

## **A Revision of the Malagasy Species of Homalium Sect. Eumyriantheia Warb. (Salicaceae)**

Author: Applequist, Wendy L.

Source: Candollea, 71(1) : 33-60

Published By: The Conservatory and Botanical Garden of the City of Geneva (CJBG)

URL: <https://doi.org/10.15553/c2016v711a7>

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# A revision of the Malagasy species of *Homalium* sect. *Eumyriantheia* Warb. (Salicaceae)

Wendy L. Applequist

## Abstract

APPLEQUIST, W.L. (2016). A revision of the Malagasy species of *Homalium* sect. *Eumyriantheia* Warb. (Salicaceae). *Candollea* 71: 33–60. In English, English and French abstracts. DOI: <http://dx.doi.org/10.15553/c2016v711a7>

*Homalium* sect. *Eumyriantheia* Warb. (Salicaceae) is the largest and most widespread fasciculate-stamened section of *Homalium* Jacq. Though the section is markedly heterogeneous, the Malagasy species appear to form a natural group. A new revisionary treatment of these species is presented and an identification key is provided. Fifteen species are recognized, of which five, i.e. *Homalium dorrii* Appleq., *Homalium pseudoboinense* Appleq., *Homalium randrianasoloi* Appleq., *Homalium ranomafanicum* Appleq., and *Homalium schatzii* Appleq., are newly described. Occasional hybridization is observed. Most species are endangered.

## Résumé

APPLEQUIST, W.L. (2016). Une révision des espèces malgaches de *Homalium* sect. *Eumyriantheia* Warb. (Salicaceae). *Candollea* 71: 33–60. En anglais, résumés anglais et français. DOI: <http://dx.doi.org/10.15553/c2016v711a7>

*Homalium* sect. *Eumyriantheia* Warb. (Salicaceae) est, parmi les sections à étamines en faisceaux, celle qui a le plus grand nombre d'espèces et possède la plus large répartition. Malgré que la section soit très hétérogène, les espèces malgaches semblent former un groupe naturel. Une nouvelle révision de ces espèces est présentée et une clé de détermination est proposée. Quinze espèces sont reconnues, dont cinq, i.e. *Homalium dorrii* Appleq., *Homalium pseudoboinense* Appleq., *Homalium randrianasoloi* Appleq., *Homalium ranomafanicum* Appleq. et *Homalium schatzii* Appleq., sont nouvellement décrites. L'hybridation est observée occasionnellement. La plupart des espèces sont menacées.

## Keywords

SALICACEAE – *Eumyriantheia* – *Homalium* – *Myriantheia* – Madagascar – Taxonomy

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Address of the author:

Missouri Botanical Garden, P.O. Box 299, St. Louis, MO, 63166-0299, U.S.A. E-mail: [wendy.applequist@mobot.org](mailto:wendy.applequist@mobot.org)

Submitted on July 29, 2015. Accepted on December 9, 2015.

First published online on March 14, 2016.

## Introduction

*Homalium* Jacq. is a pantropical woody genus that is now placed within *Salicaceae*, along with many other genera of the polyphyletic former *Flacourtiaceae* (CHASE et al., 2002; ALFORD, 2005). *Homalium* is one of the largest of these genera, including up to 150 recognized species (APPLEQUIST, 2013), as well as an unknown number of unrecognized species in regions where the existing treatments are obsolete. The genus is characterized by hermaphroditic flowers with semi-inferior ovaries and conspicuous single raised glands at the base of each sepal; fruits are very small with few maturing seeds, and flowers are usually dehiscent as a unit before seeds mature. As currently circumscribed, the genus encompasses an unusually broad range of floral morphology (e.g., there is substantial variation in petal and sepal number, shape, indument and accrescence, anther morphology, stylar morphology, shape of the fruiting ovary, and locular pubescence; Applequist, unpubl. data). The last worldwide survey of *Homalium* was by WARBURG (1894), who published a complex classification of two subgenera (subg. *Blackwellia* Warb., and *Homalium*, defined by solitary (per-petal) vs. fasciculate stamens respectively), and nine sections. This classification has been largely maintained, though later authors have made some nomenclatural corrections and proposed additional sections, not all of which appear useful.

Madagascar represents perhaps the most important center of diversity for *Homalium*; six sections are present, four of which have previously been considered endemic. The last revisionary treatment of the Malagasy species of *Homalium* (SLEUMER, 1973) recognized 36 species. The amount of herbarium material from Madagascar available now, compared to 40 years ago, has increased enormously, and examination of collections indicated that multiple unnamed species were present. Updated revisions of all sections are therefore being prepared. *Homalium* sect. *Eumyriantheia* Warb. is one of the most speciose sections in Madagascar, and the only section present that belongs to subg. *Homalium*. As traditionally circumscribed, it occurs in Asia and the Pacific as well as Madagascar. However, the author will propose a revised classification of *Homalium* in which the Asian and Pacific species of sect. *Eumyriantheia*, which have far less morphological similarity to the Malagasy species of that section than to single-stamened Asian species, will be segregated into sect. *Polyanthera* Warb. Under this treatment, sect. *Eumyriantheia* will represent a fifth endemic section in Madagascar (Applequist, unpubl. data).

## Material and methods

Herbarium specimens at Paris (P) and St. Louis (MO) were examined, as were then-undistributed duplicates for exchange available at those herbaria and images available through JSTOR of types held by other institutions.

Definition of species utilized a taxonomic species concept (e.g., GRANT, 1981), the most widely used and usually most practical approach in plant taxonomy; three fixed morphological differences suffice to recognize taxonomic entities at the species level, with conspicuous ecological preferences potentially being considered as supporting characters (in practice, this is necessary only in the “*Homalium capuronii* Sleumer species complex”, in which species are on average distinct but encompass a range of variation that can make extremes hard to formally distinguish). Preliminary evaluation of conservation status according to the IUCN Red List Categories and Criteria (IUCN, 2012) was performed for each species recognized.

## Taxonomic treatment

*Homalium* sect. *Eumyriantheia* Warb. in Engler & Prantl, Nat. Pflanzenfam. III(6a): 36. 1893.

≡ *Myriantheia* Thouars, Gen. Nov. Madagasc.: 21. 1806. ≡ *Homalium* [unranked as §] *Myriantheia* (Thouars) Baill. in Bull. Mens. Soc. Linn. Paris 1: 576. 1886 [as *Myriantheia*]. ≡ *Homalium* sect. *Myriantheia* (Thouars) Kuntze in Post & Kuntze, Lex. Gen. Phan., Prop.: 285. 1903 [as *Myriantheia*].

**Typus:** *Homalium laxiflorum* (Tul.) Baill. (≡ *Myriantheia laxiflora* Tul.) (designated by SLEUMER, 1973: 315).

*Trees.* Leaves with stipules usually caducous (rarely in part persistent); secondary veins brochidodromous, little or not prominent; texture fairly thick to coriaceous. *Inflorescences* racemose or paniculate, lateral (in part pseudoterminal or clustered at apices); flowers pedicellate (sessile), often with bracteoles borne on pedicels, dehiscing immediately or slightly below flower shortly after anthesis. *Flowers* with sepals and petals numbering 4 to 5 (seldom 6), not markedly accrescent nor highly reduced; sepals not (or inconsistently) reflexed; petals obovate to oblanceolate (in *H. trigynum* to spatulate, with sepals then ovate), not ciliate (except through pubescence of entire adaxial surface); calyx cup usually more or less funnelform (rarely shortly so, or in *H. trigynum* cylindrical with a broad rounded base); stamens inserted just below base of, but not adnate to petals in groups of 3 (aberrantly 4; in *H. boinense* consistently 5) with two in each fascicle attached at the sides of the neighboring sepal glands; anthers 0.2–0.5 mm, dorsifixed below midpoint and often somewhat versatile, dehiscing by longitudinal sutures, united by a broad connective so that the thecae are parallel or almost parallel with their adjoining lateral surfaces appressed; styles fused at base. *Fruits*, where known, usually containing 1 to 2 maturing seeds (possibly several-seeded in one species); inner surface of ovary glabrous (sparsely pubescent).

