots	Ochnaceae	*Schuurmansia henningsii* K. Schum.					S		S	S	
dicots	Olacaceae	*Anacolosa papuana* Schellenb.				X			X		
dicots	Olacaceae	*Olax imbricata* Roxb.				X					
dicots	Oleaceae	*Jasminum domatiigerum* Lingelsh.			X					S	
dicots	Onagraceae	*Epilobium hooglandii* Raven			X						
dicots	Onagraceae	*Epilobium keysseri* Diels			X						
dicots	Onagraceae	*Epilobium* sp.								S	S
dicots	Onagraceae	*Ludwigia octovalvis* (Jacq.) Raven				X				S	
dicots	Passifloraceae	*Passiflora foetida* L.						S			
dicots	Piperaceae	*Peperomia pellucida* (L.) Kunth						S			
dicots	Piperaceae	*Peperomia* sp.								X	
dicots	Piperaceae	*Piper abbreviatum* Opiz									X

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Table 9.2. *continued*

Vascular Plant Group	Family	Scientific Name	Infraspecific Taxon	IUCN STATUS	Occurrence (X = collection made; S = sight record)						
					Site 1 Kai-ingri	Site 2 Tualapa	Site 3 Umgé	Site 4 Wanakipa	Site 5 Gugusu	Site 6 Sawetau	Site 7 Apalu Reke
dicots	Piperaceae	*Piper caninum* Bl.							S		
dicots	Piperaceae	*Piper gibbilimbum* C. DC.							X		
dicots	Piperaceae	*Piper macropiper* Pennant							S	S	
dicots	Pittosporaceae	*Pittosporum pullifolium* Burkill			X						X
dicots	Pittosporaceae	*Pittosporum ramiflorum* (Zoll. & Mor.) Miq.			X	X			X		
dicots	Pittosporaceae	*Pittosporum sinuatum* Bl.				S		S	S		
dicots	Polygalaceae	*Epirixanthes papuana* J.J. Sm.					X				
dicots	Polygalaceae	*Polygala paniculata* L.						S			
dicots	Polygonaceae	*Polygonum nepalense* Meissn.			X						
dicots	Polygonaceae	*Rumex brownii* Campd.			X						
dicots	Polyosmaceae	*Polyosma cestroides* Schltr.									S
dicots	Polyosmaceae	*Polyosma* cf. *dentata* Schltr.								X	
dicots	Polyosmaceae	*Polyosma* sp. ?nov.								X	
dicots	Proteaceae	*Finschia chloroxantha* Diels				X					
dicots	Proteaceae	*Helicia acutifolia* Sleumer							X		
dicots	Proteaceae	*Helicia amplifolia* Sleumer				X					
dicots	Rhamnaceae	*Alphitonia excelsa* (Fenzl) Reiss. ex Endl.				X			X		
dicots	Rhamnaceae	*Rhamnus nipalensis* (Wall.) Lawson ex Hook.								S	
dicots	Rosaceae	*Acaena anserinifolia* (Forst.) Druce			X						S
dicots	Rosaceae	*Potentilla* sp.									S
dicots	Rosaceae	*Prunus pullei* (Koehne) Kalkm.									X
dicots	Rosaceae	*Prunus* sp.				X					
dicots	Rosaceae	*Rubus archboldianus* Merr. & Perry			X						
dicots	Rosaceae	*Rubus chrysogaeus* P. Royen				X					
dicots	Rosaceae	*Rubus diclinus* F. Muell.			X						
dicots	Rosaceae	*Rubus lorentzianus* Pulle			X						
dicots	Rosaceae	*Rubus moluccanus* L.							S	S	S
dicots	Rosaceae	*Rubus montis-wilhelmi* P. Royen			X						
dicots	Rosaceae	*Rubus papuana* Schltr. ex Diels			X						
dicots	Rosaceae	*Rubus royenii* Kalkm.									X
dicots	Rosaceae	*Rubus royenii* Kalkm.	var. *hispidus* Kalkm.		X						
dicots	Rousseaceae	*Buddleja asiatica* Lour.				S					
dicots	Rousseaceae	*Carpodetus arboreus* (K. Schum. & Lauterb.) Schltr.									S
dicots	Rubiaceae	*Amaracarpus* sp.								X	

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Table 9.2. *continued*

Vascular Plant Group	Family	Scientific Name	Infraspecific Taxon	IUCN STATUS	Occurrence (X = collection made; S = sight record)						
					Site 1 Kai-ingri	Site 2 Tualapa	Site 3 Umgé	Site 4 Wanakipa	Site 5 Gugusu	Site 6 Sawetau	Site 7 Apalu Reke
dicots	Rubiaceae	*Argostemma* aff. *bryophilum* K. Schum.							X		
dicots	Rubiaceae	*Atractocarpus decorus* (Val.) Puttock				X					
dicots	Rubiaceae	*Coffea arabica* L.						S			
dicots	Rubiaceae	*Coprosma brassii* Merr. & Perry			X						
dicots	Rubiaceae	*Coprosma papuensis* Oliv.									X
dicots	Rubiaceae	*Cyclophyllum* cf. *caudatum* (Valeton) A.P. Davis & Ruhsam				X			X		
dicots	Rubiaceae	*Galium subtrifidum* Reinw.			X						
dicots	Rubiaceae	*Gardenia pallens* Merr. & Perry					X				
dicots	Rubiaceae	*Hedyotis* cf. *radicans* (DC.) Miq.				X					
dicots	Rubiaceae	*Hedyotis* sp., "*auricularia-lapeyrousii*" facies				X			X		
dicots	Rubiaceae	*Hydnophytum* sp.							S		
dicots	Rubiaceae	*Ixora* cf. *leptopus* Valeton							S		
dicots	Rubiaceae	*Ixora* sp.				X					
dicots	Rubiaceae	*Lasianthus stipularis* Blume, or aff.				X			X		
dicots	Rubiaceae	*Lasianthus* cf. *tomentosus* Bl.					X				
dicots	Rubiaceae	*Lasianthus* sp.				X					
dicots	Rubiaceae	*Morinda citrifolia* L.						S			
dicots	Rubiaceae	*Mussaenda ferruginea* K. Schum.				X					
dicots	Rubiaceae	*Mycetia javanica* (Bl.) Reinw. ex Korth.				X			S		
dicots	Rubiaceae	*Myrmecodia* sp.								S	
dicots	Rubiaceae	*Nauclea orientalis* (L.) L.						S			
dicots	Rubiaceae	*Ophiorrhiza* sp. A				X					
dicots	Rubiaceae	*Ophiorrhiza* sp. B								X	
dicots	Rubiaceae	*Psychotria amplithyrsa* Valeton					X			X	
dicots	Rubiaceae	*Psychotria apiculata* Warburg								S	
dicots	Rubiaceae	*Psychotria aquatilis* Merr. & Perry							X	X	
dicots	Rubiaceae	*Psychotria aurea* Lauterb.				X					
dicots	Rubiaceae	*Psychotria chrysantha* Merr. & Perry								X	
dicots	Rubiaceae	*Psychotria defretesiana* (Takeuchi) Takeuchi, ined.							X		
dicots	Rubiaceae	*Psychotria dieniensis* Merr. & Perry					X			X	
dicots	Rubiaceae	*Psychotria leucococca* Laut.							X	X	
dicots	Rubiaceae	*Psychotria* cf. *multicostata* Val.								X	
dicots	Rubiaceae	*Psychotria stevedarwiniana* Takeuchi ined.								X	

