New Species of *Ocotea* (Lauraceae) from Northern Peru and Ecuador

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ABSTRACT. Seven species of *Ocotea*, collected during fieldwork in the drainage of the Río Cenepa in northern Peru, are described. They will be included in the forthcoming *Flora del Río Cenepa*. The new species are: *Ocotea badia* van der Werff, *Ocotea hirtandra* van der Werff, *Ocotea imazensis* van der Werff, *Ocotea laevifolia* van der Werff, *Ocotea lenitae* van der Werff, *Ocotea leptophylla* van der Werff, and *Ocotea vasquezii* van der Werff.

Key words: Ecuador, Lauraceae, *Ocotea*, Peru, Río Cenepa.

During preparation of a treatment of the Lauraceae for the *Flora del Río Cenepa* (Vasquez et al., in prep.) a number of collections were encountered that defied attempts at identification. Three species, belonging to the better known genera *Licaria* Aublet, *Nectandra* Rottboell, and *Pleurothyrium* Nees, were described in an earlier publication (van der Werff, 2003), but those belonging to the large and difficult genus *Ocotea* Aublet had not been dealt with. Based on these collections from northern Peru and adjacent Ecuador, seven new species are described here. *Ocotea* is the largest genus of Lauraceae in the Neotropics, with an estimated 300+ species (pers. obs.). It was last revised by Mez (1889), who included 199 species in the genus. Since then, a steady stream of new species has been published (van der Werff, 1994, 1999, 2001, 2003; van der Werff & Vicentini, 2000). Rohwer (1986) published an overview of the genus, largely based on a study of type specimens. He recognized a number of species groups and provided keys to his species groups and to species within each species group. His contribution has greatly helped our understanding of the genus. Traditionally, *Ocotea* has been characterized by having flowers with nine 4-celled locelli, the locelli arranged in two superposed pairs, and includes all species that do not fit in other, better defined genera with nine 4-celled stamens. A DNA-based phylogeny of the genera of Lauraceae (Chanderbali et al., 2001) suggests strongly that *Ocotea* as currently accepted is not a monophyletic genus, but is formed by several not closely related groups of species. These new insights have not yet been incorporated in a new classification, largely because morphological characters that would support the groups recognized in the DNA-based phylogeny have not yet been found. A first step toward a new classification of *Ocotea* will be a revision of the known species and the description of the assorted undescribed species. Such a revision is planned by the author. Until such a revision has been completed, I will use the traditional concept for *Ocotea*, even though it is very likely too broad.

The new species discovered in northern Peru are the following:

1. Ocotea badia van der Werff, sp. nov. TYPE: Peru. Depto. Amazonas: Bagua Prov., Distr. Imaza, Yamayakat, 04°55′S, 78°19′W, 400 m alt., 24 May 1996 (fl), *R. Vasquez & A. Vasquez 20957* (holotype, HUT; isotypes, HBG, K, MO, NY, USM). Figure 1.

Ex grege Ocoteae minarum, sed ramulis tomentellis, venatione partim brochidodroma et foliis subtus pilis erectis praeditis differt.

Trees, to 25 m; young twigs angular, solid or older twigs narrowly fistulose, densely reddish brown tomentellous, the indument covering the surface completely, becoming glabrous with age; terminal buds densely reddish brown tomentellous. Leaves 10–18 × 3–5 cm, elliptic to slightly obovate, chartaceous, alternate, the base acute, the margin flat, the apex acuminate, acumen to 1.5 cm long; venation immersed on upper surface, raised on lower surface; upper surface glabrous, lower surface initially densely pubescent with short, erect hairs, the indument becoming sparser with age, midrib and lateral veins tomentellous on the lower surface; domatia lacking; lateral veins 4 to 7 pairs, often somewhat loop-connected in the distal half; petioles flat above. Inflorescences to 12 cm long, paniculate-cymose, reddish brown tomentellous, in the axils of leaves or cataphylls. Flowers hermaphrodite, yellow, 2.5–3.5 mm diam., the tepals erect at anthesis, pedicels 2–3 mm long; tepals 6, 1.5 mm

long, ovate-elliptic, moderately pubescent outside, sparsely pubescent inside; stamens 9, all 4-celled, the cells in 2 superposed pairs, the outer 6 ca. 1.2 mm long, the glabrous anther ca. 1 mm long, the short filament pubescent; inner stamens same length, also with a very short filament, glands present at the base of the inner stamens, staminodia not seen, pistil glabrous, ca. 1.6 mm long, the style 1 mm long, the ovary globose, clearly swollen. Fruits ellipsoid to ovoid-ellipsoid, 2 × 1 cm, cupule small, platelike, 6 mm diam., gradually narrowed into the pedicel.

Ocotea badia, named after the color of the indument on the young twigs, is close to the O. minarum group or part of it, largely because of its ellipsoid or ovoid-ellipsoid fruits and small, platelike cupules. Rohwer (1986) found two types of flowers in this group: pistillate and hermaphrodite. The type of *O. badia* has hermaphrodite flowers: the pistil has a clearly thickened ovary, while the locelli of the stamens open and show some pollen grains on their flaps. However, the terminal buds are not as long and slender as is usual in this group. The only species in the O. minarum group or close to it that have an erect indument are *O. fendleri* (Meisner) Rohwer, *O. ovalifolia* (Ruiz & Pavón) Mez, *O. scalariformis* van der Werff, and *O. odorata* (Meisner) Mez, but the first three of these species have attenuate leaf bases that are usually inrolled and *O. odorata* differs in having the lower leaf surface glaucous. Some of the flowers and buds of the type collection are larger than average for the species, and have a denser indument and longer pedicels. These buds or flowers are diseased and contain only whorls of gradually reduced tepals, but no reproductive organs. The tertiary venation on the lower leaf surface of *O. badia* is noticably less raised on the fruiting specimens than on the flowering ones, but the leaf shape, indument, and the partly loop-connected venation are similar in fruiting and flowering specimens. The Ecuadorian paratype is placed here provisionally: it differs in having smaller leaves, shorter petioles, more pairs of lateral veins and lacks the loop-connected venation in the distal half of the leaves.