*Notes.* – SLEUMER (1973) wrongly corrected the name of sect. *Eumyriantheia* to *Myriantheia* and treated it as having been based upon the generic name *Myriantheia* Thouars. Under Art. 21.3 of the ICN (McNEILL et al., 2012), *Eumyriantheia* could not have been validly published as a section within *Myriantheia* if that genus had been recognized, but it is legal within *Homalium*. *Myriantheia* does not enjoy priority at the sectional level, and *Eumyriantheia* could have been published either as a replacement name for it or as the name of a new taxon. However, since Sleumer considered the two to be nomenclatural synonyms, his designation of a type for one of them can be considered applicable to both.

The traditional circumscription of sect. *Eumyriantheia* is excessively broad. It was distinguished from other fasciculate-stamened sections largely by its lack of the apomorphic characters that were said to characterize those sections; thus it has been defined by plesiomorphic characters, and encompassed a suspicious degree of variation. South Asian, Malesian and Pacific species (see SLEUMER, 1954; LESCOT, 1970, 1980) have 7 to 12 (rarely 6) narrowly oblong to narrowly elliptical sepals and petals, which are similar in shape, or the sepals shorter and narrower, and long-ciliate or long-pubescent throughout; the calyx cup is usually subcylindrical and prominently ridged and the anthers very small in proportion to the long slender filaments. Flowers of most of these species closely resemble typical flowers of the widespread sect. *Blackwellia*, except that sect. *Blackwellia* has only 1 stamen per petal.

By contrast, the Malagasy species of sect. *Eumyriantheia* (including the type of the section) have 4 to 5 (rarely 6) sepals and petals, which are relatively broad and variable in shape (the petals often being obovate) and lack long cilia; the calyx cup is usually funnelform or cup-shaped and the anthers different in shape and usually larger. In overall appearance, these species bear much less resemblance to the fasciculate-stamened Asian and Pacific species than to some solitary-stamened Malagasy species. The distribution of morphological variation in *Homalium* (and allied genera such as *Calantica* Jaub. ex Tul.) makes it evident that some character(s) must have evolved homoplasiously. It is this author's opinion that changes in stamen number are clearly homoplasious, and that neither subg. *Homalium* nor subg. *Blackwellia* as traditionally defined are natural groups. The exclusion of the Asian and Pacific species from sect. *Eumyriantheia* into a restored sect. *Polyanthera* will therefore be proposed (Applequist, unpubl. data).

Almost no fruiting material is available of sect. *Eumyriantheia*, as recircumscribed to comprise only the Malagasy species; fruits with large (to 2 mm) developing seeds are very rare even in well-collected species. It appears that fruits dehisce promptly as seeds mature. Most flowering parts, except for anthers, usually persist until the maturing fruit is lost as a unit. Species circumscriptions and keys therefore rely solely on flowering characters.

## Key to the Malagasy species of *Homalium* sect. *Eumyriantheia*

1. Stamens in groups of 5; dry forest, Mahajanga . . . . . **1. *H. boinense***
- 1a. Stamens in groups of 3 (aberrantly 4); humid and littoral (very rarely to dry) forests, widespread. . . . . 2
2. Calyx cup cup-shaped, usually elongated, or cylindrical with a broad rounded base; pedicel 0.5–1 (rarely to 3) mm or absent; petals < 3.5 mm with acute apices . . . . . **15. *H. trigynum***
- 2a. Calyx cup usually funnelform at anthesis (to cup-shaped in fruit or rarely cylindrical); pedicel usually > 1 mm; petals variable, usually > 3.5 mm (rarely < 3.5 mm then apices rounded) . . . . . 3
3. Abaxial surface of both sepals and petals densely (to moderately) pubescent over most of surface, often less dense at apical margins . . . . . 4
- 3a. Abaxial surface of sepals and petals sparsely or minutely pubescent to glabrous, or portions of the petals densely pubescent but the sepals glabrous to sparsely (moderately) pubescent (in one species moderately pubescent, densest at base and along margins). . . . . 7
4. Upper surface of sepal glands at least partly pubescent . . . . . **9. *H. oppositifolium***
- 4a. Upper surface of sepal glands glabrous . . . . . 5
5. Sepals 4 (rarely 5), 3–5.5(–6.5) mm, broadly oblong to broad-based obovate or oblong (rarely broadly elliptical) with rounded apex; petals 3.6–6.2 mm, normally significantly longer than sepals (aberrantly equal in length); neither petals nor sepals at all keeled; petals very densely pubescent at least near base, with fairly short trichomes . . . . . **6. *H. laxiflorum***
- 5a. Sepals 5 (seldom 4 or 6 in *H. brevipedunculatum*), 4.5–8.4 mm, oblong-lanceolate or elliptical (to obovate) with acute (to obtuse or rounded) apex; petals 4.5–9 mm, slightly longer than (about equal to) sepals; petals and/or sepals usually slightly keeled towards apex; petals usually in part densely sericeous with long trichomes . . . . . 6
6. Leaves subopposite to alternate (especially proximally), obovate (narrowly or broadly obovate, elliptical), (3.7–) 5.1–11 × 2.1–5.8(–6.5) cm with petiole 3–12(–17) mm; inflorescences 1.5–4(–5.3) cm; abaxial surface of sepals and petals densely pubescent to sericeous (usually only on petals); sepals often shallowly keeled only at apex, petals usually shallowly keeled; petals oblanceolate to narrowly obovate, 4.5–8.5 × 1.8–3 mm. . . . . **2. *H. brevipedunculatum***
- 6a. Leaves usually alternate (seldom subopposite), elliptical to obovate (broadly obovate), (5.5–)6.5–18 × (3–)4–9 cm with petiole 7–23 mm; inflorescences (1.5–)2.3–10(–13.5) cm; abaxial surface of petals and sometimes sepals densely



