

Revision of the genus *Wielandia* (Euphorbiaceae-Phyllanthoideae)

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ABSTRACT

The monotypic genus *Wielandia* (Euphorbiaceae-Phyllanthoideae), long considered to be endemic to the Seychelles, but later found also in Madagascar, and recently in the Comoro Islands, is revised. *Wielandia elegans* var. *perrieri* from Madagascar could not be confirmed as a separate taxon. Showing no adaptations to long-distance dispersal, *Wielandia elegans* presents another example of a species with a relic distribution in the Indian Ocean.

MOTS CLÉS

Euphorbiaceae,
Phyllanthoideae,
Wielandia,
Seychelles,
Madagascar,
Comores.

RÉSUMÉ

Le genre monotypique *Wielandia* (Euphorbiaceae-Phyllanthoideae), longtemps considéré endémique des Seychelles, mais trouvé aussi à Madagascar et récemment aux Comores, est révisé. *Wielandia elegans* var. *perrieri* de Madagascar ne peut être retenu comme un taxon à part. Ne présentant aucune adaptation à une dispersion à longue distance, *Wielandia elegans* illustre un autre exemple d'une espèce à distribution relictuelle dans l'Océan Indien.

INTRODUCTION

Wielandia is a monotypic genus of the Seychelles and Madagascar. It is the type genus of the tribe Wielandieae in the Euphorbiaceae-Phyllanthoideae, which is often considered to be the basal tribe of the subfamily (WEBSTER 1994b: 35). The genus is unique in the Phyllanthoideae in having completely 5-merous, petaliferous flowers in both sexes.

The presumed closest relative of *Wielandia* is

the small genus *Petalodiscus* with similar flowers but a 3-locular ovary. Both these genera develop exalbuminous seeds with massive storage cotyledons. This character is found in only three other genera of the subfamily, *Actephila*, *Amanoa* and *Apodiscus* (STUPPY 1996: 150), none of which is well-studied. Other key characters of *Wielandia* are the flattened young branches, the annular floral disc in both sexes and the connate stamens which are crowned by an alternistaminally 5-lobed pistillode.

Noteworthy are the peltate stipules of *Wielandia*, first described and illustrated by FRIEDMANN (1994: 375, pl. 107, fig. 8). The stipules cover the tips of the branches like bud scales and can easily be mistaken for them. They fall off as soon as the leaf grows out, leaving only a very small circular scar. Similar, strongly auriculate stipules, which bridge the gap between the peltate stipules of *Wielandia* and the deltoid or linear ones of other members of the tribe Wielandieae, are found in the genus *Petalodiscus*.

When describing the genus *Wielandia* from the Seychelles, BAILLON (1858: 569) included two elements, *W. oblongifolia* and *W. elegans*. Both were nomina nuda on this page, but the latter name was validated in the atlas appended to this work (p. 40, t. 22, fig. 6-10). Three years later, BAILLON validly published the former name as *Savia oblongifolia* (1861: 35). This species was to become the type of the genus *Blotia* Leandri (1957: 240). In neither of these publications did BAILLON explain the derivation of the generic name. STAFLEU & COWAN (1988: 265) assumed that the genus was named after J.F. WIELAND (1804-1872).

Wielandia remained monotypic but was subsequently found to occur also in Madagascar, and only recently also in the Comoro Islands. For the Malagasy collections, LEANDRI described the variety *perrieri* (1939: 190), for which no distinguishing characters could be established and which therefore is not recognised here.

This revision has been undertaken as part of a systematic study of the Euphorbiaceae-Phyllanthoideae and also represents a precursor for the revised Euphorbiaceae treatment of the 'Flore de Madagascar et des Comores'.

WIELANDIA Baill.

Étude Euphorb.: 568 (1858); *Adansonia* 2: 32 (1861); Hb. pl. 5: 142, 234 (1874); Benth. & Hook. f., Gen. pl. 3: 270 (1880); Pax in Engl. & Prantl, Nat. Pflanzenfam. 3(5): 16 (1890); Hemsley, Hooker's Icon. Pl. 29: t. 2813 (1906); Hemsley et al., Bull. Misc. Inform. Kew 1919: 130 (1919); Pax & K. Hoffm. in Engl., Pflanzenr., H. 81: 181 (1922); Nat. Pflanzenfam., ed. 2, 19c: 67 (1931); Summerhayes, Trans. Linn. Soc. London., Ser. 2, Zool., 19: 290

