

Preliminary checklist of the flora of Waisoi - Namosi and its surrounding area

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Abstract

A floristic survey of Waisoi, Namosi Province, Viti Levu, Fiji, conducted from 1995-1996 has revealed a vascular plant flora comprising 371 taxa (345 species and 26 sub-species). Dicots contributed the largest number of families (68), genera (133) and species (196), representing 52.8% of the entire flora, followed by monocots; 15 families, 56 genera, and 68 species, representing only 18.3%; fern and fern allies represent 26.7% of the flora comprising 22 families, 53 genera, 99 species; gymnosperms; 2.2% of the flora comprising 3 families, 7 genera, 8 species of the total flora, respectively. Trees formed the largest life-form group representing 33.9 % of the flora, followed by perennials 20.3 %, epiphytes 15.2%, shrubs 14.2 %, climbers and lianas 7.6 %, succulent herbs 5.3 % and annual herbs 3.5%. Native taxa represent 86 % of the flora (43.5 % endemic and 42.4 % indigenous) and adventive taxa (13 %). 36 taxa are reported as range extensions and new records for the Namosi province, including the rare conifer *Acropyle sahniana*, the psilophyte *Tmespteris truncata*, and a taxon previously considered extinct, *Carruthersia macrantha*.

Introduction

The overall flora of Fiji is relatively well-known (Smith 1979-1991) with a native vascular plant flora of approximately 1600 species. The majority of collections are from readily accessible areas, and thus reliable distribution and abundance data throughout the islands are generally lacking from remote areas. Recent botanical exploration in Fiji by M. Doyle, his students, and R. H. Phillips have revealed a number of new and interesting discoveries including one new species of palm-- *Heterospatha phillipsii* Fuller & Dowe (Fuller, Dowe, and Doyle 1997; Fuller, unpublished) and a new site for the extremely rare Fijian podocarp *Acropyle sahniana* Buchh. & N. E. Gray (Bush and Doyle, in press; Bush, unpublished). The purpose of this study was to determine the flora of a previously little-collected and floristically rich area that is potentially threatened by proposed mining operations. The Waisoi area of Namosi Province, Viti Levu has been identified as a copper-rich area (Colley and Flint 1995) and exploitation of the mineral deposits are now under consideration. The Waisoi area lies within the windward side, or "wet zone" of Viti Levu and thus is subject to high annual rainfall (ca 5000 mm/yr.). The general natural forest type of the area fits within the classification "lowland tropical rainforest", although at higher elevations the forest could be considered "montane tropical forest".

A floristic survey was conducted to assess the overall floristic diversity of the Waisoi area. This survey included the collection of vouchers for all taxa present as well as base-line ecological information. This information is

provided as a preliminary checklist for the flora as well as an analysis of its taxonomic distribution, growth-forms, and natural occurrence status. This information, along with additional field work, will be further analysed as part of an ecological study now underway which will be published at a later date.

Methods

The study site is located in the SE region of the Korobasabasaga Range, Viti Levu and covers an area 8 sq. km. of flat, steep and rugged terrain with an elevation range of 250m to 850m. Collections were obtained from December 1995 to November 1996. Dried herbarium vouchers were made for all taxa recorded along with some liquid-preserved material (inflorescence and fruits), the latter fixed in standard FAA solution (9:5:5 EtOH [70%] commercial strength formalin and glacial acetic acid) [Radford et. al. 1974]. The taxonomic treatments of Brownlie (1977) and Smith (1979-1991) are followed in this treatment for pteridophytes and phanerogams, respectively. Other useful treatments included Gillespie (1930, 1931), Parham (1972) and Whistler (1995). Voucher collections are cited, these numbers representing Tuiwawa collections (all denoted by numbers alone), or previous collections from Waisoi deposited in the South Pacific Regional Herbarium (SUVA), these denoted by a letter prefix either DA or L, or simply a number followed by (SUVA).