- sericeous; sepals usually shallowly keeled for half or more of length, petals usually with a thick streak of very dense indument along central axis but not noticeably keeled; petals obovate to broadly obovate with a narrowed base, 5.5–9 × 3.4–5 mm ..... **8. *H. nobile***
7. Sepals 5.5–6.6 mm, petals 9–10.5 mm; abaxial surface of sepals usually with a conspicuous broad pale margin more densely pubescent than remainder of surface. .... **10. *H. pseudoboinense***
- 7a. Sepals to 4.6 mm, petals to 6.5 mm; abaxial surface of sepals glabrous to sparsely (moderately, minutely) pubescent throughout, the indument not denser near margins .... 8
8. Upper surface of sepal glands densely (to moderately) pubescent ..... 9
- 8a. Upper surface of sepal glands glabrous to glabrate, or sparsely or partially pubescent ..... 11
9. Leaves narrowly obovate to narrowly elliptic or oblong-elliptic or obovate; sepals 3.7–4.6 mm; petals moderately longer than sepals; littoral or low-elevation forest. .... **4. *H. dorrii***
- 9a. Leaves elliptical (to narrowly or broadly elliptical, obovate) or broadly obovate (to obovate, broadly elliptical); sepals < 3.5 mm; petals almost twice as long as sepals; mid-elevation humid forest ..... 10
10. Leaves elliptical (to narrowly or broadly elliptical, obovate); leaf margins toothed or wavy with multiple glands in marginal projections; inflorescences racemose ..... **7. *H. maringitra***
- 10a. Leaves broadly obovate (to obovate, broadly elliptical); leaf margins revolute, often strongly, to subentire with 0 to 2 basal glands sunk in margins; inflorescences paniculate with well-developed branches. .... **13. *H. ranomafanicum***
11. Inflorescences all or almost completely racemose, with flowers borne singly or in groups of 1–3 on a ridged rachis (at most, clustered flowers rarely forming a very short branch). .... 12
- 11a. Inflorescences paniculate, sometimes spiciform with most flowers borne in clusters on short side branches .... 13
12. Leaves oblanceolate to elliptical or narrowly elliptical, 4–9(–13.7) × 1.5–3.6(–4.4) cm; base cuneate to convex or attenuate; apex cuspidate to rounded (acute); leaf margins with 2–4 small basal glands per side; rachis and pedicels usually glabrous (sparsely pubescent); sepal glands 0.6–1 × 0.4–0.5 mm; abaxial surface of petals pubescent with short appressed hairs most densely on central basal portion, less so towards margins, usually with a dark line down the center but not a broad glabrate stripe; Toliara. .... **11. *H. pulchrum***
- 12a. Leaves elliptical to obovate, 6–11.5 × 2.8–6.2 cm; base convex; apex rounded to rounded-cuspidate, rounded-obtuse or emarginate; leaf margins with 1–2 small basal glands per side; distal part of rachis and pedicels minutely pubescent; sepal glands 0.9–1.6 × 0.7–1 mm; abaxial surface of petals moderately to densely short appressed-pubescent with a conspicuous glabrate stripe along the central axis; Toamasina ..... **14. *H. schatzii***
13. Leaf margins crenate-serrulate for most of length; panicles borne mostly in pairs along length of older twigs, with an open slender appearance, many having one or more well-developed lower branches sometimes subtended by foliose bracts; petals usually only slightly longer than sepals; sepal glands entirely glabrous; low-elevation forest, Antsiranana ..... **5. *H. graciliflorum***
- 13a. Leaf margins subentire or revolute (occasionally with few glandular teeth); panicles borne singly except when clustered at twig apices, usually confined to younger distal portions of twigs, usually mostly spiciform with very short branches (in part with few well-developed branches, these then not subtended by foliose bracts); petals normally significantly longer than sepals; sepal glands sometimes in part sparsely pubescent in the depressed central portion. .... 14
14. Leaves obovate to elliptical, often broadly (rarely to suborbicular, narrowly elliptical, or oblanceolate), (2.5–)4–7.5(–10.2) × (1.5–)2.1–4.3(–5.1) cm; base cuneate to convex (slightly attenuate); apex rounded (rounded-obtuse, shallowly emarginate or rounded-cuspidate, rarely acute or short-acuminate with a rounded tip); margins revolute to subentire or bearing few shallow teeth, with small glands sometimes present and variably placed; panicles normally all spiciform; sepals and petals 4; high- to mid-elevation forest; Antsiranana. .... **3. *H. capuronii***
- 14a. Leaves elliptical to obovate or broadly (narrowly) elliptical, 6–12.5 × 2.8–6.6 cm; base convex to rounded, at extreme base short-attenuate; apex rounded-acute to cuspidate, rounded, or shallowly emarginate; margins minutely revolute with 0 to 2 basal glands just inside margin; panicles sometimes with short but well-developed lower branches; sepals and petals 4(–5); low-elevation forest; Toliara (Marovony). .... **12. *H. randrianasoloi***

**1. *Homalium boinense*** H. Perrier in Mém. Mus. Natl. Hist. Nat. 13: 297. 1940.

**Lectotypus** (first step, designated by SLEUMER, 1973: 318): **MADAGASCAR. Prov. Mahajanga:** Beritzoka entre Maevatanana et Andriba, X.1892, fl., *Perrier de la Bâthie* 338 (P).

**Lectotypus** (second step, designated here): **MADAGASCAR. Prov. Mahajanga:** Beritzoka entre Maevatanana et Andriba, X.1892, fl., *Perrier de la Bâthie* 338 (P [P04679008]!; isolecto-: G [G00018416] image seen, L [L0010885] image seen, P [P04679009]!). **Syntypi:** **MADAGASCAR. Prov. Mahajanga:** *sine loc.*, 1898, fl., *Perrier de la Bâthie* 699 (P [P04679004]!, S [S10-10098] image seen); env. de M[a]evatanana, 1900, fl., *Perrier de la Bâthie* 6729 (P [P04679005]!, PRE [PRE0602253-0] image seen, US [US00603577] image seen); Mahamavo, W du Namakia, IX.1922, fl., *Perrier de la Bâthie* 14833 (K [K000231474] image seen, P [P04679006, P04679007]!).

*Tree* to 20 m tall; large twigs brown; young twigs brown, glabrous or sparsely and minutely pubescent; stipules broadly deltoid (deltoid), 1–1.6 mm, minutely pubescent or glabrous. *Leaves* alternate; petiole 5–15 mm, glabrous or sparsely minutely pubescent; blade elliptical to broadly elliptical or obovate, 5.7–13.6 × 3.4–6.6 cm; base rounded (minutely attenuate at petiole attachment) to convex (cuneate in immature leaves); apex rounded to rounded-obtuse or cuspidate; margins subentire or shallowly wavy or toothed, then with small glands in tooth apices at margin; abaxial surface glabrous or bearing few small hairs on midrib, drying brown; adaxial surface glabrous, drying dark or pale grayish brown. *Inflorescences* narrowly paniculate, with flower clusters usually borne on short branches or flowers solitary distally, occasionally racemiform, lateral, 6.5–15 cm, short-pubescent; peduncle (0.8–) 2–5.5 cm, moderately thick; pedicel 1–2(–2.5) mm, densely short-pubescent; bracts ovate to broadly deltoid or suborbicular, 1.3–3.4 mm, densely (to sparsely) pubescent; bracteoles lanceolate (ovate), 1–2 mm, pubescent. *Flowers:* sepals 5(–6), narrowly oblong to narrowly elliptical or oblong-ovate with acute to rounded-acute (rounded) apex, 3–5.7 mm, abaxial surface moderately pubescent; calyx cup shortly funnelform, densely short-pubescent especially basally; sepal glands irregularly trapezoid to rectangular with a depressed center, 0.6–1.3 × 0.5–0.8 mm, upper surface usually densely short-pubescent; petals white, obovate to oblanceolate, with rounded apex, 5.2–8 × 2.3–4 mm, conspicuously longer than sepals, abaxial surface densely short-pubescent especially basally, adaxial surface glabrous; stamens in groups of 5; filaments 3–4 mm, glabrous; anthers 0.4 mm; ovary raised conic, densely short-pubescent; styles 4, 1.4–2.3 mm, short-pubescent at base. *Seeds* not seen.

*Uses.* – The wood is said to be white, of good quality, and much used (*Perrier de la Bâthie* 14833).

*Distribution, ecology and conservation status.* – *Homalium boinense* is confined to dry forest in Mahajanga province. It is known from fewer than 5 locations; its native range is unprotected and highly degraded, and it has not been collected for over 90 years. A preliminary conservation status assessment of “Endangered” [EN B2ab(iii)] following IUCN Red List Categories and Criteria probably underestimates the level of threat.

*Notes.* – SLEUMER (1973) designated *Perrier de la Bâthie* 338 at P as the lectotype of *Homalium boinense*; there are two sheets of this collection at P, both of which he marked “Syn & Lectotype”. Art. 9.17 of the ICN (McNEILL et al., 2012) recommends that a second-stage lectotypification be published to select one of these sheets; the selected sheet is in better condition and includes a fragment packet and what is probably Perrier de la Bâthie’s original label.

