

FOLIA TAXONOMICA 16. *DILKEA* (PASSIFLORACEAE) 1. *EPKIA*,
A NEW SUBGENUS AND FIVE NEW SPECIES
FROM WESTERN AMAZONIA AND THE GUIANAS

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ABSTRACT

An introduction to *Dilkea* (Passifloraceae) is given and the new subgenus ***Epkia*** and three new species from western Amazonia are described: ***Dilkea cuneata***, ***D. ovalis***, and ***D. tillettii***; as well as two new species from the Guianas: ***Dilkea lecta*** and ***D. vanessae***. The species of subgenus *Epkia* have branches where the first internode after the bud scales is much longer than subsequent ones. A key to the subgenera of *Dilkea* is also given.

RÉSUMÉ

Une introduction à *Dilkea* (Passifloraceae) est présentée et le sous-genre ***Epkia*** et trois espèces nouvelles d'Amazonie occidentale sont décrits: ***Dilkea cuneata***, ***D. ovalis*** et ***D. tillettii***; ainsi que deux espèces des Guyanes: ***Dilkea lecta*** et ***D. vanessae***. Les espèces du sous-genre *Epkia* ont des branches dont le premier entre-nœud après les écailles du bourgeon est plus long que les suivants. Une clé des sous-genres de *Dilkea* est aussi présentée.

RESUMEN

Se presenta una introducción al género *Dilkea* (Passifloraceae) y se describe el nuevo subgénero ***Epkia*** y tres nuevas especies de la Amazonia occidental: ***Dilkea cuneata***, ***D. ovalis*** y ***D. tillettii***; así como dos nuevas especies de las Guianas: ***Dilkea lecta*** y ***D. vanessae***. Las especies del subgénero *Epkia* poseen ramas con el primer entrenudo tras las escamas de la yema más largo que los siguientes. Se proporciona también una clave para los subgéneros de *Dilkea*.

INTRODUCTION

Dilkea was named by Masters (1871) to honor his late friend Charles Wentworth Dilke, II (1810–1869), made baronet by Queen Victoria in 1862. Dilke was a patron of arts and sciences. He died in St Petersburg while representing England at the horticultural exhibition held there. His father, C.W. Dilke, I (1789–1864), was a founder of the *Gardener's Chronicle*.

Dilkea, with 7 species, is a genus of tribe Passifloreae. The species can easily be separated from the other American genera of the tribe based on the following characters suite: flowers with 4 sepals, 4 petals, 8 stamens, 4 carpels and styles, stamens inserted at the bottom of the tube or halfway up the short, 0–2 mm long androgynophore, and seeds that are neither flattened nor ornamented (Masters 1872; Killip 1938; Holm-Nielsen et al. 1988; Tillett 2003; Feuillet & MacDougal 2007). *Dilkea* has a large lowland distribution in Panama and South America, from Colombia to Mato Grosso and from Peru to Amapá, but has been little collected.

Dilkea Mast., Trans. Linn. Soc. 27:627. 1871. TYPE SPECIES: *D. retusa* Mast., Trans. Linn. Soc. 27:628. 1871. (for typification, see Killip 1938).

Shrubs, small trees, or lianas. Leaves always simple and unlobed, margin entire; petiole with a basal pulvinus. Flowers white; sepals 4; petals 4; operculum and limen lacking; androgynophore shorter than wide or lacking; stamens 8, inserted on the bottom of the floral cup or on a 1–2 mm long androgynophore; ovary sessile or usually on a short 1–2 mm long gynophore, styles 4, united at base. Fruits yellow to orange, baccate, ovoid or globose, apically rounded or with a conical acumen, pericarp coriaceous, placentas 4, seeds

few, slightly bean-shaped or straight, not flattened, both ends similar, and sarcotesta thin, neither sclerified nor ornamented.

There is a great similarity in floral morphology within *Dilkea*; thus, one cannot separate species in the genus based on floral characteristics alone. Killip (1938) described *Dilkea parviflora* and commented: "I am inclined to think that further study and collecting will show that the four last species of the present treatment should be merged in one." Part of the problem, as suggested by Killip, resided in the small number of field collections, but instead of getting a synonymizing species as a result of better sampling, it appears that increased sampling is instead revealing new species.

Historically, nine species have been described within *Dilkea*. Masters (1871) published *D. acuminata* and *D. retusa* from Spruce's collections as new species within this new genus. Later, Masters (1872) described *D. wallisii* Mast., only after an illustration by Wallis, in his treatment of the Passifloraceae for *Flora Brasiliensis*. Few taxa have been published since then: *D. johannesii* by Barbosa Rodrigues (1888), *D. ulei* by Harms (1906), *D. glaziovii* (nom. nud.) by Glaziov (1909), *D. johannesii* var. *parvifolia* by Hoehne (1915), *D. parviflora* by Killip (1938), *D. magnifica* by Steyermark (1968), and *D. margaritae* by Cervi (1991). For more than 70 years, *D. ulei* has been treated as a synonym of *D. johannesii*. *Dilkea glaziovii* Mast. ex Glaz. (nom. nud.) was ignored, as *Mitostemma glaziovii* Mast. was considered to be in the right genus. Thus, at present seven species and one variety are circumscribed within *Dilkea*.

Most recently, Holm-Nielsen et al. (1988) placed *D. acuminata*, *D. magnifica*, and *D. wallisii* in synonymy of *D. retusa*, keeping *D. johannesii* and *D. parviflora* as separate species on the basis of petiole, pedicel, and gynophore sizes. They had not seen the type of *D. parviflora* and therefore based their identification on Killip's description. In fact, the material cited from Ecuador and the illustration mostly belong to a new species described below as *D. cuneata*.

Recent gifts of *Dilkea* collections to the Smithsonian Institution herbarium (US) revealed an unexpected diversity of vegetative morphology from the Loreto region in Peru and from the Guianas. This was confirmed in February 2009 by a visit to the herbarium collections at the Missouri Botanical Garden, especially rich in *Dilkea* from western Amazonia. Several species are woody vines that exhibit continuous monopodial growth and climb by the mean of strong tendrils apically 3-fid but early deciduous if they do not find a support. They represent what is considered here to be *Dilkea* subg. *Dilkea*. Another group of species, including the five new species described below, have similar flower and fruit morphology, but are small trees and exhibit a unique "modular" growth pattern that is rare in the Passifloraceae. The stems have strongly modular growth; the modules have at the base very short internodes with bud scales, then a long internode, and apically a swelling with short internodes, leaves, and inflorescences and ramifications. In most cases, the terminal meristem aborts and the growth continues through 1(–3) subterminal vegetative buds. This results in the overall appearance of a treelet with one stem and tiers of leaves, evidence of rhythmic or modular growth (field studies are needed to ascertain this) and sometimes a few modular branches 1–2 meters above ground. The plants are self standing and do not have tendrils.

In the text below, the word "lacking" means "not present in the taxon" and the expression "not seen" means "not present in the collections studied."