Results

Preliminary Checklist of the Flora of Waisoi

Psilotales

Psilotaceae

Lycopodiales

Lycopodiaceae

- Lycopodium cernuum* L. 276
L. foliosum Copel. 140, 386, 477, L18647, L24582
L. magnificum Brownlie 480
L. parksii Copel. 564
L. phlegmaria L. 479
L. subtrifoliatum Brownlie 387, DA18632
L. trifoliatum Copel. L24583

Marattiaceae

- Angiopteris evecta* (Forst.) Hoffm. 441
Marattia smithii Mett. ex Kuhn 308, 405

Osmundaceae

- Leptopteris wilkesiana* (Brack.) Christen. 382, 447;
 18700 (SUVA)

Schizaeaceae

- Lygodium reticulatum* Schkuhr 350

Gleicheniaceae

- Dicranopteris caudata* (Copel.) St. John 279
D. linearis (Burm.) Underwood 348
Gleichenia longissima Blume 18641 (SUVA)
G. oceanica Kuhn 331

Cyatheaceae

- Culcita straminea* (Labill.) Maxon 361
Cyathea alta Copel. 18662 (SUVA)
C. hornei (Baker) Copel. 401, 402
C. lunulata (Forst.) Copel. 355, 356, 359
C. truncata (Brack.) Copel. L24620 (SUVA)
Dicksonia brackenridgei Mett. 404, L24581 (SUVA)

Hymenophyllaceae

- Hymenophyllum affine* Brack. 418, 452, 453
H. denticulatum Swartz 454
Trichomanes apiifolium Presl 257, 303 ; L24625, 24580 (SUVA)
T. asae-grayi v. d. Bosch. 18652
T. bimarginatum v. d. Bosch. 563
T. boryanum Kunze L18618 (SUVA)
T. caespifrons C. Christen. L24579 (SUVA)
T. caudatum Brack. 463
T. intermedium v. d. Bosch. 367
T. maximum Blume 216, 455
T. sp. 366

Dennstaedtiaceae

- Dennstaedtia flaccida* (Forst.) Bernh. 446
Orthiopteris ferulacea (Moore) Copel. 302, 377, 385,
 451; L24627 (SUVA)

PSILOPHYTA

- Psilotum complanatum* Swartz 139, 411
Tmesipteris truncata (R. Br.) Desvaux 186

LYCOPODOPHYTA

- L. serratum* Thunb. 220

Selaginellales

Selaginellaceae

- Selaginella breynoides* Baker 296
S. firmula A. Br. ex Kuhn 217, 297, 298, 299, 300
S. victoriae Moore 266
S. viridangula Spreng. 294, 295

PTERIDOPHYTA

- O. tenuis* (Brack.) Brownlie 271, 449, 456; 18630, 24628 (SUVA)

Lindsaeaceae

- Lindsaea pacifica* Kramer L24630, 18627 (SUVA)
L. pulchra (Brack.) Carr. ex Seem. 462
L. repens (Bory) Thwaites L24629, 18651 (SUVA)
Sphenomeris chinensis (L.) Maxon 261, 263, 333, 416

Davalliaceae

- Arthropteris articulata* (Brack.) C. Christen. 258
Davallia solida (Forst. f.) Swartz 269
Humata botrychioides Brack. 537; 18642 (SUVA)
H. polypodioides Brack. 18657 (SUVA)
Nephrolepis biserrata (Swartz) Schott 373
N. hirsutula (Forst.) Presl 415, 443, 539
N. tuberosa (Bory ex Willd.) Presl 371, 374; 18800 (SUVA)
Oleandra neriiformis Cav. 380, 538, 549
O. sibbaldii Grev. 504
Scyphularia pycnocarpa (Brack.) Copel. 360, 536, 376

Vittariaceae

- Antrophyum alatum* Brack. 138
A. subfalcatum Brack. 556
Vaginularia angustissima (Brack.) Mett. 262
Vittaria elongata Swartz 141; 18629 (SUVA)
V. scolopendrina (Bory) Thwaites 460

Adiantaceae

- Taenitis hookeri* (C. Christen.) Holtt. 305
T. pinnata (J. Smith) Holtt. var. *polypodioides* (Baker) Holtt. 506
Syngamma spathulata (C. Christen.) Holtt. 18650 (SUVA)