Phenology. Flowering May–June; fruiting February.

Paratypes. ECUADOR. **Carchi:** Tulcan Canton, Reserva Ethnica Awa-Camumbi (fr), *C. Quelal, C. Aulestia & F. Nastacuaz 255* (MO). PERU. **Amazonas:** Río Cenepa, S of Huampami trail (fr), *B. Berlin 1662* (MO); Quebrada Huampami (fr), *R. Kayap 363* (MO); Condorcanqui Province, El Cenepa, comunidad de San Antonio (fl), *R. Vasquez, A. Peña, E. Chavez & E. Quiaco 24088* (MO).

2. Ocotea hirtandra van der Werff, sp. nov. TYPE: Peru. Depto. Amazonas: Bagua Prov., Distr. Imaza, camino Putuim–Shimutaz, 05°03′S, 78°20′W, 380 m, 22 June 1996 (fl), *R. Vasquez, A. Vasquez, L. Dekentai & M. Chuimtan 21335* (holotype, HUT; isotypes, HBG, MO, NY). Figure 2.

Ocoteae multiglandulosae similis, sed staminibus dense pubescentibus et pistillodio glabro recedit.

Trees, to 30 m; twigs angular or ridged, glabrous or near the tips minutely appressed pubescent, solid, terminal buds densely appressed pubescent. Leaves alternate, 10–21 × 4–8 cm, chartaceous, obovate or obovate-elliptic, the base acute, margin flat or slightly inrolled, apex obtuse to bluntly acute, glabrous, except for the tufts of hairs in the axils of the basal lateral veins, venation immersed on the upper surface, midrib and lateral veins raised, tertiary venation immersed on the lower surface, petioles 10–15 mm, ridged; lateral veins 7 to 10 pairs. Inflorescences 8–15 cm, paniculate-cymose, in the axils of cataphylls near the tips of the branches, basally nearly glabrous, becoming distally moderately to densely puberulous with very short, erect hairs. Staminate flowers 3.5–4 mm diam., yellowish, pedicels densely puberulous, half as long to about as long as the flowers; tepals 1.5–2 mm long, densely puberulous on both surfaces, half-erect at anthesis, equal; stamens 9, all 4-celled, the cells in 2 superposed pairs, the outer 6 stamens with the cells introrse, 1.5 mm long, the filament half as long as the anther, filaments densely puberulous, the anther abaxially densely puberulous or the indument dense along the center of the anther and less dense toward the margins; inner 3 with the lower pair of cells extrorse, the upper pair latrorse, about as long as the outer 6 stamens, filaments densely puberulous and with 2 conspicuous glands at the base; staminodia present, ca. 0.5 mm long, stipitiform or with a capitate tip, puberulous, sometimes 2 locelli present on the staminodia; pistillode spindle-shaped, 1 mm long, glabrous; receptacle cup-shaped, glabrous inside; pistillate flowers and fruits not known.

Ocotea hirtandra is characterized by its densely puberulous flowers and stamens and its obovate or obovate-elliptic leaves with axillary tufts of hairs. The position of the inflorescences, in the axils of cataphylls and not in the axils of leaves, is unusual. In one of the five known collections (*Palacios & Iguago 4639*) the inflorescences are not subapical; here the terminal buds have produced a young shoot with immature leaves and the inflorescences are lower on the twig, but still not in the axils of leaves.