(1931); Leandri in Humbert, Fl. Madagascar 111(1): 135 (1958); Punt, Wentia 7: 34 (1962); Köhler, Grana Palynol. 6: 51, 80 (1965); Fosberg & Renvoize, Fl. Aldabra & neighbouring islands: 252 (1980); Friedmann, Flowers & Trees Seychelles: 73, 100, 172 (1986); Levin, Ann. Missouri Bot. Gard. 73: 40 (1986); Syst. Bot. 11: 520-522 (1986); Mennega, Bot. J. Linn. Soc. 94: 114-115, 118 (1987); Muller et al., Trop. Subtrop. Pflanzenwelt 67: 84 (1989); Friedmann, Fl. Seychelles, Dicotyledons: 373 (1994); Webster, Ann. Missouri Bot. Gard. 81: 37 (1994); Stuppy, Syst. Morph. & Anat. Samen biovol. Euphorb.: 183 (1996). — *Savia* Willd. sect. *Wielandia* (Baill.) Müll. Arg., Linnaea 32: 78 (1863); in DC., Prodr. 15(2): 228 (1866).

TYPE.—*Wielandia elegans* Baill.—Fig. 1.

Monoecious shrubs, young branches flattened. Indumentum absent or very scarce, simple. Stipules caducous, peltate. Petiole canaliculate above, vascular bundles cylindrical throughout, adaxially flat to slightly U-shaped, sometimes interrupted by thin strands of collenchyma. Leaves alternate, petiolate, simple, symmetrical, entire, pinnately veined, eglandular. Anticlinical walls of the epidermal cells straight, stomata cyclocytic with 3-6 subsidiary cells.

Inflorescences fasciculate, axillary, borne directly in the leaf axils or on short unbranched (rarely once branched), usually leafless (occasionally bearing a very reduced leaf) axes; pistillate and staminate flowers in the same fascicle. Flowers pedicellate, 5-merous (rarely 4- or 6-merous), pale yellow, greenish white or white. Pedicel inarticulate. Sepals imbricate, quincuncial in 5-merous flowers. Petals imbricate, quincuncial or not, about twice as long as sepals. Disc extrastaminal, annular, margin entire. Stamens epispalous, filaments fused, anthers introrse in bud, reflexed and consequently extrorse at anthesis, longitudinally dehiscent. Pistillode alternistaminally lobed. Styles 2-fid. Stigmas truncate to slightly swollen. Ovules 2 per locule, anatropous (vascular bundle adnate for ca. 4/5 of nucellus length), sharing one 2-lobed obturator.

Fruits capsular, more or less globose, dehiscence septicidal (starting from the base), loculicidal (starting from the apex) and septifragal (starting from the columella); dehiscence of septa irregular; thin exo- and coriaceous mesocarp separate

from the lignified endocarp; septicial and loculicidal dehiscence complete (into 8-12 parts of endo- and as many parts of mesocarp) or incomplete (whole carpels or the adjacent halves of two carpels staying together). Columella persistent, 4-10 times longer than the narrowest width, acutely 5-angled, base and apex thickened; disc, calyx and stigmas persistent in the fruiting stage. Seeds 1 per locule, ecarunculate, shortly apiculate, perichalazal annulus absent or small and inconspicuous, globose to ovoid (in fruits with aborted locules) to nearly triangular in cross section (in fruits without aborted locules), smooth. Endosperm in mature seeds absent but for a thin membrane. Embryo with hemispherical to hemiovoid storage cotyledons, radicle conical, about as long as wide.

Wielandia elegans Baill.

Étude Euphorb., Atlas: 40, t. 22, fig. 6-10 (1858), for further references see above. — *Savia elegans* (Baill.) Müll. Arg., Linnaea 32: 78 (1863); in DC., Prodr. 15(2): 229 (1866). — Type: *Pervillé* 971, Île Caranga, 12. Nov. 1841, 'communiqué par Boivin', (holo-, P!).

Wielandia elegans Baill. var. *perrieri* Leandri, Notul. Syst. (Paris) 7: 190 (1939); in Humbert, Fl. Madagascar 111(1): 136, fig. 19.1-6 (1958). — Type: *Perrier de la Bâthie* 1683, Madagascar, domaine de l'Ouest, Anbongo, Manongarivo, bois sablonneux, Jan. 1904, (lecto-, isolecto-, P!, chosen here); *syn. nov.*

?*Mespilodaphne* sp., Baker, Fl. Mauritius: 291 (1877) [based on *Horne* 445].

