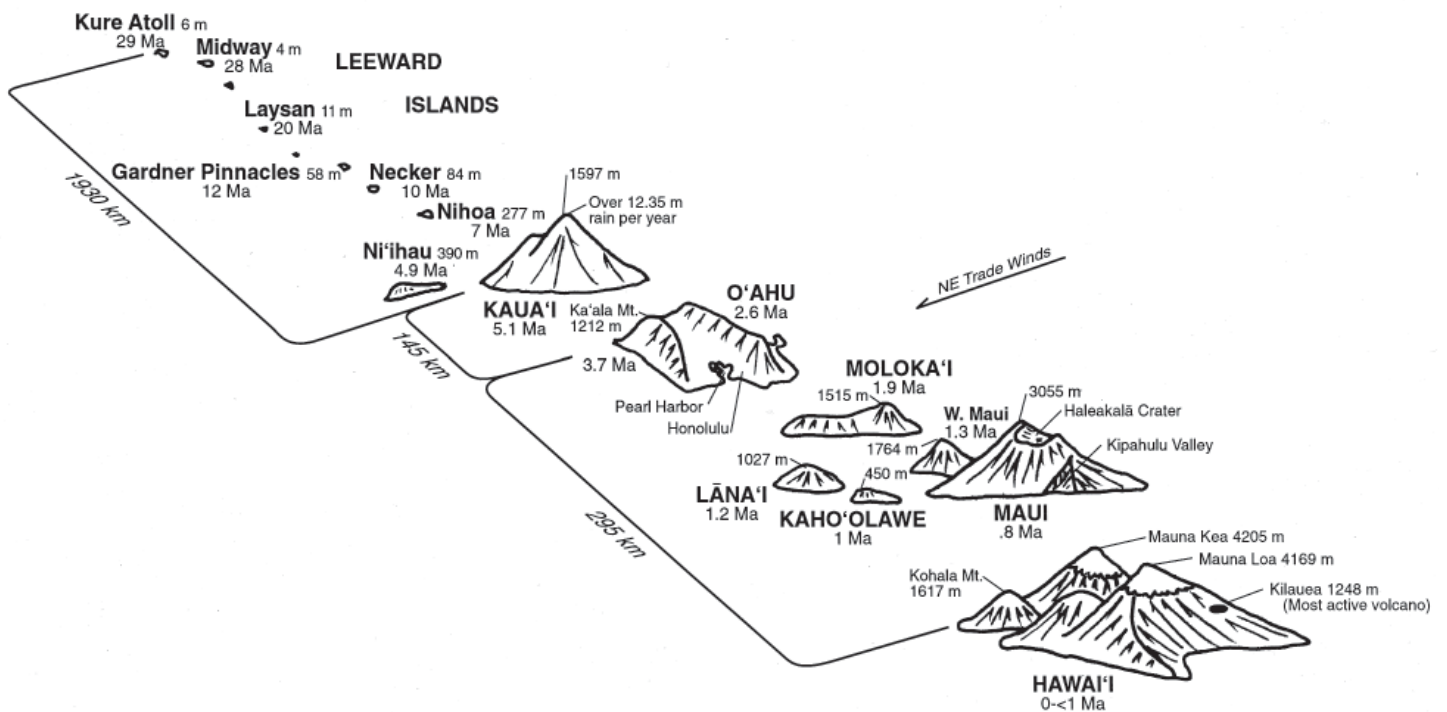


# International Association of Vegetation Science

## 47th Annual Symposium in Hawai`i

### Post-Conference Field Trip Guide



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# Maui, July 24-26, 2004

## Saturday, July 24 West Maui Trip (during afternoon)

- The Post-Conference Group (34 according to the latest count) leaves Kailua-Kona Airport at 12:22 PM with HA 177.
- Arrival in Kahului, Maui at 12:51 PM. Airport pick-up by bus from Akaina Tours [(808) 879-2828]. It also carries the entire luggage. Transfer to coach with the entire luggage after arrival, I estimate will take 40-50 minutes.
- Next we drive from the Airport to West Maui through Wailuku to `Iao Valley State Park and Kapaniawai Heritage Garden. We may spend there 1 to 2 hours, and then drive back to Kahului to get to the Maui Seaside Hotel [(808) 877-3311] after check-in time and spend the rest of the day and the night there.