Aspleniaceae

- Asplenium amboinense* Willd. 254, 255, 379, 472; L18658 (SUVA)
A. australasicum Hooker 461
A. bipinnatifidum Baker 256, 368; L24576, 18656 (SUVA)
A. cuneatum Lam. 259

Athyraceae

- Diplazium harpeodes* Moore 343; 18634 (SUVA)
D. proliferum Kaulf. 403, 507
Lunathyrium japonicum (Thunb.) Kurata 430
L. sp. 378

Thelypteridaceae.

- Coryphopteris sp.* 388
Plesioneuron hopeanum (Baker) Holtt. 514
Pneumatopteris parksii (Ballard) Holtt. 286, 444
Pronephrum beccarianum (Cesati) Holtt. 470, 475, 516; L18638 (SUVA)
P. rubrinerve (Mett.) Holtt. 540

Aspidiaceae

- Didymochlaena truncatula* (Swartz) J. Smith 268, 383; L24621, 24584, 18659 (SUVA)
Dryopteris subarborea (Baker) C. Christen. 448
Pleocnemia cumingiana Presl 445; 18640 (SUVA)
P. irregularis (Presl) Holtt. 442
Tectaria decurrens (Presl) Copel. 239
T. godeffroyi (Lueres.) Copel. 220, 287
T. vitiensis Brownlie 307

Blechnaceae

- Blechnum milnei* (Carr.) C. Christen. 412
B. orientale L. 270

GYMNOSPERMAE

Pinales

Podocarpaceae

- Acmopyle sahniana* Buchh. & N. E. Gray 163, 212, 347
Dacrydium nidulum de Laubenfels 193
Dacrycarpus imbricatus var. *patulus* de Laubenfels 038, 384
Retrophyllum vitiense (Seem.) C. N. Page 322
Podocarpus affinis Seem. 194, 213

ANGIOSPERMAE

Magnoliales

Degeneriaceae

- Degeneria vitiensis* I. W. Bailey & A. C. Sm. 175, 190

Annonales

Annonaceae

- Cyathocalyx insularis* A. C. Sm. 290
C. sp. 035
Richella monosperma A. Gray 174
Xylopiya pacifica A. C. Sm. 319

Myristicaceae

- Myristica chartacea* Gillespie 089, 117
M. gillespieana A. C. Sm. 043, 349
M. macrantha A. C. Sm. 324

Piperales

Piperaceae

- Macropiper puberulum* Benth. f. *glabrum* (C. DC.) A. C. Sm. 095, 147
M. vitiense (A. C. Sm.) A. C. Sm. 221
Piper aduncum L. 534

- B. pilosum* (Brack.) Brownlie 304

Blechnum sp. 260

Lomariopsidaceae

- Bolbitis palustris* (Brack.) Hennipman 18664, 18696 (SUVA)
Elaphoglossum dominii Krajina 306
E. imthurnii Krajina 457
E. milnei Krajina 18628 (SUVA)
Lomagamma polyphylla Brack. 450, 471; 24578 (SUVA)
Lomariopsis brackenridgei Carr. 554
L. oleandrifolia (Brack.) Mett. 535; 18616 (SUVA)

Grammitidaceae

- Ctenopteris contigua* (Forst.) Holtt. 309, 375; 24626, 18649 (SUVA)

Polypodiaceae

- Belvisia mucronata* (Fee) Copel. 548
Dipteris conjugata Reinw. 264
Lemmaphyllum accedens (Blume) Donk. 285
Loxogramme parksii Copel. 142
Microsorium alatum (Brack.) Copel. 505
M. linguaeforme (Mett.) Copel. 143
Polypodium subauriculatum Blume 486

- P. neriiifolius* D. Don 039

Araucariaceae

- Agathis macrophylla* (Lindley) Masters 327

Gnetales

Gnetaceae

- Gnetum gnemon* L. Mant. 040, 081

Dicotyledones (Magnoliatae)