Shrub or tree 2-20 m tall, up to 15 cm diameter, branches slender, flexible. Young twigs more or less flattened, glabrous. Stipules extremely caducous, strongly involute, peltate, narrowly elliptic, apex and base rounded, 2-9 mm long, 0.5-2 mm wide, glabrous or with very short, rigid hairs. Petiole 3-7(-10) mm long, 0.6-1.5 mm wide, glabrous. Leaves elliptic to ovate, more rarely oblong, apex acuminate-mucronate rarely acute, base acute to rounded, well-defined, (3-)5-9(-15) cm long, (1.5-)2-4.5(-7) cm wide, (1.5-)2-2.5(-3.5) times longer than wide, glabrous, chartaceous to coriaceous, shiny (some-

times less so on lower leaf side), midvein raised above, secondary veins 6-9 pairs below the acumen, finer venation prominent above (especially in young leaves), drying olive-green to greyish green or reddish brown, con- or discolourous.

Inflorescences borne directly in the leaf axils or on axes up to 4 cm long; flowers in fascicles of 2-6 (usually one pistillate and several staminate flowers) per fascicle, up to 20 flowers per leaf axil. Bracts deltoid to slightly ovate, 0.3-1 mm long, 0.3-0.8 mm wide, glabrous or with very short, rigid hairs. Buds globose. Staminate flowers 4-7 mm long, 5-8 mm wide. Pedicel filiform, 5-15 mm long, 0.2-0.4 mm wide, glabrous. Sepals yellowish green, unequal, more or less orbicular, rounded, 1.5-3 mm long, 1.5-3 mm wide, glabrous or with very short, rigid hairs outside, glabrous inside, margin hyaline, entire or erose (probably a drying artefact as in the most recent collections the sepals are entire). Petals pale yellow, obovate to elliptic, symmetrical, rounded, 4-6 mm long, 2-4 mm wide, glabrous, entire or erose, sometimes slightly hyaline. Disc pentagonal from above, 0.5-1 mm long, thinly coriaceous, glabrous. Androecium 1.5-2 mm long, 1-1.5 mm wide, glabrous, filaments fused at the base for ca. 3/4 of their length, their apices bent outwards, anthers basifix, ellipsoid, 0.3-0.4 mm long, 0.25-0.3 mm wide, thecae parallel or nearly so. Pistillode shortly funnel-shaped, 0.2-0.4 mm long, 0.5-1 mm in diameter, glabrous, more or less deeply 5-lobed, lobes usually flatly spread out, rounded to acute, margin erose or glandular. Pistillate flowers 6-10 mm long, 5-10 mm wide. Pedicel terete or slightly flattened, more or less thickened apically, 10-50 mm long, 0.5-1 mm wide at the base, 1-2.5 mm wide at the apex, glabrous. Sepals green, unequal, more or less orbicular, rounded, 2-4 mm long, 2-4 mm wide, slightly accrescent (up to 7 × 5 mm), coriaceous, glabrous or with very short, rigid hairs outside, glabrous inside, margin hyaline, entire or erose (see under staminate flowers). Petals pale yellow with dark marks inside close to the base, obovate to spatulate, sometimes asymmetrical due to imbrication in bud, rounded, 5-7 mm long, 4-7 mm wide, glabrous, margin more or less erose. Disc pentagonal from above, 1-1.2 mm long, thinly coriaceous, glabrous. Ovary

globose, glabrous. Styles canaliculate above, 2-fid in upper third, glabrous.

Fruits solitary, globose, sometimes depressed or elongate, terete or (4-)5(-6)-lobed, sometimes with dorsal ridges along each lobe, often flattened on one side due to abortion of locules, 10-25 mm long, 12-25 mm wide, 0.6-1.4 times longer than wide, green and shiny when fresh, dark brown, dull and papillate or pustulate when dry. Fruiting pedicel usually thickened apically, 10-50 mm long, 0.8-1 mm wide at the base, 1-2.5 mm wide at the apex. Columella 7-15 mm long, 1-3 mm wide in the middle, base thickened to 3-4 mm, apex thickened to 3-7 mm. Exo- and mesocarp together 1.5-2 mm thick when fresh, 0.4-0.6 mm thick when dry, slightly verrucate on inner surface. Endocarp 0.2-0.5 mm thick, light brown. Seeds 8-13 mm long, 5-12 mm wide, raphe more or less impressed, smooth to slightly striate (striation only noticeable upon magnification; possibly an artefact of drying), medium to dark brown, sometimes marbled.

