The genus *Fernandezia* was proposed by Ruiz and Pavón (1794) to accommodate some monopodial orchids with an obtuse labellum. Their rather broad concept of the genus included species of *Dichaea* Lindl. and *Maxillaria* Ruiz & Pav. Unfortunately, while discussing an aberrant taxon that had an acute labellum, *F. laxe* Ruiz & Pav., they inadvertently validated it, and this entity (which is a species of *Dichaea* Lindl.) is the nomenclatural type of *Fernandezia*. Therefore, the choice of *F. subbiflora* Ruiz & Pav. (a name published in 1798 but illustrated in 1794) as lectotype by Dunsterville and Garay (1972) is superfluous. It will therefore be necessary to conserve the type of *Fernandezia* to continue its usage as currently interpreted. Of the eight species named in 1798, only *F. subbiflora* Ruiz & Pav. and *F. denticulata* Ruiz & Pav. belong to the current concept of the genus.

For a long time *Fernandezia* contained only a few (about 6 or 7), attractive, red to orange-flowered species, until Chase and Whitten (2011) merged *Pachyphyllum* Kunth (about 40 species) with it on the basis of molecular data. The justification for this merger was published by Neubig et al. (2012), and it showed that species of *Pachyphyllum* were interdigitated with those of *Fernandezia*. However, Kolanowska and Szlachetko (2014) preferred to recognize five separate genera, namely *Fernandezia* Ruiz & Pav., *Orchidotypus* Kraenzl., *Pachyphyllum* Kunth, *Raycadenco* Dodson, and a new genus *Valdiviesou* Szlach. & Kolan. With the exception of *Raycadenco*, which seems best treated as a sister genus, I have followed Chase and Whitten’s broad concept of *Fernandezia*.

I agree with the criticism of the molecular clade of Neubig et al. (2012) by Kolanowska and Szlachetko (2014), who pointed out that seven of the taxa sampled were unidentified. Another problem is that two of the names used (*F. hartwegii* [Rchb.f.] Garay & Dunsterv. and *F. tica* Mora-Retana & J.B. Garcia) are in my opinion (Ormerod 2016) respectively synonyms of *F. myrtillus* (Rchb.f.) Garay & Dunsterv. and *F. sanguinea* (Lindl.) Garay & Dunsterv. These two latter entities were also quite often confused with each other in the literature and herbarium. Furthermore, another name used, *F. cuencae* (Rchb.f.) M.W. Chase, has been misapplied in the herbarium to at least two different species; I have not seen modern material of it. It is evident more species that have been confidently identified are required for a broader sampling base, including the use of more coding regions.

However, the problems with the taxa sampled in Neubig et al. (2012) are not their fault but rather a reflection of the history of confused taxonomy in *Fernandezia sensu lato*, where many names were misapplied, there was a large amount of unidentified herbarium material, and about half of the species of the genus were undescribed.

In this paper my intention is to try and resolve the identities of a number of previously established taxa, thus requiring some new synonymy. A large number of new taxa are also described, particularly from Peru and Bolivia, where it is evident active speciation has occurred. After examining most of the species in the genus it would seem prudent to propose some infrageneric divisions to aid in species placement and identification.

A number of taxonomic issues remain, and they bear mentioning. *Fernandezia distichoides* M.W. Chase (*Pachyphyllum distichum* Kunth) is the type species of *Pachyphyllum* Kunth. The name is frequently misapplied, part of the problem being that the type material in Paris appears to be a mixture of three or four species. Taxa in this group are difficult to distinguish. Three other species, *F. dalstroemii* (Dodson) M.W. Chase, *F. hugsateri* (Dodson) M.W. Chase, and *F. theodorii* M.W. Chase (*Pachyphyllum hartwegii* Rchb.f.), also pose problems because of their conservative floral morphology.

*Fernandezia sensu lato* may be recognized by its monopodial habit, short, axillary inflorescences, small flowers (sepal 1–12 mm long), relatively simple, barely lobed lip, often bearing a medial thickening that terminates in a bilobed callus or two lamellae, broadly winged column, often with a cryptic anther, and two pollinia with variously developed viscidia and tegula.

I wish to thank Anthony Brach (A, GH), Kanchi Gandhi (GH), Marta Kolanowska (UGDA), Gustavo A. Romero (AMES), and Dariusz Szlachetko (UGDA) for their kind help in many matters. Herbarium and library staff at the Harvard University Herbaria are also thanked for their assistance and hospitality. The following herbaria generously loaned material for study: BM, K, MO, NY, SEL, and US.

Paul Ormerod

**Abstract.** Literature and herbarium studies of the Neotropical orchid genus *Fernandezia* Ruiz & Pav. reveal that a number of previously recognized taxa should be synonymized, while at the same time it is necessary to propose several new taxa (45 species and 11 varieties). *Fernandezia distichoides* (*Pachyphyllum distichum*) and *F. pectinata* are lectotypified, and *F. vaginata* is neotypified. An infragenic subdivision is proposed for *Fernandezia*, in which six sections are recognized. *Section Capitata* is transferred from *Pachyphyllum*, *Orchidotypus* is reduced to sectional level (as it was in *Pachyphyllum*), and three new sections are proposed, namely, *section Breviconnata*, *section Gracillima*, and *section Lamellata*.

**Keywords:** *Fernandezia*, new species, sections, synonymy, typification

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Infrageneric Division

**Fernandezia** section *Breviconnata* Ormerod, sect. nov.

Type species: *Pachyphyllum breviconnatum* Schltr.

Leaves flat, often twisted basally to lie in a 180° plane; peduncle often bifurcose; flowers often with sepals and petals united basally, dorsal sepal and petals often recurved, lateral sepals often upcurved, labellum short to long clawed, blade ovate-lanceolate, narrowly elliptic to subpandurate, column shortly stalked, with suborbicular wings in the upper half.

**Distribution:** about eight species in Peru and Bolivia.

The core group of species in this section contains *Fernandezia* *breviconnata* (Schltr.) M.W. Chase and five new species, *F. bilineata*, *F. chaparensis*, *F. cymbiformis*, *F. mercadoi*, and *F. solomonii*. These all agree in habit and leaf shape (elliptic with tapered ends), short 2- to 3-flowered inflorescences, flowers with a recurved dorsal sepal and petals, upcurved lateral sepals, and ovate-lanceolate to a subpandurate lip. I also consider *F. parvifolia* (Lindl.) M.W. Chase to belong here, though its habit is a little different, the leaves oblong to oblongo-ovate, the sepals straight, and the lip oblong to elliptic. Another outlier is *F. luerorum* Chase from Bolivia, which has a short but seemingly multiflowered raceme, flowers with splayed (vs. upcurved) lateral sepals, and an unusual column widened both dorsally and ventrally.

**Fernandezia** section *Capitulum* (D.E. Bennett & E.A. Christenson) Ormerod, comb. nov.


This section was originally proposed by Christenson on the basis of the premise that the flowers were in a capitulum, instead of a raceme. However, I consider the inflorescence to have a very short, often bifurcose raceme, a feature also found in taxa of the *F. breviconnata* (Schltr.) M.W. Chase group. All three species in section *Capitulum* share the short raceme, flowers with papillose-denticulate margins to the sepals and petals, an ovate-suborbicular lip that bears a Y-shaped callus with the ends vanishing into the surface, and a column with downward-directed lobe-like wings.

Kolanowska and Szlachetko (2014) provided a revision of the group under the generic name *Valdiviesoa*, but they overlooked *Pachyphyllum ecallosum*. I think further studies are called for, especially since all three species are very similar florally.

In this paper only *Fernandezia ecallosa* and a new variety are treated.

**Fernandezia** section *Fernandezia* sensu lato

Type species (to be conserved): *Fernandezia subbiflora* Ruiz & Pav.
**Fernandezia** section *Lamellata* Ormerod, sect. nov.

Type species: *Pachyphyllum pectinatum* Rchb.f.

Leaves flat to conuplicate; labellum often narrowed to base but can be oblong to elliptic, with two lamellate keels, these either elongated or abbreviated; column stalked, often with suborbicular wings.

**Distribution:** 29 species in Peru and Bolivia.

This group of species has obviously speciated in the Andes of Peru and Bolivia. Leaf form varies from flat to conuplicate, coriaceous to fleshy. Obviously the plants have some vegetative similarity to various species in section Fernandezia, but generally the lip is narrower in the basal half and adorned above with lamellae, whereas in section Fernandezia the lip is usually broader in the basal half, and the calli of the lip are thick and fleshy.


**Fernandezia** section *Orchidotypus* (Kraenzl.) Ormerod, comb. nov.


Type species: *Orchidotypus muscoides* Kraenzl.


**Distribution:** eight species in Mexico, Guatemala, Costa Rica, Panama, Venezuela, Colombia, Ecuador, and Peru.

This group of species may be recognized by the small size of the plants (to 6 cm tall), short, 1- to 2-flowered inflorescences, and tiny campanulate flowers (sepal 1.2–2.7 mm long), with connate sepals and petals, a broadly clawed lip with well separated lamellae, and a shortly stalked column. One exception to floral size is *Fernandezia pastorelliae* Trujillo, which has 10-mm-long sepals. A recent synopsis of the Colombian species was given by Szlachetko et al. (2014), but in my opinion the authors misapplied the name *Orchidotypus breviflorus* (Schltr.) Senghas to material of *O. schultesii* (L.O. Williams) Senghas, while what they called *O. schultesii* is rather *O. vaginatus* (Schltr.) Senghas.

Notes on this can be found under the relevant taxa.

The following key is arranged using the sections above, but in the following order (basically from those with the least species to the most): Sections *Capitata*, *Orchidotypus*, *Gracillima*, *Brevicornata*, *Fernandezia*, and *Lamellata*.

**Key to the Sections and Species of Fernandezia Treated Here**

A. Section *Capitata*. Labellum with callus tips vanishing in its surface.

1A. Labellum with apical margin minutely papillose; column 1.0–1.3 mm wide laterally ......................................................... *F. ecallosa* var. *ecallosa*

1B. Labellum with apical margin entire; column 1.8 mm wide laterally ................................................................. *F. ecallosa* var. *cundinamarcae*

B. Section *Orchidotypus*. Sepals and petals connate; base of lateral sepals not broadly oblique; column widest in upper half.

1A. Leaf sheaths with margins fimbriate-denticulate; lateral sepals to 1.9 mm long; blade of labellum pentagonal-suborbicular ................................................................. *F. antioquiensis*

1B. Leaf sheaths with margins entire to shortly denticulate; lateral sepals 1.9–2.9 mm long; blade of labellum ovate to ovate-elliptic ................................................ 2

2A. Lateral sepals 1.9 mm long; sepals with free parts elliptic ................................................................. *F. vaginatus*

2B. Lateral sepals 2.2–2.9 mm long; sepals with free parts triangular ................................................................. *F. schultesii*

C. Section *Gracillima*. Sepals and petals connate basally to halfway; lateral sepals to 3 mm long with a broadly oblique base, sometimes thickened medially but not lamellate carinate; column widest medially.

1A. Leaves narrowly oblanceolate to oblong; sepals and petals connate about halfway; labellum pentagonal .............................................. *F. vanderwerffii*

1B. Leaves ovate-elliptic, attenuate both ends; sepals and petals connate in lower third or not; labellum oblong to trullate ................................................ 2

2A. Labellum ovate-elliptic; column narrowly stalked ................................................................. *F. pastinaca*

2B. Labellum oblanceolate; column broadly stalked ................................................................. *F. nunezii*

3A. Labellum trullate ................................................................. *F. unduaviiae*

3B. Labellum oblanceolate to oblong-elliptic ................................................................. *F. platychila*

D. Section *Brevicornata*. Sepals and petals connate in basal part; lateral sepals (3.0–)3.4–8.8 mm long, usually lamellate carinate.

1A. Leaves oblong to oblong-oblate; sepals and petals forward-pointing, straight ................................................ 2

1B. Leaves ovate-elliptic, attenuate both ends; dorsal sepal and petals recurved; lateral sepals upcurved to splayed ................................................ 3

2A. Labellum oblanceolate to narrowly elliptic, 1.0–1.3 mm wide ................................................................. *F. parvifolia* var. *parvifolia*

2B. Labellum elliptic, 1.8 mm wide ................................................................. *F. parvifolia* var. *cajamarcae*

3A. Lateral sepals splayed; labellum with claw longer than blade; blade ovate-elliptic bearing a single callus; column widened dorsally and ventrally at apex ................................................ 4

3B. Lateral sepals parallel, upcurved; labellum with claw shorter than blade; blade ovate-lanceolate to subpandurate and bearing two lobe-like calli; column widened ventrally ................................................ 5

4A. Labellum subpandurate ................................................................. 5

4B. Labellum oblanceolate ................................................................. 7
KEY TO THE SECTIONS AND SPECIES OF FERNANDEZIA TREATED HERE CONT.

5A. Labellum with large lamellae about 1/4 length of blade; column 2.1 mm long .............................................. F. cymbiformis
5B. Labellum lamellae twice as small; column 3.1–3.2 mm long ................................................................. F. militaris
6A. Dorsal sepal oblong; petals 1.8 mm wide; labellum subacuminate, calli obliquely angled ......................... F. solomoni
6B. Dorsal sepal ligulate-ob lanceolate; petals 1.2 mm wide; labellum narrowly triangular in upper half, calli parallel .......... F. bilineata
7A. Petals with claw 1/3 length; labellum ovate-lanceolate ........................................................................ F. mercadoi
7B. Petals with claw 1/5 to 1/6 length; labellum oblong ......................................................... F. chaparensis

E. Section Fernandea. Labellum with fleshy calli arising from a thickened medial ridge (see discussion above about exceptions).

1A. Labellum obovate, or wider in apical half .................................................................................. F. cristallina
1B. Labellum wider in lower half, or similar width throughout .......................................................... F. cambrensis
2A. Labellum with a transversely elliptic blade in upper half .............................................................. F. transversalis
2B. Labellum more or less obovate ................................................................................................. F. mandonii
3A. Sepals 3.5–4.1 mm long; labellum 4.0 × 2.3 mm ........................................................................ F. salliquensis
3B. Sepals 2.0–2.6 mm long; labellum 2.7 × 1.5 mm ................................................................. F. espinosae
4A. Leaves semitubular, rigid ...................................................................................... F. cristallina
4B. Leaves flat to conduplicate, texture softer ................................................................................. F. falcifolia
5A. Labellum subpandurate  .................................................................................................. F. cristallina
5B. Sepals (1.8)–1.9–4.1 mm long ....................................................................................... F. camposii
6A. Flowers globular with broadly elliptic to subcircular tepals; column wings semi-elliptic, forward pointing ................ F. pulchella
6B. Flowers not globular, tepals ovate, elliptic to oblong; column wings truncate or barely produced . F. crystallina
7A. Stems sub laxly leafy; leaf sheaths smooth; sepals 1.0–1.5 mm long; petals oblong ................................. F. bilineata
7B. Stems densely leafy; leaf sheaths subverrucose rugulose; sepals 1.5–1.7 mm long; petals oblong-ob lanceolate .......... F. campost
8A. Column angled down dorsally ....................................................................................... F. callacalae
8B. Column straight or slightly curved dorsally ........................................................................ F. bilineata
9A. Stems up to 12 mm across leaf sheaths; column 2.95–3.00 mm long ............................................... F. cristallina
9B. Stems up to 8 mm across leaf sheaths; column 1.1–2.3 mm long .............................................. F. cristallina
10A. Labellum upper part ("epichile") transversely elliptic, distinctly broader than long ......................... F. cristallina
10B. Labellum upper part ("epichile") ovate, deltate, to subcircular, hardly broader than long, more often longer than broad ........... F. cristallina
11A. Leaves oblong-elliptic, 10.0–15.0 × 4.5–6.5 mm; petals widest basally; column wings slightly narrowed toward base .......... F. cuprea
11B. Leaves ligulate, 8.0–10.0 × 2.5–4.0 mm; petals widest apically; column wings distinctly narrowed toward base ........ F. yahuarococha
12A. Column 1.1–1.3 mm long ................................................................. F. cristallina
12B. Column 1.5–2.3 mm long ................................................................................. F. cristallina
13A. Labellum ovate-deltate; column 0.7 mm wide laterally, wings obtuse, forward-pointing, produced ................ F. rubescens
13B. Labellum subpandurate; column 0.9–1.0 mm wide laterally, wings obliquely truncate, slightly produced ........ F. denticulata
14A. Labellum widely ovate, upper part triangular; column shortly and broadly clawed, truncate, wings transverse rectangular .......... F. rubicunda
14B. Labellum ovate, ovate-lanceolate, to oblong; column usually sessile, if shortl clawed then not truncate, wings deltate to elliptic ... F. cristallina
15A. Column 1.5 mm long; labellum 1.15–1.30 mm wide ................................................. F. cristallina
15B. Column (1.4)–1.7–2.3 mm long; labellum 1.3–2.0 mm wide ............................................. F. cristallina
16A. Stem laxly leafy; column widest basally, wings angling up from base to apex ........................................ F. cristallina
16B. Stem rarely laxly leafy, usually sub laxly to densely leafy; column either narrowest basally, or wings straight (i.e., 180° line) ....... F. cristallina
17A. Lower margins of column straight (i.e., basal and apical width equal) ............................................. F. cristallina
17B. Lower margins of column angling back toward base (i.e., column widest apically) ................. F. cristallina
18A. Wings obliquely truncate, apex of clinandrium relatively large ................................................. F. cristallina
18B. Wings columnally produced, rounded, apex of clinandrium smaller ........................................ F. cristallina
19A. Leaves thinly coriaceous to fleshy ........................................................................................ F. cristallina
19B. Leaves thin but firm (edges often revolute); labellum upper part straight; column wings about 1/3 width of apex ........ F. putamayensis
20A. Leaves oblong to elliptic, usually 6–10 × 3–6 mm; labellum upper part usually deflexed to recurved .......... F. cristallina
20B. Leaves ligulate, 15–18 × 5 mm; labellum upper part straight ........................................................... F. cristallina
21A. Sepals 2.0–2.6 mm long; labellum 1.4 mm wide ........................................................................ F. cristallina
21B. Sepals 2.75–3.70 mm long; labellum 1.8–2.1 mm wide ......................................................... F. cristallina
22A. Leaves 5.0–17.0 × 4.0–5.5 mm spread, sides upcurved; labellum lower half divided longitudinally by a narrow medial thickening ................................................. F. cristallina
22B. Leaves 12.0–31.0 × 7.0–9.5 mm spread, sides weakly upcurved; labellum lower half divided longitudinally by a broader thickening ................................................. F. cristallina

F. Section Lamellata. Labellum usually narrowed in basal half, base not wider than upper part, bearing short to long lamellae; column usually stalked, often with suborbicular wings.

1A. Labellum blade subquadrato .................................................................................................. F. quadrangularis
1B. Labellum blade otherwise shaped .................................................................................. F. cristallina
2A. Labellum cuneate to rectangular .................................................................................. F. cristallina
2B. Labellum otherwise shaped ......................................................................................... F. cristallina
3A. Sepals 2.30–2.65 mm long; labellum 2 × 1 mm ........................................................................ F. cristallina
3B. Sepals 2.8–3.8 mm long; labellum 2.7–3.0 × 1.0–1.6 mm ..................................................... F. cristallina
4A. Labellum subpandurate ............................................................................................. F. cristallina
4B. Labellum with lamellae two to three times smaller; labellum 2.0–2.2 × 1.0 mm long .......... F. cristallina
<table>
<thead>
<tr>
<th>Step</th>
<th>Description</th>
<th>Section/Species</th>
</tr>
</thead>
<tbody>
<tr>
<td>4B</td>
<td>Labellum otherwise shaped</td>
<td>F. pandurata</td>
</tr>
<tr>
<td>5A</td>
<td>Labellum apex obtusely apiculate; lamellae small, subquadrate, well separated</td>
<td>F. pandurata</td>
</tr>
<tr>
<td>5B</td>
<td>Labellum apex broadly rounded; lamellae transverse ligulate, approximate</td>
<td>F. diazii</td>
</tr>
<tr>
<td>6A</td>
<td>Labellum with a long rectangular claw terminating in a pentagonal blade; lamellae large, overlapping nexus of claw and blade spread out.</td>
<td>F. pseudodichaean</td>
</tr>
<tr>
<td>6B</td>
<td>Labellum with claw absent, short, or cuneate, blade shaped otherwise; lamellae rarely overlapping edges</td>
<td>F. pseudominor</td>
</tr>
<tr>
<td>7A</td>
<td>Labellum oblong, of equal width throughout, broadly rounded</td>
<td>F. pseudominor</td>
</tr>
<tr>
<td>7B</td>
<td>Labellum otherwise shaped, if oblong then either narrowed toward base or apex</td>
<td>F. pseudominor</td>
</tr>
<tr>
<td>8A</td>
<td>Labellum blade forming an acute to right angle with claw</td>
<td>F. pseudominor</td>
</tr>
<tr>
<td>8B</td>
<td>Labellum blade forming an obtuse angle with claw, or simply the base cuneate or rounded in each side</td>
<td>F. pseudominor</td>
</tr>
<tr>
<td>9A</td>
<td>Labellum subsessile, oblong-lanceolate, acute; lamellae paired, short</td>
<td>F. scimitaris</td>
</tr>
<tr>
<td>9B</td>
<td>Labellum with a short subquadrate claw, blade broadly rounded; lamellae parallel to slightly divergent, more or less elongate</td>
<td>F. scimitaris</td>
</tr>
<tr>
<td>10A</td>
<td>Sepals 3.2–3.5 mm long; labellum 3.4–3.5 × 1.8 mm; column 2 mm long</td>
<td>F. shoveliformis var. shoveliformis</td>
</tr>
<tr>
<td>10B</td>
<td>Sepals 1.8 mm long; labellum 2.0 × 1.2 mm; column 1.15 mm long</td>
<td>F. shoveliformis var. shoveliformis</td>
</tr>
<tr>
<td>11A</td>
<td>Labellum ovate-lanceolate, upper 1/3 thickened</td>
<td>F. crassapex</td>
</tr>
<tr>
<td>11B</td>
<td>Labellum otherwise shaped, upper 1/3 not thickened, except along midvein below</td>
<td>F. crassapex</td>
</tr>
<tr>
<td>12A</td>
<td>Labellum elliptic, same width apically and basally</td>
<td>F. crassapex</td>
</tr>
<tr>
<td>12B</td>
<td>Labellum otherwise shaped, sometimes oblong-elliptic but then more tapered apically or basally</td>
<td>F. crassapex</td>
</tr>
<tr>
<td>13A</td>
<td>Petals obovate-oblong to unevenly ovate-elliptic, noticeably thickened along midvein; column wings not much broader than basal part of column</td>
<td>F. minor var. bokoeorum</td>
</tr>
<tr>
<td>13B</td>
<td>Petals oblong to elliptic, not noticeably thickened along midvein; column wings almost as much broader again than basal part of column</td>
<td>F. minor var. breviflora</td>
</tr>
<tr>
<td>14A</td>
<td>Labellum oblong-oblancoate</td>
<td>F. minor var. breviflora</td>
</tr>
<tr>
<td>14B</td>
<td>Labellum otherwise shaped</td>
<td>F. minor var. breviflora</td>
</tr>
<tr>
<td>15A</td>
<td>Sepals to 2.8 mm long</td>
<td>F. minor var. breviflora</td>
</tr>
<tr>
<td>15B</td>
<td>Sepals 2.9–4.6 mm long</td>
<td>F. minor var. breviflora</td>
</tr>
<tr>
<td>15B</td>
<td>Sepals 2.9–4.6 mm long</td>
<td>F. minor var. breviflora</td>
</tr>
<tr>
<td>16A</td>
<td>Labellum lamellae abbreviated, subquadrate to suborbicular</td>
<td>F. teranti</td>
</tr>
<tr>
<td>16B</td>
<td>Labellum lamellae elongate or with drawn out bases</td>
<td>F. teranti</td>
</tr>
<tr>
<td>17A</td>
<td>Leaf sheaths broad, covering stem; labellum lamellae within confines of blade when spread</td>
<td>F. carabayana</td>
</tr>
<tr>
<td>17B</td>
<td>Leaf sheaths narrow, semitubular, internodes partially exposed; labellum lamellae overlapping edge of blade when spread</td>
<td>F. angusta var. erythromitra</td>
</tr>
<tr>
<td>18A</td>
<td>Leaves thick and fleshy, conduplicate</td>
<td>F. angusta var. erythromitra</td>
</tr>
<tr>
<td>18B</td>
<td>Leaves thin coriaceous, flat</td>
<td>F. angusta var. erythromitra</td>
</tr>
<tr>
<td>19A</td>
<td>Petals oblong-oblancoate; labellum lamellae obliquely lanceolate in profile in apical half, gradually decreasing in height toward the base; carinae below labellum apex deltate, obtuse, forward-pointing</td>
<td>F. ichneumonea</td>
</tr>
<tr>
<td>19B</td>
<td>Petals oblong; labellum lamellae rectangular to obliquely trapezoidal in profile in upper half, suddenly decreasing in height toward base; carina below labellum apex semi-elliptic, rounded, not forward-pointing</td>
<td>F. ichneumonea</td>
</tr>
<tr>
<td>20A</td>
<td>Column constricted basally; column wings downward directed</td>
<td>F. minor var. minor</td>
</tr>
<tr>
<td>20B</td>
<td>Column stalked but not constricted; column wings slightly forward directed</td>
<td>F. minor var. minor</td>
</tr>
<tr>
<td>21A</td>
<td>Labellum oblong-cuneate; lamellae drawn out basally and overlapping edges when spread</td>
<td>F. angusta var. angusta</td>
</tr>
<tr>
<td>21B</td>
<td>Labellum otherwise shaped; lamellae rarely spreading over edges, if so then bases not long drawn out</td>
<td>F. angusta var. angusta</td>
</tr>
<tr>
<td>22A</td>
<td>Labellum oblong, slightly tapered each end</td>
<td>F. angusta var. angusta</td>
</tr>
<tr>
<td>22B</td>
<td>Labellum otherwise shaped</td>
<td>F. angusta var. angusta</td>
</tr>
<tr>
<td>23A</td>
<td>Leaf sheaths with distinctly outcurved apices; labellum lamellae elongate</td>
<td>F. amboroensis var. amboroensis</td>
</tr>
<tr>
<td>23B</td>
<td>Leaf sheaths not distinctly outcurved apically; labellum lamellae abbreviate</td>
<td>F. amboroensis var. amboroensis</td>
</tr>
<tr>
<td>24A</td>
<td>Leaf sheaths oblong-lanceolate in profile; petals high carinate on outside in upper half</td>
<td>F. dorriana</td>
</tr>
<tr>
<td>24B</td>
<td>Leaf sheaths subrectangular to broad triangular in profile; petals not high carinate</td>
<td>F. dorriana</td>
</tr>
<tr>
<td>25A</td>
<td>Petals oblong-oblancoate</td>
<td>F. pectinata var. pectinata</td>
</tr>
<tr>
<td>25B</td>
<td>Petals obliquely elliptic</td>
<td>F. pectinata var. pectinata</td>
</tr>
<tr>
<td>26A</td>
<td>Labellum trullate</td>
<td>F. pectinata var. pectinata</td>
</tr>
<tr>
<td>26B</td>
<td>Labellum otherwise shaped</td>
<td>F. pectinata var. pectinata</td>
</tr>
<tr>
<td>27A</td>
<td>Sepals 3.00–3.75 mm long</td>
<td>F. pectinata var. pectinata</td>
</tr>
<tr>
<td>27B</td>
<td>Sepals 1.5–2.4 mm long</td>
<td>F. pectinata var. pectinata</td>
</tr>
<tr>
<td>28A</td>
<td>Labellum oblong-elliptic, sublanceolate rather short</td>
<td>F. pectinata var. pectinata</td>
</tr>
<tr>
<td>28B</td>
<td>Labellum obvate-oblancoate; lamellae elongate</td>
<td>F. pectinata var. pectinata</td>
</tr>
<tr>
<td>29A</td>
<td>Sepals fleshy, obtuse; lamellae lamellae abbreviated</td>
<td>F. pectinata var. pectinata</td>
</tr>
<tr>
<td>29B</td>
<td>Sepals thinner, acute to subacute; labellum lamellae elongate</td>
<td>F. pectinata var. pectinata</td>
</tr>
<tr>
<td>30A</td>
<td>Petals obvate-oblancoate, midvein thickly carinate in upper half; labellum obvate-oblancoate; lamellae obliquely triangular in upper part</td>
<td>F. amboroensis var. obvata</td>
</tr>
<tr>
<td>30B</td>
<td>Petals elliptic to obvate-elliptic, midvein not thick carinate; labellum lamellae not raised apically</td>
<td>F. amboroensis var. obvata</td>
</tr>
<tr>
<td>31A</td>
<td>Sepals 1.5–1.8 mm long; labellum lamellae parallel, apices decurrent on blade</td>
<td>F. barnettiae</td>
</tr>
<tr>
<td>31B</td>
<td>Sepals 2.1–2.4 mm long; labellum lamellae divergent, apices truncate</td>
<td>F. barnettiae</td>
</tr>
</tbody>
</table>
**Fernandezia amboroensis** Ormerod, *sp. nov.*