*Homalium boinense* is notable for its stamens in groups of five, rather than three, and its habitat in dry regions of Mahajanga province, where no other species of sect. *Eumyriantheia* occur.

**2. *Homalium brevipedunculatum*** Scott-Elliot in J. Linn. Soc., Bot. 29: 21. 1891.

**Typus:** **MADAGASCAR. Prov. Toliara:** Fort-Dauphin, V.18??, post-fl., *Scott Elliot* 2600 (holo-: K [K000231468] image seen; iso-: P [P00375087]!).

*Tree* to 20 m tall, 35 cm dbh; large twigs dark gray to gray or dark brown; young twigs grayish to pale brown, glabrous (to sparsely or partially pubescent); stipules narrowly lanceolate or linear, 1.7–2 mm, pubescent. *Leaves* subopposite to alternate especially proximally; petiole 3–12(–17) mm, glabrous or sparsely (to moderately) pubescent when young; blade obovate (narrowly or broadly obovate, elliptical), (3.7–)5.1–11 × 2.1–5.8(–6.5) cm; base convex (cuneate, rounded); apex rounded to emarginate; margins usually somewhat revolute, occasionally minutely toothed then with 1–5 glands toward base of leaf, rarely more; abaxial surface sparsely pubescent on midrib (and blade), drying brown; adaxial surface glabrous, drying brown (green). *Inflorescences* racemose, lateral, sometimes mostly confined to distalmost portion of twigs, 1.5–4(–5.3) cm, densely (to moderately) short-pubescent; peduncle 0.3–0.8 cm, sturdy; pedicel 1–2(–4) mm, densely pubescent; bracts broadly ovate (ovate), (1.4–)2–3.8 mm, densely pubescent; bracteoles ovate, sometimes apparently absent, 1.5–2.5 mm, densely pubescent. *Flowers:* sepals (4–)5(–6), greenish-beige to whitish or yellowish, narrowly oblong (oblong-elliptical, oblanceolate) with acute apex, 4.5–7.5 mm, abaxial surface densely to moderately

pubescent (to sericeous), often slightly keeled at apex; calyx cup funnelform (becoming cylindrical), densely to moderately pubescent (to sericeous); sepal glands yellow, conspicuously elevated,  $0.9\text{--}1.3 \times 0.9\text{--}1.3$  mm, the upper surface glabrous and wrinkled, with pubescence underneath on abaxial surface; petals greenish-white to white or yellowish-white, oblanceolate to narrowly obovate with a narrow base, acute to obtuse or rounded apex,  $4.5\text{--}8.5 \times 1.8\text{--}3.2$  mm, slightly longer than or about equal to sepals, abaxial surface densely pubescent and often shallowly keeled, adaxial surface glabrous or rarely sparsely pubescent; filaments white to yellowish,  $2.4\text{--}3.8$  mm, glabrous; anthers yellow,  $0.3\text{--}0.4$  mm; ovary short-conical, long-pubescent to pilose; styles 3(–4), dark reddish green,  $1.5\text{--}3.5$  mm, basally long-pubescent. *Seeds* probably 1 per fruit; mature seeds not seen.

*Vernacular names.* – “Maranikoditra” (*Faliniaina et al.* 37, *Ramison et al.* 139); “Rohandriana” (*Service Forestier* 6610, 7851).

*Distribution, ecology and conservation status.* – *Homalium brevipedunculatum* is native to littoral and low-elevation humid forests of southeastern Madagascar; it is reported primarily on sand, but occasionally on laterite. Fewer than ten distinct locations are known, most close to Fort-Dauphin; though these include some protected land, the remainder of its range is subject to ongoing forest loss, justifying a preliminary conservation status assessment of “Vulnerable” [VU B2ab(iii)] following IUCN Red List Categories and Criteria.

*Notes.* – *Homalium brevipedunculatum* most closely resembles, and co-occurs in part of its range with *H. nobile*; the latter species has sometimes very large leaves,  $(5.5\text{--})6.5\text{--}18 \times (3\text{--})4\text{--}9$  cm, with at least slight pubescence on the midribs, and petals  $3.4\text{--}5$  mm broad. The other common littoral species with racemose inflorescences and densely pubescent perianth, *H. laxiflorum*, has broader and on average shorter sepals and petals with rounded apices, with the petals usually well exceeding the sepals; neither petals nor sepals are at all keeled, and their indument, though partly dense, is generally short.

*Rabenantoandro et al.* 954 from Mahabo ( $23^{\circ}10'20''\text{S}$   $47^{\circ}42'23''\text{E}$ ; MO) has flowers like those of *H. brevipedunculatum*, with narrow petals, and the leaf midribs are virtually glabrous, but the leaves are very large as is typical of *H. nobile*. Both species are known from Mahabo. It is suggested to be a hybrid between those species.

*Additional material examined.* – MADAGASCAR. **Prov. Fianarantsoa:** S of Farafangana, near village of Mahabo,  $23^{\circ}10'51''\text{S}$   $47^{\circ}42'29''\text{E}$ , 30 m, 5.XI.2001, fl., *McPherson* & *Rabenantoandro* 18358 (MO, P); Fkt. Nosy ala, forêt d'Analazaha,  $23^{\circ}10'13''\text{S}$   $47^{\circ}43'27''\text{E}$ , 22 m, 26.VIII.2003, fl., *Rabehevitra et al.* 558 (P). **Prov. Toliara:** Fort-Dauphin, fl., *Cloisel* 125 (P); forêt sur la route de Ste. Luce, partie S,  $24^{\circ}46'\text{S}$   $47^{\circ}09'\text{E}$ , 0–10 m, 23.III.1989, post-fl.,

*Dumetz* 631 (MO, P); Fkt. Sainte Luce,  $24^{\circ}46'41''\text{S}$   $47^{\circ}10'04''\text{E}$ , 17.XII.2000, fl. and post-fl., *Faliniaina et al.* 37 (MO); Bemangidy forest, ca. 3 km E of Antsotso, along RN 12a,  $24^{\circ}34'05''\text{S}$   $47^{\circ}12'38''\text{E}$ , 100 m, 10.II.2006, post-fl., *Lowry et al.* 6756 (MO, P); Ste. Luce region, Manafiafy,  $24^{\circ}47'\text{S}$   $47^{\circ}10'\text{E}$ , 25 m, 19.X.1989, fl., *McPherson et al.* 14168 (MO, P); few km NW of Manantenina, forêt d'Analalava,  $24^{\circ}13'\text{S}$   $47^{\circ}21'\text{E}$ , 40 m, 28.X.1989, fl., *McPherson* 14274 (MO, P); N of town near village of Ste. Luce (Manafiafy), forest NW of village,  $24^{\circ}47'\text{S}$   $47^{\circ}10'\text{E}$ , 20 m, 16.I.1990, post-fl., *McPherson et al.* 14808 (MO, P); Taolagnaro, forêt M 7,  $24^{\circ}57'31''\text{S}$   $47^{\circ}00'02''\text{E}$ , 0–10 m, 6.X.2000, fl., *Rabenantoandro et al.* 333 (MO, P); Fkt. Sainte Luce, forêt sublittorale de S8, Hova site minier,  $24^{\circ}46'29''\text{S}$   $49^{\circ}08'57''\text{E}$ , 6 m, 4.XI.2003, fl., *Rabenantoandro* & *Ramisy* 1540 (MO, P); Fkt. Sainte Luce, forêt d'Analavinaky, à l'W du village d'Ambandrika,  $24^{\circ}46'30''\text{S}$   $47^{\circ}09'00''\text{E}$ , 21 m, 24.XI.2009, fl., *Rakotovoao* 4736 (MO); sentier reliant Ampasy et Iaboakoho village,  $24^{\circ}35'57''\text{S}$   $47^{\circ}09'31''\text{E}$ , 29.XI.2009, fl., *Rakotovoao et al.* 4909 (MO); forêt d'Ambavarano,  $24^{\circ}57'32''\text{S}$   $47^{\circ}02'07''\text{E}$ , 7 m, 11.XII.2006, fl., *Ramison et al.* 139 (MO); Ste. Luce, fkt. Manafiafy, forêt de Manafiafy,  $24^{\circ}46'08''\text{S}$   $47^{\circ}10'14''\text{E}$ , 21 m, 30.XI.2002, fl., *Randrianaivo et al.* 865 (MO, P); Antsotso, forêt d'Ivohibe,  $24^{\circ}56'46''\text{S}$   $47^{\circ}19'54''\text{E}$ , 386 m, XI.2005, fl., *Razakamalala et al.* 2458 (MO, P); Iaboko, Antsotso Avaratra,  $24^{\circ}34'35''\text{S}$   $47^{\circ}12'28''\text{E}$ , 25 m, 13.XII.2007, fl., *Razakamalala et al.* 4025 (MO, P); N of Ft. Dauphin on road to Ste. Luce, block S-9 of QUIT-FER,  $24^{\circ}47'\text{S}$   $47^{\circ}11'\text{E}$ , 15 m, 12.XI.1990, fl., *Schatz et al.* 2999 (MO, P); Mandena, 19.XII.1952, post-fl., *Service Forestier* 6610 (P); Mandena, 3.XI.1953, fl., *Service Forestier* 7851 (P); Vinanibe, à l'W de Fort-Dauphin, 7.XII.1968, fl., *Service Forestier* 28619 (P [2 sheets]).