NOTE 1.—The place of publication of this name is often cited as 'Étude Euphorb.: 569. 1858.' (e.g. LEANDRI 1958: 136), but on this page the name is listed without a description and therefore a *nomen nudum*. The name cannot be regarded as validly published on this page by a 'descriptio generico-specifica' (Art. 42.1 of the Tokyo Code) either, as the genus was at that time not monotypic. It is, however, illustrated with an analytical drawing in the atlas appended to the 'Étude', and thereby validly published according to Art. 44.1 of the Tokyo Code. FRIEDMANN (1994: footnote p. 375) came to the same conclusions with regards to the typification of this name.

NOTE 2.—It can be assumed that the only reason for recognizing this variety was the geographical distance between the Seychelles and Madagascar. This assumption is supported by the lack of a diagnosis in the protologue, as LEANDRI usually stated the differences of his new varieties from the type in this way (e.g. 1939: 189 and 193). For *W. elegans* var. *perrieri*, he provided only a description without differential characters. The only difference found when examining the material from both the Seychelles and

Madagascar was that the outside of the sepals, and to a lesser extent the bracts and stipules, are sometimes covered with a very short, rigid indumentum in the Malagasy collections, while they are always glabrous in the material from the Seychelles. This indumentum, however, is not present in either of the syntypes of var. *perrieri*.

ILLUSTRATIONS.—Baillon, *Étude Euphorb.*, Atlas: t. 22, fig. 6-10 (1858), floral diagram of staminate & pistillate flower, pistillate flower, bud, gynoecium, androecium; the pistillate floral diagram and gynoecium were reproduced in: Pax in Engl. & Prantl, *Nat. Pflanzenfam.* 3(5): 16, fig. 11 C-D (1890), Pax & K. Hoffm. in Engl., *Pflanzenr.*, H. 81: 174, fig. 14 C-D (1922) and *Nat. Pflanzenfam.*, ed. 2, 19c: 67, fig. 31 C-D (1931); Baillon, *Hist. pl.* 5: 142, 234 (1874), floral diagram and longitudinal section of staminate and pistillate flower; Hemsley, Hooker's *Icon. Pl.* 29: t. 2813 (1906), habit & details of flower, fruit, seed, embryo; Leandri in Humbert, *Fl. Madagascar* 111(1): fig. 19.1-6 (1958), habit with flowers & fruit plus reproductions of the floral diagrams, androecium and gynoecium from Baillon 1858; Köhler, *Grana Palynol.* 6: t. 6, fig. 1-3 (1965), pollen; Friedmann, *Flowers & Trees Seychelles*: 100, 172 (1986), photo flowers & fruits; Levin, *Ann. Missouri Bot. Gard.* 73: 41, fig. 1-2 (1986), leaf venation; Muller et al., *Trop. Subtrop. Pflanzenwelt* 67: 64, fig. 1-7 (1989), pollen; Friedmann, *Fl. Seychelles, Dicotylédons*: 374, pl. 107, fig. 1-9 (1994), habit, fruit, floral details; Stuppy, *Syst. Morph. & Anat. Samen bio-vul. Euphorb.*: pl. 53 A-C (1996), seed, embryo, seed coat.

DISTRIBUTION.—Madagascar, Comoro Islands (Mayotte) and Seychelles (Mahé, Silhouette, Praslin, Aldabra). FOSBERG & RENVOIZE (1980: 252) assumed that *Wielandia* was absent from Aldabra and that the specimen *Fryer 84* must have been mislabelled. *Wielandia* was, however, found on Esprit Island in the Aldabra Atoll in 1983 (Friedmann 4740).—Fig. 2.