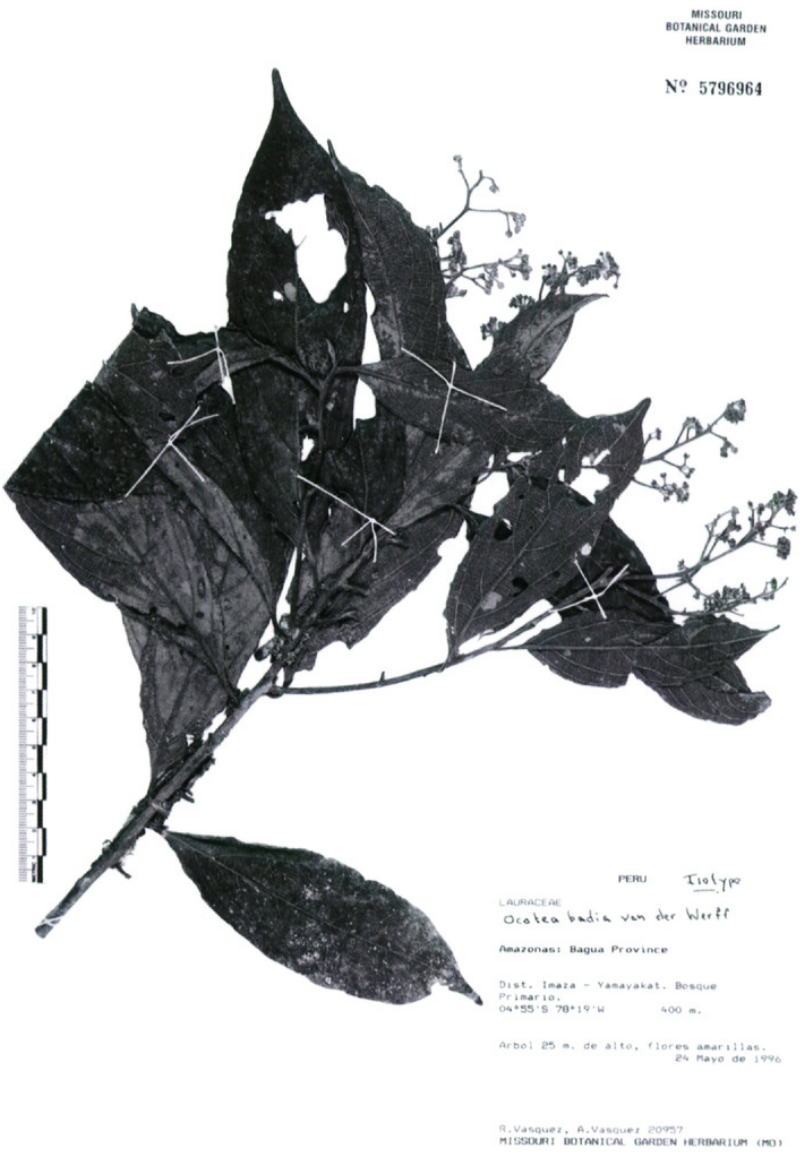

Figure 1. *Ocotea badia* van der Werff, the MO isotype, *Vasquez & Vasquez 20957*.

Relationships of the new species are not clear. It resembles species such as *O. multiglandulosa* (Ruiz & Pavón) Mez and *O. cuneifolia* (Ruiz & Pavón) Mez. The position of the inflorescences is unusual in the genus, as are the densely puberulous stamens. Mature cupules would help in understanding its position in the genus. In one collection (*Kayap 972*) the pistillode is swollen at the base, suggesting a viable pistil, but the anthers are normally developed, possess a few pollen grains, and the thickened pistillode does not possess a stigma and is clearly shorter than the inner 3 stamens. It is possible that this species is androdioecious, having staminate and hermaphrodite flowers, but more collections are needed to confirm this. Gynodioecious flowers have been reported in *Ocotea*, but androdioecious flowers are not definitely known in Lauraceae; Chanderbali (2004) suggested the presence of androdioecious flowers in *Endlicheria gracilis* Kostermans.

Phenology. Flowering June (Peruvian collections), October (Ecuadorian collections).

Paratypes. PERU. **Depto. Amazonas:** Prov. Condorcanqui, comunidad de Tutino (fl), *R. Vasquez, A. Peña, E. Chavez & E. Quiaco 24177* (MO); Lugar Huampami (fl), *R. Kayap 972* (MO). ECUADOR. **Napo:** Canton Archidona, Carretera Hollín–Loreto, entre Huamani y el Río Pucuno (fl), *W. Palacios & C. Iguago 4639* (MO); km 50 Carretera Hollín–Loreto (fl), *W. Palacios & C. Iguago 4621* (MO).

3. Ocotea imazensis van der Werff, sp. nov. TYPE: Peru. Depto. Amazonas: Bagua Prov., Distr. Imaza, Comunidad de Kampaenza, Ribera de la Quebrada Shimutaz, 05°55′S, 78°19′W, 320 m, 23 Sep. 1994 (fl, immature fr), *N. Jaramillo, R. Apanu & S. Katip 477* (holotype, HUT; isotypes, HBG, K, MO, NY, USM). Figure 3.

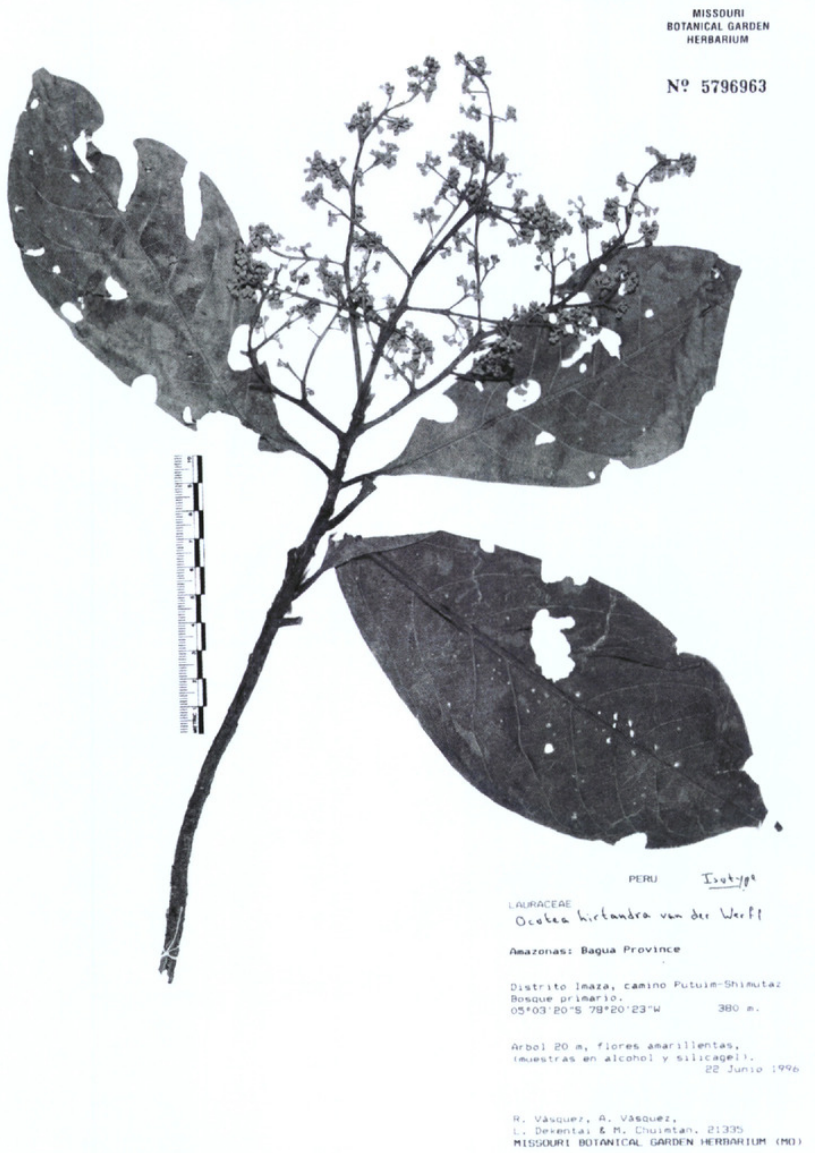

Figure 2. *Ocotea hirtandra* van der Werff, the MO isotype, *Vasquez et al. 21335*.