## Sunday, July 25 East Maui Upland Tour, Haleakalā Mountain

- 7:30 AM depart from Seaside Hotel. Drive to Makawao-Pukalani and drop off signed Permits for all participants at Nature Conservancy Office. (Since this is a Sunday, all the permitting procedure has to be done before. DMD will clarify this with Patti Welton or Lloyd Loope). From Pukalani we drive up on Haleakalā Highway to Hosmer Grove.
- 9:30 AM hike from Hosmer Grove via conifer plantation area to Waikamoi Nature Reserve and down Fish and Wildlife Transect 3. Upper montane native *Acacia koa* – *Metrosideros* – *Dryopteris* cloud forest. Described in “Vegetation of the Wet Windward Slope of Haleakalā” in Pac. Sci. 46: 207 as Unit B3: *Metrosideros-Sadleria* ecotone community between 1750-1950 m. See also Figure 3: 203, upper montane zone.
- 1:30 PM Lunch from pack lunch (kept in bus) at Hosmer Grove.
- 2:30 PM Stop at Park Headquarters (2135 m). [Fee waver]
- 3:00 PM Stop at Halemau`u Trail at 8000 feet elevation (2440 m). Walk along trail for about 100 m to a Sandalwood bush (*Santalum haleakalae*). This is Unit C1: Subalpine scrub community *Dubautia* – *Sophora* in Pac. Sci. 46: 202-207, from 2000-2700 m elevation (9000 feet).
- 4:00 PM Stop at Red Hill, Summit of Haleakalā, 3057 m (10,023 feet). Alpine stone desert.
- 4:30 PM Stop at Silversword enclosure, near Kalahaku Overlook 2825 m (9,324 feet). Here, we make a short trail hike along contour into tropical upper subalpine scrub with scattered native bunchgrass, *Deschampsia nubigena*, *Dubautia menziesii* shrubs, and silversword individuals (*Argyroxiphium sandwicensis* spp. *macrocephalum*) in various life stages.
- 5:30 PM Return to Maui Seaside Hotel in Kahului for second overnight stay.

## Monday, July 26 East Maui Lowland Rainforest and Historic Dieback Area

- 7:30 AM Start from Maui Seaside Hotel after check-out and luggage is stored on coach. Lunch packages should be handed out to each participant to carry in pack sack. Drive to Pa`ia EMI Office to get key and collect permits. Name list must be at EMI Office one week before.
- 8:15 AM Continue on Hana Highway via Kailua to Papa`a`ea Reservoir and gate to Spreckle’s Trail (a Jeep Road).
- 9:00 AM Enter through gate on foot with EMI key and walk up 3 km on Spreckle’s Trail past Reservoirs to base of *Eucalyptus robusta* forest (planted in early 1930s). From base of eucalypt forest hike along blue flagged trail, 1 km up gentle slope through sections of *Melaleuca* forest to edge of historic *Metrosideros* dieback area.
- 12:00 Lunch at forest edge (dieback boundary). See “Vegetation of Wet Windward Slope” Pac. Sci. 46: 203-204 Unit A1 *Metrosideros-Sphenomeris* (*Odontosoria*) dieback area with stunted *Metrosideros* scrub islands and old big-diameter broken-down tree skeletons. Note *Melaleuca* invasion. See also

story on “Maui forest trouble” by Alan Holt on [www.botany.hawaii.edu/pabitra](http://www.botany.hawaii.edu/pabitra).

- 1:00 PM Hike back to parked coach.
- 3:00 PM Back in coach, and off to Kahului Airport for late afternoon flight to Lihue, Kaua`i (4:00 PM at Airport).
- Departure from Maui at 5:32 PM on HA 549V. Arrives HNL 6:06 PM, continues to Kaua`i at 6:45 PM. Arrival on Kaua`i at 7:22 PM. Received there at Lihue Airport by Kaua`i Island Tours.

## Plant Species on the Windward Transect of Haleakalā, Maui

*Acacia koa* (Fabaceae), end.

*Adenophorus tripinnatifidus* (Grammitidaceae), end., slender creeping rhizomes P: 37

*Adenophorus montanus*, end. renamed *A. tamariscinus* var. *montanus*, thick rhizomes P: 37

*Adenophorus pinnatifidus*, end. common, frond tapering at both ends, P: 40

*Adenophorus hymenophylloides*, end. hanging fronds, palai huna (hidden fern) P: 37

*Adenophorus tamariscinus*, end. epiphyte, thick rhizome, fronds can be bottle brush form P: 37

*Ageratina adenophora*, nat. (Asteraceae), Maui pāmakani W: 254

*Agrostis sandwicensis*, end. (Poaceae) W: 1492

*Alyxia oliviformis*, end. (Apocynaceae), maile W: 214

*Andropogon virginicus*, nat. (Poaceae), broomsedge, first coll. 1924 W: 1497

*Anthoxanthum odoratum*, nat. (Poaceae), sweet vernal grass, first coll. 1907 W: 1498