- P. insectifugum* C. DC. ex Seem. 207

Peperomiaceae

- Peperomia lasiostigma* C. DC. 136, 135
P. nandalana Yunker var. *nandalana* J. W. Parham 218
P. nandarivatensis Yunker 177

Laurales

Hernandiaceae

- Hernandia olivacea* Gillespie 225

Lauraceae

- Cinnamomum pallidum* Gillespie 313
Cryptocarya fusca Gillespie 347

Urticales

Ulmaceae

- Gironniera celtidifolia* Gaud. 096
Parasponia andersonii (Planch.) Planch. 496

Moraceae

- Ficus bambusifolia* Seem. 101

- F. barclayana* (Miq.) Summerhayes 060
F. fulvo-pilosa Summerhayes 467
F. masonii Horne ex Baker 091, 057
F. smithii Horne ex Baker var. *robusta* Corner 499
F. vitiensis Seem. 079, 155, 476

Urticaceae

- Boehmeria virgata* (Forst. f.) Guillemain 149, 541
Cypholophus macrocephalus Wedd. var. *mollis* (Wedd.) Wedd. 167
Elatostema australe (Wedd.) Hall. 169
E. nemorosum Seem. 130, 157
E. tenellum A. C. Sm. 310
Pipturus argenteus (Forst. f.) Wedd. var. *lanosus* Skotts. 542
Procris goepeliana (A. C. Sm.) A. C. Sm. 168

Caryophyllales

Nyctaginaceae

- Pisonia umbellifera* (J. R. & G. Forst.) Seem. 232

Caryophyllaceae

- Drymaria cordata* (L.) Willd. ex Roemer & Schultes var. *pacifica* Mizushima 419

Amaranthaceae

- Amaranthus gracilis* Desf. 489

Dilleniales

Dilleniaceae

- Dillenia biflora* (A. Gray) Martelli ex Dur. & Jacks. 092

Saurauiaceae

- Saurauia rubicunda* (A. Gray) Seem. 032, 236;
 DA18695, 18676 (SUVA)

Clusiaceae

- Calophyllum amblyphyllum* A. C. Sm. & S. Darwin 247

- C. cerasiferum* Vesque 346

- C. leptocladum* A. C. Sm. & S. Darwin 051

- C. vitiense* Turrill 058, 249, 345

- Garcinia myrtifolia* A. C. Sm. 226, 321

- G. sessilis* (Forst. f.) Seem. 251; 18611 (SUVA)

- G. vitiensis* (A. Gray) Seem. 551

Malvales

Elaeocarpaceae

- Elaeocarpus chelonimorphus* Gillespie 114

Tiliaceae

- Trichospermum calyculatum* (Seem.) Burret 059, 089

- T. richii* (A. Gray) Seem. 055

- Microcos vitiensis* A. C. Sm. 291

Sterculiaceae

- Heritiera ornithocephala* Kostermans 243

Malvaceae

- Sida rhombifolia* L. 431

Euphorbiales

Euphorbiaceae

- Acalypha insulana* Muell. var. *insulana* A. C. Sm. 110, 466

- A. repanda* Muell. var. *denudata* (Muell. Arg.) A. C. Sm. 171

- A. rivularis* Seem. 028

- Acalypha* sp. 069

- Baccaurea pulvinata* A. C. Sm. 029

- Bischofia javanica* Bl. 531

- Endospermum macrophyllum* (Muell. Arg.) Pax & Hoffm. 250

- Glochidion atalotrichum* A. C. Sm. 053

- G. bracteatum* Gillespie 552

- G. ramiflorum* J. R. & G. Forst. 245

- Macaranga graeffeana* Pax & Hoffm.