**3. *Homalium capuronii*** Sleumer in Bull. Jard. Bot. Natl. Belg. 43: 319–320. 1973.

**Typus:** MADAGASCAR. **Prov. Antsiranana:** Massif d'Anjanaharibe, W district Andapa, 1000 m, 29.XII.1950, fl., *Service Forestier* 952 (holo-: P [P00375088]!; iso-: G [G00018410] image seen, K [K000231473] image seen, L [L0539781] image seen, P [P04734072, P04734073, P04734077]!, TEF [TEF000229] image seen).

*Tree* to 30 m tall, 80 cm dbh; large twigs brown to grayish; young twigs brown (to grayish), often fairly thick, glabrous; stipules deltoid,  $0.4\text{--}0.7$  mm, glabrous. *Leaves* alternate (to opposite, mostly at twig ends); petiole  $(3\text{--})4\text{--}8$  mm, glabrous; blade obovate to elliptical, often broadly (rarely to suborbicular, narrowly elliptical, or oblanceolate),  $(2.5\text{--})4\text{--}7.5\text{--}(10.2) \times (1.5\text{--})2.1\text{--}4.3\text{--}(5.1)$  cm; base cuneate to convex (slightly attenuate); apex rounded (rounded-obtuse, shallowly emarginate or rounded-cuspidate, rarely acute with a rounded tip or short-acuminate); margins revolute to shallowly toothed or subentire with small glands sometimes present, not always associated with noticeable toothings; abaxial surface glabrous, drying medium brown (greenish); adaxial surface glabrous, drying pale brown or greenish to grayish brown. *Inflorescences* normally spiciform paniculate with most flowers clustered on short branches, lateral, mostly borne on distal portions of twigs,  $(2\text{--})3\text{--}9\text{--}(12)$  cm, glabrous or the rachis minutely pubescent; peduncle  $(0.2\text{--})0.5\text{--}4\text{--}(6)$  cm, slender; pedicel  $(0.5\text{--})1\text{--}4\text{--}(4.5)$  mm, sparsely minutely pubescent; bracts ovate to broadly ovate or deltoid (lanceolate),  $0.7\text{--}2.7$  mm, glabrous or sparsely pubescent; bracteoles deltoid to ovate or broadly deltoid,



0.3–1.5 mm, sparsely pubescent or glabrous, sometimes absent. *Flowers* sepals 4, greenish white or green on abaxial surface and white on adaxial surface (to reddish?), oblong to elliptical, narrowly oblong or elliptical, or ovate with rounded (rounded-obtuse, rounded-acute) apex, 2.5–4(–5.3) mm, abaxial surface glabrous or sparsely pubescent; calyx cup funnelform, sparsely and minutely pubescent; sepal glands yellow, irregularly rectangular to elliptical, 0.6–1.3 × 0.4–0.6 mm, upper surface glabrous or sparsely short-pubescent (to moderately, only in the depressed center); petals greenish white to white (to reddish?), obovate to narrowly obovate (rarely to oblanceolate; usually ascending rather than spreading) with rounded apex, 3.5–5.7(–6.7) × 1.8–2.6(–3) mm, usually significantly longer than sepals, abaxial surface minutely pubescent on lower central portion, sometimes densely at base, to glabrous at apical margin, sometimes with a dark line down the center, adaxial surface glabrous; filaments white, 1.2–2.8 mm, glabrous; anthers white becoming yellow then brown, 0.2–0.3 mm; ovary nearly flat in early anthesis to conic, moderately appressed-pubescent; styles white, 4, (0.7–)1–1.5(–2.5) mm, if long then fused for up to a third of length, short appressed-pubescent at base. *Seeds* 1 per fruit, subglobose, 1.8–2.1 mm.

*Uses* – *Homalium capuronii* is said to have hard wood, though there is no explicit documentation of ethnobotanical use.

*Distribution, ecology and conservation status.* – *Homalium capuronii* is native to humid forest in the northern province of Antsiranana; it is reported to occur on gneiss and granite, and at moderate to high elevations. Only five distinct locations are known; the species is rarely collected and anthropogenic damage in the area is ongoing. Hence, a preliminary conservation status assessment of “Endangered” [EN B2ab(iii)] following IUCN Red List Categories and Criteria is appropriate.

*Notes.* – *Homalium capuronii* belongs to a group of species, also including *H. graciliflorum*, *H. pulchrum*, *H. randrianasoloi*, and *H. schatzii*, which have small flowers with sparsely pubescent or glabrous sepals and sepal glands. Material of the species in this group is limited; all appear to be rare, and usually of limited distribution. Since their flowers are rather similar, and all have glabrous twigs and leaves and minutely pubescent (in 1 species to glabrous) inflorescences, they can be difficult to differentiate. Table 1 summarizes the most conspicuous variable characters. *Homalium capuronii* usually has leaves of modest size (usually < 7.5 cm, rarely to 10.2 cm), with mostly rounded apices (one aberrant specimen, *Derleth* 107, has all short-acuminate apices) and mostly revolute or subentire margins, and spiciform panicles, which are confined to younger twigs and twig apices, with flowers mostly borne

in clusters on very short branches. It is the only species of this group found at mid-to-high elevations in northern Madagascar, and is unusually variable in appearance despite the limited number of specimens known.

*Schmidt et al.* 4339 from the Anjanaharibe-Sud Special Reserve (14°43'56"S 49°28'13"E, from at least 1400 m altitude; MO) resembles *Homalium capuronii* except that the inflorescences are well-developed panicles with multiple branches at least slightly elongated; further, the sepal glands are much more densely pubescent than is normal for this species. Typical *H. capuronii* has also been collected from the Reserve. It is tempting to identify this specimen as a hybrid, but the only potential second parent that occurs in medium- or higher-elevation northern forests is *H. oppositifolium*, which is not known from the location, and which has racemose inflorescences so might be assumed unlikely to produce a hybrid with more paniculate inflorescences. Further investigation of this population would be highly desirable.