The dry, explosive capsules of *Wielandia* are clearly autochorous, and the seeds with their thin, dry seed-coat show no apparent adaptation to long distance dispersal. The same applies to all other genera of the tribe Wielandieae. The bio-

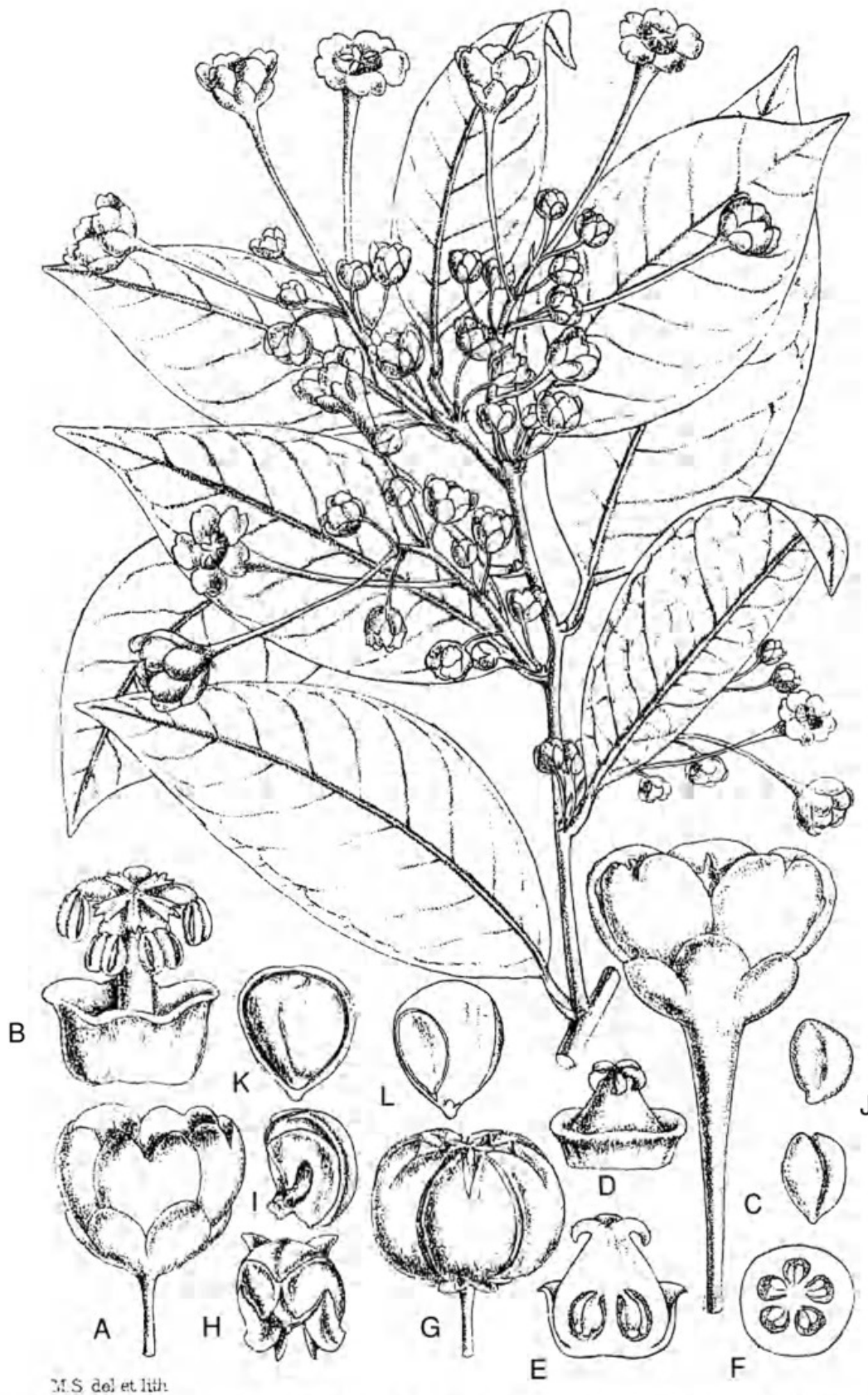


Fig. 1.—*Wielandia elegans*: Reproduced from HEMSLEY 1906. Note that the petals are erose rather than emarginate as pictured here. A, staminate flower; B, disc and androecium; C, pistillate flower; D, disc and gynoecium; E, longitudinal section of the same; F, cross section of the ovary; G, ripe fruit; H, one of the carpels after dehiscence from the inside; I, lateral view of the same; J, seeds; K, seed, with part of the seed-coat removed; L, longitudinal section of a seed. (G-J natural size, the rest enlarged). Drawn from Thomasset 193.

geography of the *Wielandieae* (cf. WEBSTER 1994a: 21-23) therefore suggests both a relatively high age and a relic status for the members of this tribe. The presence of *Wielandia* on Aldabra is of special interest because these islands are said to have been completely submerged only about 100 000 years ago (TAYLOR et al. 1979: 62-63). FOSBERG & RENVOIZE (1980: 2) pointed out that the biological evidence contradicts the geological findings here: "Biologically this seems questionable, because of the extent and differentiation of the flora and fauna". For further discussion on the biogeography of the Seychelles including Aldabra see also FRIEDMANN (1994: 9-15).