*TYPE:* BOLIVIA. Santa Cruz: Prov. Florida, Parque Nacional Amboro, 8 km by air NE of Mairana, 5.5 km N of Campamento “La Yunga” park station, 2300 m, 29 March 2002, M. Nee, M. Sundue, M. Mendoza & A. Arbelaez de Churchill 52044 (Holotype: NY). Fig. 1.

Similar to *Fernandezia barnettiae* Ormerod but with oblong (vs. elliptic) leaves, leaf sheath tips curving outward (vs. close to stem), and labellum lamellae with erect ensiform tips (vs. running into blade).

**Epiphytic**. **Roots** terete, 0.40–0.75 mm thick. **Stems** simple, densely leafy, 3–10 cm long, ca. 0.08 cm thick. **Leaves** oblong, acute, minutely denticulate near apex, coriaceous, subsessile, 7–8 × 3–4 mm; leaf sheaths ovate-lanceolate laterally, curving away from stem, margins entire, surface smooth, striate. **Inflorescence** 12–15 mm long; peduncle ca. 7 mm long; rachis sublaxly 6–8 flowered, 5–8 mm long; floral bracts deltate, acute, 2 × 1.5 mm. **Flowers** white. **Pedicellate** ovary clavate, triquetrous, 2.5–2.8 mm long. **Dorsal sepals** oblong, subacute, concave, weakly carinate, 1.80 × 0.75 mm. **Lateral sepals** obliquely oblong-lanceolate, subacute, carinate, 1.95 × 0.80–0.85 mm. **Petals** obovate, subacute, midvein thickly carinate in upper half, 1.55–1.60 × 0.90 mm. **Labellum** obovate-oblong, obtuse, 1.70 × 0.85 mm; claw with a narrow midline that divides and raises up into 2 parallel, apically triangular, frontally truncate lamellae. **Column** each side with a weakly developed, rounded wing each side, 1 mm long, 0.75 mm wide laterally.

**Distribution:** Bolivia.

**Habitat:** cloud forest, 2500–2600 m.

**Etymology:** named after the shape of the lip.

This variety can be distinguished from typical *Fernandezia amboroensis* by its thickly carinate petals and obovate-oblong-lanceolate lip. The type material is a mixture—the other specimen on the sheet belongs to *F. dorriana*.

**Fernandezia angusta** Ormerod, *sp. nov.*

*TYPE:* BOLIVIA. La Paz: Prov. Nor Yungas, Sacramento Valley of the Rio Coroico, 10 km NE of Chuspipata on Coroico road, 2450 m, 29 January 1984, A. Gentry & J.C. Solomon 44800 (Holotype: MO). Fig. 3.

Similar to *Fernandezia cuneata* Ormerod but with smaller flowers (sepals 2.0–2.3 vs. 2.30–2.65 mm long) and an oblong-oblong-lanceolate (vs. cuneate) labellum.

**Epiphytic**. **Roots** terete, 0.6 mm thick. **Stems** simple, subleafy, 5.0–6.5 cm long, ca. 0.1 cm thick. **Leaves** ligulate, acute, coriaceous, conduplicate, margin minutely denticulate toward apex, 5–10 × 3 mm; leaf sheath tubular, apices shortly curved outward, smooth, striate, not fully covering internodes, ca. 3.0–3.5 mm long. **Inflorescence** 7 mm long; peduncle 5 mm long; rachis densely, simultaneously 5 flowered, 2 mm long; floral bracts ovate-lanceolate, acute, to 1.3 mm long. **Flowers** white. **Pedicellate** ovary narrowly clavate, triquetrous, 3.4 mm long. **Dorsal sepals** ligulate, acute, 2.0 × 0.6 mm. **Lateral sepals** obliquely ligulate-lanceolate, acute, 2.3 × 0.7 mm. **Petals** narrowly oblong-ligulate, acute, 1.95 × 0.55 mm. **Labellum** oblong-oblong-lanceolate, subacute, carinate below tip, 1.95 × 0.80 mm; lamellae 2, divergent from base of lip, very low until raised up apically into more or less semicircular flaps. **Column** shortly stalked, each side an obliquely suborbicular wing, 1.75 mm long, 0.8 mm wide laterally.

**Distribution:** Bolivia.

**Habitat:** dense ridgetop cloud forest, 2450 m.

**Etymology:** from the Latin *angustus*, narrow, in reference to the uniformly narrow sepals and petals.

This is a neat little plant, easily recognized by its combination of small size, narrow leaves, simultaneously (not sequentially) 5-flowered inflorescences, subequal, narrow sepals and petals. It seems to be most closely related to *Fernandezia cuneata*, but with longer (5–10 vs. 3–6 mm), ligulate (vs. oblong-lanceolate) leaves, longer, more exserted inflorescence peduncles (5 vs. 3–4 mm), smaller flowers, and an oblong-oblong-lanceolate (vs. cuneate) lip in which the keels do not overlap the edges.

**Fernandezia barnettiae** var. *obovata* Ormerod, *var. nov.*


Differ from the typical variety in the flowers having more strongly carinate petals and the labellum more distinctly clawed (obovate-oblong-lanceolate vs. broadly oblong-lanceolate).

**Epiphytic**. **Roots** terete, to 0.7 mm thick. **Stems** with 3–8 branches, leafy, to 13.5 cm long, 0.08 cm thick. **Leaves** ovate-elliptic, acute, margins minutely denticulate toward tip, coriaceous, 9 × 4 mm; leaf sheaths smooth, striate, margins entire. **Inflorescences** to 15 mm long; peduncle 5.5 mm long; rachis up to 8 flowered, 9.5 mm long; floral bracts deltate, acute, to 2 mm long. **Flowers** white. **Pedicellate** ovary clavate, triquetrous, 2.5–2.8 mm long. **Dorsal sepals** oblong, subacute, concave, weakly carinate, 1.80 × 0.75 mm. **Lateral sepals** obliquely oblong-lanceolate, subacute, carinate, 1.95 × 0.80–0.85 mm. **Petals** obovate, subacute, midvein thickly carinate in upper half, 1.55–1.60 × 0.90 mm. **Labellum** obovate-oblong-lanceolate, obtuse, 1.70 × 0.85 mm; claw with a narrow midline that divides and raises up into 2 parallel, apically triangular, frontally truncate lamellae. **Column** each side with a weakly developed, rounded wing each side, 1 mm long, 0.75 mm wide laterally.

**Distribution:** Bolivia.

**Habitat:** dense ridgetop cloud forest, 2450 m.

**Etymology:** from the Latin *angustus*, narrow, in reference to the uniformly narrow sepals and petals.
Figure 1–4. 1, *Fernandezia amboroensis* Ormerod var. *amboroensis*. A, stem; B, flower; C, dorsal sepal; D, lateral sepal; E, petals; F, labellum; G, column. Drawn from holotype. 2, *Fernandezia amboroensis* Ormerod var. *obovata* Ormerod. A, dorsal sepal; B, lateral sepal; C, petal; D, labellum; E, column. Drawn from holotype. 3, *Fernandezia angusta* Ormerod var. *angusta*. A, plant; B, inflorescence; C, dorsal sepal; D, lateral sepal; E, petal; F, labellum; G, column. Drawn from holotype. 4, *Fernandezia angusta* Ormerod var. *erythromitra* Ormerod. A, stem (upper part); B, dorsal sepal; C, petal; D, lateral sepal; E, labellum; F, column. Drawn from holotype.
Fernandezia angusta var. erythromitra Ormerod, var. nov.
TYPE: BOLIVIA. Cochabamba: Prov. Chapare, between Chapare and Villa Tunari, near KM 1000, 1850 m, 17 January 1984, C. Luer, J. Luer & R. Vasquez 9396 (Holotype: SEL). Fig. 4.

Differs from the typical variety in the flowers having longer (2.5–3.3 vs. 2.0–2.3 mm) sepals with distinct carinae on the apex of the lateral sepals.

Epiphytic herb. Roots terete, to 0.7 mm thick. Stems simple, sub laxly leafy, 7–12 cm long, 0.15–0.20 cm wide across leaf sheaths, 0.05–0.10 cm thick. Leaves ligulate-lanceolate, acute, coriaceous, margins minutely denticulate toward apex, 5–7 mm long, 1.0–1.5 mm wide laterally; leaf sheaths tubular, striate, smooth, margins minutely denticulate, not fully covering internodes. Inflorescence 8–10 mm long; peduncle ca. 4-6 mm long; rachis 3–6 flowered, 4 mm long; floral bracts deltate, acute, 1.7–2.5 mm long. Flowers white, anther cap red. Pedicellate ovary clavate, triquete[r]ous, 3–4 mm long. Dorsal sepal narrowly oblong-lanceolate to ligulate, acute, midvein low carinate, 2.50–3.10 × 0.75–0.90 mm. Lateral sepals obliquely lanceolate, acute, high carinate near apex, 2.7–3.3 × 0.8–1.2 mm. Petals oblong-ligulate to oblong, subacute to acute, 2.2–2.8 × 0.7–0.9 mm. Labellum oblong-oblanco[l]ceate, acute, carinate below tip, 2.2–2.5 × 0.8–1.0 mm; lower of labellum medially thickened, dividing and raising up into 2 flap-like, oblique-based, obtuse lamellae that over-reach the labellum edges. Column shortly stalked, each side with a subauricular wing, 1.7–1.9 mm long, 1.0–1.2 mm wide laterally.

Distribution: Bolivia.


Habitat: cloud forest (type), 1850–2500 m.

Etymology: from the Classical Greek eruthros, red, and mitra, originally a headband, but later a cap, in reference to the red anther cap.

I had originally considered this plant to be a separate species, but it agrees well in habit and floral characters with Fernandezia angusta, differing in having longer sepals with high keels on the apices of the lateral ones.

Fernandezia antioquiensis (Szlach., Kolan. & Mystk.) Molinari, Richardsona 15: 268. 2015.
TYPE: COLOMBIA. Antioquia: Municipio Urrao, Paramo de Frontino, Sitio Llano Grande, 3420 m, 11 September 1986, F.J. Roldan, O. Marulanda & M. Escobar 390 (Holotype: COL, not seen). Fig. 5.

Distribution: Colombia.

Additional specimen examined: COLOMBIA. Cundinamarca: Choconta, El Sisga, high part of the La Represa, 2700–2900 m, 14 January 1962, H. Garcia-Barriga 17384 (AMES, NY); Paramo de Gasca, 3355 m, 8 May 1958, R.E. Schultes, E.W. Smith & H. Blohm s.n. (AMES).

Among the taxa in the Orchidotypus group with glabrous leaves, this species is notable for the relatively prominent fimbriate-denticulate margins of the leaf sheaths. The flowers have a suborbicular-pentagonal (illustrated as ovate-elliptic in the protologue) labellum “midlobe.” One collection (Garcia-Barriga & Jaramillo 19784) cited in the protologue I find to be F. vagina[t]a (see there for further comment).

Fernandezia barnettiae Ormerod, sp. nov.

Similar to Fernandezia steinbachii Ormerod but not as tall (stems to 10.5 vs. to 19.5 cm), flowers with a shorter (1.5 vs. 5.0 mm) pedicellate ovary, labellum narrower (0.8 vs. 1.2–1.3 mm) and bearing parallel (not divergent) keels.

Epiphytic (?) herb. Roots terete, 0.6–0.8 mm thick. Stems often with several basal branches (these 4–6 cm long), subdensely leafy, to 10.5 cm long, 0.1 mm thick. Leaves elliptic, acute, margins minutely denticulate near apex, 5.5–8.0 × 5.0 mm; leaf sheaths semitubular, exposed part 3.5–4.5 mm long. Inflorescence to 8.5 mm long; peduncle 4 mm long; rachis to 4.5 mm long, up to 6 flowered; floral bracts widely ovate, acute, ca. 1.6 × 1.6 mm. Flower color not known. Pedicellate ovary weakly clavate, triquete[r]ous, 1.5 mm long. Dorsal sepal ovate-elliptic, acute, 1.50 × 0.75 mm. Lateral sepals obliquely oblong-lanceolate, acute, midvein carinate toward tip, 1.80 × 0.75 mm. Petals obvate-elliptic, subacute, 1.6 × 0.8 mm. Labellum elliptic from a broadly clawed base, subacute, weakly carinate below tip, 1.9 × 0.8 mm; lamellae 2, parallel, starting at base of lip and ending at apical 1/3. Column broadly stalked, each side apically with an apical, obliquely subauricular wing, 1.1 mm long, 1.0–1.1 mm wide laterally.

Distribution: Bolivia.

Eponym: named after Lisa C. Barnett (1959–), specialist in the Sterculiaceae and one of the collectors of the type.

As noted below, the type sheet of this species also contains the holotype of Fernandezia dorriana. Discussion on how these two taxa differ is given under the latter taxon. Fernandezia barnettiae is however more closely to F. steinbachii, which occurs higher up in the same region. The former is a much smaller plant than F. steinbachii, has slightly smaller flowers, with a much shorter pedicellate ovary (1.5 vs. 5.0 mm), and a narrower lip (0.8 vs. 1.2–1.3 mm) with parallel (not divergent) keels.

Fernandezia bilineata Ormerod, sp. nov.
TYPE: BOLIVIA. Cochabamba: Prov. Chapare, along road to Villa Tunari, 2840 m, 13 & 16 January 1981, C. Luer, E. Besse & R. Vasquez 5615 (Holotype: SEL). Fig. 7.

Similar to Fernandezia steinbachii Ormerod but not as tall (stems to 10.5 vs. to 19.5 cm), flowers with a shorter (1.5 vs. 5.0 mm) pedicellate ovary, labellum narrower (0.8 vs. 1.2–1.3 mm) and bearing parallel (not divergent) keels.

Epiphytic herb. Roots terete, 0.6–0.8 mm thick. Stems often with several basal branches (these 4–6 cm long), subdensely leafy, to 10.5 cm long, 0.1 mm thick. Leaves oblong-lanceolate, acute, midvein carinate near apex, 5.5–8.0 × 5.0 mm; leaf sheaths semitubular, exposed part 3.5–4.5 mm long. Inflorescence to 8.5 mm long; peduncle 4 mm long; rachis to 4.5 mm long, up to 6 flowered; floral bracts widely ovate, acute, ca. 1.6 × 1.6 mm. Flower color not known. Pedicellate ovary weakly clavate, triquete[r]ous, 1.5 mm long. Dorsal sepal ovate-elliptic, acute, 1.50 × 0.75 mm. Lateral sepals obliquely oblong-lanceolate, acute, midvein carinate toward tip, 1.80 × 0.75 mm. Petals obvate-elliptic, subacute, 1.6 × 0.8 mm. Labellum elliptic from a broadly clawed base, subacute, weakly carinate below tip, 1.9 × 0.8 mm; lamellae 2, parallel, starting at base of lip and ending at apical 1/3. Column broadly stalked, each side apically with an apical, obliquely subauricular wing, 1.1 mm long, 1.0–1.1 mm wide laterally.

Distribution: Bolivia.

Eponym: named after Lisa C. Barnett (1959–), specialist in the Sterculiaceae and one of the collectors of the type.

As noted below, the type sheet of this species also contains the holotype of Fernandezia dorriana. Discussion on how these two taxa differ is given under the latter taxon. Fernandezia barnettiae is however more closely to F. steinbachii, which occurs higher up in the same region. The former is a much smaller plant than F. steinbachii, has slightly smaller flowers, with a much shorter pedicellate ovary (1.5 vs. 5.0 mm), and a narrower lip (0.8 vs. 1.2–1.3 mm) with parallel (not divergent) keels.
Figure 5–8. 5, *Fernandezia antioquiensis* (Szlach., Kolan. & Mystk.) Molinari. A, flower; B, tepals (lateral sepal, petal, dorsal sepal, petal, lateral sepal); C, column; D, labellum. Drawn from Schultes et al. (AMES). 6, *Fernandezia barnettiae* Ormerod. A, stem (upper part); B, flower; C, dorsal sepal; D, lateral sepal; E, petal; F, labellum; G, column. Drawn from holotype. 7, *Fernandezia bilineata* Ormerod. A, stem (upper part); B, dorsal sepal; C, petal; D–E, lateral sepal (inside and lateral views); F, column; G, labellum; H, anther cap. Drawn from holotype. 8, *Fernandezia callacallae* Ormerod. A, stem (upper part); B, flower; C, dorsal sepal; D, lateral sepal; E, petal; F, column; G, labellum and column; H, labellum. Drawn from holotype.
Epiphytic herb. Roots terete, 0.5–0.7 mm thick. Stems simple, sinuose to subsinuose, subdensely leafy, 18–21 cm long, 0.20 cm wide across leaf sheaths, 0.05–0.10 cm thick. Leaves oblong, apiculate, coriaceous, 9.0–13.0 × 3.0–3.5 mm, apiculus 0.8 mm long; leaf sheaths tubular, smooth, 4.5–5.0 mm long. Inflorescence 5.0–5.5 mm long; peduncle stout, ca. 3 mm long; sheathing bract subapical, ovate-lanceolate, acute, to 6 × 2–4 mm; rachis biflorous, 2.0–2.5 mm long; floral bracts lanceolate, acute, 3.0–5.0 × 1.5 mm. Flowers white with two purple lines on the lip. Pedicellate ovary clavate, triquetrous, 3 mm long; capsule bracts ovate-deltate, acute, to 1 mm long. 4 mm long; rachis few flowered, 3.0–4.5 mm long; floral bracts ovate-deltate, acute, to 1 mm long. Flowers white. Pedicellate ovary clavate, triquetrous, 3 mm long; capsule yellow. Dorsal sepal ovate-elliptic, acute, concave, thin, 2.0–2.3 × 1.20–1.35 mm. Lateral sepals obliquely elliptic, subacute to acute, concave, 2.2–2.3 × 1.15 mm. Petals oblong to oblong-lanceolate, obtuse to subacute, 1.8–2.0 × 0.9 mm. Labellum oblong to ovate-oblong, obtuse to subacute, 2.2–2.7 × 1.15–1.40 mm; lower 2/3 divided by a low thickening that ends in 2 parallel, oblongoid to ellipsoid calli. Column rectangular in profile, incurved dorsally, 1.4–1.5 mm long, 0.9–1.0 mm wide laterally.

**Distribution:** Peru.


**Etymology:** named after the Cerros Calla Calla, the type locality.

This species is allied to *Fernandezia falcifolia* (Rchb.f.) M.W. Chase from Ecuador, sharing with it a similar habit and lip shape. However, its flowers are twice as large with not so rounded segments, and the longer column has an incurved (vs. rounded) back with a truncate (vs. rounded) apex. According to the collectors of the type, the plant is a “rare epiphyte in masses.”

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**Fernandezia callacallae** Ormerod, *sp. nov.*

**TYPE:** PERU. Amazonas: Prov. Chachapoyas, Cerros Calla Calla, E side, 19 km above Leimebamba, on road to Balzas, 3100 m, 6 June 1964, *P.C. Hutchison & J.K. Wright 5557* (Holotype: F; Isotypes: AMES, NY). Fig. 8.


Related to *Fernandezia falcifolia* (Rchb.f.) M.W. Chase but the flowers with larger (2.0–2.3 vs. 1.1–1.2 mm), ovate-elliptic to elliptic (vs. suborbicular) sepals, and the column with an incurved (vs. rounded) back, and a truncate (vs. rounded) apex.