*Additional material examined.* – **MADAGASCAR. Prov. Antsiranana:** Manongarivo, Mont Antsatroto, 14°05'01"S 48°23'18"E, 1780 m, 14.II.1994, fl., *Andrianarisata et al.* 200 (BR, K, MO); Manongarivo, vallon en amont de la chute de la rivière Bekolosy, 14°02'S 48°18'E, 1100 m, 22.VIII.1994, fl., *Derleth* 107 (MO, P); Massif de l'Anjanaharibe (pentes et sommet N) à l'W d'Andapa, 10.XII.1950–3.I.1951, post-fl., *Humbert et al.* 24560 (P); Manongarivo massif, above village of Ambodisakoana, 14°05'S 48°20'E, 1100 m, 17.X.1994, fr., *McPherson & van der Werff* 16390 (MO); *ibid. loc.*, ridge above camp, 1100–1175 m, 19.X.1994, fr., *McPherson & van der Werff* 16420 (MO); Daraina, forêt de Binara, 13°15.83'S 49°35.94'E, 1015 m, 18.XI.2005, fl., *Nusbaumer & Ranirison* 1626 (MO, P); Antanambao Belinta, W du campement II, 13°39'14"S 48°40'06"E, 937 m, 3.XI.2007, fl., *Rakotovao et al.* 3893 (MO, P); Manantenina, Mandena, E de la vallée de Beondrika, rivière Beamalona, 14°29'S 49°49'E, 8.XII.2004, fl., *Ravelonarivo* 1337 (G, MO); Anjanaharibe-Sud, village de Mandritsarahely, suivant la rivière de Andranomenabe, 14°43'10"S 49°27'12"E, 1700 m, 14.II.1995, fl., *Ravelonarivo & Rabesonina* 635 (G, MO); Massif du Manongarivo, plateau du Bekolosy, vers 1200 m, 13.XI.1954, fl., *Service Forestier* 11447 (P).

#### 4. *Homalium dorrii* Appleg., spec. nova (Fig. 1, 2A).

**Typus:** MADAGASCAR. **Prov. Toamasina:** Analalava, 2.8 km W of old fortress at Foulpointe, 3.XII.1985, fl., *Dorr et al.* 4432 (holo-: MO-3320333!; iso-, P [P04705567, P04705569]!).

*Homalium dorrii* Appleg. differs from *H. maringitra* *H. Perrier* in having narrowly obovate to narrowly elliptic leaves with cuneate to convex bases, subopposite or clustered near twig ends, and longer sepals.

Tree to 10–15 m tall, 6 cm dbh; large twigs dark or grayish brown; young twigs gray-brown to pale whitish gray, glabrous; stipules deltoid, 1 mm, glabrous. *Leaves* clustered at twig apices or on short branches or subopposite, leaf scars on older twigs occasionally whorled; petiole 5–11 mm, glabrous; blade narrowly obovate to narrowly elliptic or oblong-elliptic or obovate, 4.2–9 × 1.6–4 cm; base convex to cuneate; apex rounded;

**Table 1.** – Comparison of key features of species in the *Homalium capuronii* Sleumer group. Apparent differences in stamen and style size are excluded because of limited material.

	Leaf shape	Leaf size [cm]	Leaf margins	Inflorescence
<i>H. capuronii</i>	Variable, usually obovate to elliptical, often broadly; apex variable, often rounded; base cuneate to convex	(2.5-)4-7.5(-10.2) x (1.5-)2.1-4.3(-5.1)	Revolute to shallowly to obovate or subentire; glands, if present, not always associated with toothings	Paniculate, normally spiciform; bracts to 2.7 mm
<i>H. graciliflorum</i>	Elliptical (narrowly elliptical); apex cuspidate to short-acuminate with a rounded tip; base convex	5.8-10.5 x 2.3-4.7	Crenate-serrulate for much of length, sometimes with variably located glands	Paniculate, the lower branches often well-developed, sometimes subtended by foliose bracts 6-9(-20) mm long
<i>H. pulchrum</i>	Ob lanceolate to elliptical or narrowly elliptical; apex cuspidate to rounded (acute); base cuneate to convex or attenuate	4-9(-13.7) x 1.5-3.6 (-4.4)	Subentire, seldom minutely revolute or with few shallow rounded teeth, with 2-4 glands per side	Racemose (rarely partly paniculate with few flowers clustered on very short branches); bracts to 1.5(-2.2) mm
<i>H. randrianasoloi</i>	Elliptical to obovate or broadly (narrowly) elliptical; apex rounded-acute to cuspidate, rounded, or shallowly emarginate; base convex to rounded (cuneate when young)	6-12.5 x 2.8-6.6	Minutely revolute, sometimes with 1 to 2 basal glands per side	Paniculate, with well-developed lower branches or entirely short-branched; bracts to 2.5 mm
<i>H. schatzii</i>	Elliptical to obovate; apex rounded to rounded-cuspidate, rounded-obtuse or emarginate; base convex	6-11.5 x 2.8-6.2	Subentire with 1-2 basal glands per side	Racemose (flowers in groups of 1 to 3 above a prominent ridge); bracts to 1.5 mm

margins slightly revolute, shallowly and irregularly denticulate with few teeth, glands located in teeth; abaxial surface glabrous, drying brown; adaxial surface glabrous, drying dark brown. *Inflorescences* racemose, lateral, often clustered near twig apices, 4.5-9 cm, sparsely short-pubescent (to moderately pubescent distally); peduncle 0.3-4 cm, moderately thick; pedicel 1-4 mm, short-pubescent; bracts very few, deltoid, 0.5-1 mm, minutely pubescent; bracteoles not seen (absent or caducous and not leaving obvious scars). *Flowers* sepals 4-5, broad-based obovate to nearly oblong with rounded apex, 3.7-4.6 mm, abaxial surface moderately (sparsely) short-pubescent on basal half, sparsely pubescent toward apical margin; calyx cup funnelform (becoming convex in fruit), ridged, short-pubescent; sepal glands roughly elliptical, 1-1.2 x 0.5-0.6 mm, upper surface densely short-pubescent; petals white or whitish-grey, obovate with rounded apex, 4.8-5.4 x 2-2.6 mm, moderately longer than sepals, abaxial surface short appressed-pubescent mostly at base and in center, adaxial surface glabrous; filaments ca. 1-1.5 mm, glabrous; anthers 0.3 mm; ovary conic (becoming hemispherical in fruit), short-pubescent; styles 4, ca. 1 mm, basally short-pubescent. *Seeds* 1 per fruit, subglobose, 2-2.5 mm.

*Distribution, ecology and conservation status.* – The two known collections of *H. dorrii* are from the forest of Analalava near Foulpointe, at a low elevation near the coast, on laterite. The small number of collections suggests that the species is rare, since the area around Foulpointe was repeatedly botanized over several decades. Though the location had until recently been subject to ongoing degradation, it is now effectively protected. Thus, given the lack of knowledge regarding this species, a preliminary conservation status of “Data Deficient” [DD] seems most appropriate.