A congeneris ramulis inflorescentiisque dense tomentellis, basibus foliorum parum decurrentibus, petiolis supra complanatis et floribus hermaphroditis recedit.

Trees, to 25 m; twigs terete or angular, densely ferrugineous-tomentellous, the surface completely covered, solid; terminal buds densely tomentellous. Leaves 7–10 × 3–7 cm, firmly chartaceous, evenly distributed along the twigs, green above, with small wax deposits on the lower surface, glabrous on upper surface, with scattered curled hairs, these appressed or half-erect, on the lower surface the hairs denser and becoming tomentellous on the major veins; domatia lacking; apex acute or shortly acuminate, the base acute, the lamina slightly decurrent on the petioles; lateral veins 5 to 7 pairs; petioles brown-tomentellous, 8–14 mm long, flat above. Inflorescences 2.5–5 cm long, densely tomentellous, in the axils of leaves or bracts, paniculate-cymose, the lateral branches ending in a cyme, or racemose. Flowers yellow or cream-colored, hermaphrodite, ca. 3 mm diam., the pedicels less than the diameter of the flowers; tepals 1.3 mm long, spreading at anthesis, elliptic-oblong, densely pubescent on the outer surface, slightly less so on the inner surface; stamens 9, all 4-celled, glabrous, the outer 6 ca. 0.5 mm long, the filament shorter than the anther, opening introrse, the cells arranged in 2 pairs, inner 3 stamens of same size, the lower 2 anther cells extrorse, the upper 2 lateral, glands present at the base of the inner 3 stamens, staminodia present, columnar, with a slightly thickened apex, glabrous, about as long as the filaments of the inner stamens; pistil glabrous, style distinct, ca. 0.2 mm long. Immature fruit enclosed in the hypanthium; 1 older cupule 7 mm diam., 5 mm high, weakly double-margined, the outer margin erect and sur-

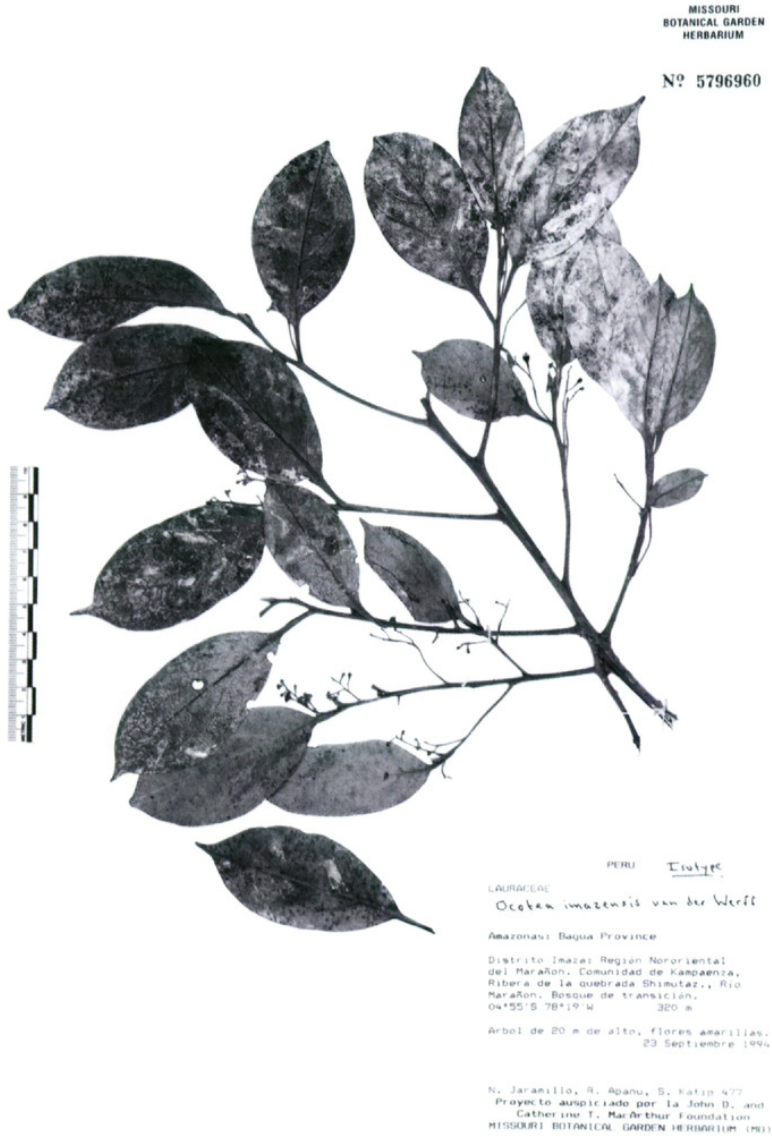

Figure 3. *Ocotea imazensis* van der Werff, the MO isotype, *Jaramillo et al. 477.*

passing the inner margin; fruit (possibly immature) 9 × 4 mm; tepals deciduous in fruit.

Ocotea imazensis is best recognized by the combination of densely pubescent twigs and inflorescences, the slightly decurrent leaf base, the flat petioles, and perfect flowers. The new species does not seem to be closely related to any of the other *Ocotea* species with perfect flowers in South America. Vegetatively it resembles a collection from the Arboretum Jenaro Herrera in the Departamento de Loreto (*Chota s.n*, collected from tree 3/96, MO), but that specimen has larger flowers with pubescent stamens; it has not yet been identified.