**Epiphytic herb. Roots** terete, 0.75–1.50 mm thick. **Stems** weakly flexuous, 2–3 branched (branches to 7.5 cm long), densely leafy throughout, 10.5–33.5 cm long, to 0.35 cm across leaf sheaths, to 0.15 cm thick. **Leaves** linear-ligulate, subacute, fleshy, semiterete, 6–13 mm long, 1.0–1.3 mm wide laterally; leaf sheaths deltate, truncate, surface smooth, striate. **Inflorescence** to 8.5 mm long; peduncle ca. 4 mm long; rachis few flowered, 3.0–4.5 mm long; floral bracts ovate-deltate, acute, to 1 mm long. **Flowers** white. **Pedicellate ovary** clavate, triquetrous, 3 mm long; capsule...
Figure 9–12. 9. Fernandezia camposii Ormerod. A, stem fragment (leaf sheath margin arrowed); B, flower; C, dorsal sepal; D, petal; E, lateral sepal; F, labellum; G, column and labellum; H, column. Drawn from holotype. 10. Fernandezia carabayana Ormerod. A, plant; B, dorsal sepal; C, petal; D, lateral sepal; E, column; F, labellum. Drawn from holotype. 11. Fernandezia chaparensis Ormerod. A, stem (upper part); B, dorsal sepal; C, petal; D, lateral sepal; E, labellum; F, column. Drawn from holotype. 12. Fernandezia crassapex Ormerod. A, stem; B, dorsal sepal; C, petal; D, lateral sepal; E, labellum; F, column. Drawn from holotype.
**Fernandezia carabayana** Ormerod, *sp. nov.*

**Type:** PERU. Puno: Prov. Carabaya, Ackapampa to Juro-Juro, 3500 m, 31 December 1947, C. Vargas C. 7038 (Holotype: AMES; Isotype: K, not seen). Fig. 10.


Related to *Fernandezia ichneumonea* Ormerod but leaves acute (vs. long-apiculate), flowers with oblong-lanceolate (vs. oblong-ob lanceolate) petals, and an oblong-ob lanceolate (vs. ob lanceolate) labellum.

Lithophytic herb. Roots terete, 0.5–0.8 mm thick. Stems simple to 2 branched (branches 2–3 cm long), densely leafy, 4–6 cm long, 0.2 cm wide across leaf sheaths, 0.1 cm thick. Leaves oblong-lanceolate, acute, fleshy, conduplicate, margins minutely denticate towards apex, 6–7 mm long, 1.2–2.0 mm wide laterally; leaf sheaths smooth, striate, margins minutely denticate. Inflorescence to 6 mm long; peduncle ca. 3 mm long; rachis few-flowered, 2.5–3.0 mm long; floral bracts deltate, acute, to 1.7 mm long. Flowers white. Pedicellate ovary clavate, triquetrous, 3.0–3.3 mm long. Dorsal sepal oblong-lanceolate, subacute, concave, 2.2 × 0.75 mm. Laterals sepals obliquely lanceolate, acute, carinate near apex, 2.7 × 0.8 mm. Petals narrowly oblong-lanceolate, acute, 2.2 × 0.7 mm. Labellum oblong-ob lanceolate, acute, carinate below tip, 2.20 × 0.85–0.90 mm; lower 1/5 of lip divided by a low, thickened midline that divides into 2 divergent lamellae. Column broadly stalked, each side with an obliquely suborbicular wing, 1.4 mm long, 1.2 mm wide laterally.

**Distribution:** Peru.

**Habitat:** on rocks, 3500 m.

**Etymology:** named after the Province of Carabaya, the type locality.

In Peru this taxon is most closely related to *Fernandezia ichneumonea* but does not have long-apiculate leaves, flowers have petals that are not widened toward the apex, and the lip is not so markedly narrowed toward the base.

**Fernandezia chaparensis** Ormerod, *sp. nov.*

**Type:** BOLIVIA. Cochabamba: Prov. Chapare, road between Cochabamba and Villa Tunari, 2800 m, 18 January 1983, C. Luer, J. Luer, R. Vásquez, T. Mulder, D. Mulder & A. Vogel 12884 (Holotype: K; Isotype: MO, not seen). Fig. 11.

Related to *Fernandezia mercadoi* Ormerod but the flowers with a prominently apiculate (vs. acute) dorsal sepal, and petals with a shorter, broader claw.

Epiphytic herb. Roots terete, 0.5–0.7 mm thick. Stems flexuous, 3 branched (branches 11.0–11.5 cm long), sub laxly leafy, to 46 cm long, 0.10–0.15 cm thick. Leaves oblong-lanceolate, acute to sub acuminate, thinly coriaceous, margins minutely denticate near the apex, 9.0–13.0 × 3.2–4.0 mm; leaf sheaths tubular, margins minutely denticate, surface smooth. Inflorescence to 7 mm long; peduncle 3 mm long; rachis 2–3 flowered, to 4 mm long; floral bracts widely ovate, acute, to 5 × 3 mm. Flowers greenish-white, with a red dot on the lip. Pedicellate ovary clavate, triquetrous, 5.5 mm long. Dorsal sepal narrowly oblong, acute, midvein carinate, prominently so at apex, gently upcurved, 6.0 × 1.2 mm. Laterals sepals obliquely ligulate-lanceolate, acute, subsigmoid, high carinate, basal 2.5 mm joined to lip, ca. 7.5 × 2.0 mm. Petals oblong-lanceolate from a shortly and broadly clawed base, acute, midvein carinate near apex, gently upcurved, 5.0 × 1.5 mm. Labellum narrowly oblong from a clawed base, carinate below tip, acute, claw ligulate, 2.2 mm long, blade 4.8 × 1.8 mm, in total 7.0 × 1.8 mm; callus of 2 semiprostrate, semicircular to semielliptic lobes joined by a transverse, bicallose thickening in lower half of lip blade. Column each side with broad, obliquely semicircular wing from a shortly clawed base, 3.8 mm long, 2 mm wide laterally.

**Distribution:** Bolivia.

**Additional specimen examined:** BOLIVIA. Cochabamba: Prov. Chapare, along the road to Villa Tunari, 2900 m, 22 January 1980, C. Luer, J. Luer & R. Vásquez 4878 (SEL).

**Habitat:** roadside forest, 2800–2900 m.

**Etymology:** named after the type locality, Chapare Province.

*Fernandezia chaparensis* is a member of the *F. brevicornata* complex. It differs from the Peruvian *F. brevicornata* in having a narrower dorsal sepal, more distinctly carinate and apiculate near the apex, the calli of the lip joined (vs. separate) by a fleshy bicallose process, and the column with wider wings. The differences with its Bolivian congener *F. mercadoi* are mentioned above in the diagnosis, and further discussed under the latter taxon.

**Fernandezia crassapex** Ormerod, *sp. nov.*

**Type:** PERU. Cusco: Prov. Quispicanchis, edge of roadside between Marcapata and Abra Hualla Hualla, 3340 m, 15 October 1976, D.C. Wasshausen & F. Encarnacion 829 (Holotype: US; Isotypes: MO, NY). Fig. 12.

Similar to *Fernandezia minor* (Schltr.) M.W. Chase var. boekorum Ormerod but flowers with an ovate-lanceolate (vs. ovate-elliptic to elliptic) labellum much thickened in the upper 1/3.

Epiphytic herb. Roots terete, numerous, 0.4–0.8 mm thick. Stems simple to 1–3 branched (branches 2.5–6.5 cm long), laxly to densely leaved, 10.5–24.0 cm long, 0.10–0.25 cm thick. Leaves oblong-lanceolate, apiculate, margins minutely denticate, conduplicate, fleshy, 7–9 mm long, 1.8–2.0 mm wide laterally; leaf sheaths smooth, striate, apices shortly spreading away from stem, margins denticate. Inflorescence to 10 mm long; peduncle to 5 mm long; rachis with up to 6 flowers at once, to 5 mm long; floral bracts deltate, acute, to 2 mm long. Flowers greenish white. Pedicellate ovary clavate, triquetrous, 3.8–4.0 mm long. Dorsal sepal oblong-lanceolate, subacute, concave, 3.8 × 1.2 mm. Laterals sepals obliquely ligulate-lanceolate, subacute, carinate, 4.2 × 1.1 mm. Petals elliptic, acute, midline broadly thickened, 3.05 × 1.15 mm. Labellum ovate-lanceolate, acute, upper third (1.2–1.3mm) much thickened, 3.7 × 1.7 mm; lower part of lip divided by a broad thickening that divides into 2 weakly divergent lamellae. Column each side with a broad low, rounded wing, 2 mm long, 1.65 mm wide laterally.
**Distribution:** Peru.

**Habitat:** cloud forest near a rocky outcrop, 3340 m.

**Etymology:** from the Latin *crassus*, thick, and *apex*, summit, in reference to the thickened upper 1/3 of the labellum.

Among the Peruvian taxa in the *Fernandezia pectinata* alliance, this one has the largest flowers (sepals to 4.2 mm long), with a distinctive ovate-lanceolate lip that is much thickened in the upper 1/3. It most closely resembles *F. crystallina* var. *boekeorum* but that has a thinner, ovate-elliptic to elliptic lip.


Basionym: *Pachyphyllum crystallinum* Lindl., Orch. Linden.: 18. 1846. TYPE: VENEZUELA. Merida, 3050 m, August 1843, *J. Linden* 686 (Holotype: K-L, image seen). Fig. 13–14.


**Fernandezia pasti** (Rchb.f.) M.W. Chase, Phytotaxa 20: 30. 2011.


**Fernandezia peperomioides** (Kraenzl.) M.W. Chase, Phytotaxa 20: 30. 2011.


**Fernandezia foreroi** (Szlagh. & Kolan.) Molinari & Mayta, Richardiana 16: 43. 2015.


**Fernandezia longipedicellata** (Szlagh., Kolan. & Oleodr.) Molinari & Mayta, Richardiana 16: 43. 2015.

**Distribution:** Costa Rica, Panama, Venezuela, Colombia, Ecuador, Peru, Bolivia.

Figure 13–16. 13, Fernandezia crystallina (Lindl.) M.W. Chase. Typical form. A, flower; B, flower minus tepals; C, dorsal sepal; D, petal; E, lateral sepal; F–G, labellums; H, column. A–F, H, from Pennell 9275 (AMES); G from Pennell 9786 (AMES). 14, Fernandezia crystallina (Lindl.) M.W. Chase. Pasti form. A, flower; B, labellum and column; C, dorsal sepal; D, petals; E, lateral sepal; F, labellum. Drawn from Steyermark 53467 (AMES). 15, Fernandezia cuneata Ormerod. A, stem (upper part); B, dorsal sepal; C, lateral sepal; D, petal; E, labellum; F, column. Drawn from holotype. 16, Fernandezia cuprea Ormerod. A, stem fragment (minus leaves, no scale); B, leaf; C, dorsal sepal; D, petal; E, lateral sepal; F, labellum; G, column. Drawn from holotype.
Paramo de Guasca, no altitude, 1919, Brother Ariste-Joseph E.P. Killip 34117 (AMES); A.H.G. Alston 7488 (BM); Paramo de Guasca, M.L. Grant 9433 (US); Cordillera Oriental, Cerro Negro, Hato Grande, Quebrada San Roque, 2725 m, 27 July 1944, Bogota, 10 km W of Gutierrez, Rio Blanco valley, N side of Jaramillo M. 21653 (US); Cordillera Oriental, 45 km S of December 1959, de Palccio (Hacienda La Siberia), El Tablon, 3350 m, 14 August 1922, 2600–2800 m, 2–10 August 1922, F.W. Pennell 9275 (BM); near Pitayo, 3000–3400 m, 16 March 1881, F.C. Lehmann 3750 (BM). Narino: “Provincia Pastoensi,” 3660 m, October, W. Jameson 293 (BM, GH, K); without locality, 50 leagues (= 240 km) N of Quito (Ecuador), W. Jameson s.n. (GH); Cordillera Oriental, S side of Volcan Dona Juana, 3400–3600 m, 16 December 1944, J. Ewen 16622 (AMES, BM, US); Municipio de la Cruz, Estivaciones del Volcan Dona Juana, 3550–3600 m, 29 October 1964, L.E. Mora 3292 (AMES); NE ridge of Volcan Gualcala, 18 km SE of Piedrancha, 3600 m, 4–6 October 1943, F.R. Fosberg 21136 (US); near crater lake on E slope of Volcan Galeras, 3200 m, 21 January 1979, C. Luer & J. Luer 3747 (SE); above Pueblo de Cumbal, Paramo de Cumbal, 3500 m, 4 July 1956, S. Vogel 261 (AMES). Putumayo: Cordillera Portachuelo, along main road from Pasto to Mocoa, between Santiago and Pepino, 1900–2400 m, 2 August 1961, L.A. Garay, C.E. McClennan & A. Kapuler 465 (AMES).

This species essentially has two races, one of which is mostly distributed from Costa Rica, Panama, and central and eastern Colombia to Venezuela, and composes with typical *Fernandezia crystallina* (see Fig. 13) in having small flowers (sepals 2.0–2.5 mm long). The occasional plant reaches to southern Ecuador (*Espinosa 737*). The other race (the “pasti” form, see Fig. 14) is most common in western Colombia, down the Andes through Ecuador and Peru to Bolivia, it has larger flowers (sepals 3–4 mm long and more). The two races agree in all floral characters, and occasional specimens with flowers intermediate in size do exist. In the “pasti” form there is quite some variation in labellum shape, which can vary from perfectly oblanceolate to trilobed, but as is typical of the species the upper half or “midlobe” is decurved. There also occurs in the Province of Chota, Peru, a small-flowered variant of the “pasti” form (*Leiva et al. 1335; Gentry et al. 74908*), which I at one stage considered a separate species. However, all the deviating floral measurements are accounted for in the broader variability of *F. crystallina*.

Having become familiar with the vegetative variation (which is presumably linked to habitat and exposure in
some cases) of the species I see no reason to recognize taxa such as *Pachyphyllum peperomioideae* (elliptic leaves), *P. longipedicellatum* (linear, canaliculate leaves), *P. micranth* (fleshy curved leaves), and *P. stiebeli*. All florally agree with the species as I understand it.

In regard to *Pachyphyllum bucarasicae* from eastern Colombia, it cannot be known for certain that it is a synonym because the type is now lost. The description perfectly matches typical *Fernandezia crystallina* in vegetative and floral characters except for two points that require explanation. The leaf sheaths are said to be entire, but likely the margins were recurved and thus the true edge was not observed, since plants with strongly denticulate leaf margins do not have entire leaf sheath edges. The lip is said to be linear, sigmoid, and 0.5 mm wide. This seems unlikely since the petals are said to be 1 mm wide. After study of many species in the genus I find the lip is always around the same width as the petals, and never drastically half their width. Therefore, I suspect faulty observation or poor rehydration of the flower. Importantly the lip is said to be deflexed, another typical feature of *F. crystallina*. For these reasons I consider *Pachyphyllum bucarasicae* to be a synonym of *F. crystallina*.

I could not find separating characters for the recently described *Fernandezia foreroi*. The type is from the Department of Caldas in Colombia and agrees well vegetatively with specimens I have seen from there, except that the flowers are said to be about 3 mm long (sepals 2.0–2.4 mm long in material I studied), like in the “pasti” form. Among the paratypes cited for it is Schneider 106 (COL) from La Rambla, however the specimen with this number in AMES is from Quebrada del Chico. Schneider sometimes gave the same number to what he thought was the same species. His specimen in AMES is typical *F. crystallina*.

*Pachyphyllum longipedicellatum* was recognized due to its narrow, canaliculate leaves, flowers with a long pedicellate ovary (5.5 mm long), and erose margins (not illustrated) of the lip. The type sheet of this taxon contains a mixture (the other specimens form the holotype of *P. putumayoensis*), and the type of *P. longipedicellatum* is in the upper half of the sheet between two specimens of *P. putumayoense*. However, on the lower lefthand side of the sheet is a typical specimen of *Fernandezia crystallina* with flat leaves that has been misidentified as *F. putumayoensis.* The specimen chosen as type of *P. longipedicellatum* is in my opinion a plant found in an exposed area. The elongate pedicellate ovary (5.5 mm) could not be confirmed. Flowers that I measured from the image had a 3.5-mm-long pedicellate ovary. The floral characters of *P. longipedicellatum* therefore match *F. crystallina* in sepal, petal, and lip shape (including the recurved “epichile”). The column appears to have collapsed down a little; its shape as illustrated is not representative of the genus.

*Fernandezia cuneata* Ormerod, *sp. nov.*

**TYPE:** BOLIVIA. La Paz: Prov. Nor Yungas, 8.7 km below Chusipapata on road to Yolosa, 2400 m, 23 January 1983, J.C. Solomon 9321 (Holotype: MO). Fig. 15.

Related to *Fernandezia angusta* Ormerod var. *angusta* but with shorter (5–6 vs. 5–10 mm), oblong-lanceolate (vs. ligulate) leaves, shorter (3–4 vs. 5 mm) inflorescence peduncles mostly hidden (vs. exposed) in the leaf sheaths, and flowers with a cuneate (vs. oblong-ob lanceolate) labellum.

**Epiphytic herb. Roots** terete, 0.8 mm thick. **Stems** weakly flexuous, 5–6 branched (branches 3–4 cm long), sublaxly leafy, 8 cm long, 0.10–0.17 cm thick, 0.2 cm across leaf sheaths. **Leaves** oblong-lanceolate, acute, minutely denticulate near apex, fleshy, conduplicate, 5–6 × 3.2–3.4 mm; leaf sheaths obliquely obcuneate in lateral view, margin recurved, minutely denticulate, surface smooth, striate. **Inflorescence** 5–7 mm long; peduncle 3–4 mm long, mostly hidden in leaf sheath; rachis few-flowered, 2–3 mm long ca. 2.5 mm long. **Dorsal sepal** oblong-lanceolate, acute, thickened along midvein, 2.3 × 0.8 mm. **Lateral sepals** obliquely oblong-lanceolate, acute, thickened along midvein, 2.65 × 0.90–0.95 mm. **Petals** oblong, acute, thickened below apex, 2.15 × 0.75 mm. **Labellum** cuneate, subacute, carinate below tip, 2 × 1 mm; lower 2/3 of lip with divergent lamellae that overlap the sides of the lip, apices flap-like, semicircular to subquadrate. **Column** shortly clawed, each side with semicircular wing, 1.6 mm long, 0.8 mm wide laterally.

**Distribution:** Bolivia.

**Habitat:** cloud forest with little disturbance, 2400 m.

**Etymology:** from the Latin *cuneatus*, wedge-shaped, in reference to the lip shape.

As noted above this species seems closely related to *Fernandezia angusta*, differing from the typical variety of that entity in having shorter, oblong-lanceolate (vs. ligulate) leaves, inflorescences with slightly shorter peduncles that are mostly hidden (vs. exposed) by the leaf sheaths, slightly larger flowers, and a cuneate (vs. oblong-ob lanceolate) lip.

*Fernandezia cuprea* Ormerod, *sp. nov.*

**TYPE:** ECUADOR. Loja: Cordillera de Las Lagunitas, Amaluza to Jimbura to Zumba road, KM 36, 3390 m, 22 November 1994, P.M. Jorgensen, C. Ulloa, S. Leon, H. Vargas & P. Lozano 739 (Holotype: MO). Fig. 16.

Related to *Fernandezia kosnipatae* Ormerod but with shorter (10–15 vs. 17–26 mm) elliptic (vs. oblong) leaves, and flowers with a transversely elliptic (vs. suborbicular-subquadrate) front part of the labellum.

**Terrestrial herb. Roots** terete, 0.8–1.5 mm thick. **Stems** simple, densely leafy, 8–21 cm long, 0.5–0.8 cm wide across leaf sheaths, to 0.3 cm thick. **Leaves** elliptic, subacute, coriaceous, margins minutely denticulate, carinate below tip, drying a coppery color, 10.0–15.0 × 4.5–6.5 mm; leaf sheaths with exposed part triangular, margins minutely denticulate, smooth, dorsal edge 7.5 mm long. **Inflorescence** 10–12 mm long; peduncle 5 mm long; rachis secund, densely 3–5 flowered, 5–7 mm long; floral bracts deltate, acute, to 3 mm long. **Flowers** white and light green. **Pedicellate ovary** clavate, triquetrous, 4 mm long; capsule green. **Dorsal sepal** oblong, bluntly apiculate, fleshy, midvein thickly carinate, 3.0 × 1.3 mm. **Lateral sepals** obliquely oblong-
leaves suborbicular-subquadrate) upper half or “midlobe.”

**Fernandezia cymbiformis** Ormerod, sp. nov.

TYPE: PERU. Amazonas: between Leimebamba and Balsas, 3050 m, 25 August 1980, C. Luer, J. Luer, W. Koeniger & H. Koeniger 5425 (Holotype: SEL). Fig. 17.

Related to **Fernandezia solomonii** Ormerod but flowers with less oblique, narrower (1.0 vs. 1.8 mm) petals, a narrower (1.1 vs. 2.0 mm), almost evenly (vs. strongly unequally) pandurate labellum, and a shorter (2.1 vs. 3.2 mm) column.

Epiphytic **herb. Roots** terete, ca. 1 mm thick. **Stems** simple, subdensely leafy, 10.5 cm long, 0.18–0.20 cm wide across leaf sheaths, 0.06 cm thick. **Leaves** oblanceolate-subacute, fleshy, 10.5 cm long, 0.18–0.20 cm wide across leaf sheaths, 0.06 cm thick. **Inflorescence** cymose, 7–17 cm long, 0.3–0.4 cm wide across leaf sheaths, ca. 2 mm thick. **Pedicellate ovary** cream. **Flowers** clavate, triquetrous, 3.3 mm long. **Dorsal sepal** ligulate, subacute, 1.9 × 1.1 mm. **Lateral sepals** obliquely lanceolate, subacute, fleshy, midvein carinate, 3.40 × 1.30–1.60 mm, in total 4.70 × 1.60 mm; lower half of lip divided by a thick midline ending in 2 parallel, fleshy, oblong-obovate-oblanceolate petals for 0.9 mm, claw ligulate, 1.15 × 0.25 mm, blade 2.75 mm long (lower part 0.9 mm wide, upper part cymbiform 1.1 mm wide), in total 3.9 × 0.9–1.1 mm; callus of two relatively large semi-elliptic, parallel lamellae. **Column** shortly and broadly stalked, each side with a suborbicular wing, 2.1 mm long, ca. 1.3 mm wide laterally.

**Distribution:** Peru.

**Habitat:** cloud forest, 3050 m.

**Etymology:** from the Latin *cymbae*, boat, and *forma*, shape or form, in reference to the shape of the upper half of the labellum.

Among taxa in the **Fernandezia breviconnata** (Schltr.) M.W. Chase group this species has the smallest flowers and shortest column. It appears to be most similar to *F. solomonii* from Bolivia, but the flowers have narrower petals, and an almost evenly pandurate lip with larger, parallel (not oblique) calli.


TYPE: PERU. Huanuco: Pillao, H. Ruiz & J. Pavon s.n. (Holotype: MA, image seen; Isotype: BM). Fig. 18.


Lithophytic and epiphytic **herb. Roots** terete, 0.7–0.8 mm thick. **Stems** simple, densely leafy, 7–17 cm long, 0.3–0.4 cm wide across leaf sheaths, ca. 2 mm thick. **Leaves** ligulate, subacute, weakly curved, shallowly canaliculate, margins minutely denticulate, fleshy, 8 mm long, ca. 2 mm wide laterally; leaf sheaths broadly deltate-infundibuliform, margins minutely denticulate, smooth, striate. **Inflorescence** to 7 mm long; peduncle ca. 3 mm long; rachis up to 5 long, to 4 mm long; flowera ca. 3 mm long. **Dorsal sepal** ovate, subacute, concave, 1.9 × 1.1 mm. **Lateral sepals** obliquely ovate-elliptic, subacute, fleshy, midvein carinate, most notably in upper 1/3, 1.9 × 1.0 mm. **Petals** elliptic, subacute, margins minutely denticulate, midvein low carinate, 1.75–1.80 × 0.90 mm. **Labellum** subquadrate, subacute, lower part 1.10 × 1.15 mm, upper part 0.8 × 0.8 mm, in total 1.90 × 1.15 mm; lower half divided by a low thick ridge that ends apically in 2 parallel, oblongoid calli. **Column** stout, 1.2–1.3 mm long, ca. 0.9–1.0 mm wide.

