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**A Revision of *Lepinia* (Apocynaceae), with Description of  
a New Species from the Marquesas Islands**

DAVID H. LORENCE<sup>1</sup> AND WARREN L. WAGNER<sup>2</sup>

ABSTRACT

A fourth species of the anomalous Pacific genus *Lepinia* (Apocynaceae, subfamily Plumerioideae, tribe Alyxieae) is described from the Marquesas Islands. The new species, *Lepinia marquisensis* Lorence & W. L. Wagner, differs from the other species in having elongate-obconical, weakly quadrangular fruiting carpels, corolla tube ca. 25 mm long, and the leaf blades broadest above the middle. The 4–5 uniovulate carpels are congenitally syncarpous at the base and become postgenitally permanently fused at the apex with an apocarpous region in between, making *Lepinia* relatively isolated—and unique—in the family.

INTRODUCTION

During the 1988 Fatu Hiva Expedition to the Marquesas Islands (Iles Marquises) in French Polynesia, an unusual and obviously undescribed species of *Lepinia* Decne. was collected by Steve Perlman on Fatu Hiva, the southernmost island in the archipelago. The Fatu Hiva Expedition was a joint, multi-institutional collaborative effort to explore, study, and document the biota of this remote and isolated archipelago in the Territory of French Polynesia. Collaborating institutions included the Bishop Museum (Honolulu, Hawaii), the National Tropical Botanical Garden (Lawai, Hawaii), the Smithsonian Institution (Washington, DC), and ORSTOM (Papeete, Tahiti). This revision is one of a series of precursor papers for two floristic projects currently being undertaken for the region: the *Vascular Flora of the Marquesas Islands* (Warren L. Wagner and David H. Lorence, co-principal investigators) and the *Flore de la Polynésie française* (Jacques Florence, principal investigator). Recent publications relevant to the latter project include revisions of genera and descriptions of new taxa (Florence, 1985, 1986, 1990; Florence & Stuessy, 1988).

The unique fruit morphology and anomalous distribution of *Lepinia* enticed us to undertake this revision, particularly since the only recent taxonomic treatment of the genus was published by Hosokawa in 1934, which was a superficial conspectus even at that time. Specimens of the genus, which probably represent the bulk of material collected, were examined from the following herbaria: BISH, K, MO, PTBG, P, PAP, TAI, US.

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## TAXONOMIC HISTORY

*Lepinia* was described by J. Decaisne in 1849 based on the species *L. taitensis*. Decaisne named the genus after its collector, Jules Lépine, a pharmacist who collected specimens of this species from the Society Islands of Tahiti and Moorea in 1847. Decaisne suggested the genus was allied to *Alyxia* R. Br. and *Vallesia* Ruiz & Pav. in the tribe "Plumeriées", based on its apocarpous carpels and seeds with densely sulcate endosperm.

Hemsley (1905) described a second species, *Lepinia solomonensis*, based on collections from the Solomon Islands of San Cristobal and New Georgia. Hemsley remarked that his species was allied to *L. taitensis* and that both species displayed a remarkably disjunct distribution pattern, although he suggested no phylogenetic relationships for the genus. A third species, *L. ponapensis*, was described from Ponape by Hosokawa (1934).

## AFFINITIES

Hosokawa (1934) suggested that *Lepinia* was allied to the genera *Pleiocarpa* Benth. from tropical Africa and *Notonerium* Benth. from southern Australia, possibly because these are the only genera in the Apocynaceae with more than two carpels. *Pleiocarpa* belongs to the tribe Pleiocarpeae of the subfamily Plumerioideae, and *Notonerium*, known from only a single collection made over a century ago, actually belongs to the Boraginaceae (Crisp, 1983).

Pichon (1949) later accommodated *Lepinia* and the East Malesian genus *Lepiniopsis* Valetton as members of the subtribe Alyxiinae Pichon in the tribe Rauvolfieae Pichon of subfamily Plumerioideae. Balgooy (1966) stated that *Lepinia* was an isolated genus on account of its peculiar fruit, consisting of three to five separate carpels fused basally and connate apically forming a basket-like configuration.

The most recent treatment of taxa of Apocynaceae above the genus level places *Lepinia* in subfamily Plumerioideae, tribe Alyxieae, subtribe Alyxiinae (Leeuwenberg, 1994). This placement seems appropriate for a number of reasons. In *Lepinia* the entire style head appears to be receptive to pollen tube penetration and corresponds to Schick's (1980) "*Plumeria*-type," a primary characteristic of Plumerioideae and one considered to be the most simple and plesiomorphic for the entire family. Further studies on gynoecial development in *Lepinia marquisensis* have revealed that the carpels are congenitally syncarpous at the base and postgenitally fused at the apex, with an apocarpous region in between (Endress et al., 1997). The apocarpous region undergoes extreme elongation during fruit development, forming the peculiar, stipitate fruit. Floral and fruit anatomy support placement of *Lepinia* in tribe Alyxieae, subtribe Alyxiinae (M. Endress, pers. comm. 1995). *Lepinia* clearly is closely related to two other genera in Alyxieae: *Alyxia* Banks ex R. Br., a genus of about 120 species ranging from Asia through the Pacific, and *Pteralyxia* K. Schum., with two species endemic to the Hawaiian Islands (M. Endress, pers. comm. 1995).