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Table 9.2. *continued*

Vascular Plant Group	Family	Scientific Name	Infraspecific Taxon	IUCN STATUS	Occurrence (X = collection made; S = sight record)						
					Site 1 Kai-ingri	Site 2 Tualapa	Site 3 Umgé	Site 4 Wanakipa	Site 5 Gugusu	Site 6 Sawetau	Site 7 Apalu Reke
dicots	Rubiaceae	*Psychotria stolonifera* Takeuchi								X	
dicots	Rubiaceae	*Psychotria ternatifolia* Takeuchi								X	
dicots	Rubiaceae	*Psychotria* sp. nov. "*glomerata*"							X		
dicots	Rubiaceae	*Psychotria* sp. nov., aff. *magnasepala* Sohmer			X						
dicots	Rubiaceae	*Psychotria* sp. A (vining)							X		
dicots	Rubiaceae	*Psychotria* sp. B (vining)									X
dicots	Rubiaceae	*Psychotria* sp. C				X					
dicots	Rubiaceae	*Saprosma subrepandum* (K. Schum. & Lauterb.) Valeton							X		
dicots	Rubiaceae	*Schradera ramiflora* (Valeton) Puff, Buchner & Greimler							X		
dicots	Rubiaceae	*Tarenna buruensis* (Miq.) Valeton							X		
dicots	Rubiaceae	*Timonius avenis* Val.									X
dicots	Rubiaceae	*Timonius belensis* Merr. & Perry			X						X
dicots	Rubiaceae	*Timonius grandifolius* Valeton							X		
dicots	Rubiaceae	*Timonius* sp. A, "*laevigatus-pulposus* group"				X					
dicots	Rubiaceae	*Timonius* sp. B								X	
dicots	Rubiaceae	*Uncaria lanosa* Wall.	var. *appendiculata* (Benth.) Ridsd.						S		
dicots	Rubiaceae	*Urophyllum* (closest to) *brittanicum* Wernh.					X				
dicots	Rubiaceae	*Urophyllum pubescens* Val.				X					
dicots	Rubiaceae	*Urophyllum* sp.							X		
dicots	Rubiaceae	*Versteegia* sp.							X		
dicots	Rubiaceae	*Wendlandia paniculata* (Roxb.) DC.				X			X		
dicots	Rutaceae	*Acronychia murina* Ridley									X
dicots	Rutaceae	*Acronychia trifoliolata* Zoll. & Mor.	var. *ampla* Hartley			X					
dicots	Rutaceae	*Flindersia pimenteliana* F. Muell.		E					S		
dicots	Rutaceae	*Halfordia kendack* (Montrouz.) Guillaumin					S			X	
dicots	Rutaceae	*Melicope brassii* T.G. Hartley									X
dicots	Rutaceae	*Melicope denhamii* (Seem.) Hartley				X					
dicots	Rutaceae	*Melicope novoguineensis* Valeton				X	X		X	X	
dicots	Rutaceae	*Melicope reticulata* Lauterb.									X
dicots	Rutaceae	*Melicope robbinsii* Hartley			X						
dicots	Rutaceae	*Triphasia brassii* (C.T. White) Swingle				X	X				
dicots	Salicaceae	*Casearia macrantha* Gilg				X					

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Table 9.2. *continued*

Vascular Plant Group	Family	Scientific Name	Infraspecific Taxon	IUCN STATUS	Occurrence (X = collection made; S = sight record)						
					Site 1 Kai-ingri	Site 2 Tualapa	Site 3 Umgé	Site 4 Wanakipa	Site 5 Gugusu	Site 6 Sawetau	Site 7 Apalu Reke
dicots	Salicaceae	*Casearia* sp. A					X				
dicots	Salicaceae	*Casearia* sp. B							X		
dicots	Santalaceae	*Cladomyza* sp.									X
dicots	Santalaceae	*Scleropyrum leptostachyum* Pilg.				X				X	
dicots	Sapindaceae	*Cupaniopsis curvidens* Radlk.				X					
dicots	Sapindaceae	*Harpullia cupanioides* Roxb.				X					
dicots	Sapindaceae	*Harpullia mabberleyana* Takeuchi				X					
dicots	Sapindaceae	*Harpullia ramiflora* Radlk.				X			X		
dicots	Sapindaceae	*Harpullia rhachiptera* Radlk.							X		
dicots	Sapindaceae	*Lepisanthes senegalensis* (Poir.) Leenh.				X					
dicots	Sapindaceae	*Mischocarpus* cf. *pyriformis* (F. Muell.) Radlk.							X		
dicots	Sapindaceae	*Mischocarpus* sp.				X					
dicots	Sapindaceae	*Pometia pinnata* Forst.				S		S	S		
dicots	Scrophulariaceae	*Limophila* sp.				X					
dicots	Solanaceae	*Capsicum anuum* L.						S			
dicots	Solanaceae	*Nicotiana tabacum* L.						S			
dicots	Solanaceae	*Physalis peruviana* L.				X					
dicots	Solanaceae	*Solanum memecylonoides* Bitter & Schltr.				X					
dicots	Solanaceae	*Solanum oliverianum* Lauterb. & K. Schum.							S	X	
dicots	Solanaceae	*Solanum rostellatum* M. & P.				X					
dicots	Solanaceae	*Solanum* sp.				X	X				
dicots	Sphenostemonaceae	*Quintinia brassii* Reeder					S			X	
dicots	Sphenostemonaceae	*Quintinia kuborensis* Royen									X
dicots	Sphenostemonaceae	*Quintinia* cf. *macgregorii* F. Muell.			X						
dicots	Sphenostemonaceae	*Sphenostemon papuanus* (Laut.) Steen. & Erdtman					S			S	S
dicots	Stemonuraceae	*Gomphandra* sp.				X					
dicots	Stemonuraceae	*Medusanthera laxiflora* (Miers) Howard						S			
dicots	Symplocaceae	*Symplocos cochinchinensis* (Lour.) S. Moore			X		X			X	
dicots	Theaceae	*Eurya brassii* Kobuski			X						S
dicots	Theaceae	*Eurya tigang* K. Schum. & Lauterb.								S	
dicots	Theaceae	*Gordonia papuana* Kobuski					S			S	S
dicots	Theaceae	*Ternstroemia britteniana* F. Muell.									X