**Distribution:** Peru.

The above description is based on the BM isotype and is provided to augment knowledge of the species. Despite study of numerous Peruvian specimens, no later collections were found, perhaps indicating that the plant is a local endemic.

**Fernandezia diezii** Ormerod, sp. nov.

TYPE: PERU. Cajamarca: Prox. Cutervo, KM 10 from San Andres towards Socota, on property of Senor Vitelo Diaz, 2500 m, 19 April 1988, C. Diaz & S. Baldeon 2812 (Holotype: MO). Fig. 19.

An isolated species of section *Lamellata* characterized by having flowers with obovate-oblong-ovate petals, a pandurate labellum with 2 elongate lamellae, and a relatively long-stalked column.

Epiphytic **herb. Roots** terete, 0.3–0.7 mm thick. **Stems** simple or occasionally one branched (branch to 3.4 cm long), flexuous, laxly leafy, 6.5–12.5 cm long, 0.17 cm wide across leaf sheaths, 0.05 cm thick. **Leaves** ligulate, subacute, often shortly decurved near apex, 10.0–15.0 × 2.0–2.4 mm; leaf sheaths often not fully covering stem, smooth. **Inflorescence** to 8.5 mm long; peduncle 5.0–5.5 mm long; rachis 4–5 long, to 3.4 mm long; flowera 5.0–5.5 mm long; leaf sheaths often not fully covering stem, smooth. **Pedicellate ovary** clavate, triquetrous, 3.3 mm long. **Dorsal sepal** oblong-ligulate, obtuse, midvein low carinate near the apex, 1.95 × 0.75–0.80 mm. **Lateral sepals** obliquely
Figure 17–20. 17, Fernandezia cymbiformis Ormerod. A, stem (upper part); B, dorsal sepal; C, petal; D, labellum; E, lateral sepal; F, column. Drawn from holotype. 18, Fernandezia denticulata Ruiz & Pav. A, stem (upper part); B, flower; C, dorsal sepal; D, petal; E, lateral sepal; F, labellum and column; G, labellum; H, column. Drawn from isotype (BM). 19, Fernandezia diazi Ormerod. A, stem (upper part); B, flower; C, dorsal sepal; D, lateral sepal; E, petal; F, labellum; G, column. Drawn from holotype. 20, Fernandezia dorriana Ormerod. A, plant; B, labellum and column; C, dorsal sepal; D, lateral sepal; E, petal; F, labellum; G, column. Drawn from holotype.
Distribution: Ecuador. 
The type material of this taxon comprises four sheets kept in Paris. At least three species appear to be present on these sheets, but only sheet 00669643 has material (on the right hand side) matching the illustration in the protologue (Kunth 1816). The left hand plant on this sheet has laxer, more pointed leaves, I believe it represents F. hamiltonii, newly described below. 
While Fernandezia distichoides likely occurs in Peru I have preferred not to accredit specimens to it until a more detailed study can be made to ascertain the specific limits of the taxon. 
Fernandezia dorriana Ormerod, sp. nov. 
Distribution: Peru. 
The holotype of this species is a mixed collection; the other specimen present represents the holotype of Fernandezia barnettii, described above. The isotypes in MO and NY, however, have only material of F. dorriana on them. From F. barnettii, F. dorriana may be distinguished by its fleshier, oblong-lanceolate (vs. elliptic) leaves, strongly keeled lateral sepals and petals, and lip with calli raised into triangular flaps (vs. 2 long lamellae). However, its closest ally appears to be F. jordaniae var. jordaniae from the same region, a taxon with a similar habit and floral size. The two seem to differ in details of the sepals (acute vs. obtuse), petals (carinate vs. ecarinate), and labellum (sessile vs. clawed). 
TYPE: PERU. Huancavelica: Prov. Taycaya, Distrito Huachocolpa, Capcasoro, 3400 m, 15 June 1999, M. Leon M. 3067 (Holotype: MOL [including two samples in spirit], not seen). Fig. 21G. 
Leaves ligulate, acute, upper margin shortly fimbriate-denticulate, upper surface rugose, often secund, 7–16 × 1.8–3.5 mm. Flowers green with tips of petals becoming yellow as the capsule develops. Dorsal sepal oblong, obtuse, slightly thickened in upper 1/3 along midvein, upper half with minutely denticulate-papillose margins, 3 × 1.2 mm. Lateral sepals obliquely oblong-ligulate, apex irregular, upper half with denticulate margins, thickened along midvein, weakly curved, 2.6–2.8 × 0.95–1.00 mm. Petals oblong, apex irregular, upper half with denticulate margins, thickened along midvein, 2.8 × 1.2 mm. Labellum ovate, acute, upper half with minutely papillose margins, 2 × 1.5 mm; lower half divided by an obscure ridge that diverges apically into 2 short, parallel, decrescent ridges. Column short, broad, each side with a short, suborbicular, downward-pointing wing, 1 × 1 mm. 
Distribution: Peru. 
Additional specimen examined: PERU. San Martin: Distrito Huallaga, valley of the Rio Apisoncho, 30 km above Jucusbamba, 3600 m, 12 August 1965, A.C. Hamilton & P.M. Holligan 1261 (K).
Figure 21–24. 21, A–F, Fernandezia ecallosa (D.E. Benn. & E.A. Chr.) M.W. Chase var. cundinamareae Ormerod. A, plant; B, dorsal sepal; C, lateral sepal; D, petal; E, labellum; F, column (no scale). G, Fernandezia ecallosa var. ecallosa. G, labellum. A–F from holotype; G from Hamilton & Holligan 1261 (K). 22, Fernandezia espinosae Ormerod. A, stem (upper part); B, flower minus tepals; C, dorsal sepal; D, lateral sepal; E, petal; F, labellum. Drawn from holotype. 23, Fernandezia hamiltonii Ormerod var. hamiltonii. A, dorsal sepal; B, petal; C, lateral sepal; D, labellum; E, column. Drawn from Luer et al. 2543 (SEL). 24, Fernandezia hamiltonii Ormerod var. hamiltonii. A, stem (upper part); B, flower; C, dorsal sepal; D, petal; E, lateral sepal; F, labellum; G, labellum and column. Drawn from holotype.
This species is closely related to *Fernandezia tortuosa* (Foldats) M.W. Chase but with much more strongly rugose surfaces on the leaves, which tend to not be so narrowed toward the apex. Christenson (2008) recorded *F. tortuosa* from Peru, but judging from a photograph of the specimen (Cusco: Machu Picchu, Winay Wayna, 3100 m, 2 June 1998, W. Nauray & Acuriol 181 [CUZ, photo.: F]), it appears more likely to be *F. ecallosa*. *Fernandezia tortuosa* does occur in nearby Ecuador, however, and has also been reported for Bolivia (Kolanowska and Szlachetko, 2014).

The above short description based on the cited specimen is provided to augment the protologue, since the taxon was only known from the type.

**Fernandezia ecallosa** var. *cundinamarcae* Ormerod, var. nov.

**TYPE:** COLOMBIA. Cundinamarca: Highlands of Bogota, Paramo de Pradera, 2800–3200 m, March 1892, F.C. Lehmann 8831 (Holotype: K; Isotype: K). Fig. 21A–F.

Differing from *Fernandezia ecallosa* (D.E. Bennett & E.A. Christenson) M.W. Chase var. *ecallosa* in the flowers having a labellum with entire (vs. minutely papillose) margins, and broader (1.8 vs. 1.0–1.3 mm) column wings.

Epiphytic *herb. Roots* terete, to 1 mm thick. *Stems* densely leafy, to 12 leaved, 5.0–6.5 cm long, to 0.8 cm wide across leaf sheaths, 0.3 cm thick. *Leaves* lanceolate, apex oblique, acute to subacute, upper margins fimbriate-denticulate, upper surface rugose, 10.0–17.5 × 2.5–5.0 mm; leaf sheaths with shortly denticulate margins. *Inflorescence* 11.5 mm long; peduncle compressed, 10 mm long; rachis very short, probably 2 flowered; primary floral bracts 11.5 mm long; peduncle compressed, 10 mm long; rachis very short, probably 2 flowered; primary floral bracts paired, ovate-oblong, acute, 5 × 4 mm. *Flowers* yellowish to greenish yellow. *Pedicellate ovary* not seen unfertilized; capsule ellipsoid, rounded triangular in section, 5 × 4 mm. *Dorsal sepal* oblong-elliptic, apex irregular, upper half with minutely papillose-denticulate margins, slightly thickened along midvein, 2.9 × 1.2 mm. *Lateral sepals* obliquely oblong, obtuse, weakly curved, thickened along midvein, upper third to half with minutely denticulate margins, 2.8 × 1 mm. *Petals* oblong-elliptic, apex irregular, upper half with minutely papillose-denticulate margins, slightly thickened along midvein, 2.8 × 1.5 mm. *Labellum* broadly ovate, subacute to obtuse, 2 × 1.75 mm; lower half divided by a low, narrow ridge (this rarely united to the column) that diverges apically in two, i.e., Y-shaped. *Column* short and broad, each side with a broadly elliptic, downward-pointing wing, 1 × 1.8 mm.

**Distribution:** Colombia.

**Additional specimen examined:** COLOMBIA. Cundinamarca: W of Zipaquira, Mt. Chuscal, 3200–3300 m, 22 October 1917, F.W. Pennell 2595 (US).

**Etymology:** named after the type locality, the Department of Cundinamarca.

This taxon differs from the typical Peruvian entity in having entire lip margins, and much broader column wings (1.8 vs. 1.0–1.3 mm).

**Fernandezia espinosae** Ormerod, sp. nov.

**TYPE:** ECUADOR. Loja: Horta-Naque, 2500 m, 9 September 1946, R. Espinosa 1024 (Holotype: AMES). Fig. 22.

Related to *F. crystallina* (Lindl.) M.W. Chase but the flowers with an entire (vs. trilobed to entire) oblong-ovovate (vs. oblong to ovate-elliptic) labellum.

Epiphytic *herb. Roots* terete, 0.5–1.0 mm thick. *Stems* 1–3 branched apically (branches 5–12 cm long), sublaxly leafy, 12–30 cm long; 0.2–0.4 cm wide across leaf sheaths, to 0.15 cm thick. *Leaves* oblong, acute, thinly coriaceous, 8.0–10.0 × 2.5–4.0 mm; leaf sheaths deltate, smooth. *Inflorescence* to 7.5 mm long; peduncle to 5 mm long; rachis 3–4 flowered, 2.0–2.5 mm long; floral bracts ovate-lanceolate, acute, up to 2 mm long. *Flowers* lemon yellow, white on the edges. *Pedicellate ovary* clavate, triquetrous, 2.1 mm long. *Dorsal sepal* elliptic, subacute, midvein thickly carinate, 2.00 × 1.15–1.20 mm. *Lateral sepals* obliquely oblong-elliptic, subacute, midvein thickly carinate, 2.6 × 1.0 mm. *Petals* oblong-elliptic, subacute, 2.00 × 0.95 mm. *Labellum* oblong-ovovate, subacute, 2.7 × 1.5 mm; lower half divided by a narrow ridge that divides apically into 2 divergent, fleshy calli. *Column* more or less rectangular, each side apically with a forward-pointing, rounded wing, ca. 1.7 mm long, 1.65 mm wide laterally.

**Distribution:** Ecuador.

**Eponymy:** named after Dr. Reinaldo Espinosa (1898–1950) from the University of Loja, who collected the type.

This species shares its habit and small flowers with the type form of *Fernandezia crystallina* but differs from it in having an oblong-ovovate lip. The column was somewhat distorted from pressing in the flower studied, so that the apical part of the clinandrium was upturned. It appears in reality to be forward-pointing as in most other *Fernandezia*.

**Fernandezia falcioloba** (Rchb.f.) M.W. Chase, Phytotaxa 20: 30, 2011.

**Basionym:** *Pachyphyllum falciolobi* Rchb.f., Linnaea 41: 32, 1876.

**TYPE:** ECUADOR. Loja, September, W. Jameson s.n. (Holotype: W-R, image seen; Isotype: AMES). Fig. 34G–I.

Epiphytic *herb. Roots* terete, thin. *Stems* caespitose, wiry, to 100 mm long, to 2 mm wide across leaf sheaths. *Leaves* linear, acute, fleshy, falcate, to 8 mm long, ca. 0.75 mm wide laterally; leaf sheaths tubular, obliquely truncate, not covering all of stem, smooth. *Inflorescence* few flowered. *Flowers* yellow. *Pedicellate ovary* triquetrous; capsule triquetrous, shortly pedicellate, 2.8 mm long. *Dorsal sepal* ovate, obtuse, midvein low carinate, 1.3 × 1.0 mm. *Lateral sepals* obliquely obvate, subacute, midvein low carinate, 1.65 × 1.15 mm. *Petals* elliptic to obvovate-elliptic, subacute to obtuse, 1.10–1.15 × 0.70–0.85 mm. *Labellum* oblong-lanceolate, oblong, to subandurate, obtuse, lower part elliptic, ca. 1.1 × 0.9 mm, upper part ovate-elliptic, ca.. 0.70–0.75 × 0.40–0.50 mm, in total 1.70–1.85 × 0.70–0.90 mm; lower half divided by a low thickening that ends in 2 fleshy calli. *Column* short, stout, 0.9–1.0 mm long, ca. 0.8 mm wide laterally.

**Distribution:** Ecuador.

**Additional specimens examined:** ECUADOR. Azuay: E cordillera, 4–5 km N of Sevilla de Oro, 2745–3050 m, 14 August 1945, *W.H. Camp E-4680* (AMES, NY); E cordillera, 1–8 km N of Sevilla de Oro, 2440–2745 m, 27 July to 12 August 1945, *W.H. Camp E-4444* (AMES, NY).
Zamora-Chinchipe: few kilometers E of “El Tiro” Pass, between Loja and Zamora, 2600 m, 22 October 2004, F.A. Werner 1241 (MO); “El Tiro” Pass, ca. 15 km from Loja, 2900 m, 8 July 2004, F.A. Werner 1078 (MO).

The above description is supplied to augment knowledge of the species. It is closest to *Fernandezia callacallae* from Peru (see discussion under the latter) but is also similar to *F. micrantha*. This species probably occurs in Peru, but I did not confirm records from there. One collection previously recorded by Schweinfurth (1970) is referred here to *F. callacallae*, described above.

**Fernandezia hamiltonii** Ormerod, *sp. nov.*

TYPE: PERU. San Martin: Distrito Huallaga, valley of Rio Apisongo, 30 km above Jucusamba, 3500 m, 12 August 1965, A.C. Hamilton & P.M. Holligan 1259 (Holotype: K; Isotype: AMES). Fig. 23–24.

Related to *Fernandezia distichoides* M.W. Chase but with more laxly leaved stems, shorter (5–17 vs. to 30 mm long) leaves, and smooth (vs. rugulose) leaf sheaths.

Epiphytic *herb. Roots* terete, thick and fleshy, 0.5–2.0 mm thick. *Stems* simple, sub-laxly many-leaved, 3–31 cm long, 0.3–0.6 cm wide across leaf sheaths, 0.20–0.25 cm thick. *Leaves* ligulate in lateral view, acute, minutely denticulate along margins, slightly curved, fleshy, 5–17 mm long, 2.0–2.5 mm wide laterally; leaf sheaths deltate in lateral view, truncate, margins denticulate, surface smooth. *Inflorescence* to 6.5 mm long; peduncle ca. 2.5 mm long; rachis arched, 6 flowered, to 4 mm long; floral bracts deltate, acute, margins denticulate, to 2.5 × 2.0 mm. *Flowers* green, yellow to yellowish. *Pedicellate ovary* clavate, triquetrous, 3.2–3.5 mm long. *Dorsal sepal* oblong-lanceolate, acute, midvein low carinate, 3.00–3.15 × 1.10–1.40 mm. *Lateral sepals* obliquely oblong-lanceolate, acute, midvein low carinate, 2.9–3.7 × 1.0–1.6 mm. *Petals* oblong, obtuse, thickened along midvein, 2.7–2.9 × 0.9–1.0 mm. *Labellum* elliptic in lower 2/3, apical 1/3 subquadrate to elliptic, acute, lower part 2.00 × 1.95–2.00 mm, upper part 1.20–1.40 × 1.10–1.15 mm, in total 3.20–3.40 × 1.95–2.00 mm, or more rarely ovate-lanceolate and 3.8 × 2.0 mm; lower part divided by low ridge that divides apically into 2 parallel, conical calli. *Column* cuneate in profile, each side at apex with an obtuse, forward-pointing wing, 2.0–2.1 mm long, 1.1–1.3 mm wide laterally.

**Distribution:** Ecuador; Peru.

**Additional specimens examined:** ECUADOR. Loja: pass 54 km N of Loja, 3000 m, 12 February 1978, C. Luer, J. Luer & M. Portilla 2453 (SEL). PERU. San Martin: Distrito Huallaga, valley of Rio Apisongo, 30 km above Jucusamba, 2800 m, 6 September 1965, A.C. Hamilton & P.M. Holligan 1291 (K).

**Habitat:** epiphyte growing among moss on trunks of small trees, in upper limit of montane forest (type), growing 5 ft (= ca. 1.5 m) above ground on tree trunk (*Hamilton & Holligan 1291*), cloud forest (*Luer et al. 2543*), 2800–3500 m.

**Eponymy:** named after the Province of Jaen, the type locality.

This variety differs from typical *Fernandezia hamiltonii* in having the leaf sheaths sublobulate midway (vs. in the lower 1/3), smaller flowers (sepalas 2.2–2.6 vs. 2.9–3.7 mm), and a narrower lip (1.40 vs. 1.95–2.00 mm).

**Fernandezia harlingii** Ormerod, *sp. nov.*

TYPE: ECUADOR. Loja: Loma de Loro, 6 km SE of Saraguro, on road to Loja, 3200 m, 11 February 1985, G. Harling & L. Andersson 21904 (Holotype: AMES). Fig. 26.

Related to *Fernandezia denticulata* Ruiz & Pav. but the flowers having a labellum with larger calli, and the column with a broad apical extension.

Epiphytic and terrestrial (on road cutting) *herb. Roots* terete, emitted from base of stem, to 0.8 mm thick. *Stems*
Figure 25–28. 25, *Fernandezia hamiltonii* Ormerod var. *jaenensis* Ormerod. A, stem (upper part); B, dorsal sepal; C, petal; D, lateral sepal; E, labellum; F, column. Drawn from holotype. 26, *Fernandezia harlingii* Ormerod. A, stem (upper part); B, column; C, dorsal sepal; D, petal; E, lateral sepal; F–G, labellums. A–F from holotype; G from Madison et al. 7470 (MO). 27, *Fernandezia ichneumonea* Ormerod. A, plant; B, dorsal sepal; C, petal; D, lateral sepal; E, labellum; F, column. Drawn from holotype. 28, *Fernandezia jordaniae* Ormerod var. *jordaniae*. A, stem (upper part); B, flower; C, dorsal sepal; D, petal; E, lateral sepal; F, labellum; G, labellum and column. Drawn from holotype.
dendronically leafy, simple to 3–4 branched apically, 10.0–20.5 cm long, 0.35 cm wide across leaf sheaths, 0.15 cm thick. Leaves oblong-lanceolate, weakly falcate, acute, margins minutely denticulate, 6–10 mm long, 1.3–2.2 mm wide laterally; leaf sheaths triangular, truncate, margins minutely denticulate, surface finely transversely rugulose. Inflorescence ca. 6 mm long; peduncle 2.5 mm long; rachis 5–6 flowered, ca. 3.5 mm long; floral bracts deltate-cymbiform, acute, to 3 mm long. Flowers green, or with green sepals, white petals and lip. Pedicellate ovary clavate, triquetrous, 3.5 mm long. Dorsal sepal ovate-elliptic, acute, carinate mediastyly, 2.2–2.8 × 1.05–1.20 mm. Lateral sepals obliquely oblong-lanceolate, acute to subacute, carinate, 2.20–2.75 × 1.05–1.25 mm. Petals oblong, acute to subacute, 2.0–2.1 × 0.8–1.0 mm. Labelllum oblong to ovate-elliptic, acute to subacute, lower half 1.4 × 1.6–1.8 mm, upper half 1.00–1.35 × 1.2–1.6 mm, in total 2.40–2.75 × 1.6–1.8 mm; lower half divided by a ridge that diverges into 2 conical to subquadrate, medial calli. Column 1.8 mm long, apex 1 mm wide laterally.

**Distribution:** Ecuador.

**Additional specimen examined:** ECUADOR. Loja: Cordillera de Sabanilla, ca. 15 km S of Yangana, 2480 m, 31 December 1980, M.T. Madison, D. Madison, L. Besse & A. Besse 7470 (MO).

**Habitat:** moist montane scrub, on road cut (type), and wet montane forest (Madison et al. 7470), 2480–3200 m.

**Eponymy:** named after Gunnar Harling (1920–2010), collector of the type. He was the founder and Chief Editor of The Flora of Ecuador series, and participated in several expeditions to Ecuador.

This species appears to be most similar to Fernandezia denticulata from Peru, sharing with it a similar habit and small flowers with similarly shaped segments. However, F. harlingii differs in having flowers with a larger labellum (2.40–2.75 × 1.60–1.80 vs. 1.90 × 1.15 mm) with larger calli, and a column with a prominent apical extension of the clinandrium. The collectors of the second specimen noted it to have cleistogamous flowers but this was not evident in the one that was studied, though it did have smaller measurements.

**Fernandezia ichneumonea** Ormerod, sp. nov.

**TYPE:** PERU. Cusco: Prov. Quispicanchi, between Abra Walla Walla and Marcapata, 210 km from Cuzco, 2800–4600 m, 21–25 April 1988. P. Niuen, F. Loayza & W. Loayza 993 (holotype: SEL; isotypes: F, MO, NY). Fig. 27.

Related to Fernandezia weberbaueri Ormerod var. weberbaueri but the leaves with an apiculus to 2 mm (vs. to 1 mm) long, the flowers with a subacuminate (vs. acute) dorsal sepal, and narrower (1.3 vs. 1.5–1.6 mm wide) column wings.

Epiphytic herb. Roots terete, 0.4–0.8 mm thick. Stems simple or rarely branched (branch to 3.5 cm long), densely leafy, 4.5–19.0 cm long, to 0.2 cm thick. Leaves oblong-lanceolate, apiculate, margins minutely denticulate, to 8.5 mm long, ca. 2 mm wide laterally, apiculus to 2 mm long; leaf sheaths delinate, truncate, margin minutely denticulate, surface smooth, striate. Inflorescence to 6 mm long; peduncle to 3 mm long; rachis up to 3 flowered, to 3 mm long; floral bracts delinate, acute, to 2.2 mm long. Flowers white. Pedicellate ovary clavate, triquetrous, triate, 2.8–3.0 mm long. Dorsal sepal oblong, subacuminate, 3.15 × 1.1 mm. Lateral sepals obliquely oblong-lanceolate, acute, carinate mediastyly near apex, 3.5 × 1 mm. Petals oblong-oblanceolate, acute, carinate mediastyly near apex, 3 × 1 mm. Labellum oblanceolate, subacute, carinate below apex with an obtuse carina, 3.1 × 1.2 mm; carinae 2, lamellate, divergent, ending in upper 2/3 of lip. Column with broad semicircular wings, 2 mm long, 1.3 mm wide laterally.

**Distribution:** Peru.

**Eponymy:** from the Classical Greek ichneumon, used for a small wasp in some cases, in reference to prominent stinger-like apiculi on the tips of the leaves and lateral sepals.

This species is closely allied to Fernandezia weberbaueri var. weberbaueri, coming from the same province in Peru. It appears to differ in being a stouter plant with broader leaf sheaths, in having conduplicate (vs. flat) leaves with a longer apiculus (2 vs. 1 mm long), fewer-flowered (up to 3 vs. up to 5 flowers) inflorescences, flowers with a subacuminate (vs. acute) dorsal sepal, and narrower column wings.

**Fernandezia jordaniae** Ormerod, sp. nov.

**TYPE:** BOLIVIA. Santa Cruz: Prov. Caballero, road to Siberia, 26 km from Comarapa, around the Campamento, 2600 m, 15 April 2003. C.G. Jordan & I.G. Vargas 394 (holotype: MO). Fig. 28.

Related to Fernandezia dorriana Ormerod but the flowers with obtuse (vs. acute) sepals, obovate-oblong (vs. oblong-elliptic) petals without a thick carina, and a clawed (vs. sessile) labellum.