Subgenus *Epkia*

Dilkea* subg. *Epkia Feuillet, subg. NOV. TYPE: *Dilkea cuneata* Feuillet (see below).

Subgenus *Epkia* ad *Dilkea pertinens*; ab subgenere *Dilkea capreoli* nulli, internodio inter gemmae squamae et folii multo elongato et ceteris internodiis brevissimis distinctus.

The species of subgenus *Epkia* are mostly small trees (or shrubs or scandent shrubs). In each branch, the first node above the numerous acicular bud scales is much longer than the following internodes and there is no transition in leaf shape and morphology. The long internodes become shorter in the branches of higher ramification order. The large leaves are alternate in a terminal cluster on the club-shaped apical part of every growth unit. The flowers are similar to those of the other species of *Dilkea* by their color and general morphology.

Collection labels usually say “tree” or “small tree” with noted sizes from <1–8 m tall, but are occasionally labeled as “shrub.” I think this is indicative of a small size rather than a clumping habit of the plants. From pictures taken in the wild, the young plants 0.5–1.5 m tall have a main stem about 1 cm in diameter, showing many leaves in a few tiers. A 1.5-m tall plant of *Dilkea cuneata* photographed in Peru has 4 tiers of 7–20 large leaves. The lower is at ground level and the upper one is at the apex of the plant. The picture shows the whole plant and it is not possible to decide if the stem has a monopodial and rhythmic growth or a sympodial, modular growth. The branches, as demonstrated by herbarium specimens, are modular and little branched constructions. Each module exhibits a unique morphology. At the base are usually more than 10 acicular bud scales followed by a long internode and the apical part with short internodes bearing the leaves and axillary flowers or short inflorescences.

The name of subgenus *Epkia* honors through his initials Ellsworth Paine Killip (1890–1968) author of *The American Species of Passifloraceae* (1938), a two-volume masterpiece covering 366 species.

KEY TO THE SUBGENERA OF *DILKEA*

1. Lianas or scandent shrubs; tendrils trifold at apex; first internode shorter than or as long as the following internodes; stamens inserted at the bottom of the hypanthium. _____ ***Dilkea* subg. *Dilkea***
1. Small trees or shrubs or scandent shrubs; without tendrils; first internode much longer than the following internodes; stamens inserted on a 1–2 mm long androgynophore. _____ ***Dilkea* subg. *Epkia***

New species

Three new species from western Amazonia and two from the Guianas are here described in subgenus *Epkia*. More species of *Dilkea* are still undescribed.

1. *Dilkea cuneata* Feuillet, sp. nov. (**Fig. 1**). TYPE: PERU. JUNÍN: Cahuapanas, on Río Pichis, 340 m, 30 Jul 1929, fr., E.P. Killip & A.C. Smith 26730 (HOLOTYPE: US).

= *Dilkea parviflora* sensu Holm-Nielsen, Jørgensen & Lawesson 1988, in part; not Killip 1938.

Haec ad subgenere *Epkia* pertinens. Petiolo solo pulvino *Dilkeae tillettii* affinis. Lamina foliorum 25–50 × 10–15 cm, anguste oblanceolata, in dimidio inferiore anguste triangulari sed basi abrupte obtusa vel rotunda differt.

Treelets 1–5 m tall, monocaulous or branched. Plant glabrous throughout. Stems with a long internode 6–20 cm long (2.5 cm in Gentry *et al.* 54258), 0.4–0.6 mm thick, followed by short ones 0.2–0.5 cm long. Tendrils lacking. Stipules not seen. Leaves in terminal clusters; petiole reduced to the pulvinus 0.8–1.5 cm; blade narrowly cuneate to cuneate, 28–53 × 10–13.5 cm, short to long attenuate and then abruptly ending at base, apex acute to rounded and acuminate, acumen 5–15 mm long, margin entire, drying olive-green adaxially, yellowish brown abaxially, midrib and veins raised on both surfaces and yellowish when dry, 12–25 main veins on each side of the midrib. Inflorescences subterminal; pedicels about 5 mm long, elongating 7–10 mm under the fruit; bracts not seen. Flowers scented; hypanthium 0.5–1.8 cm long, funnel-shaped, 0.4–0.8 cm diam. at throat; sepals 4, white, oblong, 2.5–3.5 × 0.7–1 cm, obtuse to acute at apex, ciliate at margin; petals 4, white, oblong, 2.5–3.5 × 0.5–0.7 cm, obtuse to acute at apex, united at base, thinner than sepals; corona white, in 2 rows, outer one of free straight filaments, 1–3 cm long, seldom curled at apex, inner one membranous, lacinate at margin, laciniae floccose; androgynophore 1–2 mm long; stamens 8, filaments white, ca. 3 cm long, united at base for 1 mm, anthers sulphur yellow, 8 mm long, dorsifixed near base; gynophore 1–2 mm long; ovary ovoid, 5–6 mm long, styles 4, ca. 3.5 cm long, united for 1/3–1/2 of their length, stigmas capitate, sulphur yellow. Fruits spherical or slightly ovoid, apiculate, 2.5–3 cm long, yellow, pericarp coriaceous, about 0.5 mm thick, glabrous; seeds few, elongate, 1.5–1.7 × 0.7–0.8 cm, brown.

Distribution and ecology.—*Dilkea cuneata* is a western Amazonian species known from Ecuador (Morona-Santiago) and Peru (Junín, Loreto, and Pasco), in primary forest on terra firme, at 100–700 m of elevation. It is documented blooming in February, June, July, and November, and fruiting in January to April, June, July, and October.

Several specimens lacking flowers have been misidentified as belonging to the Theophrastaceae *Clavija*