- var. *graeffeana* A. C. Sm. 229

- M. magna* Turrill 205

- Omalanthus nutans* (Forst. f.) Guillemain 152

- Phyllanthus amarus* Schumacher & Thonning 423

Gonystylaceae

- Gonystylus punctatus* A. C. Sm. 227

Rhizophorales

Rhizophoraceae

- Crossostylis richii* (A. Gray) A. C. Sm. 315

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Flacourtiaceae

- Erythrospermum acuminatissimum* (A. Gray) A. C. Sm. 061

- Homalium vitiense* Benth. 237

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- Agatea violaris* A. Gray 150

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- Paphia vitiensis* Seem. 414

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- Leucopogon septentrionalis* Schlechter 192

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Symplocaceae

- Symplocos leptophylla* (Brand) Turrill 242

Sapotaceae

- Burckella fijiensis* (Hemsl.) A. C. Sm. & S. Darwin 246

- B. parviflora* A. C. Sm. & S. Darwin 252

- Palaquium hornei* (Hartog ex Baker) Dubard 555

- P. porphyreum* A. C. Sm. & S. Darwin 231

Myrsinaceae

- Discocalyx fusca* Gibbs 195
Maesa insularis Gillespie 093
Tapeinosperma ampliflorum A. C. Sm. 126
T. capitatum (A. Gray) Mez 206, 283
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Cunoniaceae

- Geissois ternata* A. Gray var. *glabrior* A. C. Sm. 153

- Spiraenthenum graeffei* Seem. 054
Weinmannia affinis A. Gray 063

Pittosporaceae

- Pittosporum aborescens* Rich ex A. Gray 241
P. pikeriingii A. Gray 085
P. rhytidocarpum A. Gray 288, 354

Rosaceae

- Rubus moluccanus* L. var. *austropacificus* van Royen 265

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- Atuna racemosa* Raf. 323
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Fabales

Mimosaceae

- Mimosa pudica* L. var. *unijuga* (Duchass. & Walp.)
 Griseb. 424

Caesalpiniaceae

- Maniltoa grandiflora* (A. Gray) Scheffer 291

Fabaceae

- Derris elliptica* (Wall.) Benth. 497
Mucuna sp. 113

Myrtales

Lythraceae

- Cuphea carthagenensis* (Jacq.) Macbr. 422

Myrtaceae

- Decaspermum vitiense* (A. Gray) Niedenzu 068
Metrosideros collina (J. R. & G. Forst.) A. Gray
 var. *collina* A. C. Sm. 334
Psidium guajava L. 544
Syzygium brackenridgei (A. Gray) C. Muell. 082, 292,
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S. neurocalyx (A. Gray) Christophersen 351
S. purpureum (Perry) A. C. Sm. 553
S. quadrangulatum (A. Gray) Merr. & Perry 235
S. seemannianum Merr. & Perry 067, 078, 087, 494

Onagraceae

- Ludwigia hyssopifolia* (G. Don) Exell 435
L. octavalis (Jacq.) Raven
 subsp. *octavalis* 492
L. octavalis (Jacq.) Raven
 subsp. *sessiflora* (Jacq.) Raven 408

Melastomataceae

- Astronidium confertiflorum* (A. Gray) Markgraf 056
A. parviflorum A. Gray 458
A. robustum (Seem.) A. C. Sm. 485
A. storckii Seem. 041
A. victoriae (Gillespie) A. C. Sm. 228
Clidemia hirta (L.) D. Don 501
Melastoma denticulatum Labill. 050, 502
Medinilla archboldiana A. C. Sm. 121
M. heterophylla A. Gray 077, 099
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Anacardiaceae

- Semecarpus vitiensis* (A. Gray) Engl. 240

Bursaceae

- Canarium harveyi* Seem. 318
Haplolobus floribundus (K. Schum.) Lam subsp.
solomonensis (C. T. White) Leenh. 230

Simaroubaceae

- Amaroria soulameoides* A. Gray 314

Rutaceae

- Citrus limon* (L.) Burm. 532

Meliaceae

- Aglaiia archboldiana* A. C. Sm. 224, 515
A. vitiensis var. *minor* A. C. Sm. 170

Sapindales

Sapindaceae

- Allophylus timoriensis* (DC.) Bl. 116
Elattostachys falcata (A. Gray) Radlk. 244
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Araliales