*Antidesma platyphyllum*, end. (Euphorbiaceae), hame, W: 600

*Argyroxiphium sandwicense* ssp. *macrocephalum*, end. (Asteraceae) ahinahina W: 261

*Asplenium trichomanes*, ind. (Aspleniaceae), `oāli`i, small, caespitose, narr. fronds, P: 61

*Asplenium lobulatum*, ind. pi`ipi`i lau manamana, dissected lvs, one pinnate P: 64

*Asplenium acuminatum*, end. lola, bi-pinnate, P: 56

*Asplenium adiantum-nigrum*, ind. `iwa`iwa, P: 59

*Asplenium normale*, ind. blades 1-pinnate, narrow linear-lanceolate, proliferation at frond tops, P: 61, 70

*Asplenium polyodon*, ind. pūnana manu (bird nest) P: 72

*Asplenium fragile*, end. renamed *A. peruvianum* var. *insulare* P: 75

*Astelia menziesiana* end. (Liliaceae), kaluaha, W: 1460

*Athyrium microphyllum*, end. (Athyriaceae), ākōlea, P: 77

*Athyrium sandwichianum*, end. renamed *Diplazium sandwichianum* (Athyriaceae), hā`i`o, pohole (on Maui), P: 124

*Broussaisia arguta*, end. (Hydrangeaceae) kanawao, pu`ahanui W: 794

*Carex alligata*, end. (Cyperaceae) W: 1388

*Carex wahuensis*, end. W: 1392

*Centella asiatica*, nat. (Apiaceae), pohakula W: 201

*Cerastium fontanum* ssp. *triviale*, nat. (Caryophyllaceae), mouse ear chickweed, W: 504

*Cheirodendrum trigynum* end. (Araliaceae), `ōlapa W: 227

*Cibotium glaucum*, end. (Dicksoniaceae) hāpu`u pulu P: 85

*Clermontia kakeana* end. (Campunalaceae) W: 429

*Clermontia arborescens* ssp. *waihia* end. `ōhā wainui, W: 426

*Clermontia grandiflora* ssp. *grandiflora* end. W: 429, long flower stalks

*Clidemia hirta* nat. (Melastomataceae), Koster`s curse W: 906

*Commelina diffusa* nat. (Commelinaceae), honohono W: 1378

*Coniogramme pilosa* end. (Ptreridaceae), lo`ulu, P: 99, base pinnae forked

*Conyza bonariensis* nat. (Asteraceae), lani wela, hairy horseweed, W: 285  
*Coprosma ernodeoides* end. (Rubiaceae), kūkaenēnē W: 1125  
*Coprosma montana* end. dioecious W: 1128  
*Coprosma pubens* end. W: 1129, hairs in line  
*Coprosma ochracea* end. W: 1127  
*Ctenitis rubiginosa* end. (Dryopteridaceae) renamed: *Nothoperanema rubiginosa*, stems very hairy P: 194  
*Ctenitis latifrons* end. ākolea, P: 101  
*Cuphea arthagenensis* nat. (Lythraceae), tarweed, W: 867  
*Cyanea aculeatiflora* end. (Campanulaceae), W: 438, lg. lvs. serrate  
*Cyanea kunthiana* end. W: 450, lg. lvd, entire  
*Cyperus halpan* nat. (Cyperaceae) W: 1397  
*Cyrtandra hashimotoi* end. (Gesneriaceae) W: 757, hairy lvs. & calyx  
*Cyrtandra platyphylla* end. `ilinia, W: 772, the common broad, wd., serrate form

*Dactylis glomerata* nat. (Poaceae), cocks foot W: 1521  
*Deschampsia nubigena* end. (Poaceae) W: 1524  
*Dicranopteris linearis* ind. (Gleicheniaceae) uluhe P: 115  
*Digitaria* sp. nat. (Poaceae) crabgrass W: 1529  
*Diplopterygium pinnatum* ind. (Gleicheniaceae) (formerly *Hicriopteris*, uluhe lau nui P: 127  
*Dodonaea viscosa* ind. (Sapindaceae), `a`ali`i W: 1227  
*Dryopteris glabra* var. *nuda* (Dryopteridaceae) kīlau, P: 140, 145  
*Dryopteris tetrapinnata*, 4-pinnate, restricted to E. Maui's rainforest, very large (up to 3 m long) scaly fronds, P: 149  
*Dryopteris acutidens*, renamed *D. unidentata* var. *palcana* P: 149  
*Dryopteris fusco-atra* P: 152, lili, reddish brown, close to *D. wallichiana* but blade more chartaceous  
*Dryopteris hawaiiensis* P: 146 & plate: 143, hairy frond  
*Dryopteris unidentata* `akole, P: 148, has two varieties: *paleasea* & *unidentata*  
*Dryopteris subbipinnata* P: 147, fronds up to 2 m on erect rhizomes, usually associated with *D. wallichiana*  
*Dryopteris wallichiana* ind. P: 152, `i`o nui, laukahi, opposite pinnae, denser than *D. fusco-atra*  
*Dryopteris glabra* P: 143, less hairy frond but often confused with *D. hawaiiensis*  
*Dubautia menziesii* (Asteraceae), W: 300, hispid, revolute