Epiphytic (?) herb. Roots terete, 0.5 mm thick. Stems simple, sub laxly leafy, 4–9 cm long, 0.10–0.15 cm thick. Leaves oblong, acute, minutely denticulate near apex, coriaceous, 8–10 × 3.5–4.2 mm; leaf sheaths obliquely oblong-lanceolate in lateral view, smooth, striate, margin revolute, minutely denticulate. Inflorescence 17 mm long; peduncle 10 mm long; rachis sub-laxly 7 flowered, 7 mm long; floral bracts delinate, acute, 2 × 1.6 mm. Flowers white. Pedicellate ovary triquetrous, 2.8–3.0 mm long. Dorsal sepal ovate-lanceolate, obtuse, fleshy, concave on lower inside half, 1.75–1.80 × 0.8 mm. Lateral sepals obliquely oblong-lanceolate, obtuse, fleshy, concave on lower inside 1/3, 2 × 0.95–1.00 mm. Petals obovate-oblong, acute, 1.75 × 0.8 mm. Labellum elliptic-oblanceolate, obtuse, carinate below tip, 2 × 0.9 mm; lower half divided by a linear ridge that diverges into low lamellae that are raised apically into obliquely subquadrate terminations. Column shortly and broadly stalked, each side with a low, broad, semicircular wing, 1.1 mm long, 0.8 mm wide laterally.

**Distribution:** Bolivia.

**Habitat:** Very wet “yungueno” forest on a montane ridge, 2600 m.

**Eponymy:** named after Claudia G. Jordan, co-collector of the type.
Among those taxa in the broad *Fernandezia pectinata* alliance, this species may be recognized by its flat leaves, long inflorescence peduncles, and very fleshy flowers with obtuse sepals. Its closest ally appears to be *F. dorriana* from the same region, the latter differing in having more oblong petals with a thick carina, and a sessile (not clawed) lip.

**Fernandezia jordaniae** var. *trullata* Ormerod, var. nov.

**TYPE:** BOLIVIA. Santa Cruz: Manuel M. Caballero, near Siberia, above Comarapa, 2500 m, 1–2 December 1978, C. Luer, J. Luer, L. Kuhn, J. Kuhn & F. Fuchs et al. 3396 (Holotype: SEL). Fig. 29.

Differ from the typical variety in having thinner sepals, truncate labellum and a sessile column.

Epiphytic (?) *herb.* Roots terete, 0.4–0.8 mm thick. Stems 2–4 branched (branches 2.0–5.5 cm long), sublaxly leafy, 14–17 cm long, 0.1 cm thick. *Leaves* oblong-lanceolate, acute, laxly minutely denticulate towards apex, 9.5 × 3.5 mm; leaf sheaths smooth, striate, half spreading away from stem, exposing internodes. *Inflorescence* to 16 mm long; peduncle 6–7 mm long; rachis 7–10 flowered, 5–9 mm long; floral bracts deltate, acute, to 1.8 mm long. *Flowers* white. *Pedicellate ovary* narrowly clavate, triquetrous, 2.5 mm long. *Dorsal sepal* oblong-lanceolate, obtuse, concave, 1.75 × 0.75 mm. *Lateral sepals* obliquely lanceolate, acute, midvein thickly carinate in upper half, 2.1 × 0.8 mm. *Petals* 1.75 × 0.75 mm. *Labellum* trullate labellum and a sessile column.

**DISTRIBUTION:** Bolivia.

**HABITAT:** cloud forest, 2500 m.

**ETYMOLOGY:** from the Latin *trullatus*, trowel shaped, in reference to the labellum shape.

This variety differs from typical *Fernandezia jordaniae* in having thinner sepals, a truncate lip, and sessile column.

**Fernandezia kosnipatae** Ormerod, sp. nov.

**TYPE:** PERU. Cusco: Prov. Paucartambo, Kosnipata: forest ridge of Ancacau, Manu National Park and Pillahuata forests, 1900 m, 20 March 1991, P. Nunez & N. Alanya 13221 (Holotype: MO). Fig. 29.

Related to *F. dalstroemii* (Dodson) M.W. Chase but the plant with more laxly leaved stems, and the inflorescences with more (6 vs. 3) flowers.

**ETYMOLOGY:** named after the Kosnipata District, the type locality.

This species appears to be related to the Kosnipata District. The latter differing in having more oblong petals with a thick carina, and a sessile (not clawed) lip.

**TYPE:** BOLIVIA. Cochabamba: Prov. Chapare, along road to Villa Tunari, 2840 m, 13 & 16 January 1981, C. Luer, J. Luer, E. Besse & R. Vásquez 5616 (Holotype: SEL). Fig. 31.

A singular entity with flat, oblong leaves, flowers with reflexed dorsal sepal and petals, basally united, splayed forward lateral sepals, a long-clawed lip with an elliptic blade that bears a single lobulate callus, and a dolabriform column.

**ETYMOLOGY:** herb. *Roots* terete, to ca. 1 mm thick. *Stems* 2–3 branched (branches to 6.5 cm long), flexuous, laxly leafy, 34 cm long, 0.3 cm thick, 0.4 cm wide across leaf sheaths. *Leaves* oblong to weakly oblong lanceolate, apiculate, coriaceous, drying brownish, 17–26 × 4.5–9.5 mm; leaf sheaths obliquely ovate in lateral view, truncate, surface smooth, striate, not fully enclosing stem, 8 mm long dorsally. *Inflorescence* ca. 10 mm long; peduncle ca. 4 mm long; rachis pectinately, up to 6 flowered, to 6 mm long; floral bracts broad ovate, acute, to 2.5 × 2.0 mm. *Flower* color not known. *Pedicellate ovary* clavate, triquetrous, ca. 3 mm long; capsule triquetrous, ca. 8 mm long (incl. 2 mm long pedicel). *Dorsal sepal* broadly oblong-lanceolate, acute, midvein broadly carinate, 3.6 × 1.5 mm. *Lateral sepals* obliquely lanceolate, acute, midvein carinate, 4.1 × 1.7 mm. *Petals* broadly oblong-lanceolate, acute, weakly ridged medially, 3.00–3.15 × 1.2 mm. *Labellum* subpandurate, acute, lower half 2.2 × 2.0 mm, upper half 1.70 × 1.65 mm, in total 3.9 × 2.0 mm; lower half divided by a ridge that ends in 2 parallel conical calli. *Column* almost rectangular in lateral view, 2.1–2.3 mm long, 1.2 mm wide laterally.

**DISTRIBUTION:** Peru.

**ETYMOLOGY:** from the Latin *trullatus*, trowel shaped, in reference to the labellum shape.
Figure 29–32. 29. *Fernandezia jordaniae* Ormerod var. *trullata* Ormerod. A, stem (upper part); B, dorsal sepal; C, lateral sepals; D, petal; E, labellum; F, column. Drawn from holotype. 30. *Fernandezia kosnipatae* Ormerod. A, stem (upper part); B, dorsal sepal; C, lateral sepal; D, petal; E, labellum; F, column. Drawn from holotype. 31. *Fernandezia luerorum* Ormerod. A, stem (upper part); B, flower; C, dorsal sepal; D, petal; E, lateral sepal; F, labellum; G, column. Drawn from holotype. 32. *Fernandezia mandonii* Ormerod. A, plant; B, dorsal sepal; C, petals; D, lateral sepal; E, labellum; F, column. *Fernandezia pectinata* (Rchb.f.) M.W. Chase. G, labellum. A–F from holotype; G from isolecotype.
in a rough inverted V-shape, at base each side with a deltate to elliptic, obtuse lobe. Column dolabiform, 2.5 mm long, 3 mm wide laterally.

**Distribution:** Bolivia.

**Eponymy:** named after Carl and Jane Luer, who helped collect the type of this species, along with so many other species of orchids throughout the Andean countries.

This rather singular species of the *Fernandezia breviconnata* (Schltr.) M.W. Chase complex may be distinguished from other members of that group by its flowers that have the lateral sepals splayed forward (rather than curved upward), by its relatively long clawed labellum with a short blade (vs. a short claw and relatively long blade), and column that is widened both dorsally and ventrally (vs. ventrally only).

**Fernandezia mandonii** Ormerod, *sp. nov.*

**TYPE:** BOLIVIA. La Paz: Prov. Larecaja, near Sorata, Mt. Chilieca, 3100 m, October 1859, G. Mandon 1152 p.p. ([Holotype: AMES 76407 [= GH 6731], two lower left plants; Isotypes: G, S, P, images seen].) Fig. 32A–F.

Related to *Fernandezia pectinata* (Rchb.f.) M.W. Chase but with larger flowers (sepals 2.8–3.8 vs. 2.0–2.4 mm long) and a cuneate (vs. oblong-oblanceolate) labellum.

Epiphytic herb. Roots terete, 0.5–1.3 mm thick. Stems simple, densely leafy, 6.5–9.5 cm long, 0.2–0.3 cm wide across leaf sheaths, 0.1–0.2 cm thick. Leaves lanceolate, acute, canaliculate, fleshy, margins minutely denticulate near apex, 8.9 mm long, 1.7–2.5 mm wide laterally; leaf sheaths with minutely denticulate margins, dorsal exposed edge 3 mm long. Inflorescences to 9 mm long; peduncle ca. 4 mm long; rachis up to 5 flowers, to 5 mm long; floral bracts deltate, acute, ca. 2.6 mm long. Flower color not known. Pedicellate ovary clavate, triquetrous, 2.5–3.0 mm long. Dorsal sepal lanceolate to ligulate-lanceolate, acute to subacute, carinate, 2.80–3.15 × 0.95–1.00 mm. Lateral sepals obliquely lanceolate, acute, carinate, 3.2–3.8 × 1.2–1.5 mm. Petals ligulate-lanceolate, acute, 2.65–3.00 × 0.80–1.00 mm. Labellum narrowly cuneate, apiculate, 2.7–3.0 × 1.0–1.6 mm; lower 1/3 divided by low parallel lamellae that raise and diverge on the middle of the lip. Column each side with an obliquely suborbicular low wing, 1.7–1.9 mm long, 1.0–1.3 mm wide laterally.

**Distribution:** Bolivia.

**Additional specimen examined:** BOLIVIA. La Paz: Gran Poder, small gold mine ca. 40 km N of Sorata, narrow wooded valley below Tacacoma, 3170 m, 3 June 1950, W.M.A. Brooke 6433 (BM, NY).

**Eponymy:** named after Gilbert Mandon (1799–1866), a French mining engineer and botanist. He was director of a mine at Tipuani from 1848–1861 and collected over 1800 plants between Tipuani and Sorata during this time.

The collection *Mandon 1152* was originally thought to contain two elements. One is a taxon with coriaceous flat leaves, and flowers with a clawed lip expanding into a pentagonal blade. That entity became the type of *Pachyphyllum pseudodichaea* Rchb.f. The other plant had conduplicate, fleshy leaves, and flowers with a cuneate to oblong-oblanceolate lip. This second entity became the type of *Pachyphyllum pectinatum* Rchb.f. However, it is now evident that this second entity is a mixture of two distinct species, one with a cuneate lip (here described as *F. mandonii*) and one with an oblong-oblanceolate lip (the lectotype of *F. pectinata*).

**Fernandezia mercadoi** Ormerod, *sp. nov.*

**TYPE:** BOLIVIA. Cochabamba: Prov. Carrasco, Parque Nacional Carrasco, c. 2 km from the Monte punk-selvercas entrance, 3100 m, 15 September 1995, M. Mercado MM 309 (Holotype: MO). Fig. 33.

Related to *Fernandezia chaparensis* Ormerod but the dorsal sepal acute (vs. apiculate), petals with a narrower, longer claw (vs. shorter and broader), and the column with longitudinally broader wings.

Epiphytic herb. Roots terete, 0.5–1.3 mm thick. Stems flexuous, 4–5 branched (branches 8.0–9.5 cm long), 0.08–0.15 cm thick. Leaves oblong-lanceolate, apiculate, upper margins minutely denticulate, thinly coriaceous, 11.5–16.0 × 3.5–5.0 mm, shortly petiolate (petiole 1–2 mm long); leaf sheaths tubular, smooth, margins often recurved, minutely denticulate, 4.5–5.0 mm long. Inflorescence ca. 5.5 mm long; peduncle ca. 4.5 mm long; rachis 2–3 flowered, ca. 1 mm long; floral bracts lanceolate, acute, to 4.5 × 2.4 mm. Flowers yellow. Pedicellate ovary clavate, triquetrous, 4.5 mm long. Dorsal sepal ligulate, acute, carinate, gently upcurved, 5 × 1 mm. Lateral sepals obliquely ligulate-lanceolate, high carinate, gently upcurved, 6.0 × 1.9 mm. Petals obliquely oblong-lanceolate from a clawed base, acute, gently upcurved, basally joined to sepals, 4.8 × 1.2 mm. Labellum ovate-lanceolate from a clawed base, claw 2.5 mm long, blade 4.0 × 1.8 mm, in total 6.5 × 1.8 mm; lower half medially thickened and ending in 2 semi-elliptic lamellae. Column clawed, each side dilated into a semicircular wing, ca. 3.2 mm long, 2 mm wide laterally, claw 0.8 mm wide.

**Distribution:** Bolivia.

**Eponymy:** named after M. Mercado, Bolivian botanist and collector of the type.

**Fernandezia mercadoi** is a member of the *F. breviconnata* (Schltr.) M.W. Chase complex; it differs from the latter in having a ligulate (oblong-elliptic) dorsal sepal and clawed (vs. sessile) petals. Another similar taxon is its Bolivian congener *F. chaparensis*, but the latter has a prominent apiculus on the dorsal sepal, more shortly, broadly clawed petals, and longitudinally wider column wings.

**Fernandezia micrantha** (Schrtr.) M.W. Chase, Phytotaxa 20: 30. 2011.


**TYPE:** COLOMBIA. Cauca: without locality, M. Madero s.n. ([Holotype: B, destroyed; drawing AMES]. Lectotype (designated by Christenson 2008: 286): t. 73, f. 282 [in Schlechter, 1929]). Fig. 34A–F.

**Heterotypic synonyms:** *Pachyphyllum nubivagum* L.O. Williams, Lilooa 3: 483. 1938 syn. nov.

Figure 33–36. 33, Fernandezia mercadoi Ormerod. A, stem (upper part); B, dorsal sepal; C, lateral sepal; D, petal; E, labellum; F, column. Drawn from holotype. 34, A–F. Fernandezia micrantha (Schltr.) M.W. Chase. A, flower; B, dorsal sepal; C, petal; D, lateral sepal; E, labellum and column; F, labellum. G–I, Fernandezia falcifolia (Rchb.f.) M.W. Chase. G, petal; H, labellum; I, column. A–F from Luer & Escobar 6572 (SEL); G–I from Werner 1241 (MO). 35, Fernandezia militaris Ormerod. A, stem (upper part); B, leaf; C, flower; D, dorsal sepal; E, lateral sepal; F, petal; G, labellum; H, column. Drawn from holotype. 36, Fernandezia minor (Schltr.) M.W. Chase var. minor. A, stem (upper part); B, labellum and column; C, dorsal sepal; D, lateral sepal; E, petal; F, labellum; G, column. Drawn from Solomon 8663 (MO).


Fernandezia idroboi (Szlach. & Kolan.) Molinari & Mayta, Richardiana 16: 43. 2015.

Distribution: Colombia; Ecuador; Peru.


This is a neat little species with falcate, fleshy leaves generally 5–7 mm long, and tiny flowers about 1 mm long, with a simple oblong to oblong-lanceolate lip. In Schlechter’s drawing of the type the calii of the lip are shown as divaricate when usually they are parallel. I have noticed that when the lip rehydrates poorly, the calii can tend to spread in a V, also the lip shape can be falsely subpandurate.

I could not find any characters justifying the separation of Pachyphyllum nubivagum, and Williams did not offer any in the protologue. Nor could any discriminating characters be found for P. idroboi, which was not compared with P. micranthum or P. nubivagum. The shape of the lip depicted for P. idroboi I believe to be erroneous, in part because of poor rehydration and difficulty in working with the tender, small flowers.

Specimens from Ecuador and Peru represent new distributional records for those countries.

Fernandezia militaris Ormerod, sp. nov. TYPE: PERU. Amazonas: Luya Prov., Distrito Camporeondo, Tullanya, Cerro Huicsocunga, 3320 m, 8 December 1996, R. Vasquez & R. Rojas 22012 (Holotype: MO), Fig. 35.

Similar to Fernandezia theodorii M.W. Chase florally but the plant much more laxly leaved, and the leaves lanceolate and semitubular (vs. narrowly oblong and V-shaped in section).

Roots terete, 0.4–0.6 mm thick. Stems simple to 3 branched (branches immature, to 2.5 cm long), fleshy, laxly leafy, 15.0–40.5 cm long, to 0.5 cm across leaf sheaths, to 0.2 cm thick. Leaves lanceolate, acute, semitubular, rigid, 15–20 mm long, 2 mm wide laterally; leaf sheaths tubular-infundibuliform, smooth, striate, not fully covering internodes, 9–12 mm long. Inflorescence to 13.5 mm long; peduncle ca. 6.5 mm long; rachis up to 10 flowered, to 7 mm long; floral bracts broadly ovate, acute, to 3 mm long. Flowers white. Pedicellate ovary clavate, triquetrous; capsule triquetrous, 9 mm long (incl. 3 mm long pedicle), one side 4.5 mm wide. Dorsal sepal oblong, subacute, midvein broadly and thickly carinate, 3.3 × 1.5 mm. Lateral sepals obliquely oblong-lanceolate, subacute, midvein broadly and thickly carinate, 3.75 × 1.75 mm. Petals oblong, subacute, 3.75 × 1.60 mm. Labellum subpandurate, acute, lower part elliptic, 2.00 × 1.75 mm, upper part circular, acute, 1.8 × 1.7 mm, in total 3.80 × 1.75 mm; lower part divided by a thick medial ridge ending midway in 2 thick, semi-elliptic, parallel calli. Column rectangular in lateral view, 2.5 mm long, 1.75 mm wide laterally.

Distribution: Peru.

Habitat: in “Jalca” vegetation, the smallest trees of which 1.5 m tall (type), 3320 m.

Etymology: from the Latin militaris, relating to soldiers or war, in reference to the ranks of sharp, sword-like leaves.

The relationships of this species are unclear. It is quite distinct in its unique habit, with laxly leaved stems, and rigid, semitubular leaves. Details of the flowers resemble Fernandezia theodorii M.W. Chase, a more densely leaved plant, with broader, flesher leaves. The collectors did not record what surface the plant was growing on.

Fernandezia minor (Schltr.) M.W. Chase, Phytotaxa 20: 30. 2011 as minus.


TYPE: BOLIVIA. La Paz: near Unduavi, 3200 m, November 1910, O. Buchten s.n. ([Holotype: B, destroyed]. Lectotype [designated by Christenson 2008: 287]: t. 60, f. 239 [in Schlechter, 1930]). Fig. 36.

Epiphytic herb. Roots terete, 0.4–0.6 mm thick. Stems simple or branching (branches 1.5–7.5 cm long), densely leafy, 5–10 cm long, 0.08–0.10 cm thick. Leaves lanceolate, acute, margins minutely denticulate near apex, fleshy, conduplicate, 7–15 × 1.8–4.5 mm; leaf sheaths with entire to sparsely denticulate margins. Inflorescence 4.5–5.5 mm long; peduncle 3 mm long; rachis 3 flowered, 1.5–2.5
Fernandezia breviflora Ormerod, var. nov.

Type: BOLIVIA. La Paz: Unduavi Valley, 2000–2600 m, 1925, Brother Julio 451 (Holotype: US). Fig. 38.

Differing from typical Fernandezia minor in having an elliptic (vs. oblong-oblanceolate) lip.

Epiphytic (?) herb. Roots terete, 0.4–0.8 mm thick. Stems stout, densely leafy, occasionally branching (branches 6–7 cm long), 3–12 cm long, 0.1–0.2 cm thick. Leaves oblong-lanceolate, acute, conduplicate, margin minutely denticulate near apex, 8.0–9.7 × 4–5 mm; leaf sheaths smooth, striate, margins recurved, entire, 4.5 mm long. Inflorescence to 6.5 mm long; peduncle ca. 4 mm long; rachis 3–4 flowered, 2.0–2.5 mm long; floral bracts deltate, acute, ca. 2.8 × 2.0 mm. Flower color not known. Pedicellate ovary clavate, triquetrous, 2.7–3.5 mm long. Dorsal sepal oblong-lanceolate, acute, carinate, 2.7–3.3 × 1.1–1.3 mm. Lateral sepals obliquely obovate to unevenly elliptic, acute, carinate, 3.00–3.75 × 1.00–1.75 mm. Petals oblong to oblong-elliptic, acute to subacute, 2.45–2.80 × 0.95–1.20 mm. Labellum elliptic, acute to obtuse, 2.75–2.90 × 1.30–1.85 mm; midline of lip narrowly thickened before diverging into 2 lamellae. Column shortly stalked, each side with an obliquely semicircular wing, 1.65–1.90 mm long, 1.0–1.3 mm wide laterally.

Distribution: Bolivia.

Additional specimen examined: BOLIVIA. Cochabamba: valley below Pelechuco, 3050–3355 m, October 1864, R. Pearce s.n. (BM).

Etymology: from the Latin brevis, short, and flora, flower, in reference to the short appearance of the labellum.

This taxon differs from typical Fernandezia minor in having an elliptic (vs. oblong-oblanceolate) lip. The description by Pearce has slightly smaller flowers; these form the lesser floral measurements in the description.

Fernandezia nunezii Ormerod, sp. nov.

Type: PERU. Cusco: Prov. Paucartambo, Pillahuata, Tres Cruces, about 130 km Cusco on the road toward Pilcopta, 2000 m, 4 April 1987, P. Nunez 7805 (Holotype: MO; Isotype: NY). Fig. 39.

Related to F. unduaviae Ormerod but the labellum with the claw half as long, and the rectangular (vs. oblong-elliptic to elliptic) blade with right-angled (vs. tapered) bases.

Epiphytic herb. Roots terete, ca. 0.7 mm thick. Stem simple to 4 branched (branches 1.5–7.0 cm long), flexuous, sub laxly leafy, 15 cm long, 0.07–0.10 cm thick. Leaves oblong to elliptic, subcuminate, margins minutely denticulate near apex, 7.0–13.0 × 3.5–3.7 mm; leaf sheaths

mm long; floral bracts deltate, acute, margins minutely denticulate, to 2 mm long. Flowers white. Pedicellate ovary clavate, 3 mm long. Dorsal sepal oblong, acute, 3.10–3.65 × 1.20–1.40 mm. Lateral sepals obliquely lanceolate to oblong-lanceolate, acute, 3.5–4.2 × 1.1–1.2 mm. Petals oblong, acute, 2.75–3.30 × 1.00–1.10 mm. Labellum oblong-oblanceolate, subacute, free part 2.0–2.5 mm long; peduncle 4–5 mm long; rachis 3–4 flowered, 2.0–2.5 mm long; floral bracts deltate, acute, ca. 2.8 × 2.0 mm. Flower color not known. Pedicellate ovary clavate, triquetrous, 2.7–3.5 mm long. Dorsal sepal oblong-lanceolate, acute, carinate, 2.7–3.3 × 1.1–1.3 mm. Lateral sepals obliquely lanceolate, acute, carinate, 3.00–3.75 × 1.00–1.75 mm. Petals oblong to oblong-elliptic, acute to subacute, 2.45–2.80 × 0.95–1.20 mm. Labellum elliptic, acute to obtuse, 2.75–2.90 × 1.30–1.85 mm; midline of lip narrowly thickened before diverging into 2 lamellae. Column shortly stalked, each side with an obliquely semicircular wing, 1.65–1.90 mm long, 1.0–1.3 mm wide laterally.

Distribution: Peru.

Additional specimen examined: PERU. Puno: Prov. Sandia, fields and houses around Ura-ayllu, 3400 m, 5 February 1986, B. Bennett 2118 (NY).

Habitat: in deep moss on rocks (type), on rocks in old field (Bennett 2118), 3400 m.

Eponymy: named after Jef and Susanne Boeke, collectors of the type.