Phenology. Flowering September.

Paratype. PERU. **Depto. Amazonas:** Bagua Prov., Distr. Imaza, Comunidad Aguaruna Pituim (fl), *C. Diaz, A. Peña & P. Atamain 7208* (MO).

4. Ocotea laevifolia van der Werff, sp. nov. TYPE: Peru. Depto. Amazonas: Prov. Bagua, Distr. Imaza, Tayu Mujaji, 05°15′56″S, 78°22′07″W, 1200 m, 21 Oct. 1997 (fl), *R. Vasquez, J. Lirio & G. Pitug 24603* (holotype, HUT; isotypes, HBG, MO). Figure 4.

Ex grege Ocoteae aciphyllae, sed foliis laevibus, inflorescentiis laxis et habitu fruticoso recedit.

Shrub, 2 m tall; twigs terete or ridged, near the tip minutely appressed pubescent, soon becoming glabrous, solid; terminal buds small, densely appressed pubescent. Leaves 9–14 × 3.5–5.5 cm, elliptic or ovate-elliptic, alternate, evenly distributed along the twigs, chartaceous, brittle, glabrous on both surfaces or minutely appressed pubescent on young leaves, the base obtuse, slightly inrolled, the apex acuminate or acute, venation on upper surface

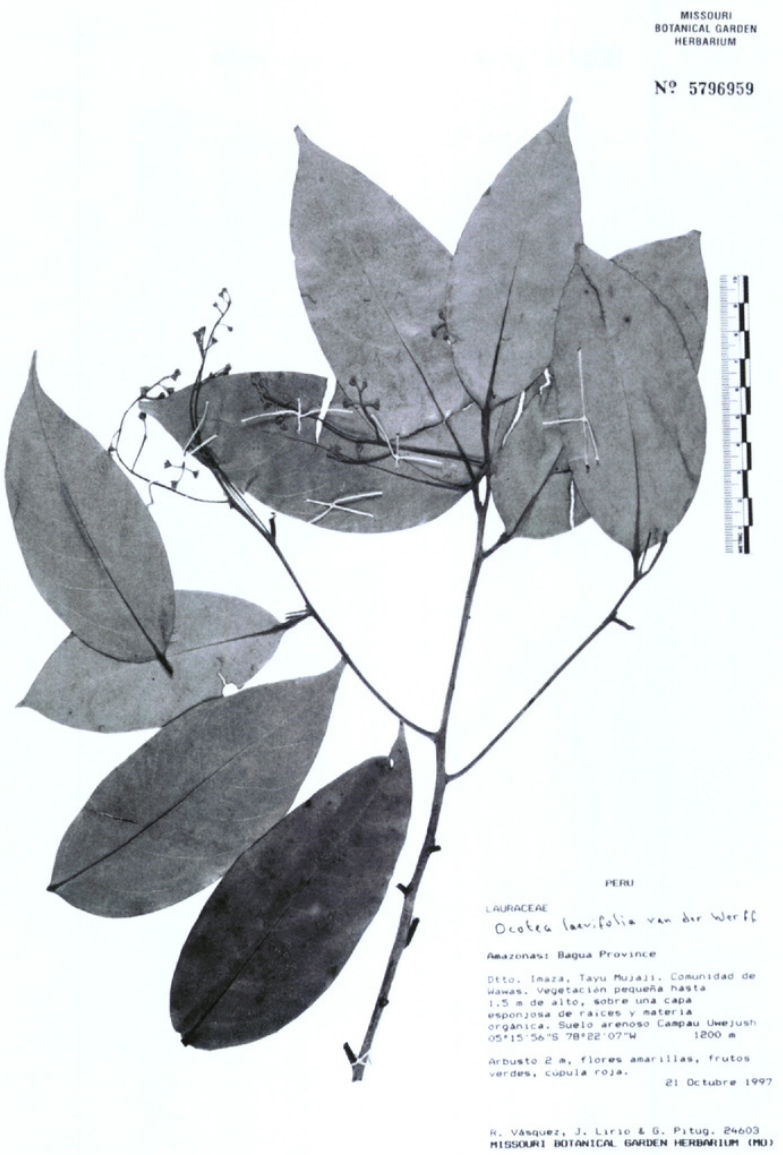

Figure 4. *Ocotea laevifolia* van der Werff, the MO isotype, *Vasquez et al. 24603*.

immersed, midrib slightly raised, otherwise venation immersed on lower surface, lateral veins difficult to discern, 6 to 8 pairs; petioles 7–10 mm long, canaliculate, minutely appressed pubescent or glabrous. Inflorescences 5–7 cm long, in the axils of leaves, laxly flowered, paniculate near the base, racemose more distally, moderately appressed pubescent, the indument denser toward the flowers. Flowers hermaphrodite, 3–3.5 mm diam., yellow, appressed pubescent, pedicels 3–5 mm long, densely appressed pubescent; tepals ca. 1.5 mm long, ovate-elliptic, appressed pubescent on both surfaces, half-erect at anthesis; stamens 9, all 4-celled, the cells in 2 superposed pairs, 1.2 mm long, the filaments a little shorter than the anthers, filaments pubescent, outer 6 stamens with the cells introrse, inner 3 with the cells lateral-extrorse, glands present at the base of the inner stamens, staminodia not seen, pistil 1.5 mm, glabrous, style slightly shorter than the ovary; receptacle cup-shaped, densely pubescent inside. Fruits and cupules not seen.

Ocotea laevifolia is only known from the type collection, made in the summit area of Cerro Tayu, at an altitude of about 1200 m. Cerro Tayu is an isolated sandstone hill with forested slopes and a summit area covered with 2 m tall scrub. Several other collections from Cerro Tayu are identified as undescribed species (representing two species of *Cyathea* in Cyatheaceae, one other species of *Ocotea*, and one species of *Phyllanthus*, Euphorbiaceae) or are new records for Peru (*Aratitiyopea lopezii* (L. B. Smith) Steyermark & Berry, Xyridaceae, and *Euceraea nitida* Martius, Flacourtiaceae). It is likely that more novelties will be found with further collecting on this rather small hill.