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Table 9.2. *continued*

Vascular Plant Group	Family	Scientific Name	Infraspecific Taxon	IUCN STATUS	Occurrence (X = collection made; S = sight record)						
					Site 1 Kai-ingri	Site 2 Tualapa	Site 3 Umgé	Site 4 Wanakipa	Site 5 Gugusu	Site 6 Sawetau	Site 7 Apalu Reke
dicots	Theaceae	*Ternstroemia* cf. *merrilliana* Kobuski				X			S		
dicots	Thymelaeaceae	*Phaleria coccinea* (Gaudich.) F. Muell.				X				X	
dicots	Thymelaeaceae	*Phaleria macrocarpa* (Scheff.) Boerl.					X				
dicots	Trimeniaceae	*Trimenia papuana* Ridl.								S	S
dicots	Ulmaceae	*Celtis* sp.							X		
dicots	Ulmaceae	*Gironniera subaequalis* Planch.				S		S			
dicots	Ulmaceae	*Trema orientalis* (L.) Blume						S			
dicots	Urticaceae	*Cypholophus treubii* (H. Winkl.)	var. *aciculata* Takeuchi		X						
dicots	Urticaceae	*Cypholophus* sp.								X	
dicots	Urticaceae	*Elatostema macrophylla* Brogn.						X			
dicots	Urticaceae	*Elatostema sesquifolium* (Reinw.) Hassk.							S		
dicots	Urticaceae	*Elatostema* sp.								S	
dicots	Urticaceae	*Laportea decumana* (Roxb.) Wedd.						S			
dicots	Urticaceae	*Leucosyke capitellata* (Poir.) Chew						S			
dicots	Urticaceae	*Pilea* sp. A								X	
dicots	Urticaceae	*Pilea* sp. B								X	
dicots	Urticaceae	*Pipturus argenteus* (Forst. f.) Wedd.							S		
dicots	Urticaceae	*Pipturus montanus* Royen			X						
dicots	Urticaceae	*Poikilospermum amboinense* Zipp. ex Miq.							S		
dicots	Urticaceae	*Poikilospermum inaequale* Chew								S	
dicots	Urticaceae	*Procris gruningii* H.J.P. Winkl.								X	
dicots	Urticaceae	*Procris pedunculata* (Forst.) Wedd.							S		
dicots	Violaceae	*Viola* cf. *kjellbergii* Melchior									X
dicots	Vitaceae	*Cayratia japonica* (Thunb.) Gagnep.						S			
dicots	Vitaceae	*Cayratia* sp.							S		
dicots	Vitaceae	*Leea coryphantha* Lauterb.							X		
dicots	Vitaceae	*Leea indica* (Burm. f.) Merr.							S		
dicots	Vitaceae	*Leea zippeliana* Miq.							X		
dicots	Vitaceae	*Tetrastigma lauterbachianum* Gilg						S			
dicots	Winteraceae	*Drimys piperita* Hook.			X					X	X
dicots	Winteraceae	*Zygogynum* sp. A			X					X	
dicots	Winteraceae	*Zygogynum* sp. B				X					
dicots	Xanthophyllaceae	*Xanthophyllum papuanum* Whitm. ex Meijden				X					

Menispermaceae
Hypserpa calcicola Takeuchi, Harvard Pap. Bot. 13 (2): 277-282, Figs. 1-6. 2008. TYPE: PAPUA NEW GUINEA. Southern Highlands Province, Strickland drainage, Tualapa, mature-growth forest on limestone karst, 5°17.003'S, 142°29.849'E, 1,120 m, 13 July 2008, *Takeuchi & Ama 24081* (holotype: LAE; isotype: A).

Hypserpa calcicola is only the second Malesian addition to the genus within the last 100 years. Antiviral activity has been reported in *Hypserpa* (Cheng et al. 2007) but the two endemic species (*H. ademae* Takeuchi the second species) have yet to be investigated for possible medicinal values.

Monimiaceae
Kairoa endressiana Takeuchi & Renner, Harvard Pap. Bot. 14 (1): 71-81, Figs. 2–4. 2009. TYPE: PAPUA NEW GUINEA. Southern Highlands Province, Strickland drainage, Tualapa, premontane forest on limestone karst, 5°17.260'S, 142°29.995'E, 1,140 m, 16 July 2008, *Takeuchi & Ama 24165* (holotype: LAE; isotypes: A, K, L, M, MO, US).

Additional specimen examined: Southern Highlands Province, Strickland drainage, Tualapa, limestone forest along fast-flowing stream, 5°17'07'S, 142°29'44'E, 1,050 m, 12 July 2008, *Takeuchi & Ama 24034* (A, BO, CANB, L, LAE, M).

With the discovery of *Kairoa endressiana*, the monotypic *Faika* was eliminated and transferred to *Kairoa* (Renner and Takeuchi 2009). The Strickland species is only the third member of its genus and the most geographically localized representative.

Myrsinaceae
Fittingia headsiana Takeuchi, Harvard Pap. Bot. 15 (1): 37, Fig. 1. 2010. TYPE: PAPUA NEW GUINEA. Southern Highlands Province, Strickland drainage, Umgé, mossy montane forest on doline karst, 5°18.245'S, 142°30.704'E, 1,440 m, 21 July 2008, *Takeuchi & Ama 24243* (holotype: LAE; isotypes: A, and two undistributed duplicates).

This is the ninth species in a genus endemic to the New Guinea mainland, and the only one (as far as can be determined) with paniculate female plants (Takeuchi 2010c). The novelty from the Umgé karst is the second *Fittingia* species discovered on the southern limestone.

Myrtaceae
Syzygium sp. nov.

Specimen examined: Western Province, Strickland drainage, Muller Range, Gugusu (Expedition Camp 1), lowland hill forest, 5°43.947'S, 142°15.973'E, 450 m, 7 September 2009, *Takeuchi, Ama, & Gamui 24488* (undistributed).

The undescribed *Syzygium* has conspicuously 8-12-ridged fruits, superficially resembling those of *Aristolochia*. No other Papuasian *Syzygium* has the exocarp sculpted in this manner. Although several fruiting individuals were seen during the survey, the anthetic flowers remain unknown.

Myrtaceae
Xanthomyrtus sp. nov., aff. X. compacta (Ridley) Diels

Specimen examined: Western Province, Muller Range, Apalu Reke (Expedition Camp 3), *Blechnum* fernland with patches of *Pandanus*-emergent mossy forest, 5°29.089'S, 142°18.083'E, 2,880 m, 20 September 2009, *Takeuchi, Ama & Gamui 24822* (undistributed).

The new *Xanthomyrtus* differs from related taxa by its clearly apiculate leaf-blades, white corolla, and anthetic filaments only 1 mm long.

Polypodiaceae
genus nov.

Specimen examined: Southern Highlands Province, Strickland drainage, Tualapa, 5°17.003'S, 142°29.849'E, 1,115 m, 23 July 2008, *Takeuchi & Ama 24318* (undistributed).

The new genus has the superficial appearance of a *Crypsinus* (= *Selliguea*) but its unusual venation provides immediate separation from the *Selliguea* complex.

Rubiaceae
Psychotria stevedarwiniana Takeuchi sp. nov. ined. TYPE: PAPUA NEW GUINEA. Western Province, Muller Range, Sawetau (Expedition Camp 2), *Nothofagus*-emergent montane forest on doline karst, 5°39.638'S, 142°18.018'E, 1,460 m, 15 September 2009, *Takeuchi, Ama, & Gamui 24688* (holotype: LAE; isotypes: A, K, L).

The new *Psychotria* can be instantly recognized by the remarkably large stipules consisting of an inflated tube with 4 lobules at the top. The epithet "*darwiniana*" has been preempted (Cheek et al. 2008), requiring adoption of the longer name.

Psychotria stolonifera Takeuchi, Phytotaxa 7: 25, Figs. 1-4. 2010. TYPE: PAPUA NEW GUINEA. Western Province, Muller Range, Sawetau (Expedition Camp 2), *Nothofagus*-emergent montane forest on doline karst, 5°39.652'S, 142°17.962'E, 1,425 m, 16 September 2009, *Takeuchi, Ama, & Gamui 24691* (holotype LAE; isotypes A, BO, K, L).