Although the exact relationships within the tribe are unclear, a southern Pacific

origin of *Lepinia* appears likely. Subsequent differentiation of the genus has occurred along two lines: dispersal into Micronesia and differentiation into *L. ponapensis*, and a separate eastward dispersal to French Polynesia followed by differentiation into the closely related *L. marquisensis* and *L. taitensis*. This hypothesis is based on the carpel shape, leaf apex, and corolla tube length, as indicated in the first couplet of the key.

The basket-like fruit morphology of *Lepinia* with three to five separate carpels permanently fused apically is quite unusual. The carpels, each of which contains a single large seed, become dry and somewhat woody and fibrous at maturity. They do not dehisce but disintegrate gradually, occasionally tardily separating apically, and eventually release their seed while the fruit persists on the tree for an indefinite period (J. Florence, pers. comm. 1994). Therefore any mode of fruit dispersal is not evident, although hydrochory is a possibility. The specialized apocynaceous compitum is thought to have developed for more efficient and even fertilization (Fallen, 1986), while the later separation of the carpels apically is thought to enhance dispersal ability. The permanent apical carpel fusion in *Lepinia* appears to be somehow related to its mode—or loss—of fruit dispersal.

#### TAXONOMY

*Lepinia* Decne., Ann. Sci. Nat. Ser. 3, 12: 194, t. 9. 1849; Drake, Ill. Ins. Mar. Pac. 233. 1886; Fl. Polynésie franç. 123. 1893. [Copies of this work with an 1892 imprint exist, with no other differences save on the title page and the page preceding it.] Type: *Lepinia taitensis* Decne.

Small glabrous trees or shrubs 0.5–15 m tall, with milky sap sometimes turning blue on exposure to air. Leaves alternate, or when crowded subopposite, weakly coriaceous, elliptic, narrowly-elliptic or narrowly-obovate, the midrib slightly sunken adaxially, prominent abaxially, at least the lateral veins conspicuous and closely spaced, numerous, arising at nearly right angles to the midrib, festooned brochidodromous, the intersecondaries forming elongate areoles parallel to the midrib, the margins slightly thickened and weakly revolute, petiolate, the stipule a low intra- and interpetiolar flange up to 1 mm high, extending from a few mm beyond the petiole, continuing as a line around the stem, persistent and somewhat indurated, the flange lined with clusters of digitate colleters producing a resinous exudate. Inflorescences of solitary or paired, few-flowered compound cymes apparently arising terminally, appearing leaf-opposed by lateral prolongation of the axis. Flowers pentamerous, subtended by a minute colleter flange near base of pedicel; calyx deeply lobed, the lobes ovate, imbricate, lacking calycine colleters; corolla sinistrorsely contorted in bud, salverform at anthesis, the tube without appendages, slightly dilated at insertion of stamens, spreading-villous in lines immediately below filaments or retrorsely appressed pubescent in a ring below filaments, the lobes obliquely ovate; stamens included, inserted in distal 1/2–3/4 of tube, attached to thickened projections in corolla tube, the filaments short, glabrous, the anthers free from the style head, linear-oblong, rounded basally, dorsifixed near base, bilocular, tetrasporangiate, dehiscence introrse; pistil of 3–5 biovulate carpels (one ovule developing in fruit), the carpels postgenitally connate apically and congenitally syncarpous basally except for small central lacunae, the apocarpous portions of carpels considerably enlarging but carpels remaining per-

manently fused at apex, style and stigma persistent when corolla falls, connate throughout, the stigma included in corolla tube, fusiform, papillose, nectary a ring of tissue at base of ovary. Fruit pendulous, basket-like, the sterile basal portion of ovary becoming greatly elongated in fruit, the carpels strongly divergent into a star-like structure, drying woody and fibrous, indehiscent, eventually disintegrating and partially splitting. Seed solitary, pendulous, fusiform to oblong, wrinkled, the endocarp horny, the endosperm deeply sulcate.

*Lepinia* consists of four species with widely disjunct distributions across the Pacific Basin. Single species occur in Ponape (Caroline Islands), Tahiti and Moorea (Society Islands), Fatu Hiva (Marquesas Islands), and several of the Solomon Islands and Papua New Guinea.