Ocotea species with hermaphrodite flowers in

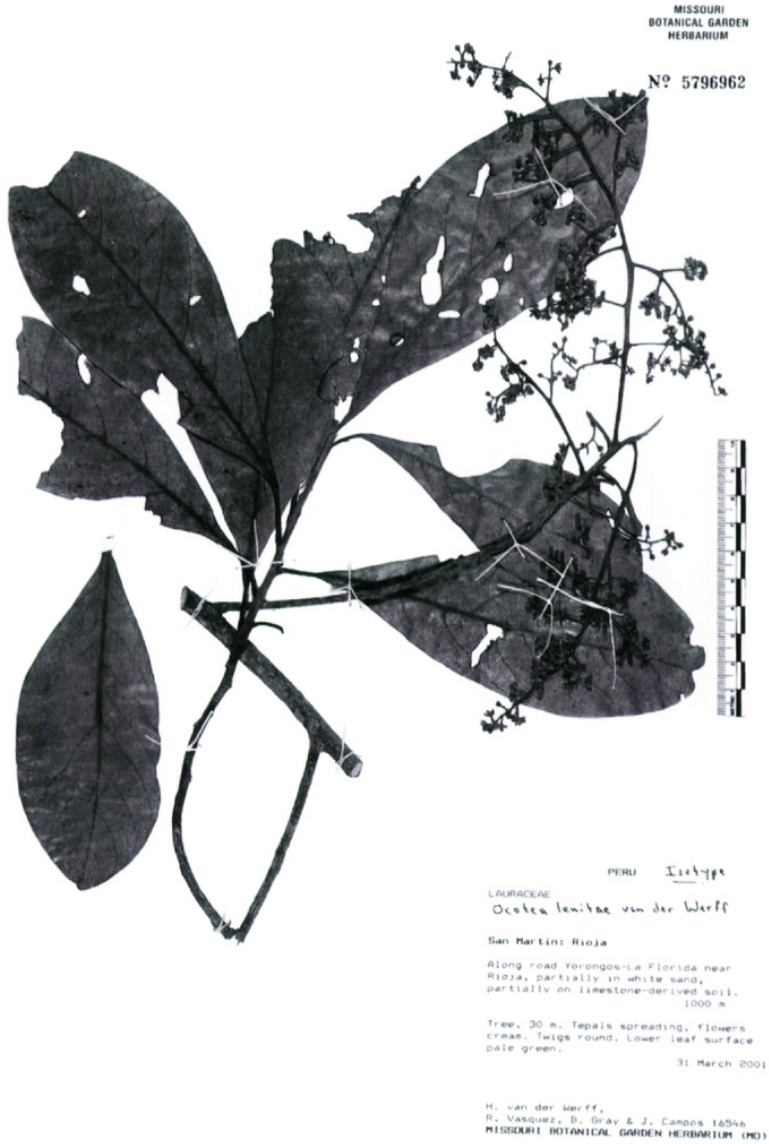

Figure 5. *Ocotea lenitae* van der Werff, the MO isotype, *van der Werff et al. 16546.*

South America tend to belong to a few species groups, such as the O. insularis group, the O. aciphylla group, the O. sodiroana group, and the O. indecora group. The strongly canaliculate petioles point to the O. aciphylla group, while distinctive characters of the other groups are lacking. Its closest relative may be an undescribed species from the Cordillera del Condor in Ecuador, which differs in having thinner, subopposite leaves with an inrolled and decurrent leaf base. The two species share laxly flowered inflorescences and a pubescent inner surface of the receptacles.

5. Ocotea lenitae van der Werff, sp. nov. TYPE: Peru. Depto. de San Martín: Rioja Prov., along road Yorongos–La Florida near Rioja, 1000 m, 31 Mar. 2001 (hermaphrodite fl), *H. van der Werff, R. Vasquez, B. Gray & J. Campos 16546* (holotype, HUT; isotypes, CANB, HBG, K, MO, NY, US, USM). Figure 5.

Ex grege Ocoteae minarum, sed foliis obtusis, tepalis intus dense pubescentibus et fructibus globosis bene distincta.

Trees, to 45 m; twigs angled, moderately to sparsely appressed pubescent, becoming glabrous with age; terminal buds slender, densely appressed pubescent. Leaves 10–18 × 3–7 cm, alternate, evenly distributed along twigs, firmly chartaceous, obovate, the base narrowly cuneate, the margin flat or slightly inrolled, the apex obtuse, the upper surface glabrous, lower surface glabrous or with some appressed hairs, a few pit-domatia sometimes, but not always, present in the axils of lateral veins and visible as bumps on the upper surface, the margins of the pits glabrous; venation immersed on the upper surface, midrib and lateral veins raised on the lower surface; lateral veins 7 to 9 pairs; petioles 1–2 cm long, shallowly canaliculate. Inflorescences 5–15 cm long, paniculate-cymose, sparsely to mod-

Figure 6. *Ocotea leptophylla* van der Werff, the MO isotype, *Diaz et al. 8076.*

erately appressed pubescent, in the axils of leaves or cataphylls; hermaphrodite flowers ca. 5 mm diam., pistillate flowers ca. 4 mm diam., yellow or green, pedicels ca. 2 mm long. Hermaphrodite flowers: tepals ca. 1.7 mm long, elliptic, spreading at anthesis, the outer three sparsely appressed pubescent on the outer surface, the inner more densely so; inner surface of tepals densely pubescent; stamens 9, all 4-celled, the cells in 2 superposed pairs, the outer 6 stamens 1.3 mm long, the filaments ca. 0.3 mm long, pubescent, the anthers 1 mm long, glabrous, opening introrse; inner 3 stamens 1.5 mm long, the filaments pubescent, ca. 0.5 mm long, the anthers glabrous; globose glands present at the base of the inner stamens; staminodia lacking; pistil 1.5 mm long, glabrous, the style ca. 1 mm long, the stigma discoid, receptacle shallow, glabrous inside. Pistillate flowers: tepals 1.5 mm long, staminodia 9, ca. 0.6 mm long, the filaments very short, pubescent, glands present at the base of the inner staminodia, pistil 1.6 mm long, glabrous, the style a little longer than the ovary; receptacle shallowly cup-shaped, with some appressed hairs inside. Infructescences branching under almost 90°. Fruit globose, 1 cm diam., cupule small, platelike, 7 mm diam., pedicel and cupule lenticellate.