ECOLOGY.—MADAGASCAR: in dry deciduous (forêt tropophile), sublittoral and littoral forest and river banks on sand over sandstone, more rarely in humid evergreen forest (forêt ombro-

phile) on lateritic soil derived from basalt or gneiss, also in deciduous forest on limestone; from sea level to 1600 m altitude. No preferences with regards to bioclimate, altitude, geology or other ecological factors could be recognized.—SEYCHELLES: in undergrowth of forest on coastal slopes, in ravines, often between or on top of granitic boulders, on poor, dry, thin soil; from sea level to 400 m altitude.

The differing ecological behaviour in the two parts of the distribution area is also reflected by the fact that in most Madagascan collections the plant is said to be a tree (max. height 20 m), while from the Seychelles it is known only as a shrub (max. height 6 m).

VERNACULAR NAMES.—MADAGASCAR: Hazomby (13801-SF), Janganito (s.coll. 1655; 7944-SF), Tsilikatsifaka (*Rakotonina* 5184-RN); Tsimafaitompo (15605-SF).—COMORO ISLANDS: M'Tsouakofou (Pascal 193), Sari Vavalouza (Pascal 751).—SEYCHELLES: Bois fourmi [nom créole] (FRIEDMANN 1986: 100, 172; 1994: 365; Procter 4002).

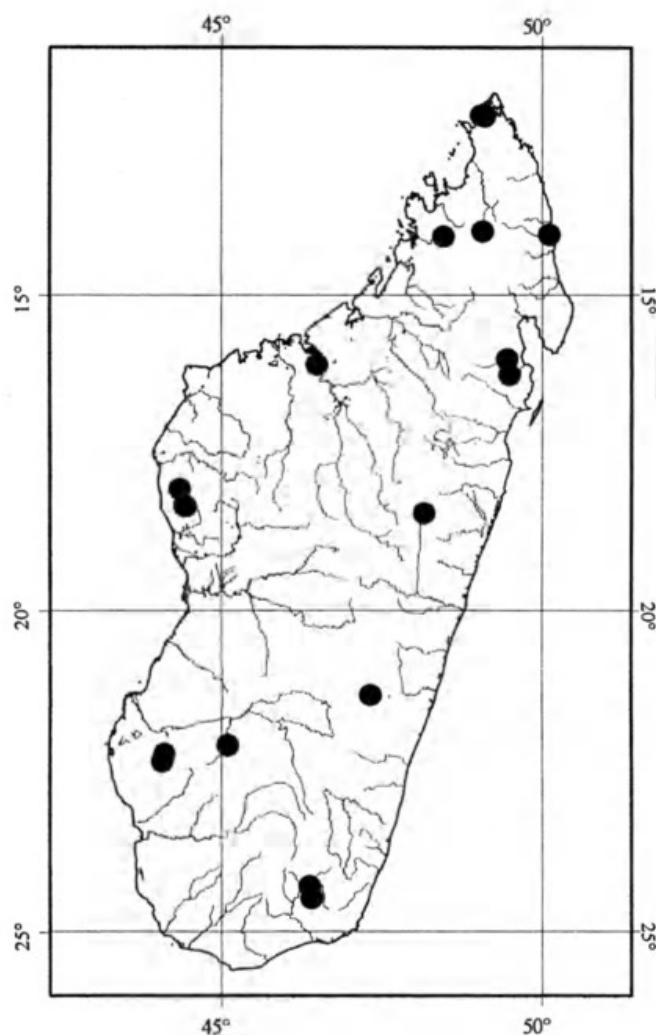


Fig. 2.—Distribution of *Wielandia elegans* in Madagascar.