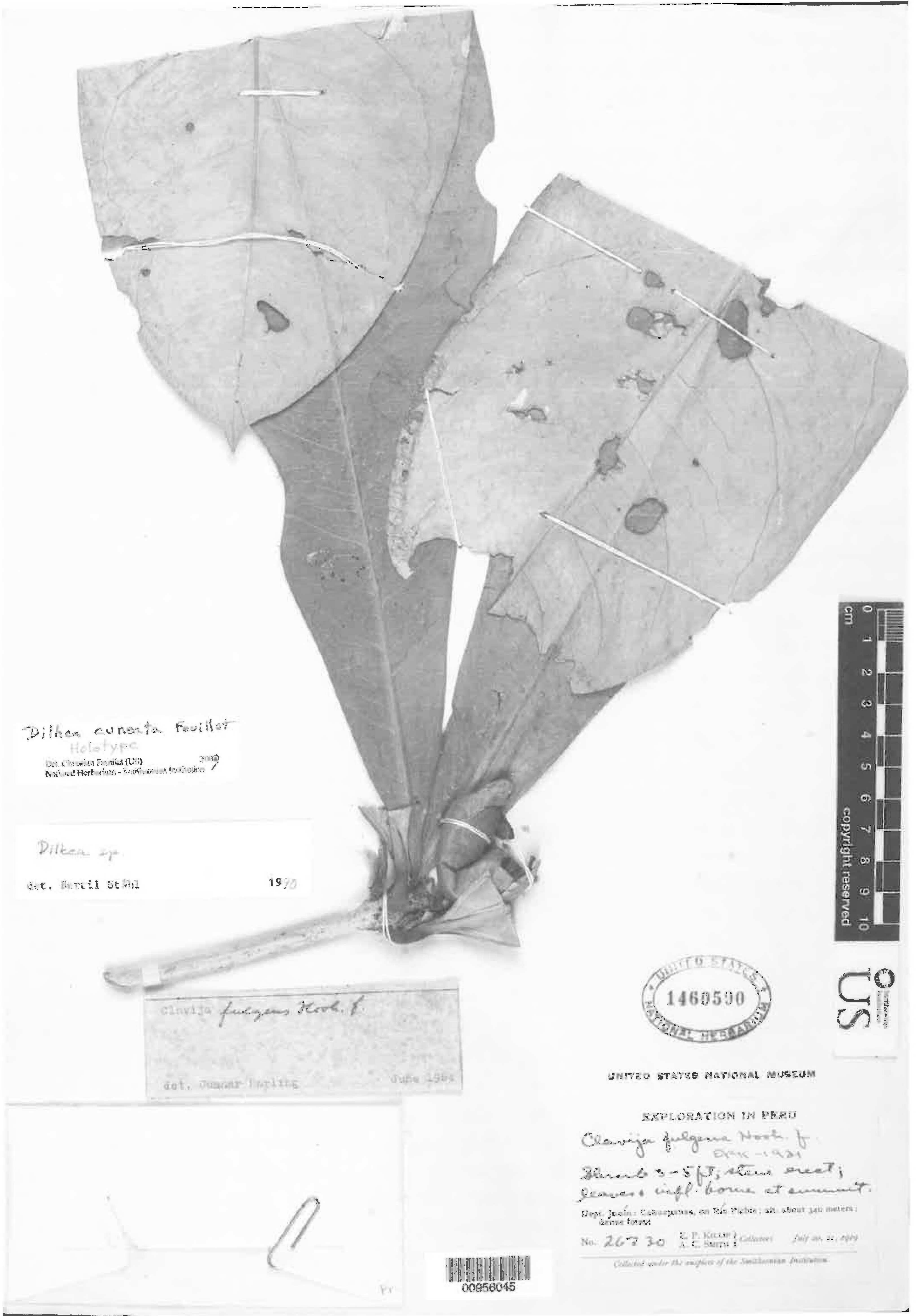


Fig. 1. *Dilkea cuneata*, holotype Killip & Smith 26730 (US).

fulgens Hook. f. (including by Killip in 1931), *Clavija lehmannii* Mez, *Clavija poeppigii* Mez, to *Passiflora* L., and even as a member of the Ranales. Some specimens have been identified as *Dilkea parviflora* (Holm-Nielsen et al. 1988) and *Dilkea wallisii* (Killip 1938) although those two *Dilkea* species are lianas. Nevertheless, *D. cuneata* clearly represents a new species from western Amazonia. Interestingly, *D. cuneata* has some of the largest leaves and of the smallest flowers in the genus. The growth units have a 15–25 cm long internode between the bud scales and the leaves and all the leaves are crowded toward the apex with internodes shorter than or equal to twice the diameter of the petioles. The congested inflorescence at the end of a branch is not terminal, but in fact consists of 2 or 3 axillary, subsessile, pauciflorous inflorescences. Aestivation of the two outer sepals is valvate, this pair surrounding the two inner sepals.

Etymology.—The epithet “cuneata” refers to the leaf blades basal half that are long triangular.

PARATYPES: **ECUADOR. Morona-Santiago:** Taisha, 500 m, 14 Feb 1962, fl. & fr., P.C.D. Cazalet & T.D. Pennington 7771 (B, K, NY, US); 8–10 km NNW of military camp, 2°21'S, 77°31'W, 650–700 m, 16 Jun 1980, fr., J. Brandbyge & E. Asanza 31937 (AAU). **PERU. Loreto:** Biological Station Río Blanco, 4°20'S, 72°45'W, 150 m, 12 Sep 1985, fr., R. Vásquez, J. Ruiz & N. Jaramillo 6714 (MO, MYF); Maynas, Las Amazonas, Explornapo Camp, 3°20'S, 72°55'W, 100–140 m, 3 Mar 1991, fr., J.J. Pipoly, R. Vásquez, N. Jaramillo, C. Grández, J. Ruiz & R. Ortiz 14165 (MO); Maynas, Las Amazonas, Explornapo Camp, 3°15'S, 72°54'W, 140 m, 20 Nov 1991, bud, R. Vásquez 17568 (MO); Maynas, Las Amazonas, Quebrada Sucusari, Explornapo Camp, 3°20'S, 72°55'W, 140 m, 17 Apr 1991, fr., R. Vásquez & N. Jaramillo 16095 (MO); Maynas, Iquitos, Alpahuayo, 73°30'W, 4°10'S, 150 m, 6 Jun 1985, fl., R. Vásquez, J. Ruiz & N. Jaramillo 6608 (HUA, MO, MYF, US); Maynas, Iquitos, Alpahuayo, 73°30'W, 4°10'S, 150 m, 24 Mar 1992, st., R. Vásquez, S.A. Vásquez & N. Jaramillo 18135 (MO); Maynas, Iquitos, Santa Maria de Ojeal, 10 km below mouth of Río Nanay, 16 Jun 1976, fr., S. McDaniel & M. Rimachi 20725 (MO); Maynas, Yanamono, Río Amazonas, 3°25'S 72°50'W, 130 m, 12 Jun 1986, fr., A.H. Gentry, R. Vásquez & N. Jaramillo 54258 (MO); vicinity of Requena, Fundo Canama, E of Río Ucayali, 17 Jul 1961, bud, M.E. Mathias & D. Taylor 5552 (F, LA, MO); Maynas, Las Amazonas, Río Sucusari, 3°20'S 72°55'W, 116 m, 7 Nov 1989, fl., R. Vásquez & N. Jaramillo 13077 (MO, MYF, P). **Pasco:** Oxapampa, Palcazu Valley, Iscozacín, 75°15'W, 10°12'S, 400 m, 26 Jan 1984, st., R.B. Foster 9545 (MO).

2. *Dilkea lecta* Feuillet, sp. nov. (Fig. 2). TYPE: FRENCH GUIANA: near Organabo, primary forest on white sand, 20 Jun 1995, fr., D. Loubry 2422 (HOLOTYPE: US; ISOTYPES: CAY, MPU).