Araliaceae

- Plerandra grayi* Seem. 064
P. insolita A. C. Sm. 030
Polyscias multijuga (A. Gray) Harms 108, 159
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Aquifoliaceae

- Ilex vitiensis* A. Gray 18607 (SUVA)

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- Citronella vitiensis* R. Howard 234

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Rhamnaceae

Alphitonia franguloides A. Gray 522

Polygalaceae

Polygala paniculata L. 406

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Decaisnina forsteriana (J. A. & J. H. Schultes) Barlow 052

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Proteaceae

Turrillia ferruginea (A. C. Sm.) A. C. Sm. 076

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Fragraea gracilipes A. Gray 033, 211

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Neuburgia corynocarpa (A. Gray) Leenh. 151, 233

Apocynaceae

Alstonia montana Turrill 500

A. pacifica (Seem) A. C. Sm. 037

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Alyxia bracteolosa A. Gray var. *bracteolosa* J. W. Parham 253

A. stellata (J. R. & G. Forst.) Roemer & Schultes var. *stellata* 549

Carruthersia macrantha A. C. Sm. 158

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Synedrella nodiflora (L.) Gaertn. 420

Vernonia cinerea (L.) Less. 433

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Liliaceae

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Orchidaceae

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A. reflexa Bl. 183, 188

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Kyllinga polyphylla Willd. ex Kunth 400

Rhynchospora corymbosa (L.) Britton 510

Commelinales

Commelinaceae

Commelina diffusa Burm. 527

Restionales

Flagellariaceae

Flagellaria gigantea Hook. 329

F. indica L. 278

Poales

Poaceae

Arundo donax L. var. *donax* 533

Bambusa vulgaris Schrader ex Wendl. 524

Brachiaria mutica (Forssk.) Stapf 525

Centosteca lappacea (L.) Desv. 395, 438, 509

Chrysopogon aciculatus (Retz.) Trin. 491

Digitaria setigera Roth ex Roemer & Schultes 526

Eleusine indica (L.) Gaertn. 390, 393

Eragrostis unioides (Retz.) Nees ex Steudel 394

Ischaemum indicum (Houtt.) Merr. 419, 439

Miscanthus floridulus (Labill.) Warb. ex K. Schum. & Lauterb. 521

Paspalum orbiculare Forst. 437

P. conjugatum Bergius 391

Sacciolepis indica (L.) Chase 397, 399

Araceae

Clinostigma exorrhizum (H. Wendl.) Becc. 189

Arales

Araceae

Alocasia macrorrhiza (L.) G. Don 530

Epipremnum pinnatum (L.) Engl. 146

Pandanales

Pandanales

Freycinetia caudata Hemsl. 047, 123

F. pritchardii Seem. 341

Discussion

The composition of the vascular flora of the south eastern slopes of the Korobasabasaga range and Waisoi is summarised in Table 1. Fern and fern allies represent 26.7% of the flora comprising 22 families, 53 genera, 99 species and 1 sub-species; gymnosperms 2.2% of the flora comprising 3 families, 7 genera, 8 species and 1 sub-species; dicotyledones 52.8% of the flora comprising 68 families, 133 genera, 196 species and 22 sub-species; monocotyledones 18.3 % of the flora comprising 15 families, 56 genera, 68 species and 2 sub-species. The total number of species as well as sub-species was 371. The results of this study indicate that an intensive survey over a relatively short period of time in a limited area will reveal more taxa than previously recorded from a similar area with sporadic collections compiled over longer periods of time. For example, a summary of Smith's flora (1979-1991) by Watkins (1995) lists 215 species as occurring on Mt. Korobaba, 242 species on Mt. Victoria and 278 species from the Colo-i-suva reservation with comparable areas in size. A similar study carried out on Mt. Korobaba revealed that at least 310 species of higher plants present (Kirkpatrick and Hassall 1985). The flora of Wasoi appears to be relatively rich as well, now being the second richest area in Fiji, following Nadarivatu, with a total of 599 species (Watkins 1995).