SPECIMENS EXAMINED.—MADAGASCAR: *Capuron* 6827-SF, Ouest, Forêt d'Antsingy, aux environs de la clairière d'Ambodiriana (route Antsalova-Tsiandro), 13 Dec. 1952 (G!, P!); *Capuron* 6827-SFbis (G!, K!, MO!, P!); *Capuron* 8524-SF, Sud (limite E. de l'Androy), entre Imonty et Ambatoabo, bord d'une rivière, 28 Sep. 1953 (G!, K!, MO!, PRE, WAG!, P!); *Capuron* 11282-SF, Centre (Nord), Montagne d'Ambre, vers 1000 m, 8-14 Oct. 1954 (P!); *Capuron* 11663-SF, Ouest, massif gresieux de l'Isalo, restes de forêts tropicales dans la vallée de la Malio, 24 Jan. 1955 (G!, K!, MO!, P!); *Capuron* 18328-SF, Est, environs de la Baie d'Antongil, massif de Farankaraina, entre Navana et Andranofotsy, 0-150 m, 18 Sep. 1957 (G!, K!, MO!, P!, PRE!, WAG!); *Capuron* 18735-SF, Centre-Est, vallée de la Vohomahery, à l'Est de Nosivolo (Canton de Manakambahiny-Est), limite Ouest de la Réserve Naturelle no. 3, 27 Aug. 1958 (G!, K!, MO!, P!); *Capuron* 22217-SF, Ouest, Hara, au Nord de Miria dans le haut bassin de l'Illiona (au NE du massif de l'Analavelona, vers 600-700 m, forêt, sur sables, 16 Dec. 1962 (G!, K!, MO!, P!); *Capuron* 23197-SF, Est (Confins du Centre), près d'Ankarahara, au P.K. 100 de la route Tananarive-Moramanga (rive gauche du Mangoro), vestige forestier, 5 Jan. 1964 (G!, K!, MO!, P!); *Capuron* 24000-SF, Centre, environs de Sandrangato, au Sud de Moramanga, 13 Dec. 1964 (P!); *Capuron* 24039-SF, Est, Ambatoharanana, au Nord de l'embouchure de l'Anove, forêt sublittorale, sur sables, 8 Mar. 1965

(G!, K!, MO!, P!); *Capuron 27705-SF*, Est (Nord), au Sud de Sambava, forêt littorale, sur sables, 1-10 Apr. 1967 (K!, P!); *Decary 1989*, Ankaizina, 1700 m, forêt, 19 Apr. 1923 (P!); *Humbert 14202*, Analavelona au N du Fiherenana, 950-1250 m, forêt, sur basalte et grès, Mar. 1934 (G!, K!, MO!, P!); *Humbert 28697*, plateaux et vallées de l'Isalo à l'Ouest de Ranohira, 800-1250 m, grès et sables siliceux, 29 Jan.-2 Feb. & 8-10 Apr. 1955 (K!, MO!, P!); *Humbert 28780*, Plateaux et vallées de l'Isalo à l'Ouest de Ranohira, haute vallée de la Malio, 800 m, restes de forêt tropophile, grès et sables siliceux, 29 Jan.-2 Feb. & 8-10 Apr. 1955 (K!, P!); *Humbert 32072*, Environs de Diego-Suarez, Forêt d'Ambre, ca. 1000 m, forêt ombrophile, sur argile latéritique de basalte, 23 Dec. 1959-18 Jan. 1960 (K!, MO!, P!); *Humbert & Capuron 24874*, Montagnes au Nord de Mangindrano (haute Maevarano) jusqu'aux sommets d'Ambohimirahavavy (parage des Eaux Mahavavy-Androranga: Centre-Nord), 1600 m, forêt ombrophile, sur latérite de gneiss, 19 Jan.-12 Feb. 1951 (G!, K!, MO!, P!); *Labat & Deroin 2290*, environs rivière Ambodirina, à l'Est d'Ambinda (RN 9, près d'Antsalova), 18°38'S, 44°42'E, 100-200 m, forêt caducifoliée de bas-fond, sol brun sur calcaire, 4 Dec. 1992 (P!); *Leandri et al. 2162*, Antsingy, vers Ambodiriana, E d'Antsalova, 100-150 m, forêt à feuilles caduques, sur calcaires, rochers isolés, 13 Dec. 1952 (G!, K!, MO!, NY!, P!, PRE!, WAG!); *Leandri et al. 2167*, 6-16 Dec. 1952 (G!, K!, MO!, P!, PRE!, WAG!); *Miller 3617*, Montagne d'Ambre, 1050 m, 21 Oct. 1988 (MO); *Perrier de la Bathie 1683*, Ouest, Ambongo, Manongarivo, bois, sablonneux, Jan. 1904 (P!), lecto- and isotype of *W. elegans* var. *perrieri*; *Perrier de la Bathie 2096*, Côte Est, Mananara, forêt littorale, Oct. 1912 (P!); *Perrier de la Bathie 5940*, Ouest, bords de la Mariano, affluent de droite du Mangoky, bois, sur grès jurassiques, 1911 (P!), syn-type of *W. elegans* var. *perrieri*; *R-4 1249bis*, s.loc. (K!, P!); *Rakotomalaza 358*, Station forestière d'Ampijoroa, rive NE du lac Ravelobe, 180 m, 22 July 1995 (MO); *Rakotoniaina 5184-RN*, Sud district, Bezaha canton, RN 11, bord rivière, 7 Apr. 1953 (K!, MO!, P!); *Razafindrakoto 4701-RN*, Antsalova, R.N. 9, 14 Dec. 1952 (P!); *s.coll. 1655*, Canton et district Marovoay, Ampijoroa, JB 4 B, 27 May 1955 (K!, P!); *5966-SF*, Ambinanindrano, Tolongoina, Fort Carnot, 21 Aug. 1952 (P!); *7944-SF*, Marovoay, Ampijoroa, JB 4, 23 Nov. 1953 (K!, MO!, P!); *8057-SF*, Ampijoroa, Marovoay, 11 Dec. 1953 (K!, P!); *11039-SF*, Diego-Suarez, J.B. 19 Roussettes, 13 Nov. 1954 (P!); *13801-SF*, Analavelona, Tulear, 15 Mar. 1955 (P!); *15605-SF*, Ihara-Sakaraha, forêt, 23 Mar. 1956 (P!); —COMORO ISLANDS, MAYOTTE: *Pascal 193*, Mlima Vatounkaridi, 14 Nov. 1995 (P!); *Pascal 751*, Sohoa, 200 m, 7 Nov. 1996 (P!); —SEYCHELLES, ÎLE CARENGA: *Perville 971* (communiqué par Boivin), sur les montagnes, 12 Nov. 1841 (P!), holotype of *W. elegans*. —ALDABRA-ISL.: *Friedmann 4740*, Ile Esprit,