KEY TO THE SPECIES OF *LEPINIA*

- Fruiting carpels cylindrical, except tapering slightly at proximal (apical) end; leaf apex usually with acumen 5–11 mm long; corolla tube 8–16 mm long.
  - Carpels 4, 2–4 maturing, the surface smooth; leaves thinly coriaceous, the margin flat or scarcely revolute, the acumen blunt . . . . . *L. solomonensis*
  - Carpels 5, 2–5 maturing, the surface conspicuously longitudinally ribbed; leaves moderately coriaceous, the margin often revolute, the acumen sharply acute . . . . . *L. ponapensis*
- Fruiting carpels elongate-obconical; leaf apex with acumen 0–6(–8) mm long; corolla tube 23–29 mm long.
  - Carpels 3 (–4), usually only 1 (sometimes 2–3) maturing, terete; leaf lamina broadest at or just above middle . . . . . *L. taitensis*
  - Carpels 4–5, usually all maturing, weakly quadrangular; leaf lamina usually broadest above middle . . . . . *L. marquisensis*

1. ***Lepinia solomonensis*** Hemsl. in Hook. Icon. Pl. 28: t. 2703. 1905. TYPE: SOLOMON ISLANDS: San Cristobal, tree by riverside, Oct. 1890, *R. B. Comins 132* (LECTOTYPE K!; ISOLECTOTYPE BRI); designated by Forster, 1992. FIGURE 1.

Tree 3–10 (–15) m tall. Leaves thinly coriaceous, elliptic to narrowly elliptic or narrowly oblanceolate, the lamina (7.5–) 13–21 cm long, 2.4–7.5 cm wide, the base cuneate to obtuse, the apex obtuse, the tip long-acuminate, the acumen blunt, 5–10 mm long, the principal lateral veins spaced 2–3 mm apart, the principal submarginal vein 1.8–2 mm from margin, with 1–2 more weakly defined submarginal veins 0.3–0.5 mm from margin, the margin flat or weakly revolute; petioles 8–35 mm long, 0.8–1.5 mm wide. Inflorescence forking once, the infructescence with peduncle 24–27 mm long, the pedicel 11 mm long; calyx lobes ca. 1 mm long, ciliolate; corolla creamy white, ca. 25 mm long, the tube ca. 15–16 mm long, spreading-villous in lines immediately below the filaments, the lobes ca. 10 mm long; pistil of 4 carpels, 2–4 maturing. Fruiting carpels cylindrical, tapering slightly at proximal end, ca. 3.5–8 cm long, ca. 7–10 mm diam., terete, the surface smooth, the sterile portion ca. 13–22 cm long, the abortive carpels elongating less. Seed ca. 4 cm long, ca. 0.8 cm diam., longitudinally sulcate, transversely wrinkled.

TYPIFICATION: Hemsley (1905) cited three collections in his protologue: “Solomon Islands, San Cristoval, *R. B. Comins 132*” [K, syntype]; “chiefly New Georgia, *Officers of the H.M.S. Penguin s.n.* in 1894–95 (fruit associated with leaves of *Cerbera*)” [K, syntype]; “without locality, *W. Micholitz s.n.*” [K, syntype]. Forster (1992) selected the *Comins 132* collection as lectotype because it was used for most or all of the illustration (*plate 2703*), and because one of the



syntypes (*Micholitz s.n.*) was in poor condition and the other syntype (*Officers of the H.M.S. Penguin*) could not be located.

DISTRIBUTION AND HABITAT: *Lepinia solomonensis* occurs in the Solomon Islands (including the Solomon Islands, New Georgia Group, Solomon Island Outliers) and Papua New Guinea (Solomon Sea Islands and North Solomon Islands). This species has been collected in lowland or lower montane rainforest up to ca. 760 m elevation. Collectors' notes and Forster (1992) indicate that it is widespread and commonly collected in the Solomon Islands.