*Elaphoglossum hirtum* ind. (Elaphoglossaceae), renamed *E. paleaecum*, P: 158, 159, rough surface  
*Elaphoglossum pelludicum*, `ēkaha `ula hoe a Maui, P: 159  
*Elaphoglossum alatum*, hoe a Maui (Maui's paddle), P: 155, `ēkaha, glabrous  
*Elaphoglossum crassifolium*, `ēkaha or hoe a Maui, P: 156-157  
*Elaphoglossum wawrae*, laukahi, `ēkaha, P: 160, Plate 159, v. dimorphic, sterile vs. fertile  
*Epilobium billardierianum* spp. *cinereum* nat. (Onagraceae) willoq herb W: 995, lvs. bluish green  
*Erechtites valerianifolia* nat. (Asteraceae) fireweed W: 314

*Fragaria chiloensis* spp. *sandwicensis* ind. (Rosaceae) `ōhelo papa, lower surface densely silky W: 1103  
*Freycinetia arborea* ind. (Pandanaeae) `ie, `ie`ie W: 1428  
*Gahnia gahniiformis* ind. (Cyperaceae) W: 1409  
*Geranium cuneatum* spp. *tridens* (Geraniaceae) hina hina end. W: 731  
*Grammitis hookeri* nat. (Grammitidaceae) māku`e lau li`i (small lvd. māku`e), P: 165  
*Grammitis tenella* kolokolo, P: 164

*Hedyotis hillebrandii* end. (Rubiaceae) manono, W: 1143, flowers & fruits below term. lvs. on branches  
*Hedyotis terminalis* manono, fruits terminal (formerly *Gouldia*) W: 1154  
*Holcus lanatus* nat. (Poaceae), common velvet grass, first coll. 1909 W: 1551

*Huperzia phyllantha* ind. (Lycopodiaceae), wāwae `iole (rat's foot), P: 255

*Huperzia serrata* ind. (lvs. serrate) P: 264

*Hypochoeris radivata* nat. (Asteraceae), hairy cat's ear, first coll. on Maui 1909 W: 327

*Ilex anomala* ind. (Aquifoliaceae) kawa`a, `aiea W: 222

*Juncus planifolius* nat. (Juncaceae), bog rush, W: 1448

*Juncus effuses* nat. Japanese mat rush W: 1453

*Korthalsella complanata* ind. (Viscaceae) hulumoa W: 1338

*Kyllinga brevifolia* nat. (Cyperaceae) kili `o`opu, W: 1412

*Labordia hedyosmifolia* end. (Loganiaceae), tubular flower, W: 851, opp. broad-elliptic lvs.

*Labordia hirtella* end. W: 851, winged stems, large ornate lvs.

*Labordia venosa* end. W: 862, close to *L. hedyosmifolia*, pubescent lower leaf veins

*Lapsana communis* nat. (Asteraceae), nipplewort, annual with milky sap, W: 328

*Liparis hawaiiensis* end. (Orchidaceae) `awapuhiakaualoa W: 1470

*Ludwigia octovalvis* nat. (Onagraceae), kāmole, primrose willow, W: 999

*Luzula hawaiiensis* end. (Juncaceae), wood rush, blade hairy, W: 1456

*Lycopodium venustulum* ind. (Lycopodiaceae), P: 269

*Lycopodium cernuum* nat. renamed *Lycopodiella cernua*, wāwae `iole (rat's foot), P: 269

*Lythrum maritimum* ind. (Lythraceae), pū kāmole, petals purple, W: 867

*Machaerina mariscoides* spp. *meyenii* ind. (Cyperaceae) lahiniu, `uki, W: 1412

*Machaerina angustifolia* ind. `uki, W: 1412

*Marattia douglasii* end. (Marratiaceae) kapua `ilio (horses foot), P: 178

*Mecodium recurvum* end. (Hymenophyllaceae), the larger of the two common, filmy ferns `ōhi`a ku, P: 182  
hemlocktips