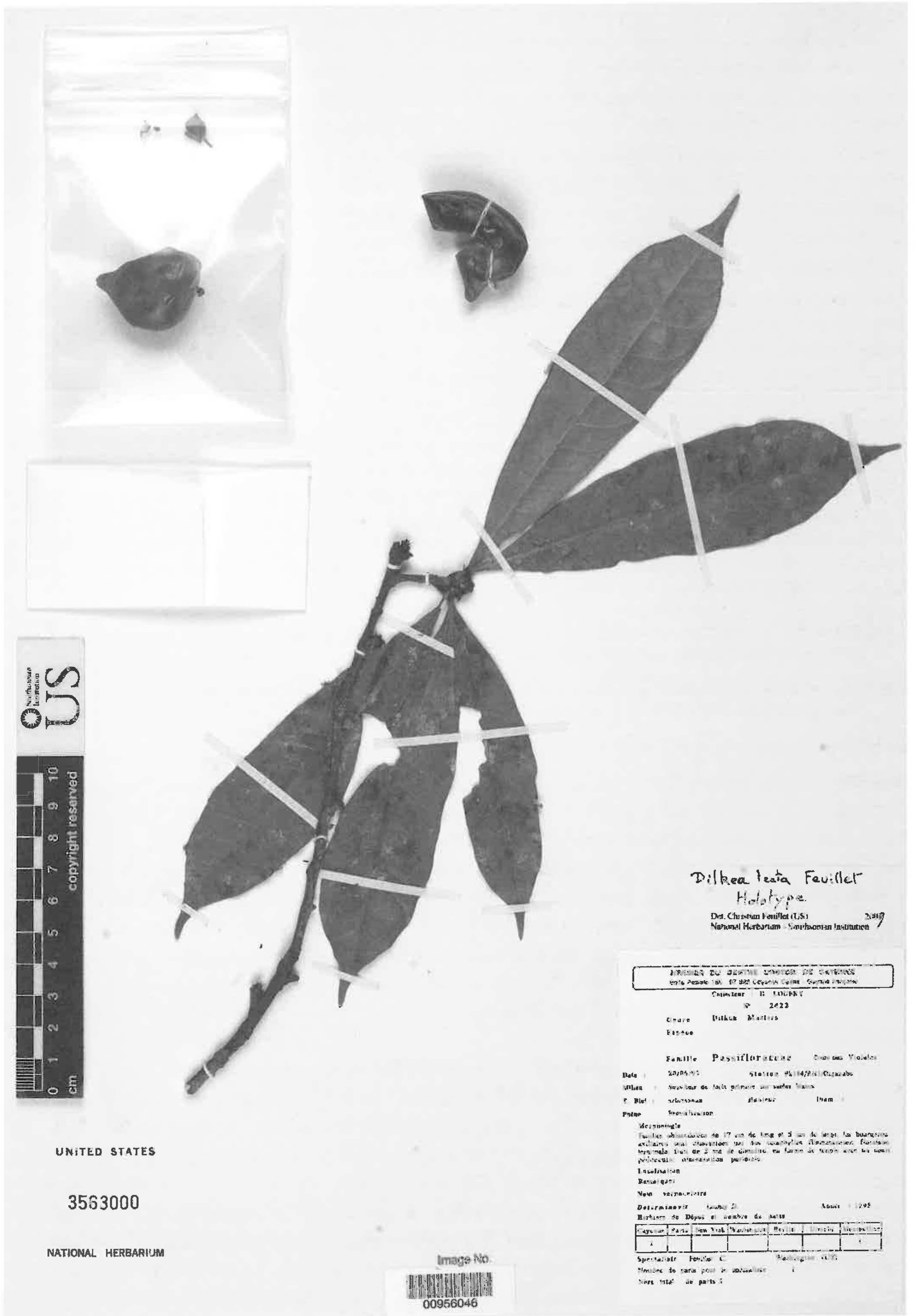
=? *Dilkea johannesii* var. *parvifolia* Hoehne, Comm. Linh. Tel. Matto Grosso ao Amazonas, Anexo 5, Bot. pt. 5:73; pl. 111. 1915. TYPE: BRAZIL. MATO GROSSO: Rio Juruena, Comm. Linh. Tel. Matto Grosso Expedition 5433 (SP).

Haec ad subgenero *Epkia* pertinens. Lamina foliorum parva, angusta, 8–14 × 2–4 cm differt.

Treelets with branches sometimes passive climbers, up to 3 m tall. Whole plant glabrous. Stems with a long internode 1.3–5 cm long, followed by short ones about as long as once their diameter or less. Vegetative bud ca. 2 mm above the leaf axils, bud scales acicular to narrow-triangular 3–5 mm long. Tendrils lacking. Stipules not seen. Leaves in terminal clusters; petiole usually reduced to the pulvinus, occasionally up to 0.6 cm long, glands not seen; blade narrow oblanceolate, cuneate, 8–17 × 2–5 cm, long attenuate, apex acute, long acuminate, margin entire, midrib and veins raised on both surfaces and yellowish when dry, 8–12 main veins on each side of the midrib. Inflorescences subterminal; pedicels not seen. Flowers not seen (see below); gynophore 1–2 mm long under the fruit; styles 4, united only at base. Fruits spherical, apiculate, 3–3.5 × 2.5–3 cm, color not documented, pericarp coriaceous, about 0.5 mm thick; developed seeds not seen, ovules flat, 2 per placenta.

Distribution and ecology.—*Dilkea lecta* is known from the Lely Mountains in eastern Surinam and from central and northwestern French Guiana, and Brazil (Matto Grosso). The ecology is different between the four collections. *Loubry 2422* was collected in primary forest on white sand, on the coastal plain, at low elevation (according to the map the whole area is below 50 m); *Larpin 1058* is from low forest island on the northern slope of a granite outcrop (inselberg) at 340 m; *Mori & Bolten 8541* was collected between 2 plateaus of a mountain range between 500 and 700 m, and *Granville & Crozier 13648* is from middle to high ridge forests on schist, quartzite, and conglomerate at 400 m. The two localities in French Guiana share a low amount of available water due to the texture of the soil, white sand without visible amount of humus causing excellent and fast drainage and maximum light reflection toward leaf undersurface in one case and the dark granite slope preventing water storage and favoring evaporation.