Ocotea lenitae belongs to the Ocotea minarum group based on its hermaphrodite and pistillate flowers and its platelike, lenticellate cupule. It is distinct within this group by the combination of obovate leaves with obtuse apex, presence of (few) pitdomatia, and the spreading tepals that are densely pubescent on the inner surface. Most species in the O. minarum group have leaves with an acute apex; in Peru only *O. obovata* (Ruiz & Pavón) Mez is reported to have leaves with a rounded or obtuse

apex, but that species does not have domatia. *Ocotea tillettsiana* Allen is the species most similar to *O. lenitae*; it has leaves with a rounded apex, spreading tepals at anthesis, and pit-domatia; it differs in its sparser indument on twigs and flowers, in having shorter petioles (to 1 cm long), more domatia, and raised tertiary venation. *Ocotea tillettsiana* is an incompletely known species reported from Guyana and adjacent Venezuela.

The pit-domatia on the leaves of *Ocotea lenitae* are not numerous. Many leaves do not have these domatia and one has to search carefully for their presence. Several collections placed here in *O. lenitae* had been previously identified as *O. oblonga* (Meisner) Mez, and duplicates may have been distributed under that name.

It is a pleasure to dedicate this species to my wife, Lenita, in recognition of her interest in and steadfast support of my work.

Phenology. Flowering April–June; fruiting January.

Paratypes. PERU. Depto. **San Martín:** Rioja Prov., along road Rioja–Yorongos–La Florida (pistillate fl), *H. van der Werff, R. Vasquez, B. Gray & J. Campos 16510* (MO); along road Yorongos–La Florida (young fr), *H. van der Werff, R. Vasquez, B. Gray & J. Campos 16545* (MO). **Depto. Amazonas:** Quebrada Kayamas, Lugar Cenepa (herm. fls), *E Ancuash 170* (MO); Quebrada yutui entsa (herm. fls), *E. Ancuash 217* (MO). ECUADOR. **Pastaza Prov.:** Via Auca, 115 km S of Coca (fr), *F. Hurtado, W. Palacios & C. Iguago 1375* (MO); 35 km SE of Curaray (buds), *Espinoza 300* (MO, QCNE). **Napo Prov.:** Río Payamino (buds), *L. Holm-Nielsen & S. Jeppesen 801* (AAU, MO); Via Coca–Auca, km 17 (fr), *W. Palacios* 3514 (MO); PN Yasuni (fr), *A. Grijalva 763* (MO, QCNE), (st), *M. Aulestia & T. Ahue 2766* (MO, QCNE), (herm. fls), *M. Aulestia 2272* (MO, QCNE), (buds), *W. Palacios 2363* (MO, QCNE); Reserva Etnica Huaorani (herm. fls), *M. Aulestia 3642* (MO, QCNE), (buds), *M. Aulestia 3616* (MO, QCNE), (herm. fls), *M. Aulestia 3635* (MO, QCNE).

6. Ocotea leptophylla van der Werff, sp. nov. TYPE: Peru. Depto. Amazonas: Bagua Prov., Distr. Imaza, Comunidad Aguaruna de Wanas (km 92 Carretera Bagua–Imacita), Cerros Chinim, 700–800 m, 29 Aug. 1996 (male fl), *C. Diaz, A. Peña, L. Tsamajain & M. Roca 8076* (holotype, HUT; isotypes, HBG, K, MO, NY, US, USM). Figure 6.

A congeneris foliis subtus glaucis, inflorescentiis foliisque ad ramulos hornotinos limitatis distincta.

Trees, to 25 m; young twigs angular, densely brown tomentellous, the surface completely covered, older twigs glabrescent, dark, with scars from fallen leaves; terminal buds densely brown tomentellous. Leaves 4–11 × 2–5 cm, membranaceous to chartaceous, elliptic to obovate-elliptic, clustered on the recent flush, older twigs leafless; base obtuse to acute, the apex acute, the margin flat; upper surface glabrous, except for the pubescent midrib, lower surface glaucous, with scattered erect hairs or almost glabrous, the indument denser on the major veins; domatia lacking; midrib and lateral veins immersed, tertiary venation slightly raised on the upper surface, midrib raised, lateral veins weakly raised and tertiary venation immersed on lower surface; lateral veins 5 to 7 on each side; petioles 10–15 mm long, densely pubescent, flat above. Inflorescences to 7 cm long, in the axils of bracts, rarely in the axils of leaves, along the young twigs; densely tomentellous, the surface entirely or largely covered, paniculate-cymose. Staminate flowers green or cream-colored, 2.5–3 mm diam., tepals ca. 1 mm long, ovate, half-erect at anthesis, densely pubescent on the outer surface, sparsely pubescent on the inner surface, but more densely so at the base, stamens 9, all 4-celled, in 2 superposed pairs, outer 6 stamens 0.6 mm long, the cells opening introrse or the lower two lateral, the filament very short, 0.2 mm, pubescent; inner 3 stamens 0.8 mm long, the cells opening extrorse, glands present at the base of the short filaments, staminodia not seen, pistillode lacking or small, glabrous; receptacle shallow, pubescent inside; pistillate flowers, fruits, and cupules not known.