This variety is closest to Fernandezia minor var. breviflora but has differently shaped petals distinctly thickened along the midvein.
Figure 37–40. 37, *Fernandezia minor* (Schltr.) M.W. Chase var. *boekeorum* Ormerod. A, stem (upper part); B, dorsal sepal; C, petal; D, lateral sepal; E, labellum; F, column. Drawn from holotype. 38, *Fernandezia minor* (Schltr.) M.W. Chase var. *breviflora* Ormerod. A, stem (upper part); B, flower; C, labellum and column; D, dorsal sepal; E, petal; F, lateral sepal; G, labellum; H, column. Drawn from holotype. 39, *Fernandezia nunezii* Ormerod. A, stem (upper part); B, flower; C, lateral sepal; D, dorsal sepal and petal; E, labellum; F, column. Drawn from holotype. 40, *Fernandezia pandurata* Ormerod. A, stem (upper part); B, flower; C, dorsal sepal; D, petal; E, lateral sepal; F, labellum; G, column. Drawn from holotype.
semitubular, smooth, 4 mm long below leaf articulation. 
Inflorescence 5 mm long; peduncle 3 mm long; rachis 2 flowered, 2 mm long; floral bracts deltate, acute, to 2.8 × 2.0 mm. *Flowers* white. Pedicellate ovary clavate, triquetrous, ca. 3 mm long. Dorsal sepal narrowly oblong, subacute, midvein low carinate, joined to petals and lateral sepals for 0.75 mm, 2.5 × 0.9 mm. Lateral sepals obliquely oblong-lanceolate, subacute, midvein, joined to each other ca. 3 mm long. Petals narrowly oblong-rhombic, acute, joined to dorsal sepal for 0.75 mm, midvein on claw diverging on blade into 2 low lamellae that are raised apically into deltate to semi-elliptic lobes. Column each side at middle with an obliquely semicircular wing, 2 mm long, 0.95 mm wide. 

**Distribution:** Peru. 

**Eponymy:** named after Percy Nunez, Peruvian botanist and collector of the type. 

*Fernandezia nunezi* is related to its Peruvian congener *F. gracillima* (C. Schweinf.) M.W. Chase but differs from the latter in having a narrowly clawed, rectangular (vs. broadly clawed, suborbicular) lip. Its other close relative is the Bolivian *F. unduaviae*, which differs in the lip having a twice-as-long claw, and tapered bases to the oblong-elliptic to elliptic blade. 

The isotype in NY is a mixed collection, also containing material of *F. weberbaueri* var. *tricruncensis*.

*Fernandezia pandurata* Ormerod, sp. nov. 

**TYPE:** BOLIVIA. Cochabamba: Prov. Chapare, Pampatambo, no altitude, 8 November 1979, R. Vasquez 202 p.p. (Holotype: SEL). Fig. 40. 

Related to *Fernandezia scimitaris* Ormerod but flowers with a pandurate (vs. ovate-lanceolate) labellum, and well-separated (vs. united) calli. 

Epiphytic (?) *herb. Roots* terete, 0.3–0.8 mm thick. *Stems* simple, sub laxly leafy, 4.3–6.3 cm long, 0.25–0.30 cm wide across leaf sheaths, ca. 0.15 mm thick. *Leaves* oblong-lanceolate, apiculate, coriaceous, margins minutely denticulate, 6–8 mm long, 2.0–2.2 mm wide laterally; leaf sheaths semitubular, striate, smooth, margins recurved, minutely denticulate. *Inflorescence* to 11 mm long; peduncle 4 mm long; rachis 3–4 flowered, 3–7 mm long; floral bracts deltate, acute, 2.5 × 1.0 mm. *Flower* color not known. Pedicellate ovary clavate, triquetrous, 3.0–3.8 mm long. Dorsal sepal oblong-lanceolate, acute, low carinate, 3.20 × 1.2 mm. Petals oblong-lanceolate, acute, 2.8 × 1.1 mm. Labellum pandurate, apex an obtuse lobule, lower part ca. 2.0 × 1.1 mm; upper part ca. 1.1 × 1.2 mm, in total ca. 3.1 × 1.1–1.2 mm; lower half of lip divided by a low, thickened midline that ends in 2 subquadrate, well-separated lamellate calli. Column shortly and broadly stalked, each side with a suborbicular wing, 2 mm long, 1.5 mm wide laterally. 

**Distribution:** Bolivia. 

**Etymology:** from the Late Latin *pandura*, itself from the Classical Greek *pandoura*, a kind of lute-like musical instrument, but now meaning violin shaped (i.e., constricted in the middle), in reference to the shape of the labellum. 

This taxon is closely related to *Fernandezia scimitaris* but does not have the curved leaves of that taxon, and the flowers have a pandurate (vs. ovate-lanceolate) lip. The dorsal sepal also appears humped at the base because its carina is not in the direct line of the one on the ovary, whereas in *F. scimitaris* the dorsal sepal and ovary carina are in line. The holotype is a mixture of two species, the other specimen on the sheet forms the type of *F. scimitaris*.

*Fernandezia parvifolia* (Lindl.) M.W. Chase, Phytotaxa 20: 30. 2011 as *parviflora*. 

**Basionym:** *Pachyphyllum parvifolium* Lindl., in W.J. Hook., Icon. Plant. 2: t.177. 1837. 

**TYPE:** PERU. Amazonas: Prov. Chachapoyas, without locality, A. Mathews 1836 (Holotype: K). Fig. 41G. 

Epiphytic *herb. Roots* terete, to 0.7 mm thick. *Stems* simple to occasionally branched (branches to 8.5 cm long), flexuous, 3.5–15.7 cm long. *Leaves* oblong to oblong-elliptic, acute, thinly coriaceous, 8.0–9.5 × 3.3–4.5 mm; leaf sheaths tubular, smooth. *Inflorescence* 6 mm long; peduncle ca. 4 mm long; rachis few flowered, to 2 mm long; floral bracts deltate, acute, 2.2 × 1.5 mm. *Flowers* green. Pedicellate ovary clavate, triquetrous, ca. 3 mm long. Dorsal sepal ligulate to narrowly oblong, acute, midvein carinate, 3.0–3.4 × 0.9–1.0 mm. Lateral sepals obliquely ligulate-lanceolate, acute, high carinate, partly joined to the other lateral sepal for 0.75–2.00 mm, 3.50–4.00 × 0.95–1.20 mm. Petals narrowly oblong to ligulate-oblanceolate, acute, 2.8–3.5 × 0.9–1.0 mm. Labellum oblong to elliptic from a clawed base, obtuse, carinate below tip, claw to 1.2 mm long, in total 2.75–3.70 × 1.00–1.30 mm; lower half with a low medial thickening that ends in 2 obliquely subquadrate calli. Column clavate-cuneate in lateral view, 1.9–2.1 mm long, 0.9–1.6 mm wide laterally. 

**Distribution:** Peru. 

**Additional specimens examined:** PERU. Amazonas: Prov. Chachapoyas, Chachapoyas to Cajamarca road, Calla Calla, 20 km from Leimebamba, 3320 m, 4 September 1983, D.N. Smith & S. Vasquez S. 5017 (F; MO); Cerros Calla Calla, 18 km above Leimebamba, on the road to Balsas, 3100 m, 8 June 1964, P.C. Hutchison & J.K. Wright 5607 (AMES); S side of Molinopampa to Diosan Pass, 2700–3100 m, 8 August 1962, J.J. Wurdack 1639 (GH). 

The illustration in the protologue did not depict the labellum. Examination of the holotype and later collections show this to be oblong to elliptic with 2 medially placed calli.

*Fernandezia parvifolia* var. *cajamarcae* Ormerod, var. nov. 

**TYPE:** PERU. Cajamarca: Prov. Jaen, Sallique, Quebrada grande, road between La Cocha and Tablon, 2770–2900 m, 30 June 1998, C. Diaz, T. Guevara & E. Tineo 9795 (Holotype: MO). Fig. 41A–F.
Figure 41–44. 41, A–F. *Fernandezia parvifolia* (Lindl.) M.W. Chase var. *cajamarcae* Ormerod. A, stem (upper part); B, dorsal sepal; C, lateral sepal; D, petal; E, column; F, labellum. G, *Fernandezia parvifolia* (Lindl.) M.W. Chase var. *parvifolia*. G, labellum. A–F from holotype; G from Smith & Vasquez 5017 (MO). 42, *Fernandezia pastinaca* Ormerod. A, stem (upper part); B, flower; C, dorsal sepal; D, lateral sepal; E, petals (outside and inside); F, labellum; G, labellum and column. Drawn from holotype. 43, *Fernandezia pectinata* (Rchb.f.) M.W. Chase var. *punoensis* Ormerod. A, stem (upper part); B, dorsal sepal; C, petal; D, lateral sepal; E, labellum; F, column. Drawn from holotype. 44, *Fernandezia pseudodichaea* (Rchb.f.) M.W. Chase. A, stem (upper part); B, dorsal sepal; C, lateral sepal; D, petals; E, labellum; F, column. Drawn from isotype (AMES).
Differing from typical *Fernandezia parvifolia* in having a much broader labellum (1.95 vs. 1.00–1.30 mm).

Epiphytic herb. Roots terete, ca. 1 mm thick. Stems flexuous, simple to occasionally branched (branches 2–3 cm long), sublaxly leafy, 13–14 cm long, ca. 0.1 cm thick. Leaves oblong, acute, margins near apex finely denticulate, 10–12 × 3.5–5.5 mm; leaf sheaths tubular, smooth, margins finely denticate, not fully enclosing internodes, ca. 4 mm long. Inflorescence 5 mm long; peduncle 4 mm long; rachis 3 flowered, 1 mm long; floral bracts broadly ovate, acute, 3.0 × 3.5 mm. Flowers green. Pedicellate ovary clavate, trigonous, 4.75 mm long. Dorsal sepal narrowly oblong-lanceolate, acute, midvein carinate, 3.75 × 1.20 mm. Lateral sepals obliquely ligulate-lanceolate, acute, carinate, joined to other lateral sepals for 0.75 mm, 4.75 × 1.80 mm. Petals oblong, subacute, midvein carinate toward tip, 3.5–3.7 × 1.2 mm. Labellum elliptic, acute, 3.75 × 1.95 mm; lower half divided by a narrow ridge that ends in 2 semi-elliptic to trapezoid calli. Column clavate-cuneate in lateral view, 2.75 mm long, 1.2–1.3 mm wide laterally.

**Distribution:** Peru.
**Habitat:** in disturbed forest, 2770–2900 m.

**Etymology:** named after the Department of Cajamarca, the type locality.

Variety *cajamarcae* differs from typical *Fernandezia parvifolia* in having a broader labellum, and longer (2.75 vs. 2.00 mm) column.

**Fernandezia pastinaca** Ormerod, sp. nov.

**TYPE:** BOLIVIA. Santa Cruz: Prov. Manuel M. Caballero, 1.5 km to the SE of the town of the Siberia, 2970 m, 29 November 2002, E. Calzadilla, I. Vargas, C. Jordan & D. Rocabado 56 (Holotype: MO). Fig. 42.

Related to *Fernandezia nunezii* Ormerod and *F. unduaviae* Ormerod but the labellum ovate-elliptic (vs. oblong-elliptic to rectangular), and column narrowly (vs. broadly) clawed.

Epiphytic herb. Roots terete, 0.6–1.2 mm thick. Stems weakly flexuous, occasionally branched (branches 4.0–12.5 cm long), sublaxly leafy, to 24.5 cm long, 0.07–0.08 cm thick. Leaves ovate-lanceolate, acute, margins minutely denticulate near apex, 5–9 × 3–4 mm; leaf sheaths semitubular, margins entire, not fully covering internodes. Inflorescence 5 mm long; peduncle 3 mm long; rachis 3 flowered, 2 mm long; floral bracts deltate, acute, 2.0 × 1.6 mm. Flowers white. Pedicellate ovary clavate, triquetrous, ca. 2 mm long. Dorsal sepal oblong, acute, thinly fleshy, basal 0.8 mm joined to lateral sepals, 2.8 × 1.1 mm. Lateral sepals obliquely lanceolate, subacute, fleshy, 3.0–3.3 × 1.1–1.5 mm. Petals elliptic from a clawed base, subacute, outside of claw and midvein thickened, 2.5 × 1.0 mm (incl. claw of 0.85 mm long). Labellum ovate-elliptic from a clawed base, subacute, claw ligulate, 0.9 mm long, blade 1.80–1.95 × 1.20 mm; in lower half midvein diverging into 2 widely separated, semi-elliptic lamellae. Column with a narrowly clawed base that expands each side into an obliquely semicircular wing, 2 mm long, ca. 1 mm wide.

**Distribution:** Bolivia.

**Habitat:** very humid “yunguengo” forest on a mountain ridge, 2970 m.

**Etymology:** from the Latin *pastinaca*, stingray, in reference to the shape of the labellum.

*Fernandezia pastinaca* is most closely related to *F. nunezii* and *F. unduaviae* but may be distinguished from them by its ovate-elliptic (vs. oblong-elliptic to rectangular) lip, and narrowly (vs. broadly) stalked column.

A flowerless collection (*I.G. Vargas 6902 [MO]*) from Laguna Brava in the Province of Manuel M. Caballero probably also belongs here.

**Fernandezia pectinata** (Rchb.f.) M.W. Chase, Phytotaxa 20: 30. 2011.


**TYPE:** BOLIVIA. La Paz: Prov. Larecaya, near Sorata, Mt. Chilecua, 3100 m, October 1858, G. Mandon 1152 p.p. (Lectotype here designated: W-R 19256 [specimens with sepals 2.0–2.4 mm long, oblong-oblong-lanceolate lips, image seen]; drawing W-R 19257; Isotypes: AMES 76407, lower rhp, AMES 54448, BM; G, GOET, MICH, NY, S, images seen). Fig. 32G.

**Distribution:** Bolivia.

As noted above under *Fernandezia mandonii*, the collection Mandon 1152 from Mt. Chilecua is a mixture of two taxa. I have reserved the name *F. pectinata* for those plants with smaller flowers (sepals 2.0–2.4 mm long) and an oblong-oblong-lanceolate (vs. rectangular-cuneate) lip.

**Fernandezia pectinata** var. *punoensis* Ormerod, var. nov.

**TYPE:** PERU. Puno: Distrito Sandia, N side of Rio Awí to Awí Valley, between Aripo and Ura-ayllu, 3100 m, 8 April 1986, B. Bennett 2781 (Holotype: NY). Fig. 43.

Differ from the typical species in having thinner (1 vs. 3 mm) stems, and an oblong (vs. oblong-oblong-lanceolate) lip.

Epiphytic herb. Roots terete, 0.6–1.0 mm thick. Stems simple to occasionally 2–3 branched (branches to 5.5 cm long), sublaxly leafy, 6–14 cm long, ca. 1 mm thick. Leaves oblong-lanceolate, acute, conuplicate, margins minutely denticate toward apex, 6 mm long, 1.0–1.5 mm wide laterally; leaf sheaths tubular, margins minutely denticate, smooth, striate. Inflorescences to 8.4 mm long; peduncle 4.2 mm long; rachis flexuous, up to 6 flowered, 4.2 mm long; floral bracts ovate-lanceolate, acute, to 1.9 mm long. Flower color not known. Pedicellate ovary clavate, triquetrous; young capsule triquetrous, 4.8 mm long (incl. pedicel of 1.3 mm), one side 2 mm wide. Dorsal sepal lanceolate, acute, midvein thinly carinate, 2.00 × 0.75–0.80 mm. Lateral sepals obliquely lanceolate, acute, midvein high lamellate, 2.4 × 0.9 mm. Petals obliquely ovate-elliptic, acute, midvein shortly carinate near the apex, 1.90 × 0.85 mm. Labellum oblong, subacute, carinate below tip, 2.1 × 0.8 mm; calli 2, lamellate, remote, parallel, in upper half of lip, deltate, rounded to truncate. Column shortly stalked, each side with a low broad wing, ca. 1 mm long, 0.75 mm wide laterally.

**Distribution:** Peru.

**Habitat:** high elevation grassland and shrubland, 3100 m.

**Etymology:** named after the type locality, the south Peruvian Department of Puno.

I have treated this plant as a variety of *Fernandezia pectinata* because it agrees in flower size (sepals 2.0–2.4 mm long, subacuminate leaves, subulate petals and oblong-lanceolate sepals) with the type specimen of the variety. *F. p. var. punoensis* differs from the typical *F. p. p.* in having a narrower labellum (1.90 vs. 2.00–2.60 mm) and narrower column (1.20 vs. 1.30–1.90 mm).
mm long), and has a somewhat similar lip. However, when compared side by side the two look rather different, since variety punoensis is a more slender, laxer leaved plant, and its lip calli are parallel (vs. weakly divergent) and more even (vs. oblique based) in shape. The shape of the column is not fully certain, since this organ was affected by the fertilization process.

**Fernandezia pseudodichaea** (Rchb.f.) M.W. Chase, Phytotaxa 20: 30. 2011.


TYPE: BOLIVIA. La Paz: Prov. Larecaja, near Sorata, Lancha de Cochipata, 3200 m, May 1860, G. Mandon 1152 p.p. (Holotype: W-R 19258, image seen; Isotypes: AMES 76407; G, P, S, images seen). Fig. 44.

Lithophytic herb. Roots terete, many emitted from leafless section of stem, ca. 0.9 mm thick. Stem simple, sublaxly leafy, 17.5 cm long, 0.05–0.10 cm thick. Leaves ovate-oblong, acute, upper margins laxly and minutely denticate, coriaceous, 9.0–10.0 × 4.2 mm; leaf sheaths semitubular, truncate, margins recurved, laxly and minutely denticate. Inflorescences to 8.5 mm long; peduncle 4 mm long; rachis 4–5 flowered, to 4.5 mm long; floral bracts deltate, acute, ca. 2.1 mm long. Flower color not known. Pedicellate ovary clavate, triquetrous, ca. 3 mm long. Dorsal sepal oblong, acute, carinate towards tip, 2.75–2.80 × 1.00 mm. Lateral sepals obliquely ovate-lanceolate, acute, midvein narrowly carinate, 3.2 × 1.5 mm. Petals ligulate-oblanceolate, acute, 2.5–2.7 × 0.9 mm. Labellum claw rectangular, dilating into a suborbicular-pentagonal blade, claw 1.2 × 0.7 mm, blade 1.5 × 1.4 mm, in total 2.70–2.75 × 1.40 mm; claw of lip with 2 low medial lamellae that suddenly raise up into parallel, triangular, frontal truncate, apically rounded flat lobes that are situated on the base of the blade, each lobe can be spread to the edge of the lip or just over it. Column shortly constricted basally, each side with a low transverse wing, 1.7 mm long, 1 mm wide laterally.

**Distribution:** Bolivia.

Mandon assigned his number 1152 to this plant, collected almost two years after the specimens from Mt. Chilieca, Bolivia. Distribution: Bolivia. Material examined: 3370 m, 23 February 1986, J. Wolf 751 (SEL); same area, 3670 m, 24 March 1986, J. Wolf 856 (SEL). Valle: Cordillera Occidental: Los Farallones, ridge of the cordillera, between El Encano and Sibundoy, paradero de San Antonio del Bordocillo, 3250 m, 4 January 1941, J. Cuatrecasas 11698A (Holotype: COL, image seen; Isotypes: AMES; US not seen). Fig. 46.

**Fernandezia putumayoensis** (Szlach., Kolan. & Oledr.) Molinari & Mayta, Richardiana 16: 43. 2015.


This is a rather characteristic species, its stems are often densely beset with little suborbicular to almost squarish, thinly and stiffly coriaceous leaves, the latter set on broadly triangular leaf sheaths. Thus the plant somewhat resembles a *Dichaea* Lindl. Apart from the distinctive leaves, it may be recognized by the relatively small-lobed, apical column wings. In the protologue it is said to have well-separated calli on the lip, but I find in the AMES isotype and other collections these are close together as in other species. However, the calli do tend to split medially when the lip is pressed flat for drawing.

The variation of the species may eventually include two other essentially identical Colombian collections (Cauca, J. Cuatrecasas 14783 [F, GH]; Valle, J. Cuatrecasas 17924 [F, GH]), which differ in having broader, more rounded
45, *Fernandezia pseudominor* Ormerod. A, stem (upper part); B, flower; C, labellum and column; D, dorsal sepal; E, lateral sepal; F, petal; G, labellum; H, column. Drawn from holotype.

46, *Fernandezia putumayoensis* (Szlach., Kolan. & Oledr.) Molinari & Mayta. A, dorsal sepal; B, petals; C, lateral sepal; D, labellum; E, column. Drawn from isotype (AMES).

47, *Fernandezia quadrangularis* Ormerod. A, stem (upper part); B, flower; C, dorsal sepal; D, lateral sepal; E, petal; F, labellum; G, column. Drawn from holotype.

48, *Fernandezia rubescens* Ormerod. A, stem (upper part); B, leaf (no scale); C, flower; D, dorsal sepal; E, lateral sepal; F, petal; G, labellum and column; H, labellum. Drawn from holotype.
column wings. The first one (Cuatrecasas 14783) also differs in having the lip widest medially (vs. in basal half), and has denticate petals. These aspects remind strongly of Fernandezia crystallina, giving the suspicion of a natural hybrid with that taxon. The second collection is in fruit, but florally agrees well with F. putumayoensis except for the broader column wings.

Another two Colombian collections (Caldas, F.W. Pennell 10517 [US]; Cauca, H. Antonio C. 70 [F]) probably belong to F. putumayoensis, but the material at hand was insufficient for positive identification.

**Fernandezia quadrangularis** Ormerod, sp. nov.

**TYPE:** BOLIVIA. Cochabamba: Prov. Sacaba, Cerro San Benito, 2900 m, 15 November 1921, J. Steinbach 5938 (Holotype: K). Fig. 47.

Related to *Fernandezia steinbachii* Ormerod but flowers with a quadrangular (vs. broadly elliptic) labellum.

Epiphytic (?) herb. *Roots* terete, several on old parts of stem, to 1 mm thick. *Stems* simple to 1 branched (branch 10 cm long), laxly leafy, 20.5 cm long, ca. 0.2 cm thick. *Leaves* oblong, acute, margins minutely denticulate, to 12 × 5 mm; leaf sheaths tubular, margin oblique, entire, exposed dorsal edge 4–5 mm long. *Inflorescences* ca. 10 mm long; peduncle mostly hidden in leaf sheath, ca. 6 mm long; rachis 4 flowered, ca. 4 mm long; floral bracts broadly ovate, acute, 2–3 × 2–3 mm. *Flowers* white. *Pedicellate ovary* clavate, triquetrous, 3.5–4.0 mm long. *Dorsal sepal* oblong-elliptic, acute, fleshy, 2.5 × 1.0 mm. *Lateral sepals* obliquely oblong-lanceolate, acute, 2.95 × 1.20 mm. *Petals* oblong-elliptic, subacute, midvein carinate at apex, 2.1 × 1.0 mm. *Labellum* subquadrate from a shortly clawed base, subacute, carinate below tip, claw broad cuneate, 0.8 mm long, blade 1.8 × 1.5 mm, in total 2.5 × 1.5 mm; on claw 2 low lamellae that broaden and diverge slightly on the lower half of the blade. *Column* shortly and broadly stalked, each side with an obliquely suborbicular wing, 1.5 mm long, 1 mm wide laterally.

**Distribution:** Bolivia.

**Etymology:** from the Latin *quadrangularis*, four cornered, in reference to the lip shape.

This taxon is probably related to *Fernandezia steinbachii*, but the flowers have a subquadrate (vs. broadly elliptic) lip. Another similar species is *F. tinguiana*, but it too has a broadly elliptic lip, and also smaller (sepals 1.8 mm long) flowers.

**Fernandezia rubescens** Ormerod, sp. nov.

**TYPE:** PERU. Amazonas: Prov. Bagua, Cordillera Colan, SE of La Peca, ridge W of peaks, 3140 m, 25 August 1978, P. Barbour 3564 (Holotype: MO; Isotype: SEL). Fig. 48.

Related to *F. rubicunda* Ormerod but with larger flowers (sepals 3.3–3.5 vs. 1.8–1.9 mm) and truncate (vs. rounded and projecting forward) column wings.