ADDITIONAL COLLECTIONS STUDIED: SOLOMON ISLANDS. SOLOMON ISLANDS: Guadalcanal: E. slopes of Mt. Gallego, 2500 ft (762 m), 10 Jul. 1965, *Hunt RSS-2143* (BISH, K). Choiseul: near Ruruvai, 28 Feb. 1964, *Whitmore BSIP-3961* (K); Makina area, 24 Sep. 1968, *Fa'arodo et al. BSIP-11295* (K). Malaita: Alasa Mt., 21 Nov. 1965, *Corner 234* (K); northeast part of island, 22 Nov. 1968, *Fa'arodo et al. BSIP-13496* (K). Maramasike (Small Malaita): north of Tarapaina, 13 Sep. 1969, *Gafui et al. BSIP-16957* (K). NEW GEORGIA GROUP: Baga: 4 Feb. 1964, *Whitmore et al. BSIP-2935* (K). Ghizo: logged area, 8 Jul. 1968, *Mauriasi et al. BSIP-11693* (K); 18 Feb. 1964, *Whitmore et al. BSIP-3038* (K); 13 Apr. 1964, *Whitmore et al. BSIP-5616* (K). Kolombangara: Shoulder Hill area, 14 Jun. 1968, *Mauriasi et al. BSIP-11454* (K), 22 Jan. 1968, *Gafui et al. BSIP-8743* (K); Kape Harbour, 23 Nov. 1962, *Whitmore & Womersley BSIP-823* (K); 1900, *Woodford s.n.* (K); Rei area, 10 Feb. 1968, *Gafui et al. BSIP-8990* (K); south of Bambari Harbour, 6 Jan. 1968, *Gafui et al. BSIP-7534* (K); west of Vila River, 11 Dec. 1967, *Dennis et al. BSIP-8520* (K); Lodomae area, 26 Jan. 1968, *Gafui et al. BSIP-8793* (K). New Georgia: Mango River, 13 Apr. 1966, *Burn-Murdoch et al. BSIP-7112* (K); 27 Jul. 1929, *Waterhouse 213* (K); without precise locality, "chiefly New Georgia," *Officers of the H.M.S. Penguin s.n.* in 1894-95 (K, SYNTYPE; fruit associated with leaves of *Cerbera*). Ranongga: Kolomali area, 4 Jun. 1969, *Mauriasi et al. BSIP-14305* (K); None area, 19 Jun. 1969, *Mauriasi et al. BSIP-14474* (K); Palaina area, 27 Jun. 1969, *Mauriasi et al. BSIP-15687* (K). Rendova: southeast part of island, 14 Aug. 1967, *Burn-Murdoch et al. BSIP-7477* (K); near Ovusa, 4 Oct. 1945, *White BSIP-172* (K). Vangunu: inland from Bopo Village, 17 Dec. 1962, *Whitmore BSIP-1277* (K). Vella Lavella: Oula River area, 7 Aug. 1968, *Kotali et al. BSIP-9534* (K). San Cristobal: Wairaha River, 11 May 1964, *Whitmore BSIP-4261* (K). Ulawa: cross road from Suholo/Hada, 23 Feb. 1965, *Teona BSIP-6320* (K). Vaghena (Wagina): 16 Mar. 1964, *Whitmore et al. BSIP-5427* (K); 1 1/2 miles inland from Ariki Village, 22 May 1964, *Whitmore et al. BSIP-6162* (K), 20 Mar. 1964, *Whitmore et al. BSIP-5535* (K). SOLOMON ISLAND OUTLIERS. Rennell: west of Matangi Village, 17 May 1969, *Gafui et al. BSIP-14913* (K); Tahanuku area, 10 May 1969, *Gafui et al. BSIP-14696* (K), Magautua area, 10 May 1968, *Sirute'e et al. BSIP-9686* (K).

PAPUA NEW GUINEA. SOLOMON SEA ISLANDS. Muyua (Woodlark): Milne Bay, 2 Sep. 1979, *Kairo 124* (K). NORTH SOLOMON ISLANDS. Bougainville: Siwai, Jul. 1930, *Waterhouse 159-B* (K).