Additional specimens examined: Western Province, Muller Range, Expedition Camp 2, *Nothofagus*-emergent montane forest on doline karst, 5°39.530'S, 142°18.105'E, 1,495 m, 13 September 2009, *Takeuchi, Ama, & Gamui 24618A* (A, LAE); 5°39.638'S, 142°18.018'E, 1,460 m, 15 September 2009, *Takeuchi et al. 24683* (A, K, L, LAE); 5°39.610'S, 142°18.018'E, 1,450 m, 17 September 2009, *Takeuchi et al. 24707* (A, BISH, K, LAE).

The Strickland species is the only Malesian Psychotria with a stoloniferous habit. Its heterostylous flowers have an unusual degree of dimorphism - the long-styled and short-styled forms would be regarded as flowers from different species if not for the circumstances of their collection. Fertile plants are exceptionally diminutive. Many individuals are fruit-bearing when 15-20 cm tall, among the smallest

statures reported for Papuasian representatives of the genus (Takeuchi 2010d).

Psychotria ternatifolia Takeuchi, Phytotaxa 7: 29, Figs. 6-8. 2010. TYPE: PAPUA NEW GUINEA. Western Province, Muller Range, Sawetau (Expedition Camp 2), *Nothofagus*-emergent montane forest on doline karst, 5°39.610'S, 142°18.018'E, 1,450 m, 13 September 2009, *Takeuchi, Ama, & Gamui 24621* (holotype LAE; isotypes A, BO, K, L, MO).

Additional specimens examined: Western Province, Muller Range, Sawetau (Expedition Camp 2), *Nothofagus*-emergent montane forest on doline karst, 5°39.610'S, 142°18.018'E, 1,450 m, 13 September 2009, *Takeuchi, Ama, & Gamui 24619* (A, K, L, LAE); 5°39.385'S, 142°18.294'E, 1,660 m, 17 September 2009, *Takeuchi et al. 24710* (A, K, LAE); *Takeuchi et al. 24716* (A, K, L, LAE); *Takeuchi et al. 24723* (A, BO, K, L, LAE).

The ternately-whorled leaves of *Psychotria ternatifolia* are manifestly distinguishing, but the undulate leaf-blades and their stiffly-dry texture (in vivo) are also unusual character states among Papuasian congeners. Because of its striking vegetative features, *P. ternatifolia* can be reliably identified even in sterile condition. Numerous individuals were seen on the limestone in spatial association with *P. stolonifera*.

Psychotria sp. nov.

Specimens examined: Western Province, Strickland drainage, Muller Range, Gugusu (Expedition Camp 1), lowland hill forest, 5°43.635'S, 142°15.733'E, 535 m, 6 September 2009, *Takeuchi, Ama, & Gamui 24471* (undistributed); 5°43.575'S, 142°15.630'E, 535 m, 9 September 2009, *Takeuchi et al. 24549* (undistributed).

The new species is distinguished by filiform calyces and glomerate flowers arranged in terminal umbellules.

Sapindaceae

Harpullia mabberleyana Takeuchi, Edinburgh J. Bot., 2010 in press. TYPE: PAPUA NEW GUINEA. Southern Highlands Province, Strickland drainage, Tualapa, premontane forest, 05°17.260'S, 142°29.995'E, 1,140 m, 17 July 2008, *Takeuchi & Ama 24181* (holotype LAE; isotype A).

Harpullia mabberleyana is one of the most unusual sapindaceous species in Papuasia. Its simple leaves are unprecedented in a genus otherwise entirely composed of pinnately-leaved plants. In addition to a unique foliage, the new *Harpullia* has a smaller stature (< 1m tall) than any known congener and is consistently unbranched (most *Harpullia* species are branching shrubs or trees). Although the flowers of *H. mabberleyana* are unknown, the fruiting facies is an anomalous combination of character states which cannot be accommodated in existing subgenera. Owing to the discovery of this remarkable plant, the present infrageneric taxonomy will require future redefinition or possible abandonment.

Other Noteworthy Collections (Distributional Records)

Chloranthaceae

Sarcandra glabra (Thunb.) Nakai, Fl. Sylv. Kor. 18: 17. 1930.

Specimens examined: Southern Highlands Province, Strickland drainage, Tualapa, limestone forest along fast-flowing stream, 5°17'07'S, 142°29'44'E, 1,050 m, 12 July 2008, *Takeuchi & Ama 24050* (A, LAE); premontane forest, 5°17.260'S, 142°29.995'E, 1140 m, 17 July 2008, *Takeuchi & Ama 24176* (A, L, LAE); Umgé, mossy montane forest on limestone karst, 5°18.245'S, 142°30.704'E, 1,440 m, 21 July 2008, *Takeuchi & Ama 24282* (A, LAE).

Although *Sarcandra glabra* is widely distributed in continental Asia and throughout Malesia (Verdcourt 1986), it is very seldom seen in Papuasia. Botanical authorities have curiously failed to note the plant's obvious rarity in eastern Malesia. LAE has no *Sarcandra* collections, but over 100 numbers of the similar-looking *Chloranthus erectus*.

Corsiaceae

Corsia purpurata L. O. Williams, Bot. Mus. Leafl. 12: 179. 1946.

Specimens examined: Southern Highlands Province, Strickland drainage, Umgé, mossy montane forest on limestone karst, 5°18.245'S, 142°30.704'E, 1,440 m, 21 July 2008, *Takeuchi & Ama 24277* (LAE); *Takeuchi & Ama 24289* (A, L, LAE).

The Papuasian species of *Corsia* are poorly known, its 25 currently accepted taxa being collectively represented by less than 45 specimens. Except for the writer's few gatherings, nothing new has been added to the Lae Herbarium since Royen's (1972) synopsis of the genus.

Royen (1972) speculated that the poor documentation on this group is attributable to unpredictable phenologies (i.e., that the plants are briefly visible only during population flushes determined by as-yet unknown circumstances). His assessment is probably correct. On previous RAP assessments, *Corsia* has always been found in synchronized blooms, never as isolated plants. Whenever a flowering individual is seen, there are sure to be others in the vicinity. A period of heavy rainfall after a time of relative drought is possibly the triggering stimulus. The *Corsia* flushes at Wanakipa were also accompanied by similar blooms in *Epirixanthes*, *Cotylanthera*, and *Sciaphila*, suggesting that these mycoheterotrophs are responding to the same stimuli.

Ericaceae

Rhododendron dielsianum Schltr. var. *stylotrichum* Sleumer, Reinwardtia 5: 80. 1960.

Specimen examined: Southern Highlands Province, Muller Range, Apalu Reke (Expedition Camp 3), *Blechnum* fernland with patches of *Pandanus*-emergent mossy forest, 5°29.266'S, 142°18.167'E, 2,870 m, 22 September 2009, *Takeuchi, Ama & Gamui 24893-A* (undistributed).

The variety was previously known only from the type locality in the Goroka subdistrict of Eastern Highlands Province (Argent 2006).

Rhododendron disterigmoides Sleumer subsp. *disterigmoides*, Reinwardtia 5: 140. 1960.