*Melaleuca quinquenervia* nat. (Myrtaceae), paper bark tree from Florida seed 1920, W: 964

*Metrosideros polymorpha* v. *incana* end. (Myrtaceae), low to middle elevations, W: 569

*Metrosideros polymorpha* v. *polymorpha* middle to higher elevations

*Metrosideros polymorpha* v. *glaberrima* middle to higher elevations

*Myrsine sandwicensis* end. (Myrsinaceae) kōlea lau li`I (small lvd.), W: 945

*Myrsine lessertiana* kōlea lau nui (large lvd.), W: 939

*Nephrolepis cordifolia* ind. (Nephrolepidaceae) P: 189, subterranean tubers, narrow linear blades

*Nephrolepis multiflora* nat. fronds wider near top of fronds, P: 191

*Nertera granadensis* ind. (Rubiaceae) mākole, W: 1159

*Odontosoria chinensis* ind. (Lindsaeaceae) renamed *Sphenomeris chinensis*, pala`ā P: 245

*Ophioglossum pendulum* ind. (Ophioglossaceae) renamed *Ophioderma pendulum*, moa, adder's tongue, P: 197

*Oreobolus furcatus* end. (Cyperaceae) W: 1422

*Paspalum scrobiculatum* nat. (Poaceae) mau`u laiki, rice grass, W: 1576

*Paspalum conjugatum* nat. mau`u, Hilo grass, W: 1575

*Paspalum urvillei* nat. Vasey grass, sheaths coarsely hirsute, W: 1577

*Pelea haleakalae* end. (Rutaceae) renamed *Melicope* W: 1189, Pate 171: 1187, revolute

*Pelea orbicularis* end. renamed *Melicope orbicularis* W: 1197, new growth: yellowish brown tomentose

*Pelea clusiifolia* end. renamed *Melicope clusiifolia* W: 1187, v. close to *M. haleakalae*

*Pellaea ternifolia* ind. (Pteridaceae), P: 201

*Peperomia obovatilimba* end. (Piperaceae) W: 1034, Plate 148: 1033, stems hirsute  
*Peperomia membranacea* end. W: 1032  
*Peperomia cookiana* end. W: 1022  
*Peperomia macraena* end. W: 1031  
*Peperomia hirtipetiola* end. W: 1026, lvs. hirsute  
*Peperomia expallescens* end. W: 1025, close to *P. eekana*  
*Peperomia eekana* end. W: 1024, Plate 145: 1023, v. small sessile lvs.  
*Perrottetia sandwicensis* end. (Celastraceae), olomea, W: 531, Plate 68: 532  
*Phymatosorus scolopendria* nat. (Polypodiaceae), renamed *Phymatosorus grossus*, laua`e (formerly *Microsorium scolopendria*), P: 205  
*Pittosporum glabrum* end. (Pittosporaceae) hō`awa W: 1040, lvs. obovate, revolute  
*Pittosporum confertiflorum* end. hō`awa, W: 1040, lvs. obovate, revolute  
*Plantago lanceolata* nat. (Plantaginaceae) narrow-leaved plantain, W: 1051  
*Pleopeltis thunbergiana* ind. (Polypodiaceae) renamed *Lepisorus thunbergianus*, pākahakaha P: 171  
*Polypodium pellucidum* end. (Polypodiaceae) `ae, `ae lau nui (large leaved `ae), P: 215  
*Polystichum bonseyi* end. (Dryopteridaceae) blades not tapering at base, P: 218  
*Pritchardia arecina* end. (Arecaceae) loulu palm, W: 1365  
*Prunella vulgaris* nat. (Lamiaceae) self heal, heal all, W: 828  
*Psidium cattleianum* nat. (Myrtaceae) waiawī, strawberry guava W: 971  
*Psidium guajava* nat. kuawa, common guava, W: 972  
*Psilotum nudum* ind. (Psilotaceae) moa, P: 273, upright whisk fern  
*Psilotum complanatum* ind. moa, flat-stemmed, whisk fern W: 272  
*Psychotria hawaiiensis* end. (Rubiaceae) kōpiko `ula, W: 1165  
*Psychotria mariniana* W: 1167  
*Pteridium aquilinum* v. *decomposium* ind. (Pteridaceae) kīlau, P: 224, bracken fern  
*Pteris cretica* ind. Cretan braken P: 225, 226  
*Pteris excelsa* `iwa, waimakanui, P: 227, 228  
*Rubus macraei* end. (Rosaceae) `ākala, W: 1109, closely related to *R. hawaiiensis*, Plate: 1108  
*Rubus rosifolius* nat. `ākala, thimbleberry, W: 1110  
*Rubus argutus* nat. `ohelo `ele`ele, prickly, Florida blackberry, W: 1107  
*Rubus hawaiiensis* end. `ākala, W: 1109, Plate 160: 1108  
*Rumex acetosella* nat. (Polygonaceae) sheep sorrel, W: 1066