Dilkea lecta is distinguished from *D. cuneata* by its leaves three times smaller and by the internode modu-



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Dilkea lecta Feuillet
Holotype
Det. Christian Feuillet (US)
National Herbarium - Smithsonian Institution

JARDIN DU BOTANICUM LÉONARD DE VIGNY 1075 Route 101 - 07 000 Cayenne Guayane Française					
Cultivateur : H. LOUBRY					
N° 2422					
Genre : <i>Dilkea</i> Martius					
Espèce :					
Famille : PASSIFLORACEAE Dioscoreales Violales					
Date :	20/04/95 Station 04/04/2001/Cayenne				
Altitude :	Niveau de la mer (niveau des terres basses)				
P. Biol. :	urbaines	pluviales	Ihm		
Prote. :	Reproduction				
Description Fleur : diamètre de 17 cm de long et 5 cm de large. Les bractées axillaires sont érigées sur des pédicelles érigés. Fruit : baccin tétraédrique de 2 cm de diamètre en forme de ballon avec les lobes pédonculés, réticulation persistante.					
Localisation Remarque :					
Nom vernaculaire					
Détecteur : Loubry H. Année : 1995					
Herbier de dépôt et nombre de parts					
Herbier	Parts	Herb. Acad. Bot. Berlin	Herb. Bot. Univ. Genève	Herb. Bot. Univ. Paris	Herb. Bot. Univ. Zürich
	1				
Spécialité : Feuilles et fruits					
Nombre de parts pour la spécialité : 1					
Nombre total de parts : 1					

FIG. 2. *Dilkea lecta*, holotype Loubry 2422 (US).

larity so characteristic of subg. *Epkia*. While this branching pattern is less obvious than in the other species of subgenus *Epkia*, it is still visible. Plants of *Dilkea lecta* are shrubs likely with one main trunk (*Granville & Crozier 13648* and *Loubry 2422*), yet able to passively climb on small trees (*Larpin 1058* and *Mori & Bolten 8541*).

Hoehne (1915) gave a brief description and a diagnostic illustration of *Dilkea johannesii* var. *parvifolia*. This is most likely a synonym of *D. lecta*. Based on Hoehne's description one can infer the following: leaf blades convex between veins, with small red dots underneath, pedicels slightly more than 1 cm long, flower with hypanthium slightly asymmetric at base, sepals and petals of similar length, corona in 2 rows, at least the inner one inserted low in the hypanthium, outer row of filaments ligulate, slightly exerted (more so than the stigmas), inner one membranous at base, filamentose at apex, filamentose segments bare at basal 1/3 and upper 2/3 papillose; stamens shorter than the petals, inserted on a short androgynophore; short gynophore; ovary wide elliptic, styles united for 2/3 of their length (unlike *Mori & Bolten 8541*), stigmas spherical. Thus, based on these features, this species fits within my current circumscription of *D. lecta*.

Etymology.—The specific epithet "lecta," Latin for gathered, refers to the leaves grouped at the apex of the branches.

PARATYPES: **SURINAM**: Lely Mountains, 175 km SSE of Paramaribo, 500–700 m, 19 Oct 1976, fr., S.A. Mori & A. Bolten 8541 (NY, US). **FRENCH GUIANA**: Montagne des Nouragues Reserve, 4°3'N, 52°42'W, 340 m, 20 Apr 1992, st., *D. Larpin 1058* (CAY, US); Montagne de la Trinité, zone sud, Mana River basin, 4°34'N, 53°27'W, 400 m, 16 Jan 1998, fr., J.-J. de Granville & F. Crozier 13648 (CAY).

3. *Dilkea ovalis* Feuillet, sp. nov. (**Fig. 3**). TYPE: PERU. LORETO: Maynas, Las Amazonas, 72°33'W, 3°25'S, 120–130 m, 25 Mar 1991, fr., C. Grández, G. Criollo & W. Criollo 2291 (HOLOTYPE: MO).

Haec ad subgenero *Epkia* pertinens. Lamina foliorum elliptica, lata, 10–18.5 × 5–9 cm differt.

Shrub or small tree, 4–6 m tall; plant glabrous throughout. Stems with a long internode 3.5–12 cm long, followed by short ones 0.1–0.3 cm long. Tendrils lacking. Stipules not seen. Leaves in terminal clusters; petiole 0.5–2.3 cm long, pulvinate for less than half its length, glands not seen; lamina elliptic to slightly obovate, 7.5–25 × 3.5–10 cm, widely acute and then short cuneate at base, apex rounded with acumen 0.6–1.2 cm long, margin entire, minutely frilled when dry, midrib and veins raised on both surfaces, 6–12 main veins each side of the midrib. Inflorescences subterminal; pedicels under fruit 7–9 mm long; bracts not seen. Flowers not seen; gynophore under fruit about 1 mm long. Fruits spherical or slightly ovoid, apiculate, about 2.5 cm diam., yellow, pericarp coriaceous, about 0.5 mm thick, glabrous; seeds few, elongate, 1.8–2 × 0.8–0.9 cm, brown.

Distribution and ecology.—The three known collections have been made in northeastern Peru, Region of Loreto, Province of Maynas, at 140–180 m. It was in flower buds in July and fruiting in March.

Dilkea ovalis is easily set apart from other species in subgenus *Epkia* by leaf shape. In *D. ovalis*, the laminas are wide elliptic rather than cuneate or narrow elliptic. The pulvinus is a third to half the petiole total length. In the other long-petioled species, *D. vanessae*, the pulvinus represents less than the fifth of the total length.

Etymology.—This species is named *ovalis* because of the oval shape of its leaf blades.

PARATYPE: **PERU. Loreto**: Maynas, Iquitos, Allpahuayo–IIAP, 73°25'47"W, 3°57'19"S, 140 m, 26 Apr 1997, st., R. Vásquez, O. Phillips, R. Rojas & A. Peña 23599 (MO); Maynas, Iquitos, Allpahuayo–IIAP, 73°30'W, 4°10'S, 150–180 m, 8 Jul 1991, fl. Buds, R. Vásquez & N. Jaramillo 17188 (MO).

4. *Dilkea tillettii* Feuillet, sp. nov. (**Fig. 4**). TYPE: PERU. LORETO: Florida, Río Putumayo at mouth of Río Zubineta, ca. 200 m, Mar–Apr 1931, fl., G. Klug 2100 (HOLOTYPE: US; ISOTYPES: MO, S).

= [*Dilkea grandifolia*] Killip ex Tillett, invalid: in sched., handwriting unknown 1986 on *Gentry et al. 37992* (F) "Tillett" and Tillett's handwriting 1993 on G. Klug 2100 (MO) "ined. Isotypus."

Haec ad subgenero *Epkia* pertinens. Petiolo parte non-tumida carente *Dilkeae cuneatae* affinis. Lamina foliorum 34–35 × 11–12.5 cm, oblanceolata, in dimidio inferiore e basi triangulari differt.