*Homalium dorrii* is presumed to be most closely related to *H. maringitra* and the newly described *H. ranomafanicum*, which have generally similar floral morphology (small flowers with sparse sepal indument but dense sepal gland indument). Both of those species have usually broader, elliptic to broadly obovate or obovate, at least partly alternate leaves and short sepals (to 3.5 mm in *H. maringitra*) that are often barely more than half as long as the petals; both are native to mid-elevation humid forests. *Homalium dorrii* must also be distinguished from *H. oppositifolium*, which is found in eastern littoral forests and has often similarly shaped leaves and densely pubescent sepal glands. *Homalium oppositifolium*



Inflorescence indument	Number of petals and sepals	Sepal and petal size	Petal indument (all appressed-pubescent)	Dimensions of upper surface of sepal glands [mm]	Habitat
Pedicels and sometimes rachis minutely pubescent	4	Sepals 2.5-4(-5.3) mm; petals 3.5-5.7 (-6.7) mm, usually significantly longer than sepals	Mostly on basal/central portion; sometimes dark line down center	0.6-1.3 × 0.4-0.6	Mid- to high-elevation forest in N, on gneiss and granite
Rachis, especially distally, and pedicels minutely pubescent	4-5	Sepals 3.8-5 mm; petals 4-5.6 mm, usually only slightly longer than sepals	Mostly on basal/central portion, sometimes with sparsely pubescent dark line	0.7 × 0.3-0.4	Low-elevation humid forest in N, on basalt and quartzite
Rachis and pedicels usually glabrous, seldom sparsely pubescent	4-5	Sepals 2.8-4 mm; petals (3-)4-6 mm, from significantly longer than sepals to nearly equal	Mostly on basal/central portion, with a central darker stripe	0.6-1 × 0.4-0.5	Low-elevation humid forest in SE, on laterite including basalt
Distal part of rachis and pedicels minutely pubescent	4(-5)	Sepals 2.4-4.2 mm; petals 3.7-6 mm, significantly longer than sepals	Mostly on basal/central portion	0.6-1 × 0.4-0.6	Low-altitude humid forest (Marovony) in SE
Distal part of rachis and pedicels minutely pubescent	4	Sepals 3.4-4.6 mm; petals 4.7-6.5 mm, significantly longer than sepals	Dense on most of surface with narrow glabrate stripe down center	0.9-1.6 × 0.7-1	Low-elevation humid forest in NE, on laterite

has a densely (to moderately) pubescent perianth, as well as denser and longer pubescence on the rachis and pedicels and sometimes on the petiole and leaf midrib; the sepals are 5-6 in number and often narrow, and the bracts and bracteoles more numerous and sometimes quite large.

*Paratypus*. – MADAGASCAR. Prov. Toamasina: Fkt. Morarano, forêt d'Analava, à 7 km du SW de Foulpointe, 17°42'32"S 49°27'33"E, 43 m, 8.III.2005, post-fl., Birkinshaw et al. 1434 (P [P04734868]).

**5. *Homalium graciliflorum*** Sleumer in Bull. Jard. Bot. Natl. Belg. 43: 321. 1973.

**Typus:** MADAGASCAR. Prov. Antsiranana: Sambava, Mandrangotra [13°59'S 50°00'E], 23.II.1957, fl., *Service Forestier* 2788 (holo-: P [P00723726]!; iso-: L [L0010923] image seen).

*Tree* to 12 m tall, 20 cm dbh, with grayish-white bark; large twigs reddish or grayish brown; young twigs pale grayish brown to pale brown, glabrous; stipules not seen. *Leaves* primarily alternate; petiole 3-7 mm, glabrous; blade elliptical (narrowly elliptical), 5.8-10.5 × 2.3-4.7 cm; base convex; apex cuspidate to short-acuminate, with a rounded tip; margins crenate-serrulate for much of length, sometimes with variably located glands; abaxial surface glabrous, drying brown, sometimes paler than upper surface; adaxial surface glabrous, drying brown. *Inflorescences* paniculate often with well-developed lower branches, the flowers single or in clusters, (2.5-) 6-12.5 cm, lateral, often paired, at least sometimes borne along the length of older twigs, also somewhat clustered at twig apices, proximally glabrous, the rachis minutely pubescent especially distally; peduncle (0-)1.7-3.6 cm, slender; pedicel (1-)2-6 mm, minutely pubescent; major branches sometimes subtended by foliose bracts 6-9(-20) mm long; bracteoles usually 1 per flower, broadly deltoid to deltoid, 0.4-0.8(-1.5) mm, minutely pubescent. *Flowers*: sepals 4-5, with pink margins in bud, oblong to ovate with rounded apex, 3.8-5 mm, abaxial surface minutely pubescent; calyx cup shortly funnelform, minutely pubescent; sepal glands yellow, irregularly

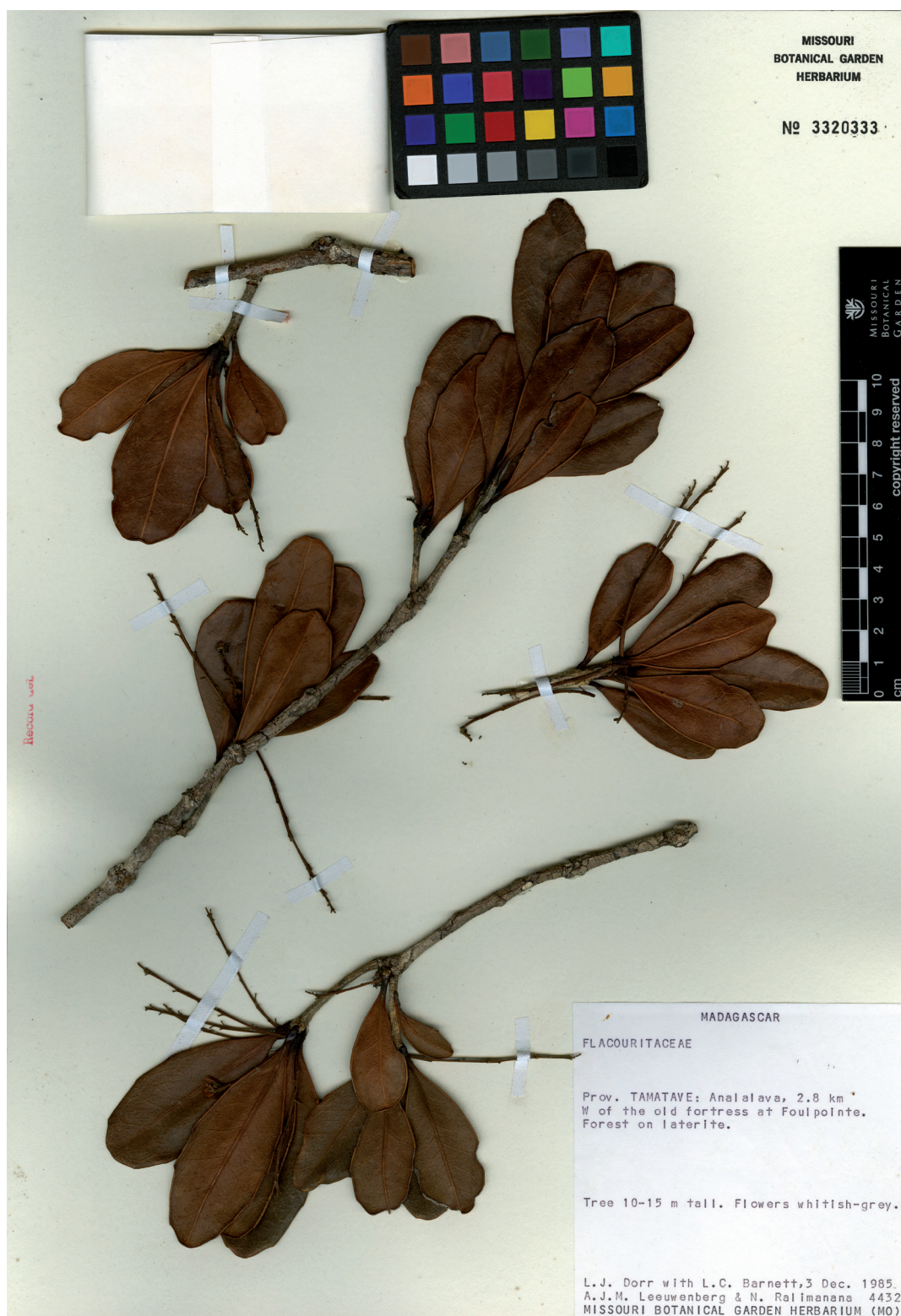


Fig. 1. – Holotype of *Homalium dorrii* Appleq.