*Sacciolepis indica* nat. (Poaceae) Glenwood grass, W: 1589  
*Sadleria cyatheoides* end. (Blechnaceae) `ama`u, P: 232  
*Sadleria squarrosa* `apu`u, P: 234  
*Sadleria pallida* `ama`u, P: 233  
*Santalum haleakalae* end. W: 1222  
*Scaevola chamissoniana* end. (Goodeniaceae) naupaka kuahiwi, W: 783  
*Setaria gracilis* nat. (Poaceae) mau`u kaleponi, perennial foxtail, W: 1592  
*Setaria palmifolia* nat. palm grass, first coll. 1903, from trop. Asia, W: 1593  
*Silene struthioloides* end. (Caryophyllaceae), plants glabrous, erect, lvs. rigid, W: 521, 525  
*Smilax melastomifolia* end. (Smilacaceae) hoi kuahiwi, W: 1610  
*Sophoroa chrysophylla* end. (Fabaceae) māmane, W: 706  
*Sphaerocionium lanceolatum* end. (Hymenophyllaceae) palai hinahina (gray fern), P: 242  
*Sphaerocionium obtusum* end. palai lau li`ii (small lvd. palai), P: 242, dendroid, densely  
*Stenogyne rotundifolia* end. (Lamiaceae) pua `aīnaka, W: 841, corolla pale pink or cream  
*Stenogyne kamehamehae* end. W: 838, Plate 116: 836, long tubular corolla, cream pink or red  
*Styphelia tameiameiae* ind. (Epacridaceae) pūkiawe, W: 590  
*Syzygium sandwicensis* end. (Myrtaceae) `ōhi`a ha, W: 976

*Tetramolopium humile* ssp. *haleakalae* end. (Asteraceae), W: 365  
*Tetraplasandra oahuensis* end. (Araliaceae) `ohe mauka, W: 235  
*Thelypteris sandwicensis* end. (Thelypteridaceae), renamed *Dryopteris sandwicensis* P: 147  
*Tibouchina herbcea* nat. (Melastomataceae) W: 915, Plate 128  
*Trifolium repens* nat. (Fabaceae) white clover, first col. 1909  
*Trisetum glomeratum* end. (Poaceae) pili uka, mountain pili, W: 1602

*Uncinia uncinata* ind. (Cyperaceae) W: 1436, Plate 212: 1433

*Vaccinium calycinum* end. (Ericaceae) `ōhelo kau lā`au, W: 593  
*Vaccinium dentatum* `ōhelo, serrate, Plate 79, W: 594  
*Vaccinium reticulatum* `ōhelo W: 593  
*Vandenboschia cyrtotheca* end. (Hymenophyllaceae) long stipes, P: 251

*Wikstroemia monticola* end. (Thymelaeaceae) small tree, up to 3 m, often assoc. with Lantana, W: 1286

*Xiphopteris saffordii* end. (Grammitidaceae) kihe renamed *Lellingeria saffordii*, P: 170, crenated blades with sori crowded

**Symbols with numbers refer to pagination in:**

P = Palmer, Daniel D. 2003. Hawaii's Ferns and Fern Allies. UH Press, Honolulu.

W = Wagner, W. L., D. R. Herbst, and S. H. Sohmer. 1999. Manual of the Flowering Plants of Hawai'i. UH and Bishop Museum Press.

# Kaua`i, July 26 to 28, 2004

## Monday, July 26

- Arrive on Kaua`i, Lihue Airport with late afternoon flight from Maui (5:32 )PM via Honolulu. Arrive on Kaua`i at 7:22 PM.
- Group will be met at Lihue Airport by a large coach from Kaua`i Island Tours [(808) 245-4777], and then proceed with entire luggage to Kauai Coconut Beach Resort [(808) 822-3455 ] in Kapa`a.