Shrub or small tree 1–5 m tall, monocaulous or branched. Branches about 5 mm thick, with a long inter-

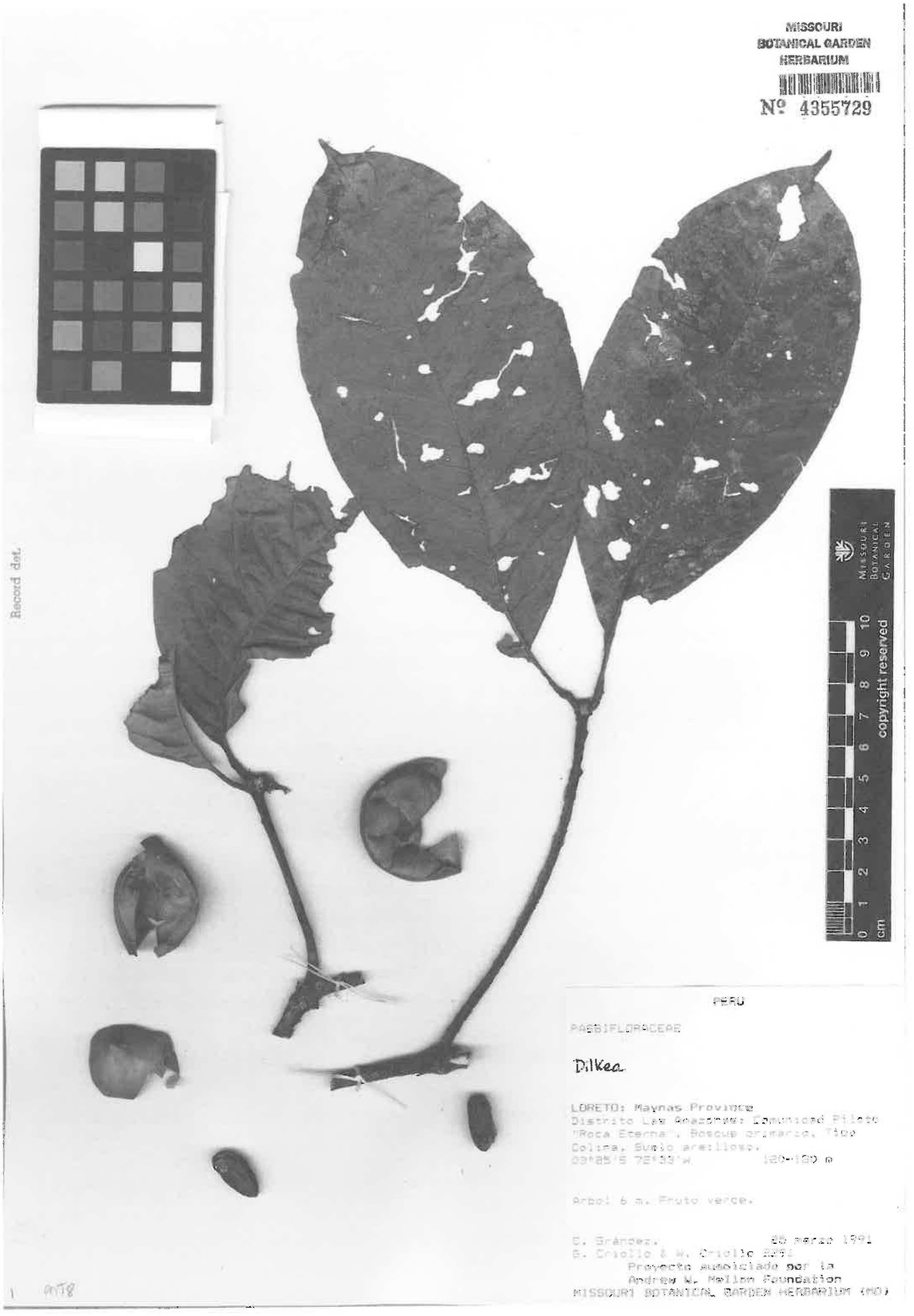


Fig. 3. *Dilkea ovalis*, holotype Grández et al. 2291 (MO).

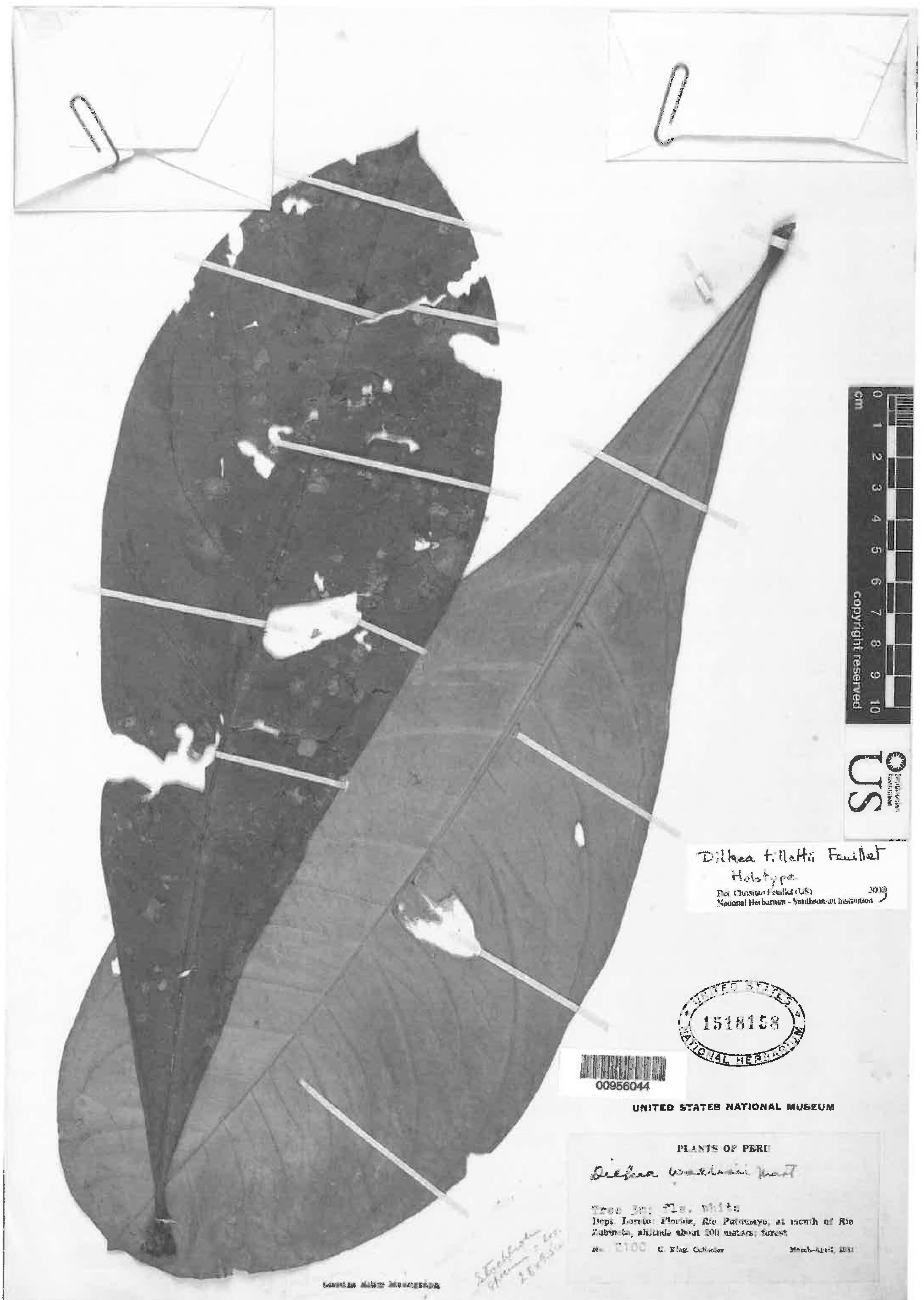


FIG. 4. *Dilkea tillettii*, holotype Klug 2100 (US).