Specimens examined: Southern Highlands Province, Muller Range, Apalu Reke (Expedition Camp 3), *Blechnum* fernland with patches of *Pandanus*-emergent mossy forest, 5°29.130'S, 142°18.097'E, 2,865 m, 18 September 2009, *Takeuchi, Ama, Gamui 24726* (undistributed); 5°29.266'S, 142°18.167'E, 2,870 m, 22 September 2009, *Takeuchi et al. 24873* (undistributed).

A PNG distributional record. Ever since its discovery in 1938, the nominate subspecies has been known only from the Lake Habbema area of Irian Jaya, now Papua Province, Indonesian New Guinea (Argent 2006). A second subspecies was recently recognized from the Star Mts., based primarily on differences in leaf arrangment (leaves spiral in subsp. *disterigmoides* but pseudowhorled in the newly erected subsp. *astromontium*).

The Muller Range population has laxly hairy styles (glabrescent) on some plants, but the spiral insertion of leaves clearly support assignment to subsp. *disterigmoides*. The disjunction represented by the latest collections is rather peculiar150—subsp. *astromontium* is now interposed between the documented stations for subsp. *disterigmoides*.

The key for subsection *Linnaeopsis* (Argent 2006:140-141) has a transposition in couplets 8 and 9 which causes subsp. *disterigmoides* and subsp. *astromontium* to be misidentified. The names need to be switched between their respective couplets in order for the key to work as intended (i.e., subsp. *astromontium* should appear in place of subsp. *disterigmoides*, and vice versa).

Ericaceae

Vaccinium hatamense Becc., Malesia 1: 210. 1878.

Specimen examined: Western Province, Muller Range, Sawetau (Expedition Camp 2), *Nothofagus* montane forest, boggy clearing at 5°39.267'S, 142°18.887'E, 2,005 m, 14 September 2009, *Takeuchi, Ama & Gamui 24656* (undistributed).

Previously known only from Irian Jaya, with the eastern limit in the Cyclops and Foja Mts. Now recorded for PNG.

Vaccinium oranjense J.J. Sm., or aff., Meded. Rijks-Herb. 25: 9. 1915.

Specimen examined: Western Province, Muller Range, Sawetau (Expedition Camp 2), *Nothofagus*-emergent montane forest on doline karst, boggy clearing, 5°39.267'S, 142°18.887'E, 2,005 m, 14 September 2009, *Takeuchi, Ama & Gamui 24659* (undistributed).

The Muller Range plants will key to *Vaccinium oranjense* or *V. oreomyrtus* (in Sleumer 1967), with some discrepancies. Both species are historically known from central Irian Jaya, and more recently from the Star Mts. (Royen 1982). The Muller Range population is closest to *V. oranjense*, and represents an eastwards extension of range into the southern karst of PNG. Because of its white corolla and other incongruities relating to indument and foliage, the latest collection may eventually warrant recognition as an infraspecific novelty.

Vaccinium sanguineum Schltr., Bot. Jahrb. 55: 172. 1918.

Specimen examined: Western Province, Strickland drainage, Muller Range, Sawetau (Expedition Camp 2), *Nothofagus* montane forest, boggy clearing at 5°39.267'S, 142°18.887'E, 2,005 m, 14 September 2009, *Takeuchi, Ama & Gamui 24660* (undistributed).

The species was known only from the Schrader Mts. type (destroyed) and from Mt. Antares. The new specimen has a bifacially glabrous corolla (adaxially hairy in the species sens. str.) but otherwise conforms in every detail to the description in Sleumer (1967). The Muller Range is the third locality for the species, extending its distribution onto the southern karst.

Vaccinium stellae-montis Sleumer, Blumea 11: 91. 1961.

Specimens examined: Enga Province, Kai-ingri, mossy subalpine forest, 5°34'27"S, 143°02'54"E, 3,100 m, 6 July 2008, *Takeuchi & Ama 23917* (undistributed); margins of grassy bog in subalpine forest, 5°34'24"S, 143°02'55"E, 3,300 m, 9 July 2008, *Takeuchi & Ama 24009* (A, LAE); Western Province, Muller Range, Apalu Reke (Expedition Camp 3), *Blechnum* fernland with patches of *Pandanus*-emergent mossy forest, 5°29.130'S, 142°18.097'E, 2,865 m, 18 September 2009, *Takeuchi, Ama & Gamui 24739* (undistributed); 5°29.089'S, 142°18.083'E, 2,880 m, 19 September 2009, *Takeuchi et al. 24761* (undistributed); *Takeuchi et al. 24787* (undistributed); 20 September 2009, *Takeuchi et al. 24794* (A, L, LAE).

The species was formerly regarded as a Star Mts. endemic (Sleumer 1961), but has recently been reported from *Sphagnum-Oreobolus* bogs near Kaijende, extending the range eastwards and off the PNG-Irian Jaya border (Takeuchi, 2007). During the Wanakipa survey, extensive epiphytic populations were documented from subalpine forests around Kai-Ingri bivouac and subsequently also from the Muller Range.

Vaccinium stellae-montis is considerably more common than once supposed. Its historical scarcity in herbarium collections is probably a result of the plant's small stature and nondescript appearance, rather than biological rarity.

Vaccinium subulisepalum J.J. Sm., Meded. Rijks-Herb. 25: 13. 1915.

Specimen examined: Western Province, Muller Range, Sawetau (Expedition Camp 2), *Nothofagus*-emergent montane forest on doline karst, 5°39.385'S, 142°18.294'E, 1,660 m, 12 September 2009, *Takeuchi, Ama & Gamui 24581-B* (undistributed).

A species record for PNG.

Vaccinium subulisepalum was previously known only from the Hellwig Mts. of Irian Jaya. The Muller Range specimen represents a significant disjunction from the Lorentz basin where the species was originally discovered. There are minor discrepancies regarding the indument on leaves and styles, but the collection in hand otherwise agrees closely with the type description.

Euphorbiaceae
Codiaeum finisterrae Pax ex Pax & K. Hoffm., Pflanzenr. (Engler) Euphorb.-Cluyt. 284. 1911.

Specimen examined: Southern Highlands Province, Strickland drainage, Umgé, mossy montane forest on limestone karst, 5°18.245'S, 142°30.704'E, 1,440 m, 21 July 2008, *Takeuchi & Ama 24246* (A, LAE).

The identity of this plant remains in doubt. The type was established on the basis of a male plant of which only fragments have survived (Airy Shaw 1980). At least two modern collections from northern PNG were tentatively referred to *Codiaeum finisterrae* by Airy Shaw. Judging from these collections, the species probably has the following essential features: 1) exceptionally large leaf-blades 30-45 x 10-15 cm, glabrous or sparsely pubescent, tapering gradually to the base then abruptly truncate; 2) petioles long—2 cm on the type description, but to 8 cm on the Umgé collection; 3) racemes (both sexes) puberulent; 4) male flowers with 40-50 stamens. The Umgé specimen, if referable to this species sensu Airy Shaw, extends the range to the south side of New Guinea.

Euphorbiaceae
Glochidion angulatum C.B. Rob., Philipp. J. Sci. C 4: 91. 1909.

Specimen examined: Southern Highlands Province, Strickland drainage, Tualapa, 5°17.003'S, 142°29.849'E, 1,115 m, 23 July 2008, *Takeuchi & Ama 24302* (undistributed).