Ocotea leptophylla is easily recognized by its glaucous, thin leaves and its short, densely tomentellous inflorescences, both of which are confined to the recent growth. Rarely do a few older leaves persist, and those have a darker lower leaf surface. The indument on the lower leaf surface varies from sparse to almost lacking. The stamens have very short filaments; normally *Ocotea* stamens have distinct, narrow filaments, while the closely related genus *Rhodostemonodaphne* Rohwer & Kubitzki has sessile or almost sessile anthers. Most species of *Rhodostemonodaphne* have clearly larger flowers than those of *O. leptophylla*, but flowers of *R. parvifolia* Madriñan are almost as small as those of *O. leptophylla*. Still, anthers of *R. parvifolia* are sessile, while those of *O. leptophylla* have a distinct, short filament; this is the main reason to describe the new species in *Ocotea* rather than in *Rhodostemonodaphne*.

Phenology. Flowering August–September.

Paratype. PERU. **Depto. Amazonas:** Bagua Prov., Distr. Imaza, Comunidad de Kampaenza, *N. Jaramillo, R. Apanu & S. Katip 487* (HUT, MO).

Figure 7. *Ocotea vasquezii* van der Werff, the MO isotype, *Vasquez et al. 21739*.

7. Ocotea vasquezii van der Werff, sp. nov. TYPE: Peru. Depto. Amazonas: Prov. Bagua, Distr. Imaza, Yamayakat, 05°03′S, 78°20′W, 480 m, 9 Nov. 1996 (fl), *R. Vasquez, P. Stern, R. Rojas & R. Aguilar 21739* (holotype, HUT; isotypes, HBG, K, MO, NY, US). Figure 7.

Ocoteae atirrensi affinis, sed ramulis solidis, staminibus verticelli III subglabris vel glabris et cupulis parvis, planis recedit.

Treelets or small trees, to 10 m; twigs angular to terete, glabrous or with a few small, appressed hairs, solid, terminal buds rather densely appressed pubescent. Leaves 15–35 × 7.5–15 cm, elliptic to broadly elliptic, alternate, evenly distributed along the twigs, papyraceous, the base acute to obtuse, the margin flat, apex acute or acuminate, the acumen 1 cm long, glabrous on both surfaces, domatia absent, venation immersed on the upper surface, midrib prominently raised, lateral veins and tertiary venation raised on lower surface; lateral veins 7 to 10 pairs; petioles 10–16 mm long, glabrous, ridged above. Inflorescences 7–20 cm long, paniculate cymose, in the axils of leaves or cataphylls near the tips of the branches, moderately to sparsely puberulous. Flowers hermaphrodite, 2.5–3 mm diam., white or yellow, pedicels ca. 2 mm long; tepals erect or half-erect at anthesis, ca. 1.5 mm long, ovate, moderately to densely pubescent outside, when moderately pubescent, the inner tepals with a denser indument than the outer ones; stamens 9, all 4-celled, the cells in 2 superposed pairs, the outer stamens 6 with introrse cells, ca. 1.3 mm long, the filament as long as the anther, glabrous or with a few hairs along the filament, the inner 3 with extrorse cells, ca. 1 mm long, the anther slightly longer than the filament, glabrous or with a few hairs along the filament; globose glands present at

the base of the inner stamens; staminodia not seen; pistil glabrous, 1.5 mm long, the style a little longer than the ovary, stigma platelike; receptacle shallowly cup-shaped, glabrous inside. Fruits ellipsoid, 3.5 × 1.7 cm, cupule consisting of a small plate, 6 mm diam.; tepals deciduous in fruit.

Ocotea vasquezii is closely related to or belongs in the Ocotea insularis group. Its appearance is similar to *O. atirrensis* Mez & Donnell Smith from Central America; large, dark green drying, papyraceous leaves, copiously branched inflorescences, more or less erect tepals at anthesis, and the habit, a small tree. It differs from *O. atirrensis* in having solid stems, a small, platelike cupule (*O. atirrensis* has a small cup-shaped cupule) and in the absence of the tuft of hairs at the junction of filaments and anthers of the inner stamens. *Ocotea insularis* is less similar; it has domatia, decurrent leaf bases, firmer leaves drying a brighter green color in addition to having a cup-shaped cupule. *Ocotea atirrensis* is not known from South America, while *O. insularis* s.l. is not uncommon in Colombia, Ecuador, and to a lesser degree in Peru.

It is a pleasure to dedicate this species to Rodolfo Vasquez, the collector of the type, who through his publications and collections has greatly expanded our knowledge of the flora of Peru.

Phenology. Flowering October–November; fruiting June–August.

Paratypes. PERU. **Depto. Amazonas:** Prov. Bagua, Distr. Imaza, Tuyankuwas, comunidad de Yanat (fl), *E. Chavez 77* (MO); Distr. Imaza, Yamayakat (fr), *R. Vasquez, R. Ortiz-Gentry, N. Jaramillo & R. Apanu 18700* (MO), (buds), *R. Vasquez & N. Jaramillo 20264* (MO), (fl), *R. Vasquez, P. Stern, R. Rojas & R. Aguilar 21582* (MO), (fr), *R. Vasquez, A. Peña & E. Chaves 23945* (MO), (fl), *R. Vasquez, A. Peña & E. Chavez 24902* (MO); Distr. Imaza, Quebrada Kuzu (fr), *C. Diaz, S. Katip & A. Peña 6958* (MO); Distr. El Cenepa, Mamayaque (fr), *R. Vasquez, R. Rojas, A. Peña, E. Chavez & E. Quiaco 24569* (MO), (fr), *R. Rojas, A. Peña & E. Chavez 235* (MO).

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