## Tuesday, July 27 Kaua`i Upland Trip

- 7:30 AM Start with lunches and water in each participant's back pack via Lihue, Kalaheo, Waimea, and drive up Waimea Canyon Road. Kaua`i Island Tours comes with three 15-seater vans with drivers = 42 open seats.
- 9:00 AM Stop at Waimea Canyon Lookout for half an hour.
- 9:30 AM Proceed to Kalalau Lookout (if possible with permission we may drive on paved road to Pu`u o Kila Lookout, 1.6 km further).
- 10:00 AM Start hiking along Pihea Trail, which goes through low-stature rain forest at 1200 m elevation. After 2.3 km on red clay pathway, the trail continues on a boardwalk, from near Pihea Peak (4284 ft = 1307 m) to Alaka`i Swamp Trail Junction, another 2.3 km walk. Here, at the open clay bog known as "lehua maka noi", we will sit down for lunch, about 12:30 PM.
- 1:00 PM Return along same track to parked coach. This should get us there by about 3:30 PM.
- 3:45-4:30 PM Stop at Koke`e Park Headquarters and Lodge.
- 4:30 PM Proceed down past Waimea Canyon Lookout to a final stop at the unique *Wilkesia gymnoxiphium* (iliau) stand, a close relative of the silversword.
- 5:00 PM Continue back to hotel at Kapa`a with approximate arrival at 6 PM. (A background paper for the Upland Trip is in Vegetatio 120: 1-20. 1995).

## Wednesday, July 28 Kaua`i Lowland Trip (final day)

- 7:30 AM Drive to Kaua`i's north shore with photographing stop at Hanalei taro (*Colocasia esculenta*) fields (15 minutes) to Limahuli Garden. This is being restored as an ahupua`a. Walk upslope into watershed forest with many stops to look at the plants and landscape features. (Fee waver has to be verified with Chipper Wichman).
- 11:30 AM Drive back to Kilauea Point National Wildlife Refuge and spend one hour there observing seabird colonies.
- 1 PM Have lunch outside nearby from pack lunches kept in coach/bus.
- 2 PM Drive back to hotel in Kapa`a to get there by 2:30.

**Field trip ends here. Participants must have made own arrangements for remaining on Kaua`i or departure to Honolulu and/or Kailua-Kona for Cloud-Forest Conference in Waimea.**



# Plant Species at the Pihea – Alaka'i Swamp Trail Area, Kaua'i<sup>1</sup>

- Adenophorus abietinus* (Grammitidaceae) the smallest, most delicate fern of the genus, end. P: 33  
*Adenophorus hymenophylloides* pendant on mossy trunk, end. pai, palai huna (hidden fern) P: 34  
*Adenophorus pinnatifidus* larger, with fronds tapering at both ends, end. P: 39  
*Adenophorus tamariscinus* two-pinnate fronds up to 20 cm in tight clusters, end. P: 34, 37  
*Adenophorus tripinnatifidus* end. P. 39 with slender creeping rhizomes  
*Alsinodendron lychnoides* (Caryophyllaceae) kuawāwaenuhu, end. genus (formerly Schiedea), W: 500 Plat 61:  
496 parallel veins, lvs in whorls  
*Alyxia oliviformis* (Apocynaceae) maile, end. W: 214  
*Asplenium lobulatum* (Aspleniaceae) pi'ipi'ilau, ind. P: 66  
*Asplenium normale*, ind. P: 70  
*Asplenium polyodon* pūnana manu, ind. P: 71  
*Asplenium sphenotomum*, end. P: 73  
*Astelia argyrocoma* (Liliaceae) pa'iniu, end. W: 1460  
*Athyrium microphyllum* (Athyriaceae) `ākōlea, end. P: 76
- Broussaisia arguta* (Hydrangeaceae) kanawao shrub, end. W: 794
- Carex alligata* (Cyperaceae) end. W: 1388  
*Cheirodendron platyphyllum* (Araliaceae) `ōlapa, lapalapa tree, end. W: 227  
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*Cibotium menziesii* (Dicksoniaceae) hapu`u, `i`i, reddish brown, end. P: 96  
*Cibotium glaucum* hāpu`u pulu, end. P: 95  
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*Clermontia fauriei* (Campanulaceae) hāhā `aiakamanu, end. W: 428  
*Coprosma elliptica* (Rubiaceae) pilo, end. W: 1124  
*Coprosma waimeae* `ōlena, end. W: 1130  
*Cryptocaria mannii* (Lauraceae) hōlio, end. W: 847  
*Cryptomeria japonica* Taxodiaceae) sugi pine  
*Cyrtandra longifolia* (Gesneriaceae) end. W: 766
- Dianella sandwicensis* (Liliaceae) `uki, ind. W: 1462  
*Dicranopteris linearis* (Gleicheniaceae) uluhe, ind. P: 113  
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*Dodonaea viscosa* (Sapindaceae) a`ali`i, ind. W: 1227  
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*Dubautia laxa* subsp. *hirsuta* (Asteraceae) na`ena`e pua melemele, end. W: 301  
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- Elaeocarpus bifidus* (Elaeocarpaceae) kalia, end. W: 589  
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*Elaphoglossum crassifolium* `ēkaha, hoe a Maui (Maui's paddle) end. P: 156  
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*Elaphoglossum pellucidum* `ēkaha `ula end. P: 158  
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- Gahnia vitiensis* (Cyperaceae) ind. W: 1411  
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*Hedyotis terminalis* (Rubiaceae) manono, end. W: 1152