The species is like *G. philippicum* except for the poorly defined and fewer lobes on capsules. Only four collections were previously known from New Guinea (Airy Shaw 1980).

Glochidion phyllochlamys Airy Shaw, Kew Bull. 33: 30. 1978.
Specimen examined: Southern Highlands Province, Strickland drainage, Tualapa, limestone forest along fast-flowing stream, 5°17'07"S, 142°29'44"E, 1,050 m, 18 July 2008, *Takeuchi & Ama 24196B* (LAE); Umgé, mossy montane forest on limestone karst, 5°18.245'S, 142°30.704'E, 1,440 m, 21 July 2008, *Takeuchi & Ama 24241* (undistributed).

Previously known only from the type locality in Irian Jaya. The stipule, petiole, and venation differences given by Airy Shaw (1980) actually intergrade with *G. nobile*, but the involucral bracts on female flowers clearly distinguish *G. phyllochlamys* from other large-fruited congeners.

Glochidion welzenii Takeuchi, Blumea 53: 399. 2008.

Specimen examined: Western Province, Strickland drainage, Muller Range, Sawetau (Expedition Camp 2), *Nothofagus* montane forest, 5°39.295'S, 142°18.745'E, 1,850 m, 14 September 2009, *Takeuchi, Ama, & Gamui 24654* (A, L, LAE).

First discovered during the 2005 CI-Kaijende RAP Expedition, *Glochidion welzenii* was known only from Lake Tawa in Enga Province. The Muller RAP survey has extended the distribution to the west. In its protologue, *G. welzenii* was preliminarily characterized as an obligate heliophyte restricted to open environments (Takeuchi 2008c) mainly in pandan savanna, but has now been found in closed forest.

Euphorbiaceae
Macaranga sp. nov.

Specimen examined: Western Province, Muller Range, Sawetau (Expedition Camp 2), *Nothofagus*-emergent montane forest on doline karst, 5°39.610'S, 142°18.018'E, 1,430 m, 15 September 2009, *Takeuchi, Ama, & Gamui 24676* (undistributed).

The undescribed species is one of three *Macaranga* first discovered during the LNG environmental assessment (Takeuchi 2009a). It's presence on the Muller karst is not surprising given the proximity to the original locality of discovery, ca. 10 km to the SE of Sawetau.

Fabaceae
Archidendron sessile (Scheff.) de Wit, Bull. Jard. Bot. Buitenzorg Ser. 3, xvii: 270. 1942.

Specimen examined: Southern Highlands Province, Strickland drainage, Lagaiap River, regrowth zone around Wanakipa, near 5°15.425'S, 142°31.297'E, ca. 800 m, 26 July 2008 *Takeuchi & Ama 24331* (undistributed).

The species was previously known only from Indonesian Papua (Verdcourt 1979, Nielsen et al. 1984, Nielsen 1992). Now recorded from PNG. Notwithstanding its apparent scarcity, *A. sessile* is apparently a weedy shrub of disturbed habitats.

Fabaceae
Mucuna schlechteri Harms, Notizbl. Bot. Gart. Berlin-Dahlem 7: 373. 1920.

Specimen examined: Southern Highlands Province, Strickland drainage, Umgé, mossy montane forest on limestone karst, 5°18.245'S, 142°30.704'E, 1,440 m, 21 July 2008, *Takeuchi & Ama 24271* (LAE).

Mucuna schlechteri is a distinctive vine known mainly from the Papuan Peninsula. Verdcourt (1979) tentatively assigned a questionable record from Digul to this species, extending its range westward into Irian Jaya. As the only confirmable collection from the Trans-Fly region, the Strickland specimen provides a geographic linkage to the putative Digul occurrence, implying that the later report is probably correct.

Lecythidaceae
Barringtonia josephstaalensis Takeuchi, Sida 19 (1): 9. 2000.

Specimen examined: Western Province, Strickland drainage, Muller Range, Gugusu (Expedition Camp 1), lowland

hill forest, 5°43.635'S, 142°15.733'E, 535 m, 6 September 2009, *Takeuchi, Ama, & Gamui 24463* (A, K, L, LAE).

The genus *Barringtonia* includes two species with linear-lorate leaves and fruits of uncertain identity. The first of these is *B. papuana*, one of six species whose fruits were unknown to Payens (1967). The recently-described *B. josephstaalensis*, is the second slender-leaved species whose fruiting structures cannot be decisively matched to flowering plants.

A recent gathering from the Muller Range has striking, aquamarine-blue fruits recalling the drupes of *Elaeocarpus* (cf. Takeuchi 2007b), but lacking flowers. Judging from the contracted raceme-rachis (the inflorescences of *B. papuana* are 2-13 x longer than those for *B. josephstaalensis*), the latest collection should be assigned to the second species. The Strickland survey voucher provides further evidence of unusual character states apparently unique to *B. josephstaalensis*. Confirmation is needed from corroborative specimens with flowers and fruits together, but this will not be easy given the phenological constraints and the consistently poor fruit set in most species.

Myrsinaceae

Discocalyx pygmaea Kaneh. & Hatus., Bot. Mag. Tokyo 57 (678): 221. 1943.

Specimens examined: Western Province, Strickland drainage, Muller Range, Gugusu (Expedition Camp 1), lowland hill forest, 5°43.947'S, 142°15.973'E, 450 m, 7 September 2009, *Takeuchi, Ama, & Gamui 24500* (A, K, LAE); 5°43.575'S, 142°15.630'E, 535 m, 9 September 2009, *Takeuchi et al. 24555* (A, L, LAE).

Discocalyx pygmaea was first collected from the Bird's Neck isthmus of Irian Jaya (Chaban, near Geelvink Bay; Kanehira and Hatusima 1943). Reportedly only 20 cm tall, this peculiar species has not been seen since its initial discovery in 1940. Its flowers are unknown.

Among the Muller Range specimens is a complete collection series of a *Discocalyx* dwarf with 4-5-merous flowers and mature fruits. As far as can be determined from the type description, the recently acquired specimens are a good match for *D. pygmaea*. The latest gatherings have only 1(–2) racemes, unlike the compound arrangement described by Kanehira and Hatusima (1943: 222; their Fig. 8 shows a 4-fascicled infructescence), but the remaining characters agree closely with the diagnosis.

The genus *Discocalyx* is distributed through the Malesian region and eastwards to Fiji, with 12 species in New Guinea and the Bismarck Archipelago (Sleumer 1988). Except for *Discocalyx latepetiolata* and *D. subsinuata*, Papuasian *Discocalyx* are poorly characterized and rarely seen. Four taxa (including two varieties) are known only from their type collections. An additional six species are individually represented by just 2-3 specimens (Sleumer 1988). Several genera in Myrsinaceae (*Ardisia*, *Discocalyx*, *Fittingia*, *Tapeinosperma*) suffer from inadequate documentation and often exhibit localized distributions. Many myrsinaceous species probably remain undiscovered, especially among the small-statured taxa in which neo-endemism appears to be concentrated. In recognition of the historical gaps in taxonomic knowledge, this family has been a focal group for RAP exploration in New Guinea and is deserving of continued attention.

Myrsinaceae

Loheria reiniana (Jacobs) Sleumer, Blumea 33: 101. 1988.