Growth form composition of the flora is summarised in Table 2 and Figure 1. The trees form the largest group comprising 33.9 % of the flora, followed by perennials

20.3 %, epiphytes 15.2%, shrubs 14.2 %, climbers and lianas 7.6 %, succulent herbs 5.3 % and annual herbs 3.5%. The forms of twenty-four taxa can be classified as either shrubs or trees, or as perennial herbs or shrubs.

The origin, distribution and establishment of the taxa are summarised in Table 3. Taxa that are native to Fiji represent 86 % of the flora comprising 43.5 % endemic and 42.4 % indigenous. Adventive taxa comprised 13 % of the flora out of which 83.3% (40 taxa) are presumably recent introductions to the area. These recent introductions may have occurred within the past 30 years when mining exploration began in the area (Colley and Flint 1995). From this study 36 new records for the Namosi province flora were observed and these can be considered as new range extensions. This makes up 9.7 % of the Waisoi flora.

The Waisoi area is particularly vulnerable to human impacts because of the mineral deposits within the area. Mining exploration roads, current logging operations, and future mining operations are direct on-going threats to the local flora, especially in low-lying areas. The flora confined to inaccessible areas (e.g., higher elevations and steep slopes) is afforded some natural protection as long as logging or mining operations do not expand into these areas. Further analyses of the flora and its ecology are currently underway (Tuiwawa and Doyle, unpublished) and will be presented elsewhere.

Table 1 Summary of the vascular plants in Waisoi based on the preliminary checklist.

Groups	Families	Genera	Species	Sub-species
Psilotales	1	2	2	-
Lycopodiales	1	1	8	-
Sellaginellales	1	1	4	-
Filicales	19	49	85	1
Pinales	2	6	7	1
Gnetales	1	1	1	-
Dicots	68	133	196	22
Monocots	15	56	68	2
Totals	108	249	371	26
All Taxa				371

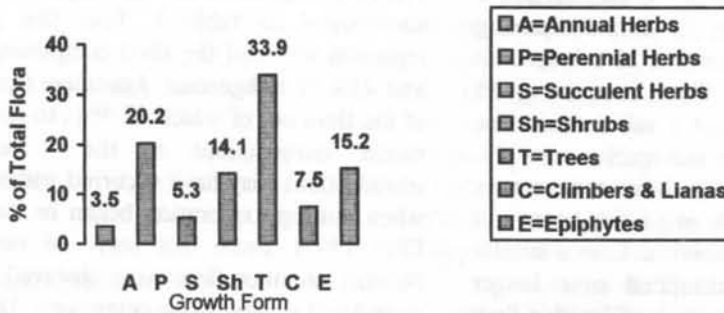
Table 2 Growth form composition of the flora.

Groups	Annual Herbs	Perennial Herbs	Succulent Herbs	Shrubs	Trees	Climbers & Lianas	Epiphytes
Fern & Allies	-	38	2	17	7	1	35
Gymnosperms	-	-	-	-	8	-	-
Dicotyledones	9	17	10	38	118	21	6
Monocotyledones	5	25	9	1	1	8	19
Totals	14	80	21	56	134	30	60

Table 3 Summary of the origin, establishment and range extension of the flora.

Groups	Endemics	Indigenous	Adventives	Naturalised	New records
Ferns & Allies	27	72	0	0	13
Gymnosperms	4	4	0	0	0
Dicotyledones	116	51	28	3	15
Monocotyledones	14	30	20	1	8
Totals	161	157	48	4	36

Figure 1 The composition of the various growth forms of vascular plants of Waisoi in Namosi.



Acknowledgement

This study was supported by a research grant from the University of the South Pacific. We wish to thank Mosese Moccawa, Masitoqi and Eranamo for their help as field guides and assistance in the collection process, the Placer Mining Exploration Limited for allowing the use of the facilities at their field station, the paramount chief of Namosi - Ratu Suliano and the Roko Tui Namosi and his staff at the Provincial office in Navua for their advice and help in liaising with the landowners, Saula Vodonaivalu with the verification of the checklist and Ms Melissa Dent for her assistance in preparing the manuscript.

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