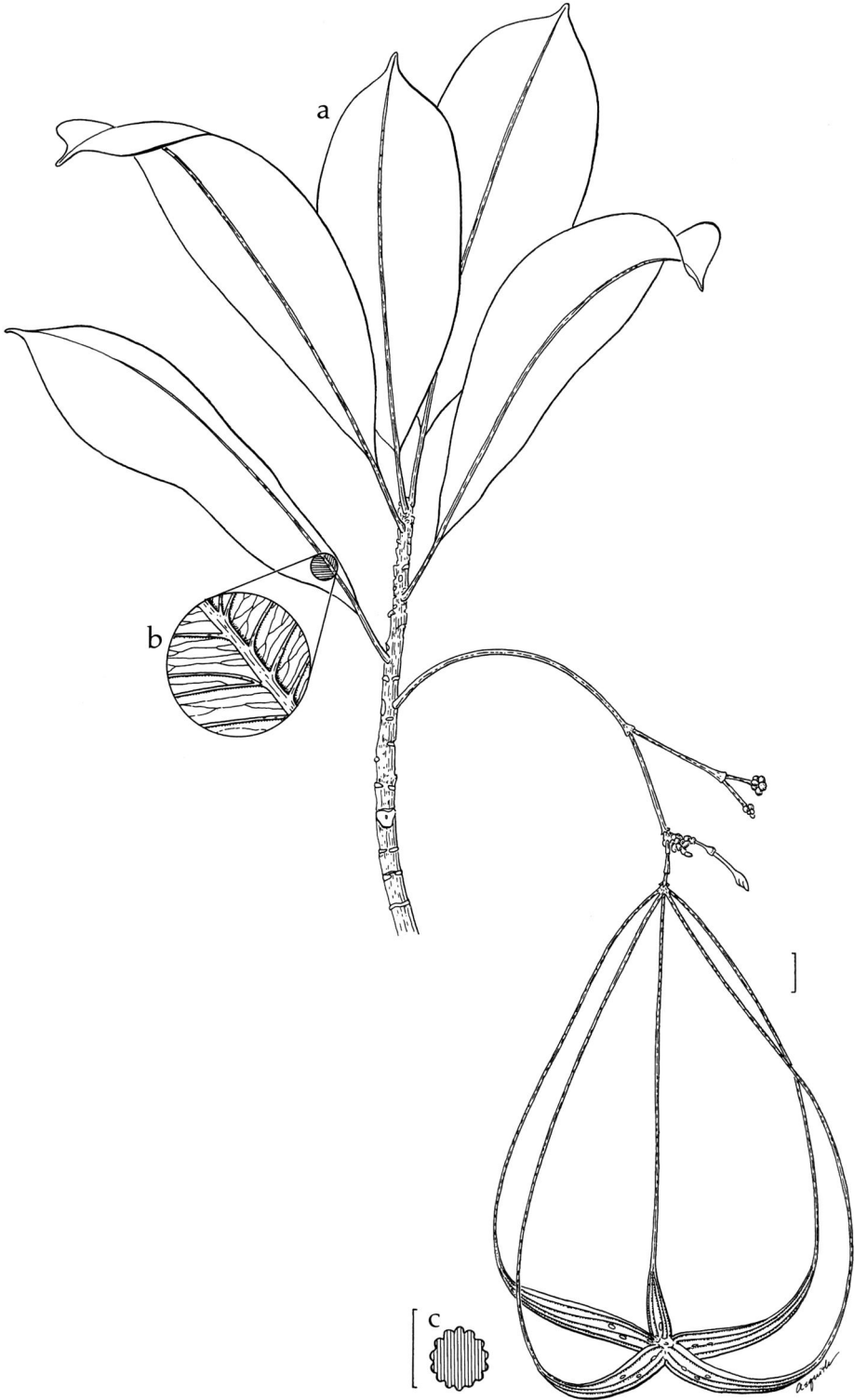
Without specific locality, *W. Micholitz s.n.* (K, SYNTYPE).

2. *Lepinia ponapensis* Hosok., Bot. Mag. (Tokyo) **48**: 529. 1934. TYPE: CAROLINE ISLANDS. PONAPE: Mt. Nanalaut, (Niinioasii), 24 Aug. 1933, T. Hosokawa 5968 (HOLOTYPE TAI!; ISOTYPES BISH!, US!). FIGURE 2.

Tree 2-10 m tall. Leaves moderately coriaceous, elliptic to narrowly elliptic, sometimes elliptic-oblongate, the lamina 10.1-15.2 cm long, (3.2-) 4.5-6.3 cm wide, the base cuneate, the apex obtuse to rounded, the tip short- to long-acuminate, the acumen sharply acute, 6-11 mm long, the principal lateral veins spaced 1.5-3 mm apart, the submarginal vein ca. 0.1 mm from the margin, the margin conspicuously revolute; petioles 10-15 mm long, 2.5-3 mm wide, narrowly winged. Inflorescence forking 2-3 times, the infructescence with peduncle

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FIGURE 1. *Lepinia solomonensis*. a, habit, with inflorescence and fruit; b, detail of venation; c, schematic cross section of carpel. Bar scale = 1 cm. (Based on *Hunt 2143*, BISH.)





15–55 mm long, the pedicels 3–4 mm long, in fruit up to 7 mm long; calyx lobes 1–1.5 mm long, ciliolate; corolla white, apparently fading yellow, ca. 16–18 mm long, the tube 8–10 mm long, the lobes ca. 8 mm long; pistil of 5 carpels, occasionally only 2–4 maturing. Fruiting carpels cylindrical, tapering slightly at proximal end, ca. 3.5–4.5 cm long, ca. 5–8 mm diam., terete, conspicuously longitudinally ribbed, the sterile portion ca. 8–18 cm long, the abortive carpels elongating less. Seed ca. 3.5–4 cm long, ca. 0.4 cm. diam.

**DISTRIBUTION AND HABITAT:** *Lepinia ponapensis* is endemic to Ponape and apparently restricted to the wet summit region of Mt. Nanalaut at 740–770 m elevation where it occurs in thickets dominated by species of *Astronia* Blume and *Pandanus* Parkinson ex Z.