Specimens examined: Western Province, Strickland drainage, Muller Range, Gugusu (Expedition Camp 1), lowland hill forest, 5°43.786'S, 142°15.669'E, 420 m, 8 September 2009, *Takeuchi, Ama, & Gamui 24518* (A, L, LAE); Sawetau (Expedition Camp 2), *Nothofagus* montane forest, 5°39.652'S, 142°17.962'E, 1,425 m, 16 September 2009, *Takeuchi et al. 24693* (A, K, L, LAE).

Loheria is a Malesian genus of six species, of which two are endemic to Papua New Guinea (Stone 1991, Pipoly 2007). The entire group is exceedingly rare. A mere 35 collections have been obtained thus far in the whole genus and only five for *L. reiniana* (Sleumer 1988, Pipoly 2007). A recent collection of *Loheria reiniana* from the Foja Mts. was a first record for Indonesia (Takeuchi and Arifiani 2010).

Myrsinaceae

Maesa protracta F. Muell., Papuan Pl. 1: 92. 1877.

Specimen examined: Southern Highlands Province, Strickland drainage, Tualapa, limestone forest along fast-flowing stream, 5°17'07"S, 142°29'44"E, 1,050 m, 12 July 2008, *Takeuchi & Ama 24055* (A, K, L, LAE).

Maesa protracta is known from five collections in the Papuan lowlands (SE New Guinea), and a curiously disjunct record from New Britain. All previously reported gatherings were made from elevations below 100 m (Sleumer 1987). The Tualapa specimen extends the habitat range into montane forest on limestone.

Myrtaceae

Syzygium ubogoensis Takeuchi, Edinburgh J. Bot. 59: 268. 2002.

Specimen examined: Western Province, Muller Range, Gugusu (Expedition Camp 1), lowland hill forest, 5°43.947'S, 142°15.973'E, 450 m, 7 September 2009, *Takeuchi, Ama & Gamui 24501-B* (undistributed).

The cauliflorous species was previously known only from the Kutubu karst and immediately adjacent habitats. With its discovery on the Muller limestone, *Syzygium ubogoensis* now has distributional endpoints encompassing most of the southern karst.

Myrtaceae

Xanthomyrtus bryophila Diels, Nova Guinea 14: 86. 1924.

Specimens examined: Southern Highlands Province, Muller Range, Apalu Reke (Expedition Camp 3), *Blechnum* fernland with patches of Pandanus-emergent mossy forest, 5°29.130'S, 142°18.097'E, 2,865 m, 18 September 2009, *Takeuchi, Ama & Gamui 24727* (undistributed); 5°29.089'S, 142°18.083'E, 2,880 m, 19 September 2009, *Takeuchi et*

al. 24749 (undistributed); *Takeuchi et al. 24753* (undistributed); *Takeuchi et al. 24778* (undistributed).

Xanthomyrtus bryophila was known to Scott (1979) only from the type locality in the Snow Mts. of Irian Jaya. The suspected epiphytic habit (in Diels, 1924) has been confirmed in the Muller Range population (the species is consistently perched on moss hummocks).

Proteaceae

Helicia acutifolia Sleumer, Bot. Jahrb. Syst. 70: 140. 1939.

Specimen examined: Western Province, Strickland drainage, Muller Range, Gugusu (Expedition Camp 1), lowland hill forest, 5°43.575'S, 142°15.630'E, 535 m, 9 September 2009, *Takeuchi, Ama & Gamui 24558* (undistributed).

Until its rediscovery in the Karius Range (Takeuchi 2007) *Helicia acutifolia* was known only from the type collection made in 1936. The Muller Range record has now extended the distribution substantially westwards, to the vicinity of the PNG–Indonesian border. Despite its long absence from the scientific record, *H. acutifolia* is probably much more common than previously supposed.

Rubiaceae

Dolianthus fimbristipularis (P. Royen) A.P. Davis, Blumea 46: 429. 2001.

Specimens examined: Enga Province, Kai-ingri, mossy subalpine forest, 5°34'46"S, 143°03'10"E, 3,100 m, 7 July 2008, *Takeuchi & Ama 23938* (undistributed); forest border beside grassy bog, 5°34'52"S, 143°02'50"E, 3,130 m, 8 July 2008, *Takeuchi & Ama 23981* (A, LAE).

The new record extends the range of *Dolianthus fimbristipularis* to the west. In the latest gatherings from Kai-ingri, there are two linear bracts subtending the upper part of the inflorescence, and no bracteoles. A new variety is possibly indicated by these differences from previous collections. One of the specimens now in hand (*Takeuchi & Ama 23938*) is the first record of the short-styled flower (cf. Davis and Bridson 2001).

Rubiaceae

Psychotria aquatilis Merr. & Perry, Jour. Arn. Arb. 27: 202. 1946.

Specimens examined: Western Province, Strickland drainage, Muller Range, Gugusu (Expedition Camp 1), lowland hill forest, 5°43.786'S, 142°15.669'E, 420 m, 8 September 2009, *Takeuchi, Ama, & Gamui 24537* (A, LAE); Sawetau (Expedition Camp 2), *Nothofagus*-emergent montane forest on doline karst, 5°39.638'S, 142°18.018'E, 1460 m, 15 September 2009, *Takeuchi et al. 24677* (undistributed); 5°39.652'S, 142°17.962'E, 1,425 m, 16 September 2009, *Takeuchi et al. 24699* (undistributed).

Psychotria aquatilis has historically been recorded only from alluvial and swamp environments below 800 m. The Muller Range numbers from *Nothofagus* forest are the first from montane habitats above 1,400 m. Flowers were previously unknown for this species (Sohmer 1988) but have now been obtained from populations on limestone karst.

Psychotria aurea Lauterb., Fl. Deutsch. Schutzgeb. Südsee, Nachtr.: 396. 1905.

Specimens examined: Southern Highlands Province, Strickland drainage, Tualapa, limestone forest along fast-flowing stream, 5°17'07"S, 142°29'44"E, 1,050 m, 12 July 2008, *Takeuchi & Ama 24018* (A, K, LAE); premontane forest on limestone karst, 5°17.003'S, 142°29.849'E, 1,120 m, 13 July 2008, *Takeuchi & Ama 24069* (A, K, L, LAE).

Psychotria aurea is known from four collections in three provinces, all from lowland habitats (Sohmer 1988). The obtuse stipules and stipitate fruits are diagnostic.

Sohmer (unpublished) had initially placed this species under the nomen nudum *P. aquatilisioides*. Unpublished names placed on LAE sheets by Sohmer are unfortunately still being cited by PNG-based botanists. These invalid names (the valid binomial is provided in parentheses), include *P. coodei* (*P. nanifrutex*), *P. waguensis* (*P. yapaensis*) and several varieties in *P. beccarii* (*P. leptothyrsa*).

Psychotria defretesiana (Takeuchi) Takeuchi, Phytotaxa. In submission.

Specimens examined: Western Province, Strickland drainage, Muller Range, Gugusu (Expedition Camp 1), lowland hill forest, 5°43.947'S, 142°15.973'E, 450 m, 7 September 2009, *Takeuchi, Ama, & Gamui 24504* (undistributed); 5°43.786'S, 142°15.669'E, 420 m, 8 September 2009, *Takeuchi et al. 24525* (undistributed); 5°43.575'S, 142°15.630'E, 535 m, 9 September 2009, *Takeuchi et al. 24560* (undistributed); 5°43.780'S, 142°15.813'E, 505 m, 10 September 2009, *Takeuchi et al. 24571* (undistributed).