Epiphytic (?) and lithophytic herb. *Roots* terete, 0.8–2.0 mm thick. *Stems* simple to 6–10 branched above (branches 5–9 cm long), densely leafy, 6.5–33.0 cm long, 0.2–0.4 cm wide across leaf sheaths, 0.15–0.30 cm thick. *Leaves* oblong to elliptic, acute, carioaceous, margins denticate near apex, base shortly conduplicate, 7.0–10.0 × 2.4–3.5 mm; leaf sheaths somewhat lobed in lower half, rectangular above in lateral view, truncate, smooth, striate. *Inflorescence* to 9 mm long; peduncle to 5 mm long; rachis 3–5 flowered, ca. 4 mm long; floral bracts ovate-lanceolate, acute, to 2 mm long. *Flowers* white. *Pedicellate ovary* clavate, triquetrous, 3 mm long. *Dorsal sepal* oblong-lanceolate, acute, to 2 mm long. *Petals* oblong, subacute, midvein thickly low carinate, 3.3 × 1.3–1.4 mm. *Lateral sepals* obliquely lanceolate, acute, carinate, 3.5 × 1.5–1.6 mm. *Labellum* ovate, acute, concave, 2.9 × 2.0 mm; lower half divided by a thick ridge that ends in 2 parallel, fleshy, conical calli. *Column* each side with a low broad wing, 1.8 mm long, 1.2 mm wide laterally.

**Distribution:** Peru.

**Additional specimen examined:** PERU. Amazonas: Prov. Bagua, Cordillera Colan, E of La Peca, ridge W of peaks, 3140 m, 25 August 1978, P. Barbour 3514 (MO, SEL).

**Habitat:** humid elfin forest, on thick moss mats (type), on exposed boulder (*Barbour 3514*), 3140 m.
Figure 49-52. 49. *Fernandezia rubicunda* Ormerod. A, stem (upper part); B, leaf; C, flower; D, labellum and column; E, dorsal sepal; F, lateral sepal; G, petal; H, labellum; I, column. Drawn from holotype. 50. *Fernandezia salliquensis* Ormerod. A, stem (upper part); B, dorsal sepal; C, lateral sepal; D, petal; E, labellum; F, column. Drawn from holotype. 51. *Fernandezia schultesii* (L.O. Williams) Carnevali & Dorr. A, flower; B, tepals (lateral sepal, petal, dorsal sepal, petal, lateral sepal); C, labellum; D, column. A–C from *Garcia-Barriga 17422* (AMES); D from holotype. 52. *Fernandezia scimitaris* Ormerod. A, stem (upper part); B, dorsal sepal; C, petal; D, lateral sepal; E, labellum; F, labellum and column. Drawn from holotype.
**Etymology:** from the Latin *rubicundus*, reddish, in reference to the color of the dried specimens.

The closest relative of this species appears to be its sister species *Fernandezia rubescens*, which occurs lower down on the same mountain range. *Fernandezia rubicunda* differs from *F. rubescens* in having larger flowers (sepals 3.3–3.5 vs. 1.8–1.9 mm), and truncate (vs. rounded and projecting forward) column wings.

*Fernandezia salliquensis* Ormerod, *sp. nov.*

**TYPE:** PERU. Cajamarca: Prov. Jaen, Sallique, Quebrada grande, route between La Cocha and Tablon, 2770–2900 m, 30 June 1998, C. Diaz, J. Campos, T. Guevara & E. Tineo 9791 (Holotype: MO). Fig. 50.

Similar to *Fernandezia distichoides* M.W. Chase but the flowers with an obovate (vs. ovate) labellum.

Epiphytic herb. Roots terete, 0.5–1.0 mm thick. Stems simple, densely leafy, 9–21 cm long, 0.7 cm wide across leaf sheaths, 0.3 cm thick. Leaves obovate-oblong-oblong, shortly apiculate, coriaceous, margins minutely denticate, drying brownish-red, 17–21 × 5.5–9.5 mm; leaf sheaths deltate, truncate, margins minutely denticate. Inflorescence to 15 mm long; peduncle 6 mm long; rachis plicate, up to 7 flowered, 9 mm long; floral bracts deltate, acute, 3 × 2 mm. Flowers green. Pedicellate ovary clavate, trilateral, 3.5 mm long. Dorsal sepal broadly oblong-lanceolate, obtuse, midvein thickly low carinate, 3.5 × 1.5 mm. Lateral sepals obliquely and broadly oblong-lanceolate, subacute, midvein carinate, carina thickest apically, 3.9–4.1 × 1.65. Petals obovate, subacute, midvein low carinate, 3.1 × 1.2 mm. Labellum obovate-elliptic, acute, 4 × 2.3 mm; lower half divided by a thick ridge that terminates in 2 parallel, oblongoid, slightly curved calli. Column rectangular in lateral view, 2.8 mm long, 1.7 mm wide laterally.

**Distribution:** Peru.

**Etymology:** named after the Sallique District, the type locality.

The relationships of this species are not clear. It resembles somewhat *Fernandezia distichoides* M.W. Chase in having rather broad leaf sheaths, and plicate inflorescences, but the leaves are not so fleshy, and the lip is obovate (vs. ovate).


Basionym: *Pachyphyllum schultesii* L.O. Williams, Caldasia 1, 3: 15. 1941. **TYPE:** COLOMBIA. Cundinamarca: SE of Bogota, Paramo de Chiquapue, 3200 m, 25 September 1941, R.E. Schultes 1020 (Holotype: AMES). Fig. 51.


**Distribution:** Ecuador; Colombia; Venezuela (?).


As noted under *Fernandezia vaginata*, this taxon may be distinguished from the latter by its larger flowers, with triangular free parts of the sepals, and ovate-lanceolate petals. The two Colombian specimens cited above were referred to *Orchidotyphus bryophytus* by Szlachetko et al. (2014), but that taxon differs in having falcate, recurved leaves, smaller (sepals barely 2 mm long) flowers, and a narrowly rhombic lip lamina. I have seen no material matching *F. bryophyta* (Schltr.) M.W. Chase; it should be regarded as a species awaiting rediscovery.

*Fernandezia scimitaris* Ormerod, *sp. nov.*

**TYPE:** BOLIVIA. Cochabamba: Prov. Chapare, Pampatambo, no altitude, 8 November 1979, R. Vásquez 202 p.p. (Holotype: SEL). Fig. 52.

Related to *Fernandezia teranii* Ormerod but flowers with longer sepals (3.15–3.90 vs. 1.90–2.50 mm), and labellum with calli basally joined to form a V (vs. parallel and separate).

Epiphytic (?) herb. Roots terete, ca. 0.8 mm thick. Stems simple, sublaxly leafy, 7.5 cm long, 0.05 cm thick. Leaves narrowly oblong-lanceolate, acute, margins minutely denticate toward apex, rigid, subfalcate, conduplicate, 6–8 mm long, 1.5–2.5 mm wide laterally; leaf sheaths semitubular, smooth, margins minutely denticate. Inflorescence to 10 mm long; peduncle ca. 5 mm long; rachis up to 5 flowered, to 5 mm long; floral bracts deltate, acute, to 2.7 mm long. Flower color not known. Pedicellate ovary clavate, triumetous, ca. 3.5 mm long. Dorsal sepal oblong-lanceolate, acute, thickly carinate, 3.15 × 1.10 mm. Lateral sepals obliquely lanceolate, acute, strongly carinate, 3.9 × 1.3 mm. Petals oblong-lanceolate, acute, midline slightly thickened, carinate near apex, 2.75 × 1.00 mm. Labellum ovate-lanceolate, acute, low carinate, 0.9 mm long, 2.8 mm wide laterally; column base united to column; callus in middle of lip, of two triangular free parts of the sepals, and ovate-lanceolate petals. The two Colombian specimens cited above were referred to *Orchidotyphus scimitaris* Ormerod in having longer sepals (3.15–3.90 vs. 1.90–2.50 mm), and labellum with calli basally joined to form a V (vs. parallel and separate).

Epiphytic (?) herb. Roots terete, ca. 0.8 mm thick. Stems simple, sublaxly leafy, 7.5 cm long, 0.05 cm thick. Leaves narrowly oblong-lanceolate, acute, margins minutely denticate toward apex, rigid, subfalcate, conduplicate, 6–8 mm long, 1.5–2.5 mm wide laterally; leaf sheaths semitubular, smooth, margins minutely denticate. Inflorescence to 10 mm long; peduncle ca. 5 mm long; rachis up to 5 flowered, to 5 mm long; floral bracts deltate, acute, to 2.7 mm long. Flower color not known. Pedicellate ovary clavate, triumetous, ca. 3.5 mm long. Dorsal sepal oblong-lanceolate, acute, thickly carinate, 3.15 × 1.10 mm. Lateral sepals obliquely lanceolate, acute, strongly carinate, 3.9 × 1.3 mm. Petals oblong-lanceolate, acute, midline slightly thickened, carinate near apex, 2.75 × 1.00 mm. Labellum ovate-lanceolate, acute, low carinate, 0.9 mm long, 2.8 mm wide laterally; column base united to column; callus in middle of lip, of two triangular free parts of the sepals, and ovate-lanceolate petals. The two Colombian specimens cited above were referred to *Orchidotyphus scimitaris* Ormerod in having longer sepals (3.15–3.90 vs. 1.90–2.50 mm), and labellum with calli basally joined to form a V (vs. parallel and separate).
rather than being parallel and separate. The type material is a mixture; the other specimen on the righthand part of the sheet forms the type material of *F. pandurata*.

**Fernandezia shoveliformis** Ormerod., sp. nov.  
TYPE: BOLIVIA. Cochabamba: Prov. Chapare, 23.8 km N of Colomi (junction of the road to Candelaria), on the road to Chapare, then 2.2 km NW (left) on side road, upper Rio Cayani, 2700 m, 19 October 1985, J.C. Solomon 14381 (Holotype: NY; Isotype: MO). Fig. 53.

Similar to *Fernandezia minor* (Schltr.) M.W. Chase but flowers with the labellum distinctly clawed (vs. sessile) and the blade with right-angled (vs. obtuse angled) corners.

Epiphytic herb. Roots terete, ca. 1 mm thick. Stems with 1–3, often basal branches (these 1.5–7.0 cm long), subdensely leafy, 5.5–13.0 cm long, 0.1–0.2 cm thick, 0.2–0.3 cm wide across leaf sheaths. Leaves oblong-lanceolate, acute, margins minutely denticulate toward apex, rigid, conduplicate, gently curved, 4–10 × 2–6 mm; leaf sheaths smooth, striate, margins minutely denticulate, dorsal exposed edge 3.5–4.0 mm long. **Inflorescences** to 11.5 mm long; peduncle ca. 9 mm long; rachis 4–6 flowered, 2.5 mm long; floral bracts deltate, acute, margins minutely denticulate, 2.0–2.2 × 3.0 mm. **Flowers** white. **Pedicellate ovary** narrowly clavate, triquetrous, 5.7 mm long. **Dorsal sepal** broadly oblong-lanceolate, acute, low carinate, 3.20 × 1.50–1.55 mm. **Lateral sepals** obliquely oblong-lanceolate, acute, low carinate, 3.5 × 1.5 mm. **Petals** oblong-elliptic, acute, midvein low carinate, 3.0 × 1.4 mm. **Labellum** oblong-elliptic from a shortly clawed base, obtuse, claw 0.95 mm long, blade ca. 2.5 × 1.5 mm, in total 3.4–3.5 × 8.8 mm; leaf sheaths tubular, striate, not fully covering internodes. **Inflorescence** 11 mm long; peduncle ca. 6 mm long; rachis successively 6 flowered, 5 mm long; floral bracts deltate, acute, to 2.7 × 2.0 mm. **Flowers** white. **Pedicellate ovary** narrowly clavate, triquetrous, 7 mm long. **Dorsal sepal** oblong, subacute, 3.7 × 1.6 mm. **Lateral sepals** obliquely oblong-lanceolate to lanceolate, subacute, midvein shortly carinate near apex, 3.75 × 1.60 mm. **Labellum** shortly clawed, blade elliptic-subpandurate, obtuse, claw 0.3 mm long, blade 3.15 × 1.75 mm, in total ca. 3.45 × 1.75 mm; lower part of lip with a broadly thickened midline ending in 2 short lamellae. **Column** shortly and broadly clawed, each with a suborbicular wing, 2.65 mm long, 1.75–1.90 mm wide laterally.

**Distribution:** Bolivia.

**Habitat:** roadside cloud forest, 2840 m.

**Etymology:** from the Latin *inversus*, upside down, in reference to the inverted proportions of the labellum as compared with the typical variety.

This variety has larger leaves than typical *Fernandezia shoveliformis*, and also differs in the flowers having a lip of inverse proportions with less distinct corners at the base, and a more triangular (vs. broadly rounded) apex.

**Fernandezia solomonii** Ormerod., sp. nov.  
TYPE: BOLIVIA. La Paz: Prov. Sud Yungas, 3.1 km E of Unduavi bridge, below on old road, 3000 m, 6 November 1982, J.C. Solomon 8665 (Holotype: MO; Isotype: SEL). Fig. 55.

Related to *Fernandezia breviconnata* (Schltr.) M.W. Chase but the flowers with a shortly (vs. long) clawed, subpandurate (ovate-lanceolate) labellum, and more broadly (2.3 vs. 1.6 mm) winged column.

Epiphytic herb. Roots terete, 0.3–0.7 mm thick. Stems pendent, 7–8 branched (branches 3.5–25.5 cm long), sub laxly leafy, flexuous, to 37 cm long, ca. 0.1 cm thick. Leaves lanceolate to oblong-lanceolate, acute, thinly coriaceous, margins minutely denticate toward apex, 13.0–16.0 × 5.0–5.5 mm; leaf sheaths semitubular, smooth, margins recurved, minutely denticate. **Inflorescence** to 8.5 mm long; peduncle 6.0–6.5 mm long; rachis 1–2 flowered, 1–2 mm long; floral bracts ovate-lanceolate, acute, to 5.5 × 3.0 mm. **Flowers** white. **Pedicellate ovary** narrowly clavate, triquetrous, 5 mm long. **Dorsal sepal** oblong-ligulate, acute, low carinate, recurved, 5.5 × 1.5 mm. **Lateral sepals** obliquely lanceolate, acute, carinate, upcurved, 8.8 × 2.2 mm. **Petals** obliquely oblong-blanceolate, acute, lower margin joined to sepals for 0.75 mm, 5.2 × 1.8 mm. **Labellum** shortly clawed, subpandurate, acute, claw 0.8 mm long, blade 5 × 2 mm, in total 6 × 2 mm; lower half with a low median thickening ending in 2 semi-elliptic to trapeziform lamellae. **Column** stoutly clawed, each side with an obliquely semicircular wing, 3.2 mm long, 2.3 mm wide laterally.

**Distribution:** Bolivia.

**Eponymy:** named after Jim Solomon, collector of the type, and curator at Missouri Botanic Gardens herbarium (MO).
Figure 53–56. 53, *Fernandezia shoveliformis* Ormerod var. *shoveliformis*. A, stem; B, flower; C, labellum and column; D, dorsal sepal; E, petal; F, lateral sepal; G, labellum; H, column. Drawn from holotype. 54, *Fernandezia shoveliformis* Ormerod var. *inversa* Ormerod. A, stem (upper part); B, flower; C, dorsal sepal; D, petal; E, lateral sepal; F, labellum; G, column. Drawn from holotype. 55, *Fernandezia solomonii* Ormerod. A, stem (upper part); B, flower; C, dorsal sepal; D, lateral sepal; E, lateral sepal; F, labellum; G, column. Drawn from holotype. 56, *Fernandezia squarrosa* (Lindl.) M.W. Chase. A, stem (upper part); B, leaves; C, dorsal sepal; D, petal; E, lateral sepal; F, labellum; G, column. A–B, D, G from Cuatrecasas 19188 (AMES); C, E–F from Marulanda & Betancur 470 (MO).
This species appears to be closest to *Fernandezia breviconnata* from Peru, but differs in having a narrower dorsal sepal, a subandurate (vs. ovate-lanceolate), shortly (vs. long) clawed lip, and a more broadly (2.3 vs. 1.6 mm) winged column.

**Fernandezia squarrosa** (Lindl.) M.W. Chase, Phytotaxa 20: 30, 2011.


Fig. 56.

Usage synonym: *Pachyphyllum hartwegii auct. non Rchb.f.*.


Epiphytic herb. Roots terete, to 1.5 mm thick. Stems simple to branching (1–4 branches, 3–12 cm long), densely leafy, to 33 cm long, to 0.6 cm wide across leaf sheaths, to 0.25 cm thick. Leaves oblong to lanceolate, acute, medially carinate, carinae obliquely truncate apically, 3.2 × 1.2 mm. Petals oblong-obcuneate, acute, midvein ridged, 2.2 × 1.1 mm. Labellum ovate-oblong, subandurate, subacute, lower half 2 × 1.8 mm, upper half 1.2 × 1.4 mm, in total 3.2 × 1.8 mm; lower half divided by a ridge that terminates just above the middle in two conical calli. Column 1.9 mm long.

**Distribution:** Colombia.


This species has some superficial similarities to *Fernandezia crystallina*, such as the forward produced lobes of the column wings, but the plants always have longer, ligulate leaves, and the flowers do not have denticulate margins to the petals and the upper half of the lip is straight (not recurved).

Its closest relative is another Colombian entity from the Department of Antioquia that Dr. Szlachetko intends to describe (four collections seen). This vegetatively similar entity differs in its smaller flowers (sepal ca. 2 mm long), broadly ovate-elliptic petals, and shorter (1.5 mm long) column.

**Fernandezia steinbachii** Ormerod, sp. nov.

TYPE: BOLIVIA. Santa Cruz: Comarapa, Cerro San Mateo, 2800 m, 24 October 1898, *J. Steinbach 8501* (Holotype: GH; Isotypes: AMES, BM, F, K, MO, NY). Fig. 57.

Similar to *Fernandezia barnettiae* Ormerod but a taller (stems to 19.5 vs. to 10.5 cm) plant, the flowers with a longer (5.0 vs. 1.5 mm) pedicellate ovary, and wider (1.2–1.5 vs. 0.8 mm) labellum that has divergent (not parallel) lamellae.

Epiphytic herb. Roots terete, elongate, 0.5–1.3 mm thick. Stems simple to branching, subdensely to laxly leafy, to 19.5 cm long, 0.10–0.25 cm thick. Leaves suborbicular to oblong, acute to subacute, margins minutely denticate toward apex, coriaceous, 6.0–8.0 × 3.5–4.5 mm; leaf sheaths semitubular, margins recurved, entire to minutely denticate, 5 mm long. Inflorescence 7 mm long; peduncle 3 mm long; rachis to 7 flowered, 4 mm long; floral bracts widely ovate, subacute, to 2.5 × 1.6 mm. Flower color not known. Pedicellate ovary clavate, triquetrous, 5 mm long. Dorsal sepal elliptic, acute, weakly carinate near apex, 2.1 × 1.0 mm. Lateral sepals obliquely oblong-lanceolate, acute, low carinate, 2.4 × 1.1 mm. Petals elliptic, obtuse, 2.1 × 1.0 mm. Labellum broadly elliptic from a shortly clawed base, subacute, 2.15 × 1.20–1.30 mm; lower half with a low median thickening that divides into 2 divergent lamellae. Column shortly clawed, each side dilated into a subquadrado-suborbicular wing, 1.4 mm long, 1.0–1.1 mm wide laterally.

**Distribution:** Bolivia.

Additional specimens examined: BOLIVIA. Santa Cruz: near Comarapa, 2600 m, April 1911, *T. Herzog 1946* p.p. (L., upper lhp; S, image seen).

**Eponym:** named after Jose Steinbach (1875–1930), originally from Germany. He made several collections of plants and insects from Bolivia, including the type of this species.

Among Bolivian taxa with flat, coriaceous (vs. conduplicate, fleshy) leaves and long lamellate keels on the lip, *Fernandezia steinbachii* may be recognized by its long pedicellate ovaries (5 mm), elliptic petals, and broadly winged column. Another feature that may help identify *F. steinbachii* is that it seems to produce many long roots. See also the comparative notes under *F. barnettiae*. The collection *T. Herzog 1946* is the type number of *Pachyphyllum herzogii* Schltr.; both L and S duplicates are mixtures that contain material of *F. steinbachii*, which can be distinguished by its flat, coriaceous (vs. conduplicate, ensiform) leaves.

Five other collections from the type region (Comarapa to Serrania Siberia) that probably belong here, but lack flowers or are in bud, are A.L. Arbelaez et al. 872 (MO), J. Balcazar & L. Fernandez 902 (NY), C.G. Jordan & I.G. Vargas 377 (MO), N. Ritter & J. Wood 2891 (F), and M. Saldias & M. Fernandez 4556 (NY).

**Fernandezia teranii** Ormerod, sp. nov.

TYPE: BOLIVIA. Cochabamba: Prov. Timipaya, Alto 1 Totolima, exposed NE slope, 2400 m, 2 May 2008, *J. Teran, Cespede, A. Soux & D. Soux 2534* (Holotype: MO). Fig. 58.

Similar to *Fernandezia amboroensis* Ormerod var. *amboroensis* in habit and flower size, but the labellum has in the middle (vs. in lower half) 2 short, subquadrate to circular (vs. two elongate) lamellae.

Epiphytic (?) herb. Roots terete, 0.3–0.8 mm thick. Stems simple to much branched (branches 1.5–5.5 cm long), leafy, 8–16 cm long, 0.1 cm thick, 0.2 cm wide across leaf sheaths. Leaves oblong-lanceolate, acute, coriaceous, conduplicate (in dry material), minutely denticate near apex, 4.0–8.0
Figure 57–60. 57, *Fernandezia steinbachii* Ormerod. A, stem (upper part); B, flower; C, dorsal sepal; D, lateral sepal; E, petal; F, labellum; G, column. Drawn from holotype. 58, *Fernandezia teranii* Ormerod. A, stem (upper part); B, flower; C, dorsal sepal; D, lateral sepal; E, petal; F, labellum; G, column. Drawn from holotype. 59, *Fernandezia tinquiana* Ormerod. A, stem (upper part); B, flower; C, dorsal sepal; D, lateral sepal; E, petal; F, labellum; G, column. Drawn from holotype. 60, *Fernandezia tintasensis* Ormerod. A, part of stem; B, part of stem minus leaves; C, flower; D, dorsal sepal; E, lateral sepal; F, petal; G, labellum; H, column. Drawn from holotype.
× 2.0–3.2 mm; leaf sheaths semitubular, smooth, striate, margins minutely denticulate. **Inflorescence** 8–21 mm long; peduncle 6–8 mm long (exposed part 4 mm long); rachis 6–10 flowered, 2–3 flowers open at once, 4–13 mm long; floral bracts widely ovate, acute, 1.5–2.0 mm long. **Flowers** white (anther cap purple-red in rehydrated flower of *Luer et al. 4881*). **Pedicellate ovary** weakly clavate, triquetrous, 1.8–2.7 mm long. **Dorsal sepal** lanceolate, acute, 1.9–2.0 × 0.7–0.8 mm. **Lateral sepals** obliquely lanceolate, obtuse, gently upcurved, thinly fleshy, 2.4–2.5 × 0.7–0.8 mm. **Petals** somewhat rhombic to narrowly oblong-elliptic, acute to subacute, 1.75–2.00 × 0.65–0.80 mm. **Labellum** ligulate-spatulate to broadly oblong-oblanceolate, acute to subacute, carinate below tip, 2.00 × 0.65–0.80 mm, lower half 0.60 mm wide; medially with 2 seemingly isolated subquadrate to semicircular lamellae. **Column** 1.0–1.1 mm long, 0.75 mm wide laterally.

**Distribution:** Bolivia.

**Additional specimens examined:** BOLIVIA. Cochabamba: Prov. Chapare, along road to Villa Tunari, 2400 m, 13 & 16 January 1981, C. Luer, J. Luer, E. Besse & R. Vásquez 5656 (SEL); along road NE of Cochabamba, toward Villa Tunari, 2500 m, 4 February 1983, C. Luer, J. Luer, E. Besse & R. Vásquez 8686 (SEL); along road to Villa Tunari, 2500 m, 22 January 1980, C. Luer, J. Luer & R. Vásquez 4881 (SEL).