**ADDITIONAL COLLECTIONS STUDIED.** CAROLINE ISLANDS. PONAPE: Mt. Nanalaut, Santyohukin, 14 Jul. 1936, *Hosokawa 8221* (BISH, TAI), 8 Mar. 1936, *Takamatsu 774* (BISH, MO, US), 2,450 ft, 28 Jun. 1949, *Glassman 2353* (BISH, US).

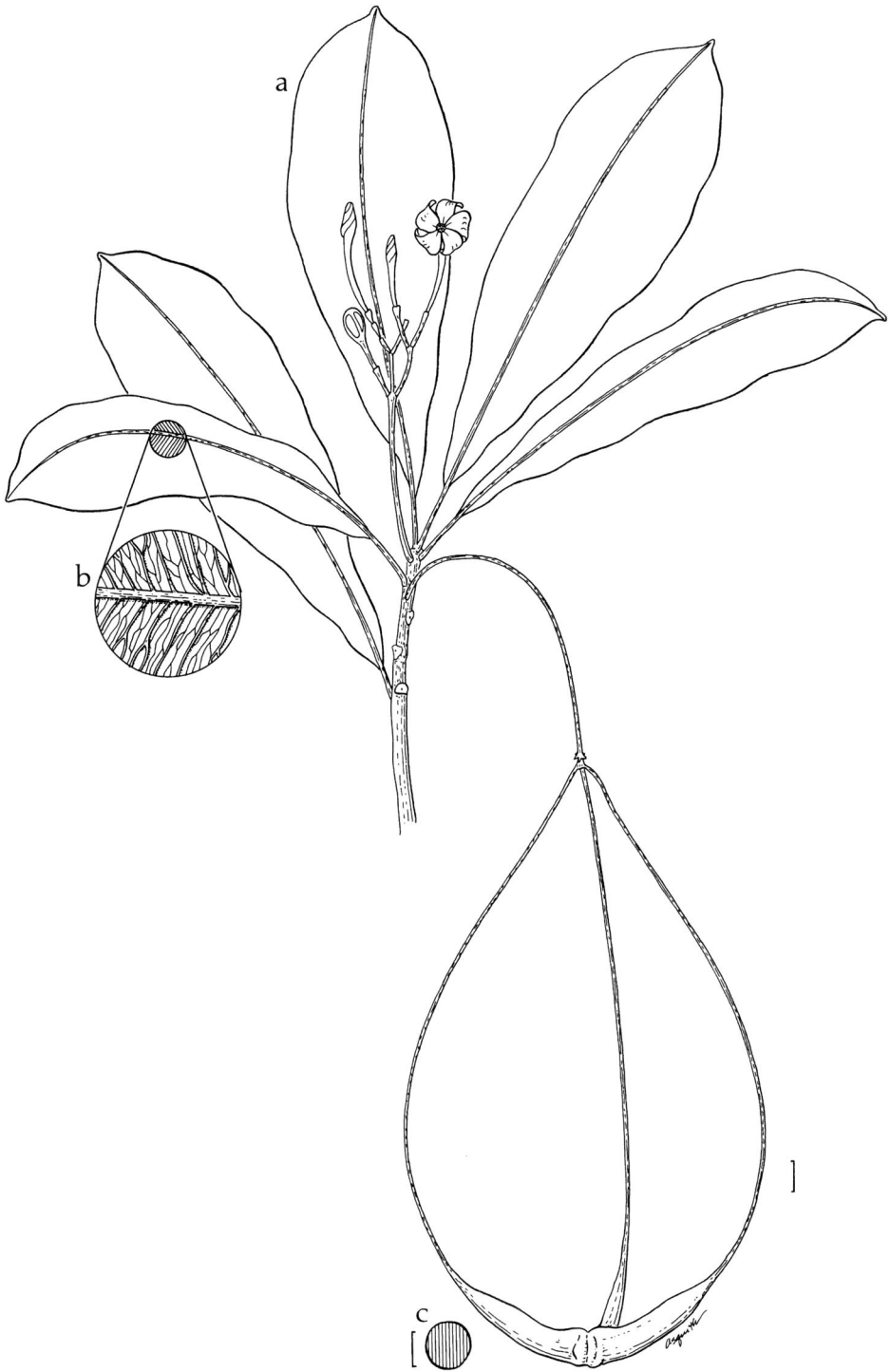
3. *Lepinia taitensis* Decne., Ann. Sci. Nat. Ser. 3, 12: 194, t. 9. 1849; Flore des Serres 7(10): 225. 1856; Nadeaud, Enum. Pl. Tahiti 56. 1873; Drake, Ill. Fl. Ins. Pacific [part 7] 233. 1892; Fl. Polynésie franç. 123. 1893 [1892]. TYPE: SOCIETY ISLANDS. TAHITI: “montagnes des Tarravao [Taravao], 400–500 m, 1847,” *J. Lépine 188* (HOLOTYPE P; ISOTYPES P, several). FIGURE 3.