*Ilex anomala* (Aquifoliaceae) kāwa`u, ind. W: 222

*Korthalsella latissima* (Viscaceae) hulumoa, end. W: 1339

*Labordia waialealae* (Loganiaceae) kamakahala, lau li`i, W: 862

*Lellingeria saffordii* (Grammitidaceae) kihe, end. P: 169

*Lycopodiella cernua* (Lycopodiaceae) wāwae `iole, ind. P: 269

*Lysimachia glutinosa* (Primulaceae) end. W: 1081

*Machaerina angustifolia* (Cyperaceae) `uki, ind. W: 1414

*Marattia douglasii* (Marattiaceae) pala, end. P: 178

*Mecodium recurvum* (Hymenophyllaceae) `ōhi`a ku, end. P: 182

*Melicope anisata* (Rutaceae) mokihana, end. (formerly *Pelea anisata*) W: 1183, 1705

*Melicope clusiifolia* kūkaemoa, kolokolo mokihana, end. W: 1185

*Melicope puberola* end. W: 1202

*Metrosideros polymorpha* (Myrtaceae) `ōhi`a lehua, end. W: 967

*Metrosideros polymorpha* var. *dieteri* W: 967

*Metrosideros polymorpha* var. *glaberrima* W: 967

*Metrosideros polymorpha* var. *pumila* lehua maka noe, W: 969

*Myrica faya* (Myricaceae) fire tree, nat. W: 931

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*Myrsine lessertiana* kōlea lau nui, end. W: 942

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*Nephrolepis cordifolia* (Nephrolepidaceae) sword fern, Boston fern, ind. P: 189

*Nertera granadensis* (Rubiaceae) mākole, ind. W: 1158

*Nothoperanema rubiginosa* (Dryopteridaceae), end. P: 194 (formerly *Ctenitis rubiginosa*)

*Oreobolus furcatus* (Cyperaceae), end. W: 1424

*Peperomia hesperomannii* (Piperaceae) end. W: 1025

*Pittosporum gayanum* (Pittosporaceae) hā`awa, end. W: 1043

*Polypodium pellucidum* (Polypodiaceae) `ae, end. P: 215

*Pouteria sandwicensis* (Sapotaceae) `āla`a, end. W: 1233

*Pritchardia minor* (Arecaceae) loulu palm, end. W: 1372

*Psilotum nudum* (Psilotaceae) moa nahele, ind. P: 272

*Psychotria mariniana* (Rubiaceae) kōpiko, end. W: 1169

*Rubus argutus* (Rosaceae) `ōhelo `ele`ele, prickly Florida blackberry, nat. W: 1107

*Sadleria pallida* (Blechnaceae) `ama`u fern, end. P: 233

*Santalum freycinetianum* (Santalaceae) `iliahi sandalwood, end. W: 1221

*Scaevola gaudichaudiana* (Goodeniaceae) naupaka kuahiwi, end. W: 784

*Scaevola glabra* `ohe naupaka, end. W: 786

*Schizaea robusta* (Schizaeaceae) `oāli`i, makali`i fern, end. P: 241

*Smilax melastomifolia* (Smilacaceae) hoi kuahiwi, uhi (Kaua`i), end. W: 1610

*Sphaerocionium lanceolatum* (Hymenophyllaceae) pulai hinahina, end. P: 242

*Stenogyne purpurea* (Lamiaceae) end. W: 841

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*Syzygium sandwicensis* (Myrtaceae) `ōhi`a hā, end. W: 976

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*Vaccinium calycinum* (Ericaceae) `ōhelo kau lā`au, end. W: 593

*Vaccinium dentatum* `ōhelo, end. W: 593

*Viola kauaensis* (Violaceae) kalili, end. W: 1334

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*Wickstroemia oahuensis* var. *palustris* (Thymelaeaceae) `ākia, end. W: 1286

**(Footnotes)**

<sup>1</sup> Based on *Vegetatio* (now *Plant Ecology*) 120:11-20 (1995) by Kitayama and Mueller-Dombois, updated 2003 by DM-D

W = Wagner, W. L. *et al.* 1990. Manual of Flowering Plants of Hawaii (pagination)

P = Palmer, D. D. 2003. Hawai`i's Ferns and Fern Allies (pagination)

End. = endemic, ind. = indigenous, nat. = naturalized

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