**Habitat:** humid montane forest dominated by Melastomataceae, Rubiaceae, and Asteraceae. Forest dominated by Ericaceae, pteridophytes, and abundant bryophytes. Soil not very deep, covered with decomposing organic matter (type), cloud forest (*Pseudobulbaria*). **Epiphytic (?).** **Herb. Roots** terete, to 1.6 mm thick. **Stem** simple, densely leafy, 35 cm long, to 1.2 cm wide across leaf sheaths, to 0.3 cm thick. **Leaves** oblong, obtuse, margin minutely denticulate toward apex, midvein low lamellate below, thinly coriaceous, 24–26 × 9–11 mm; leaf sheaths deltate, truncate. **Inflorescence** ca. 16 mm long; peduncle ca. 8 mm long, mostly hidden in leaf sheath; rachis pectinate, 7–8 mm long; floral bracts ovate, acute, 2.2 × 1.0 mm. **Flower** color not known. **Pedicellate ovary** clavate, triquetrous, ca. 3.0–3.5 mm long; capsule triquetrous, 6.2 mm long, one side 3.2–3.3 mm wide. **Dorsal sepal** oblong, acute, midvein broadly carinate, 3.50–3.80 × 1.25–1.75 mm. **Lateral sepals** obliquely oblong, obtuse to subacute, 3.75–3.80 × 1.20–1.75 mm. **Petals** oblong, acute, 3.3–3.5 × 1.0–1.4 mm. **Labellum** ovate-subpandurate, acute, lower part 2.3–2.4 × 2.0–2.5 mm, upper part 1.6 × 1.3–1.5 mm, in total 3.8–4.0 × 2.0–2.5 mm; lower half of lip divided by a thick ridge that ends in 2 parallel, fleshy, oblongoid calli. **Column** rectangular in lateral view, each side at apex with a forward-pointing rounded wing, 2.8–3.0 mm long, 1.5–1.6 mm wide laterally.

**Fernandezia quadriangularis** Ormerod, sp. nov.

**Type:** ECUADOR. Santiago-Zamora: slopes of Rio Tintas, SE of El Pan, 2895 m, 10 July 1943, J.A. Steyermark 53505 (Holotype: AMES). Fig. 60.

**Additional specimen examined:** BOLIVIA. Villa Tunari, 2500 m, 12–16 November 1995, J.A. Steyermark 53505 (Mark 53505). Fig. 60.

**Eponymy:** named after J. Teran, one of the collectors of the type specimen.

This species resembles *Fernandezia amboroensis* var. *amboroensis* in habit and flower size but differs in the flowers having somewhat rhombic (vs. weakly obovate-elliptic) petals, and ligulate-spatulate (vs. oblong-elliptic) lip with 2 remote lamellae in the middle. Another species with a similar lip is *F. cardenasii* (L.B. Smith & S.K. Harris) F. Cardenas var. *amboroensis* in habit and flower size but differs in the critical characters with the type. The deviant measurements are *dorsal sepal* 1.30 × 0.65 mm; *lateral sepals* 2.10 × 0.65 mm; *petals* 1.5 × 0.7 mm.

**Distribution:** Bolivia.

**Eymology:** named after the Rio Tintas, near the type locality.

As noted above in the diagnosis, this taxon is related to *Fernandezia quadriangularis* but has smaller flowers and a broadly elliptic (not quadrangular) lip. The type sheet contains another element with narrower leaves, narrower leaf sheaths, and 3-flowered inflorescences.
This species shares with the Colombian *Fernandezia putumayoensis* characters such as densely leafy stems and thinly coriaceous leaves set on broad triangular leaf sheaths. It differs in having longer leaves, larger flowers, and a longer column.

**Fernandezia transversalis** Ormerod, *sp. nov.*

**TYPE:** PERU. Amazonas: Prov. Bagua, Cordillera Colan, SE of La Peca, third camp, 2455 m, 6 October 1978, *P. Barbour 3770* p.p. (Holotype: MO). Fig. 61.

A singular species characterized by the flowers having the labellum broadly clawed in the lower 2/3 while the upper 1/3 is transversely elliptic.

Epiphytic *herb. Roots* terete, 0.5–0.8 mm thick. *Stems* simple, laxly leafy, 10.5–25.0 cm long, 0.2–0.3 cm wide across leaf sheaths, 0.15 cm thick. *Leaves* narrowly oblong to elliptic, acute, coriaceous, 7.5–12.0 × 3.0–5.0 mm; leaf sheaths tubular, smooth, striate. *Inflorescence* hidden in leaf sheath and leaf base, ca. 5 mm long; peduncle ca. 3 mm long; rachis biflorous, ca. 2 mm long; floral bracts not seen. *Flowers* white. *Pedicellate ovary* clavate, triquetrous, ca. 5 mm long. *Dorsal sepal* ovate-oblong, acute, carinate, 3.3–3.5 mm long; *Lateral sepals* obliquely ovate-lanceolate, acute, 1.0–2.0 × 0.6–1.6 mm. *Labellum* oblong-elliptic to oblong, subacute, low carinate, joined to petals for 0.5–0.8 mm basally, 1.7–2.0 × 0.7–0.8 mm. *Petals* oblong from a shortly clawed base, acute, midvein prominently carinate near apex, 1.7–2.0 × 0.7–0.8 mm. *Labellum* oblong to elliptic from a narrowly clawed base, acute, carinate below tip, claw ligulate, 0.80–1.15 mm long, blade 1.30–1.35 × 0.8–0.9 mm; callus of 2 semi-elliptic to obliquely deltate, obtuse lobes with low lamellate bases, the calli may or may not overlap the sides of the lip. *Column* each side medially dilated into a low suborbicular wing, 1.1–1.5 mm long, 0.7–0.9 mm wide laterally.

**Distribution:** Bolivia.


**Etymology:** named after the Rio Unduavi, and its eponymous town and district, the type locality.

As noted above in the diagnosis, this species is close to the Peruvian *Fernandezia gracilima* but has a narrower lip claw with an oblong to elliptic (vs. suborbicular blade). Another close relative is the Peruvian *F. nunezi*, which has a more rectangular lip with distinctly right-angled corners (vs. rounded) at the base of the blade; furthermore, the calli seem a little more widely separated.


**Basionym:** *Pachyphyllum vaginatum* Schltr., Rep. Sp. Nov. Regni Veg., Beih. 27: 182. 1924. **TYPE:** COLOMBIA. Cundinamarca: In the country around Bogota, 2500 m, 1921, *H. Hopf s.n.* (Holotype: B, destroyed). Neotype (here designated): COLOMBIA. Cundinamarca: Monserrate, above Bogota, 3200m, 26 March 1944, *M. Schneider 272* (Holotype: AMES; Isootype: COL, not seen). Fig. 63.

Figure 61–64. 61, *Fernandezia transversalis* Ormerod. A, stem; B, column; C, dorsal sepal; D, lateral sepal; E–F, petals; G, labellum. Drawn from holotype. 62, *Fernandezia unduaviae* Ormerod. A, stem (upper part); B, flower; C, dorsal sepal; D, lateral sepal; E, petal; F, labellum (with calli unspread and spread); G, column. Drawn from holotype. 63, *Fernandezia vaginata* (Schltr.) M.W. Chase. A, flower; B, tepals (lateral sepal, petal, dorsal sepal, petal, lateral sepal); C, column; D–E, labellums. A–D from neotype; E from Garcia-Barriga & Jaramillo Mejia 19784 (AMES). 64, *Fernandezia vanderwerffii* Ormerod. A, stem; B, inflorescence; C, flower; D, labellum and column; E, tepals (petal, dorsal sepal, petal); F, lateral sepal; G, petal (inside); H, labellum blade. Drawn from holotype.

Epiphytic *herb*. Roots terete, 0.3–0.5 mm thick. Stems simple, secondly to distichously leafy, 1–5 cm long. Leaves ligulate-lanceolate, acute, margins minutely denticulate near the apex, 4.0–7.0 × 1.2–2.1 mm; leaf sheaths with a lobe each side at apex, margins minutely papilloso-dentilicate. Inflorescence 2.9 mm long; peduncle 2.7 mm long; rachis 1–2 flowered, 0.2 mm long; floral bracts deltate, acute, ca. 1 mm long. *Flowers* white, or light greenish with a white lip. Pedicellate ovary clavate, 2–3 mm long. Dorsal sepal oblong, subacute, united to petals and lateral sepals for ca. 0.8 mm, free part ca. 1 mm long, in total 1.75–1.80 × 0.70–0.80 mm. *Lateral sepals* obliquely oblong, acute, united to other and petals for ca. 0.8 mm, 1.85–1.90 × 0.75–0.80 mm. Petals from an oblong part united to sepals, dilated into an ovate-elliptic lobe, acute to subacute, free part 0.70–0.90 × 0.70–0.75 mm, in total 1.70–1.75 × 0.70–0.75 mm. Labellum broadly clawed, obovate-oblong, subacute, thinly carinate below tip, claw 0.8 × 0.6 mm, upper part 0.80–0.95 × 0.70–0.80 mm, in total 1.65–1.75 × 0.80 mm; calli 2, remote, semicircular. Column shortly and broadly stalked, each side with a low broad wing, 0.95–1.00 mm long, 0.8 mm wide laterally.

Distribution: Peru.

Habitat: scrub and degraded forest (type), 2400 m.

Eponymy: named after Henk van der Werff (1946–), one of the collectors of the type and well-known specialist in Lauraceae.

**Fernandezia vanderwerffii** appears to be related to *F. gracillima* and its two closest allies (*F. nunezii* and *F. unduaviae*), which however differ in having elliptic leaves tapered at each end. Another similar Peruvian species is *F. tenius* (Schltr.) M.W. Chase, but it has much narrower leaves (1 mm wide) and the lip has much larger calli that far overlap the sides of the lip when spread out.

Additional specimens examined: COLOMBIA.

Santander del Norte: below Paramo de Jurisdicciones, 3150 m, 10 May 1984, C. Luer, J. Luer, R. Escobar & E. Valencia 10237 (MO).

Santander del Norte/Cesar: 20 km to the S of Abrego, Las Jurisdicciones (Cerro de Oroque), 3700–3960 m, 19/21 May 1969, H. Garcia-Barriga & R. Jaramillo 19784 (AMES); same area, 3000–3900 m, 22–27 July 1974, H. Garcia-Barriga & R. Jaramillo 20683 (GH).

This species is closely related to *Fernandezia schultesii* but generally it has slightly smaller (sepals 1.75–1.90 vs. 2.2–2.9 mm long) flowers with an elliptic (vs. triangular in upper half) dorsal sepal, and ovate (vs. ovate-lanceolate) petals. It is possible that the plant (*G.C.K. Dunsterville 1029*) from Venezuela illustrated as *Pachyphyllum schultesii* in Dunsterville and Garay (1979) actually represents *Fernandezia vaginata*, because it agrees in all the characters of the species cited above.

**Fernandezia vanderwerffii** Ormerod, sp. nov.


This species is closely related to *Fernandezia schultesii* but generally it has slightly smaller (sepals 1.75–1.90 vs. 2.2–2.9 mm long) flowers with an elliptic (vs. triangular in upper half) dorsal sepal, and ovate (vs. ovate-lanceolate) petals. It is possible that the plant (*G.C.K. Dunsterville 1029*) from Venezuela illustrated as *Pachyphyllum schultesii* in Dunsterville and Garay (1979) actually represents *Fernandezia vaginata*, because it agrees in all the characters of the species cited above.

**Fernandezia vanderwerffii** Ormerod, sp. nov.

TYPE: PERU. Amazonas: Chachapoyas to Mendoza road, a little past Molinopampa, 2400 m, 15 March 1998, H. van der Werff, B. Gray, R. Vasquez & R. Rojas 15056 (Holotype: MO). Fig. 64.

Similar to *Fernandezia tenius* (Schltr.) M.W. Chase but with broader (1.5–3.0 vs. 1.0 mm) leaves, and the labellum with smaller lamellae that do not overlap the edges of the blade.

Epiphytic *herb*. Roots terete, slender, 0.2–0.6 mm thick. Stems simple to 5 branched (branches 3.2–5.0 cm long), densely leafy, weakly to moderately flexuous, 2.1–9.0 cm long, 0.01–0.10 cm thick. Leaves oblong-ob lanceolate to oblong-elliptic, acute, thin, 6.0–9.0 × 1.5–3.0 mm; leaf sheaths semitubular, smooth, striate, 2.5–3.0 mm long. Inflorescence 5.01–8.00 mm long; peduncle narrowly winged toward apex, 5 mm long; rachis 1–5 flowered, 0.1–3.0 mm long; floral bracts ovate-deltate, acute, ca. 1 × 1 mm. *Flowers* white. Pedicellate ovary clavate, 3 mm long. Dorsal sepal oblong, cymbiform, subacute, midvein low carinate, united to lateral sepals and petals for 0.5–1.0 mm, 1.80 × 0.75–0.80 mm. *Lateral sepals* obliquely rhombic, subacute, midvein carinate, united to claw of labellum, 1.9 × 1.0 mm. Petals oblong-ob lanceolate, subacute, midvein thickly carinate in apical third, ca. 1.75 × 0.75 mm. Labellum clawed, pentagonal, subacute, claw ca. 0.7–0.8 mm long, blade 1.2 × 1.0 mm, in total ca. 2 × 1 mm; lower half of lip with 2 widely divergent lamellae, each raised apically ovate-elliptic lobe. Column each side with low wing, broadest in the lower half, 1.2 mm long, 0.9–1.0 mm wide laterally.

Distribution: Colombia.


Related to *Fernandezia distichoids* M.W. Chase but the leaves oblong to oblong-elliptic (vs. narrowly oblong), not so fleshy, and flat (vs. V-shaped in section).

Epiphytic (?) *herb*. Roots terete, 0.8–2.0 mm thick. Stems stout, simple to branched (branches to 3.5 cm long), densely leafy, 17.0–21.5 cm long, up to 1 cm wide across leaf sheaths, 0.3–0.5 mm thick. Leaves oblong-elliptic to oblong, obtuse, coriaceous, margins minutely laxly denticulate, denser apically, 12.0–31.0 × 7.0–9.5 mm; leaf sheaths (exposed part) triangular, smooth, striate, margins minutely laxly denticulate, exposed dorsal edge to 8 mm long. Inflorescence to 19.5 mm long; peduncle 6.5–7.0 mm long; sheathing bract midway along peduncle, 3 mm long; rachis densely flowered, to 11 mm long; floral bracts suborbicular, acuminate, margins minutely denticulate, 3 × 4 mm. Flower color not known. Pedicellate ovary clavate, triquetrous, 4 mm long. Dorsal sepal oblong, acute, rigid, fleshy, 3.1 × 1.2 mm. *Lateral sepals* obliquely oblong-lanceolate, subacute, rigid, fleshy, 3.2 × 1.2 mm. Petals oblong, subacute, 2.9 × 1.1 mm. Labellum ovate-oblong, subacute, carinate below tip, lower part 2.2 × 2.0–2.1 mm, upper part shallowly concave, 1.75 × 1.50 mm, in total 3.95 × 2.0–2.1 mm; lower part divided by a thick ridge that ends in 2 oblong, parallel calli. Column clavate, at apex each side with a rounded, forward-pointing wing, 2.3 mm long, 1.5 mm wide laterally.
Figure 65–68. 65, Fernandezia vargasii Ormerod. A, stem (upper part); B, flower; C, dorsal sepal; D, petal; E, lateral sepal; F, labellum; G, column. Drawn from holotype. 66, Fernandezia weberbaueri Ormerod var. weberbaueri. A, stem; B, flower; C, dorsal sepal; D, petal; E, lateral sepal; F, labellum; G, column. Drawn from holotype. 67, Fernandezia weberbaueri Ormerod var. platychila Ormerod. A, stem (upper part); B, dorsal sepal; C, lateral sepal; D, petal; E, labellum; F, column. Drawn from holotype. 68, Fernandezia weberbaueri Ormerod var. tricrucensis Ormerod. A, stem; B, flower; C, dorsal sepal; D, lateral sepal; E, petal; F, labellum; G, column; H–I, labellums. A–G from holotype; H from Cano 3997 (MO); I from Huamantupa et al. 6971 (MO).
Distribution: Peru.

Eponymy: named after C. Vargas Calderon (1903–2002), Peruvian botanist and collector of the type.

This species is a member of the florally conservative Fernandezia distichoides complex. It may be distinguished from *F. distichoides* by its flatter, less fleshy, oblong-elliptic to oblong leaves. In *F. distichoides* the leaves are flasheer with upcurved sides and narrowly oblong.

It should be noted that the plant illustrated as *Pachyphyllum distichum* (M.W. Chase) by Bennett and Christenson (1998) is not related to that species but is rather an undescribed member of section *Lamellata* (i.e., related to *F. pectinata*). The depiction of a thick V-shaped callus on the lip is erroneous related to that species but is rather an undescribed member of section *Lamellata* (i.e., related to *F. pectinata*). The depiction of a thick V-shaped callus on the lip is erroneous but it seems to be more slender and broader labellum.

**Fernandezia weberbaueri** Ormerod, *sp. nov.*

**TYPE:** PERU. Cusco: Prov. La Concencion, Distrito Huayopata, Sector San Luis, 2995 m, 23 November 2006, *L. Valenzuela, J. Farfan & E. Suclli 8087* (Holotype: MO). Fig. 67.

Differing from typical *F. weberbaueri* in having a shorter and broader labellum.

Epiphytic herb. Roots terete, 0.4–1.0 mm thick. Stems simple to branched (branches 1–3 cm long), laxly to densely leafy, 6–16 cm long, ca. 1–2 mm thick. Leaves ovate-elliptic to ovate-suborbicular, acute or with an apiculus to 1 mm long, margins minutely denticate near the apex, coriaceous, 5.5–8.0 × 4.5–7.5 mm; leaf sheaths tubular, acute or with an apiculus to 1.3 mm wide. The depiction of a thick V-shaped callus on the lip is erroneous and is correctly interpreted as 2 lamellae arising from the thickened midline of the lip.

**Fernandezia weberbaueri** Ormerod, *var. platychila* Ormerod, *var. nov.*

**TYPE:** PERU. Cusco: Prov. Quispicanchi, Marcapata, 3000–3100 m, 17 February 1929, *A. Weberbauer 7813* (Holotype: F). Fig. 66.

Related to *Fernandezia ichneumonea* Ormerod but the leaves flat (vs. conduplicate) with a shorter (1 vs. 2 mm long) peduncle; rachis 5–6 flowered, 5 mm long; peduncle to 6 mm long; rachis 3–6 flowered, 0.5–3.0 mm long; floral bracts deltate-lanceolate, acute, ca. 1 mm long. Flowers white. Pedicellate ovary clavate, trialeur, 5 mm long. Dorsal sepal oblong, acute, midvein thickly carinate, 3.0 × 1.2 mm. Lateral sepals obliquely oblong, acute, carinate, 3.7 × 1.4–1.5 mm. Petals broadly oblong-oblongo-lanceolate, subacute, midvein carinate, 2.85 × 1.15 mm. Labellum shortly clawed, blade elliptic, subacute, 3.0 × 1.7 mm; claw divided mediately by a low thickening that divides into 2 divergent lamellae that each end in a triangular lobe. Column shortly and broadly stalked, each side with a broadly semicircular wing, 1.7 mm long, 1.1–1.2 mm wide laterally.

**Distribution:** Peru.

**Habitat:** disturbed primary forest, 2995 m.

**Etymology:** from the Classical Greek *platys*, broad, and *cheilos*, lip, in reference to the broad labellum of this variety.

As noted above, this variety differs in its shorter and broader lip.

**Fernandezia weberbaueri** Ormerod, *var. trieruensis* Ormerod, *var. nov.*

**TYPE:** PERU. Cusco: Prov. Paucartambo, Distrito Challambaba, Tres Cruces, 3450 m, 27 October 2007, *R. Vasquez, C. Davidson, S. Davidson, J. Farfan, E. Suclli & A. Pen 32884* (Holotype: MO). Fig. 68.

Differing from *Fernandezia weberbaueri* Ormerod var. *weberbaueri* in the flowers having a column with straight lower margins and the wings slightly apically produced and rounded.

Epiphytic herb. Roots terete, 0.4–1.0 mm thick. Stems simple to branching (branches 1.5 cm long), sub laxly to densely leafy, 6–15 cm long, 0.2–0.4 cm wide across leaf sheaths, 0.08 cm thick. Leaves oblong, ovate, to ovate-elliptic, shortly apiculate, margin minutely denticate toward apex, drying pale greenish-blue with a white margin (type), 8.0–13.0 × 4.5–8.5 mm; leaf sheaths semihoromic in lateral view, truncate, margins recurved, entire to minutely denticate, 5 mm long. Inflorescence to 9 mm long; peduncle 3.5–4.0 mm long; rachis 5–6 flowered, 5 mm long; floral bracts ovate-robust, acute, margins entire to minutely denticate, to 2.8 × 2.4 mm. Flowers white. Pedicellate ovary clavate, trialeurous, ca. 4 mm long. Dorsal sepal ligulate to oblong-lanceolate, acute, midvein
low carinate, 3.25–4.00 × 1.20–1.30 mm. *Lateral sepals* obliquely lanceolate, acute, high carinate, 4.00–4.65 × 1.10–1.75 mm. *Petals* narrowly oblong, acute, 3.00–3.75 × 0.95–1.20 mm. *Labellum* oblong-oblanceolate to oblong-cuneate, subacute, carinate below tip, 3.65–4.10 × 1.35–1.80 mm; midline thickened in lower 1/4 of lip before dividing into 2 weakly divergent lamellae. *Column* each side with a low, suborbicular, apical wing, 1.9–2.2 mm long, 1.0–1.6 mm wide laterally.

**Distribution:** Peru.


**Habitat:** roadside remnant forest (type), frequent in forest dominated by *Weinmannia* (Cano 3997), in mixed “Pajonal” (Huamantupa et al. 6971), 2000–3885 m.

**Etymology:** named after the type locality, Tres Cruces.

*Fernandezia weberbaueri* var. *tricrucensis* may be distinguished from typical *F. weberbaueri* by its flowers having a column with straight lower margins with slightly produced and rounded wings at the apex.

![Figure 69. Fernandezia yahuarcochae Ormerod.](image)

**Fernandezia yahuarcochae** Ormerod, sp. nov.

**TYPE:** PERU. Cajamarca: Prov. Chota, Laguna Yahuarcocha (above Incahuasi), 3600 m, 14 September 1985, A. Sagastegui A., D. Skillman, J. Mostacero L. & L. Ramirez V. 12885 (Holotype: MO; Isotypes: F, HUT, not seen). Fig. 69.

Related to *Fernandezia hamiltonii* Ormerod but flowers with the upper half of the labellum wider (1.50–1.60 vs. 1.10–1.15 mm).

Lithophytic (?) herb. Roots terete, 0.75–1.00 mm thick. Stems simple, densely leafy, 6–18 cm long, 0.3–0.6 cm wide across leaf sheaths. Leaves ligulate, acute, thickly coriaceous, 8–10 mm long, 1.2–2.0 mm wide laterally; leaf sheaths delinate in lateral view, truncate, smooth. Inflorescence ca. 8 mm long; peduncle hidden in leaf sheath, ca. 4 mm long; rachis 4–5 flowered, ca. 4 mm long; floral bracts ovate-deltate, acute, 2.5 × 2.2 mm. Flowers white. Pedicellate ovary clavate, triquetrous, 2.5 mm long; capsule triquetrous, 5 mm long (incl. 1.2 mm long pedicel), one side 4 mm side. Dorsal sepal oblong-lanceolate, subacute, midvein low carinate, 2.8 × 1.2 mm. *Lateral sepals* obliquely oblong, subacute, midvein high carinate in upper half, 2.9 × 1.2 mm. Petals broadly oblong-oblanceolate, subacute, 2.20–2.30 × 1.15–1.20 mm. Labellum oblong-elliptic, shallowly subpandurate, carinate below tip, lower half 1.8 × 2.0 mm, upper half 1.2 × 1.5–1.6 mm, in total ca. 3 mm × 2 mm; lower half divided by a thick ridge ending in 2 conical-ellipsoid calli. Column cuneate in lateral view, 2 mm long, 1.2 mm wide laterally.

**Distribution:** Peru.

**Habitat:** rocky “Jalca,” 3600 m.

**Etymology:** named after the type locality, Lake Yahuarcocha.

This species appears to be related to *Fernandezia hamiltonii* but differs in having the leaves more drawn out toward the apex, and the upper half of the lip is wider (1.50–1.60 vs. 1.10–1.15 mm).

**References**