Shrub or small tree 0.8–10 m tall. Leaves thinly coriaceous, elliptic to oblong-elliptic, sometimes narrowly elliptic-ob lanceolate, the lamina (11–)13–16.5 cm long, 4.2–6.2(–7) cm wide, the upper surface usually glossy, the base cuneate, the apex obtuse, occasionally rounded, the tip acuminate, the acumen blunt, (0–) 2–6 (–8) mm long, the principal lateral veins spaced ca. 1.5 mm apart, the principal submarginal vein 1.5–2.5 mm from margin, the margin weakly revolute; petioles 16–25 mm long, 0.8–2 mm wide. Inflorescence forking once or twice, the infructescence with peduncle 4.5–8.7 cm long, the pedicels 7–10 mm long, in fruit up to 12 mm long; calyx lobes 1–1.2 mm long, ciliolate; corolla 32–39 mm long, the tube tinged with purple or pink, 23–29 mm long, the lobes creamy white or yellowish, 9–11 mm long, the margins slightly inrolled; pistil of 3 (–4) carpels, usually only 1 or sometimes 2–3 maturing. Fruiting carpels elongate-obconical, ca. 3.2–4.8 cm long, ca. 1.1–1.4 cm diam., terete, smooth, the sterile portion ca. 12–19.5 cm long, the abortive carpels elongating less. Seeds longitudinally ribbed, nearly as long as the carpels.

**TYPIIFICATION:** In the protologue Decaisne (1849) cited no collection number, only “J’ai donné à cette plante remarquable le nom de *Lepinia*, pour rappeler le nom d’un pharmacien distingué de la marine française, M. Jules Lépine, par laquelle elle a été découverte dans les hautes montagnes de l’île de Taïti.” In the Paris herbarium there are a series of unmounted *Lépine 188* collections (J. Florence, pers. comm. 1994) and a single mounted but unnumbered Lépine collection consisting of two branches with fruit bearing the following printed Herb. Mus. Paris label data: “Taïti, M. Jules Lépine 1847.” A second, hand-written label reads:

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FIGURE 2. *Lepinia ponapensis*. a, habit, with inflorescence and fruit; b, detail of venation. c, schematic cross section of carpel. Bar scale = 1 cm. (Based on *Glassman 2353*, BISH.)



“Nom indigène—ianina, montagnes de tarravao [Taravao], 4 à 500 mètres, Tahiti. Arbre de 8 à 10 mètres. . .” An undated annotation label by F. R. Fosberg on this specimen states: “I suspect these specimens may constitute the type of this species and genus. The unmounted 188 series was in folder with an unnumbered but mounted Vesco specimen.” Decaisne’s illustration (*tab. 9*) appears to be a composite of several of these collections. We regard the mounted but unnumbered Lépine collection as the holotype, and the several unmounted sheets as undistributed duplicates (isotypes). Even though the number 188 does not appear on the mounted sheet nor is it cited in the protologue, there is no reason to suspect that it is not part of the same gathering as the unmounted material.

**DISTRIBUTION AND HABITAT:** *Lepinia taitensis* is currently known from Maatea and Nauroa Valleys on Moorea and Papenoo Valley on Tahiti, Society Islands (J. Florence, pers. comm. 1994). This species usually occurs in riparian forest along streams or occasionally on forested valley slopes from 250 to 530 m elevation, growing in well drained soils. Associates include species of *Inocarpus*, *Alstonia*, *Hibiscus*, *Pandanus*, *Fagraea*, *Crossostylis*, and *Cyathea* in the upper limits of the range of *L. taitensis*. Annual precipitation in these areas ranges from 2000 to 5000 mm. Collectors’ notes on several labels indicate the white latex of *L. taitensis* turns blue on exposure to air (Florence 4863, 4984).

**CONSERVATION STATUS:** According to Jacques Florence (pers. comm. 1994) *L. taitensis* is a rare and localized species. Furthermore, its habitat is becoming seriously invaded by the noxious alien weed *Miconia calvescens* DC. in Papenoo Valley on Tahiti and also along the trail to Mt. Mou’a puta in Nauroa Valley and in the Maatea Valley on Moorea. It is urgent that conservation measures be taken to ensure the survival of *L. taitensis* on these islands. Seeds collected from the Maatea Valley population in Sept. 1995 (Perlman 15071) were distributed to four botanical gardens in Hawaii, Switzerland, and the U.K. At NTBG eight young plants survive, although they are delicate and slow-growing (D. Lorence, pers. obs. 1996).