A distinctive dwarf with contorted-unbranched stems and obtuse leaves was recently described as *Psychotria leptothyrsa* var. *defretesiana* from the Mamberamo RAP survey (Takeuchi 2009b). The variety was established mainly on the basis of the fruiting facies, the stipules and flowers being unknown at the time of initial publication. However it was noted in the protologue that future reassignment to specific rank might be warranted if the missing structures could be found. With the fortuitous acquisition of a complete morphological series from the Muller Range, var. *defretesiana* can now be recognized as a distinct species separate from the *leptothyrsa* complex. Despite their geographic disjunction, the Mamberamo and Strickland populations share the following esssential features: occurrences on swampy substrate; stems torulose, always monocaulous; leaf-blades mostly obtuse, broadly elliptic to suborbicular; pyrenes sharply ridged on the back; endosperm not ruminate.

Monocaulous Psychotria are often found in Papuasian swamp environments. Most of these apparently neotenic taxa are seldom collected, and several are still known only from their type localities. Further discoveries of similar plants are likely as exploratory surveys enter previously unknown forests.

Rubiaceae
Schradera ramiflora (Valeton) Puff, Buchner & Greimler, Blumea 43: 329. 1998.

Specimen examined: Western Province, Strickland drainage, Muller Range, Gugusu (Expedition Camp 1), lowland hill forest, 5°43.947'S, 142°15.973'E, 450 m, 7 September 2009, *Takeuchi, Ama, & Gamui 24491* (undistributed).

In the latest generic summary for Schradera (Puff et al. 1998), six endemic species are recognized for New Guinea, within a wider regional conspectus of 16 species. All the New Guinea representatives are rare, half of the taxa having only one or two specimens and none with more than six collections (Takeuchi 2007d). The recent gathering for *Schradera ramiflora* is accompanied by the first photographs of living plants.

Rutaceae
Triphasia brassii (C.T. White) W. Swingle, J. Wash. Acad. Sci. 28: 532. 1938.

Specimens examined: Southern Highlands Province, Strickland drainage, Tualapa, premontane forest on limestone karst, 5°17.003'S, 142°29.849'E, 1,120 m, 13 July 2008, *Takeuchi & Ama 24077* (A, CANB, LAE); Umgé, mossy montane forest on limestone karst, 5°18.245'S, 142°30.704'E, 1,440 m, 21 July, 2009, *Takeuchi & Ama 24259* (LAE).

Triphasia brassii was first discovered near Port Moresby during the First Archbold Expedition of 1925. The species is rare and localized. All previously known collections have originated from coastal environments in the Port Moresby subdistrict. The Tualapa record is a significant disjunction (at least 300 km to the west) and the only documented occurrence from an inland montane environment.

Triphasia brassii is the sole representative (from New Guinea) in a genus comprised of three species. Swingle (1967) assigned *T. brassii* to the monotypic subgenus *Echinocitrus*. A new taxon in this subgenus was recently found with the essential features of *T. brassii* (e.g., simple leaves, pentamerous flowers, 5-locular ovaries) but with much larger leaf-blades and fruits). The undescribed plant, apparently restricted to the Sepik basin, provides a biogeographical link between the Philippine/W. Malesian taxa and the southern austrocratonic populations of *T. brassii*.

As a wild citroid relative, *Triphasia* is of immense interest to plant breeders and horticulturalists. Swingle (1967: 245) noted the potential value of the Triphasiinae for introducing genetic improvements into existing commercial stocks.

Sapindaceae
Harpullia rhachiptera Radlk., Sitzungsber. Math.-Phys. Cl. Königl. Bayer. Akad. Wiss. München 20: 278. 1890.

Specimens examined: Western Province, Muller Range, Gugusu (Expedition Camp 1), lowland hill forest, 5°43.635'S, 142°15.733'E, 535 m, 6 September 2009, *Takeuchi, Ama, & Gamui 24486* (LAE); 5°43.947'S, 142°15.973'E, 450 m, 7 September 2009, *Takeuchi et al. 24501* (LAE).

Harpullia rhachiptera was historically known from only five specimens in the Trans-Fly (Leenhouts and Vente 1982, 1994), but the number of extant collections is probably a misleading indication of its presumed rarity. The species is a principal understory associate of *Harpullia mabberleyana*, discovered at Wanakipa during the 2008 RAP Expedition (Takeuchi 2010e in press). Recent observations and collections of *Harpullia rhachiptera* from Southern Highlands Province and Western Province (Takeuchi 2009a) also provide evidence of high frequency on the southern limestone.

Urticaceae
Cypholophus treubii (H. Winkl.) var. aciculata Takeuchi, Edinburgh J. Bot. 64 (2): 168. 2007.

Specimens examined: Enga Province, Kai-ingri, mossy subalpine forest, 5°34'46"S, 143°03'10"E, 3,100 m, 7 July 2008, *Takeuchi & Ama 23933* (A, LAE); *Takeuchi & Ama 23950* (A, L, LAE); margins of grassy subalpine bog in subalpine forest, 5°34'24"S, 143°02'55"E, 3,300 m, 9 July 2008, *Takeuchi & Ama 23992* (A, LAE).

Cypholophus treubii var. *aciculata* has a distinctive sympodial habit. The variety was described from Omyaka during the Kaijende RAP Expedition and additional populations (cited above) were subsequently documented during the Wanakipa survey. Photographs of the plant's unusual architecture were not previously available until the recent work at Kai-ingri.

DISCUSSION AND CONSERVATION RECOMMENDATIONS

The Strickland uplands are a principal part of the Southern Escarpment, the largest limestone biome in New Guinea (Löffler 1977, Sekhran and Miller 1995) and one of the least explored territories in Papuasia (Beehler 1993). The recent discoveries from this physiographic district can be attributed to the interplay between two major abiotic factors: 1) edaphic—the dominant substrate (limestone) has known correlations with floristic endemism, and 2) rainfall—the Southern Escarpment is the most perhumid environment in PNG, with annual precipitation exceeding 6000 mm at certain centers on the karst (Löffler 1977). Rainfall is the most significant determinant of tree diversity (Gentry 1988). The spatial correspondence of rainfall and limestone is a synergistic driver for endemic diversification in Strickland habitats. The optimization of these factors in a region of profound inaccessibility and picturesque topography, provides value enhancement for environmental initiatives. Unlike most conservation sites in PNG, karst terrain is unsuitable for logging and forestry operations (Anonymous 1996), a circumstance ensuring longterm immunity from commercial threats overhanging other projects. Special-area designation (e.g., Wildlife Management Area or World Heritage listing)

for such environments would be biologically appropriate and compelling.

Expectations for floristic discovery on the Papuan karst have been corroborated by the many findings of this RAP survey. Sekhran and Miller's (1995) prediction that a new genus would be forthcoming from the limestone has been vindicated with the simultaneous discovery of three new genera - one from Tualapa, and two from sites surveyed by the former Highlands Gas Project (B.S. Parris, pers. comm.). Since rapid-assessment procedures are incapable of achieving sampling saturation, many more taxa are probably awaiting discovery in Strickland habitats. Although the concluded operations have proven very fruitful, there is a continuing sense of unfinished botany. Future work in this basin will be generously rewarded.

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