node, the only partially visible >12.5 cm long (Gentry *et al.* 37992 (F)), followed by short ones 0.2–0.5 cm long. Tendrils lacking. Stipules not seen. Leaves in terminal clusters; petiole 1.5–3 cm long, usually reduced to the pulvinus, glands not seen; lamina long oblanceolate, 35–43 × 12–15 cm, basal half long triangular regularly narrowing to the short pulvinate petiole, rounded at apex, blunt or with an acumen up to 1.5 cm long, margin entire, midrib and veins raised on both surfaces and drying more or less the same color as the rest of the leaves, 8–12 main veins each side of the midrib. Inflorescences subterminal; pedicels 0.5 cm long, 1 cm under the fruit, joined 0.2–0.3 cm from the base; bracts not seen. Flowers white, with a scent of lilac (Barrier 84); hypanthium 17–19 mm long, perianth separating and hypanthium getting shorter during late anthesis; sepals and petals 20–35 mm long, about 5 mm wide, two outer sepals green outside, white inside, aestivation valvate, two inner sepals white on both surfaces, aestivation valvate; corona white in two rows 3.5–4 cm long, inserted near base of hypanthium, tubular at base, outer row filaments slightly wavy, inner series heavily branched in the uppermost 1 cm, lateral segments very thin and tightly curled; stamens inserted in the bottom on the hypanthium, filaments about 3 cm long, anther 11 × 1 mm, apiculate, base 2 mm sagitate; gynophore about 2 mm long; ovary 5 mm long, tapering at base, wider at apex, styles 3.5–4 cm long, stigma capitate. Fruits globose, 2.5–3 cm diam., apiculate, yellow, pericarp coriaceous, about 0.5 mm thick, glabrous; seeds few, elongate, 1.8 × 0.8 cm, brown.

Distribution and ecology.—*Dilkea tillettii* is known from Colombia (Amazonas & Caqueta), Ecuador (Morona-Santiago, Napo & Pastaza), and Peru (Loreto & Pasco) between 120–700 m. It was blooming in January and March–April, and fruiting in June to September and November.

Dilkea tillettii has obovate leaves that are cuneate in the basal half unlike *D. lecta* and *D. ovalis*. It is distinct from the other large-leaved species, *D. cuneata*, by the shape of the petioles and the shape of the leaf base. Although the pulvinus constitutes more than half the length of the petiole, it does not always encompass the entire petiole. The base of the lamina is the continuation of the narrow triangular leaf shape, neither suddenly ending as in *D. cuneata* nor decurrent. *Dilkea lecta* also has petioles more or less reduced to the pulvinus, but its laminae are at most half the size of those in *D. tillettii*.

Etymology.—*Dilkea tillettii* is named to honor Steve Tillett, botanist in Caracas (at MYF), and a specialist on the Passifloraceae who recognized this was a new species.

PARATYPES: **COLOMBIA. Amazonas:** Leticia, Amacayacu National Park, Quebrada de Agua Pudre, 3°47'S, 70°15'W, 200–220 m, 15 Nov 1991, fr., J.J. Pipoly 16039 (MO). **Caqueta:** Araracuara, troche a Yari, 0°25'S 72°20'W, 200 m, 23 Jan 1989, st., A.H. Gentry & M. Sanchez 64981 (MO). **ECUADOR. Morona-Santiago:** Taisha, 8–10 km NNW of military camp, 2°21'S, 77°31'W, 650–700 m, 16 Jun 1980, fr., J. Brandbyge & E. Asanza 31937 (AAU); **Napo:** along Rd. between Coca & Río Tiguino, 76°52'W, 1°10'S, 300 m, 1 Mar 1992, fr., T.B. Croat 72576 (MO); 77°45'W, 0°59'S, 200–300 m, 12 Apr 1997, fr., K. Romoleroux, M. Bass, G. Villa & C. Vriesendorp 2841 (MO, QCA); Yasuni National Park, 0°55'S, 76°11'W, 200 m, 26 May–8 Jun 1988, fr., C. Cerón & F. Hurtado 4258 (MO). **Pastaza:** Lorocachi, 3 km S of the military camp, 1°38'S, 75°58'W, 200 m, 23 May 1980, fr., J. Brandbyge & E. Asanza 30659 (AAU). **PERU. Loreto:** Mariscal Ramón Castilla, Río Yuvinetto, affluent of the Putumayo, territory of the Secoya Indians, in a purma near Bellavista, 17 Jan 1978, fl., S. Barrier 84 (P); Maynas, Las Amazonas, 72°33'W, 3°25'S, 120–130 m, 17 Aug 1991, fr., C. Grández & N. Jaramillo 2847 (MO, MYF); Maynas, Mishana, Río Nanay, 130 m, 20 Sep 1978, fr., C. Díaz & N. Jaramillo 577 (MO); Maynas, Río Gueppi, northernmost tip of Peru, 200 m, 15 May 1978, fr., A.H. Gentry, C. Díaz & N. Jaramillo 21931 (MO); Maynas, Yanomono, Río Amazonas, between Indiana and mouth of Río Napo, 3°28'S, 72°48'W, 130 m, 27 Jul 1982, fr., A.H. Gentry, D. Alfaro & N. Jaramillo 37992 (F, MO). **Pasco:** Shiringamazu, ca. 20 km S of Iscozacín, Río Palcazu Valley, 10°20'S, 75°10'W, 300 m, 9 Jul 1988, st., A.H. Gentry, C. Díaz & O. Phillips 63506 (MO).

5. *Dilkea vanessae* Feuillet, sp. nov. (Fig. 5). TYPE: FRENCH GUIANA. Pic Matecho, camp near the summit, 500 m, 14–15 Dec 2000, fr., V. Hequet 1000 (HOLOTYPE: US; ISOTYPE: CAY).

Haec ad subgenero *Epkia pertinens*. Petiolo basi cum pulvino, lamina foliorum 20–21.5 × 7–8.5 cm, oblanceolata, cuneata differt.

Treelet 0.8–2 m tall, monocaulous or branched. Stems with a long internode 2–20 cm long, followed by short ones 0.2–0.3 cm long. Tendrils lacking. Stipules not seen. Leaves in terminal clusters; petiole 2–2.5 cm long, including the pulvinus 0.3–0.4 cm long, glands not seen; blade oblanceolate, cuneate, 19–21 × 7–8 cm, basal half triangular and then with a very narrow wing along the petiole until the swollen base, apex rounded and long-acuminate, margin entire, midrib and veins raised on both surfaces and light brown when dry, 7–9 main veins on each side of the midrib. Inflorescences subterminal; pedicels ca. 6 mm long in bud, joint



Dilkea vanessae
Feuillet
ISOTYPE

Det. Christophe Feuillet (USA) Nov. 2009
National Herbarium - Smithsonian Institution

Herbier de GUYANE - CAY

BP 165 F-97323 CAYENNE Cedex

PASSIFLORACEAE

Dilkea

Det. Hequet V.