**ADDITIONAL COLLECTIONS STUDIED:** SOCIETY ISLANDS. MOOREA: Maatea valley, 10 Aug. 1980, Clarke s.n. (K); Afareaitu, haute Nauroa, 470 m, 12 Aug. 1983, Florence 4863 (PAP); Afareaitu, haute Nauroa, sentier de Mou’a puta, 500 m, 19 Aug. 1983, Florence 4984 (PAP), Florence 4990 (PAP); Maatea Valley, Fosberg 61042 (BISH, K, MO, PAP, PTBG, US); valley above Maatea, SE part of island, 250–300 m, 22 Jul. 1982, Fosberg 63674 (BISH); moyenne vallée de Maatea, 200 m, 29 Dec. 1981, Florence 2226 (BISH), flanc gauche, 255 m, 13 Aug. 1983, Florence 4878 (PAP, P); Maatea Valley, 29 Sep. 1995, Perlman et al. 15071 (PTBG); Maatea, Teraiahia, Jul. 1856–1859, Nadeaud s.n. (P, n.v.). TAHITI: Papenoo Valley, 530 m, 6 Sep. 1981, Whistler 4932 (BISH, 2 sheets); moyenne vallée de Papenoo, flanc gauche de la Tahinu, 350 m, 22 Aug. 1984, Florence 6980 (PAP); Papenoo et Hitiaa, Papeihi, Jul. 1856–1859, Nadeaud 369 (P, n.v.); without precise locality, 1847, Vesco s.n. (P, n.v.).

4. *Lepinia marquisensis* Lorence & W. L. Wagner, sp. nov. TYPE: MARQUESAS ISLANDS. FATU HIVA: trail to Mounanui from Teavapuhiau Pass— $\frac{1}{2}$  way to

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FIGURE 3. *Lepinia taitensis*. a, habit, with inflorescence and fruit; b, detail of venation; c, schematic cross section of carpel. Bar scale = 1 cm. (Based on Whistler 4932, BISH and Florence 4878, PAP.)



Mounanui, then west up ridge crest, 2200 ft, 18 Aug. 1988, *S. Perlman 10271* (HOLOTYPE BISH 559099!, a portion also in spirit collection!; ISOTYPES CAS!, CHR!, F!, K!, P!, PAP!, MO!, PTBG!, a portion also in spirit collection!, US!). FIGURE 4.

Species *Lepiniae taitensi* Decne. affinis, sed foliis elliptici-obovatis vel elliptici-oblongeolatis, carpellis 4–5 leviter quadrangularibus differt.

Tree 3–4 m tall. Leaves thinly coriaceous, elliptic-obovate to elliptic-oblongeolate or obovate, occasionally elliptic, the lamina 12.7–17.5 cm long, 4.8–10.7 cm wide, the base usually broadly cuneate to rounded, sometimes cuneate, the apex obtuse or rounded, the tip usually short-acuminate, the acumen blunt, 0–4 mm long, the principal lateral veins spaced 1–2 mm apart, the principal submarginal vein 0.5–2 mm from margin, often with another weaker submarginal vein 0.2–0.5 mm from margin, the margin weakly revolute; petioles 13–22 mm long, 1.5–2.5 mm wide. Inflorescence forking apparently once or twice, the infructescence with peduncle 3–5.3 cm long, the pedicels 2.5–4 mm long; calyx lobes 1.5–1.8 mm long, ciliolate; corolla 34–36 mm long, the tube ca. 25 mm long, retrorsely appressed pubescent in a ring below filaments, the lobes 9–11 mm long; pistil of 4–5 carpels, apparently usually all of them maturing. Fruiting carpels elongate-obconical, ca. 5–5.8 cm long, 0.9–1.1 cm diam., weakly quadrangular, smooth, the sterile portion 13.5 cm long. Seeds unknown.

DISTRIBUTION AND HABITAT: *Lepinia marquisensis* is apparently quite rare, known only from the type. The species was collected at 670 m elevation in low, wet, montane cloud forest on the slopes of the central ridge of Fatu Hiva, where a small population of several individuals was observed (*S. Perlman*, pers. comm. 1993). This species appears to be most closely allied to *L. taitensis* from Tahiti and Moorea.

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FIGURE 4. *Lepinia marquisensis*. a, habit, flowering branch; b, habit, fruiting branch; c, longitudinal section of flower in bud and detail of calyx; d, detail of gynoecium in young fruit; e, schematic cross section of carpel; f, detail of venation. Bar scale = 1 cm. (Based on *Perlman 10271*, BISH, PTBG.)

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