June 1983 (P!); *Fryer 84*, Aldabra-Isl., s.loc., 1908 (K!); —MAHE: *Dupont s.n.*, 1912 (K!); *Procter 4245*, Anse, S side of marsh, sea level, protruding from between granite boulders, Aug. 1972 (K!, P!); *Thomasset 193*, Cascade ?Stare, Feb. 1905 (K!); *Boivin s.n.*, s.loc., 1847-1852 (P!); *Friedmann 4152*, Glacis, env. 100 m, Apr. 1982 (P!); *G. de l'Île s.n.*, en allant à la Forêt noire, Mar. 1876 (P!); —MAHE/PRASLIN: *Horne 445*, s.loc., low elevation, poor and dry soils, 1874 (K!); —PRASLIN: *Dupont 62*, Anse ?Badamier, 30 July 1907 (K!); *Friedmann 5404*, pentes Nord de Fond Azore, env. 250 m, Aug. 1985 (P!); —SILHOUETTE: *Bernardi 14639*, La Réserve, 50 m, locus graniticus, asperimus, ob immania saxa, 2 Nov. 1973 (BM!, K!, NY!, S!); *Bernardi 14658*, per montem 'Corgate', 300 m, 3 Nov. 1973 (P!); *Fitzgerald 6199*, P^{te} Civine, forêt, coastal slopes, 17 Feb. 1938 (BM!, K!, P!); *Fosberg 52202*, La Réserve, on steep N slope of island, in undergrowth in native forests on talus slope of gigantic boulder, 28 Jan. 1970 (GH!, K!, NY!, US!); *Friedmann 4265*, Jardin Marron, env. 400 m, pousse au sommet d'un rocher, Aug. 1982 (P!); *Friedmann 4500*, Glacis Noel, 300 m, Feb. 1983 (P!); *Gardiner 30*, Point Masson, 14 Aug. 1908 (K!); *Jeffrey et al. 835*, La Réserve, above sea, relict lowland forest on boulder-strewn slopes, 5 Feb. 1962 (P!); *Procter 4002*, La Réserve, 100 m, high growing with *Allophylus pervillei*, *Memecylon*, *Canthium bibracteatum* etc., near edge of rock outcrop, June 1970 (K!); *Procter 4552*, La Réserve, 50 m, growing with *Tarenna*, *Colubrina*, *Nephrosperma*, *Calophyllum* etc., Nov. 1973 (K!).

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