Année:

GUYANE FRANÇAISE

Par. Matacho

Long: ''

Lat: ''

Alt: m

Fruits

iorité

arboresc.

Circ: cm

D: cm

HI: m

Feuilles à pétiole renflé. Fruits ronds jaunes apiculés.

Coll.: Hequet V.

N° 1000

Date: 14-15 Déc.

Dupl: CAY, US

2000
c. Feuillet-2007

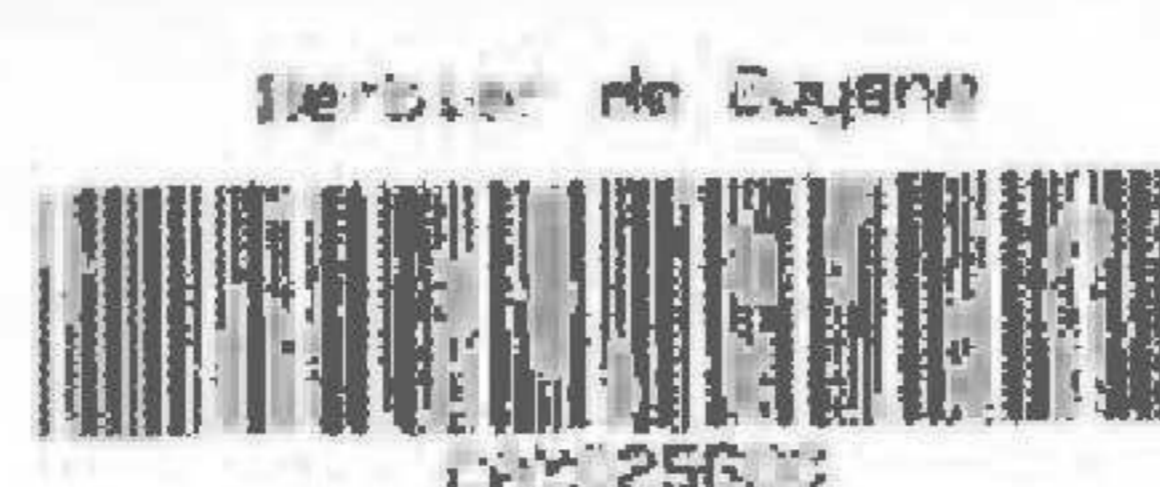


Fig. 5. *Dilkea vanessae*, isotype Hequet 1000 (CAY); petiole 25 mm long.

2 mm from the base; bracts not seen. Bud 1.8 × 0.9 cm. Flowers not seen; under the fruit, androgynophore and gynophore each 1 mm long. Fruits spherical, apiculate, about 3.5 × 3 cm, yellow, pericarp coriaceous, 0.2–0.3 mm thick, glabrous; seeds up to 8, elongate, 1.3–1.6 × 0.5–0.7 cm, reddish brown.

Distribution and ecology.—The only known collections were made in the rainforest, on Pic Matecho and Montagne des Nouragues, granitic outcrops in central French Guiana. They were fruiting in November and December (see discussion).

Dilkea vanessae has obovate leaves with a cuneate basal half.

The holotype label at US does not provide information about the date of collection. Vanessa Hequet, the collector of the holotype, noted that it was collected on 14 Dec 2000 (pers. comm.), but AUBLET, the database of the herbarium in Cayenne (CAY), lists the collection date as 15 May 2001. According to AUBLET and the few specimens I saw, *Hequet 972 to 1003* were all collected on 15 Dec 2000 at the same locality. Thus, the date 15 May 2001 represents an error in data entry.

Etymology.—The specific epithet is named after the collector of the type specimens, Vanessa Hequet, currently at NOU.

PARATYPES: **FRENCH GUIANA:** Drogue Zone 5, near Road Régina - St Georges, 4°2'N, 52°1'W, 100 m, 25 Nov 1995, fr., G. Cremers & J.-J. de Granville 14236 bis (CAY); Mont Chauve, trail between base camp and the creek, 3°49'N, 52°44'W, 100m, 21 Apr 1997, fr., G. Cremers & F. Crozier 15124 (CAY); Montagne des Nouragues, 52°42'W, 4°3'N, 7 Nov 1994, fr., B. Riéra & A. Joly 2031 (CAY, P, U); Montagne des Nouragues, 52°42'W, 4°3'N, 150 m, 24 Oct 1995, fr., O. Poncey 973 (P).

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REFERENCES

- BARBOSA RODRIGUES, J. 1888. Ordo Passifloreae Endl. *Vellozia* 1, ed. 1:24–31; ed. 2 (1891):21–31.
- CERVI, A.C. 1991. A study on Brazilian Passifloraceae, *Dilkea margaritae* A.C. Cervi, spec. nov. *Candollea* 46: 61–63.
- FEUILLET, C. AND J.M. MACDOUGAL. 2007. Passifloraceae. In: K. Kubitzki, The families and genera of vascular plants. Springer, Berlin. 9:270–281.
- GLAZIOU, A. 1909. *Plantae Brasiliae centralis a Glaziou lectae*. Liste des plantes du Brésil central recueillies en 1861–1895. *Bull. Soc. Bot. France* 56, Mém. 3d:297–392.
- HARMS, H. 1906. Passifloraceae. In: E. Ule, II. Beiträge zur flora der Hylaea nach den Sammlungen von Ule's Amazonas-Expedition. *Verh. Bot. Vereins Prov. Brandenburg* 48:184–186. ["1906," publ. 8 Mar 1907]
- HOEHNE, F.C. 1915. Passifloraceae. *Comm. Linh. Tel. Matto Grosso, Anexo* 5:72–111.
- HOLM-NIELSEN, L.B., P.M. JØRGENSEN, AND J.E. LAWESSON. 1988. Passifloraceae. In: G. Harling and L. Andersson (eds.), *Flora of Ecuador* 31:1–129.
- KILLIP, E.P. 1938. The American species of Passifloraceae. *Publ. Field Mus. Nat. Hist., Bot. Ser.* 19:1–613.
- MASTERS, M.T. 1871. Contributions to the natural history of the Passifloraceae. *Trans. Linn. Soc.* 27:593–645.
- MASTERS, M.T. 1872. Passifloraceae. In: C.F.P. von Martius, ed. *Fl. Bras. Soc.* 13, pt. 1:530–654.
- STEYERMARK, J.A. 1968. Nuevas especies de la Sierra Imataca y Altiplanicie de Nuria del Estado Bolívar y del Territorio Delta Amacuro. *Passifloraceae. Acta Bot. Ven.* 3:186–190.
- TILLET, S.S. 2003. Passifloraceae. In: P.E. Berry, K. Yatskievych, and B.K. Holst, eds. *Fl. Ven. Guayana*, vol. 7:625–667.