[Dorr et al. 4432, MO] [© Missouri Botanical Garden, Saint Louis. Reproduced with permission]





**Fig. 2.** – Flowers of newly described species of *Homalium* sect. *Eumyriantheia* Warb. **A.** *Homalium dorrii* Appleg.: flowers and nearly mature fruit with single seed; **B.** *Homalium pseudoboinense* Appleg.: abaxial surface of perianth; **C.** *Homalium pseudoboinense*: open flower; **D.** *Homalium randrianasoloi* Appleg.; **E.** *Homalium ranomafanicum* Appleg.; **F.** *Homalium schatzii* Appleg.: open flower; **G.** *Homalium schatzii*: abaxial surface of perianth.



oblong to trapezoidal,  $0.7 \times 0.3$ – $0.4$  mm, upper surface glabrous, corrugated; petals narrowly obovate with a narrowed base, rounded apex,  $4$ – $5.6 \times 1.6$ – $2.5$  mm, slightly (to moderately) longer than sepals, abaxial surface appressed-pubescent mostly at base and in center sometimes with a sparsely pubescent dark line down center, adaxial surface glabrous; filaments ca.  $0.5$ – $1$  mm, glabrous; anthers  $0.2$  mm; ovary conic, villous; styles  $4$  or  $5$ , possibly  $0.5$ – $1$  mm, villous at base. *Seeds* not seen.

*Vernacular names.* – “Tsidaitra [?]”, “Geravina” (*Service Forestier* 2788); “Zana” (*Raharimampionona et al.* 204).

*Distribution, ecology and conservation status.* – *Homalium graciliflorum* is known from low-elevation humid forest of the extreme north; it is reported to occur on basalt and quartzite substrates. Only two collections are known, which are from locations quite close together; remaining forest in that area is unprotected and subject to degradation. Hence, a preliminary conservation status assessment of “Endangered” [EN B1ab(iii)+2ab(iii)].

*Homalium graciliflorum* is part of the *H. capuronii* group of rare species (see Table 1) with small flowers, sparsely pubescent sepals, and glabrous or sparsely pubescent sepal glands. It is distinguished by having consistently toothed leaf margins, panicles that are often borne in pairs and have often well-developed lower branches sometimes subtended by unusually large foliose bracts, and petals that are usually only slightly longer than the sepals. *Homalium capuronii* and *H. schatzii* also occur in northern Madagascar, though at much lower altitudes. *Homalium capuronii* is variable, but its leaves usually are less than  $7.5$  cm long and have rounded apices; its leaf margins often lack teeth; its inflorescences are usually confined to the distal portions of twigs and usually lack long branches (nor are there foliose bracts); and its sepals are usually much shorter than the petals. *Homalium schatzii* has sometimes broader leaves with subentire margins, racemose inflorescences, very large sepal glands, and unusual petal indument.

*Additional material examined.* – MADAGASCAR. Prov. Antsiranana: Fkt. Ambavala, forêt d’Andohananjombalava dans le complexe Tsihomanaomby,  $14^{\circ}06'07''$ S  $50^{\circ}02'42''$ E,  $88$  m, 21.V.2008, fl., *Raharimampionona et al.* 204 (MO, P).

**6. *Homalium laxiflorum*** (Tul.) Baill. in Bull. Mens. Soc. Linn. Paris 1: 575. 1886.

= *Myriantheia laxiflora* Tul. in Ann. Sci. Nat., Bot. sér. 4, 8: 66. 1857 [as *Myrianthea*].

**Lectotypus** (first step, designated by SLEUMER, 1973: 326): MADAGASCAR: *sine loc.* [Foulpointe?], s.d., fl., *du Petit-Thouars s.n.* (P)

**Lectotypus** (second-step, designated here): *sine loc.* [Foulpointe?], s.d., fl., *du Petit-Thouars s.n.* (P [P04705839]!; isolecto-: P [P04705842]!, P-JUSS n°14412 image seen).

**Syntypus:** MADAGASCAR: *sine loc.* [Foulpointe?], *Chapelier s.n.* (P [P04705840]!)

*Tree* to  $14$  m tall,  $20$  cm dbh, bark dark; large twigs dark brown (to gray, often streaky or patchy); young twigs grayish, glabrous (sparsely short-pubescent at apices); stipules broadly deltoid to deltoid,  $0.7$ – $1.4$  mm, glabrate. *Leaves* often subopposite or opposite distally, mostly alternate proximally; petiole  $(1)$ – $5$ – $12$ – $(20)$  mm, glabrous (sparsely short-pubescent); blade obovate to narrowly oblong (elliptical, oblanceolate, broadly obovate),  $(3)$ – $5$ – $10$ – $(11.5) \times (1.4)$ – $2.3$ – $4.9$ – $(5.7)$  cm; base convex to cuneate (seldom to rounded); apex irregularly rounded to emarginate (rounded-obtuse, very rarely cuspidate); margins entire to minutely toothed, often somewhat revolute, with  $1$  to several glands at base or along whole leaf margin; abaxial surface glabrous or glabrate, drying pale to medium brown (rarely greenish); adaxial surface glabrous or glabrate, drying darker brown. *Inflorescences* racemes (or pseudoracemes, with bracteoles often borne in the middle of the pedicels; rarely in part racemiform panicles with few 2-flowered branches), lateral,  $4$ – $9.5$  cm, moderately short-pubescent to glabrous proximally, to densely or patchily pubescent distally; peduncle  $1.5$ – $5$  cm, slender; pedicel  $(1)$ – $1.5$ – $5$ – $(7)$  mm, densely short-pubescent; bracts broadly oblong to broadly ovate or suborbicular,  $(0.5)$ – $1$ – $2$  mm, moderately to densely pubescent (seldom to glabrate); bracteoles ovate (deltoid, oblong),  $(0.4)$ – $1$ – $1.5$ – $(2.5)$  mm, pubescent (to glabrate). *Flowers*: sepals greenish to yellowish or whitish,  $4$  (to  $5$ ), broadly oblong to broad-based obovate or oblong (rarely broadly elliptical) with a rounded apex,  $3$ – $5.5$ – $(6.5)$  mm, abaxial surface densely (to moderately above) short-pubescent; calyx cup funnelform, densely short-pubescent; sepal glands yellow, roughly rectangular,  $1$ – $1.5 \times 0.5$ – $0.6$  mm, upper surface glabrous; petals cream to white, greenish, yellowish or pinkish-white (to pinkish after flowering), obovate with a narrow base, irregularly rounded apex,  $3.6$ – $6.2 \times 2.6$ – $3.8$  mm, normally longer than sepals (similar in length in abnormal, possibly immature flowers), abaxial surface densely pubescent especially towards base, adaxial surface glabrous; filaments  $2$ – $2.5$ – $(3)$  mm, glabrous; anthers orange to yellow,  $0.4$ – $0.5$  mm; ovary shallowly conical to flat (becoming hemispherical), hispid (villous); styles  $3$ – $4$ – $(5)$ ,  $1.5$ – $2$  mm, basally hispid (villous). *Seeds*  $1$  per fruit, subglobose, to at least  $3$  mm.

*Vernacular names and uses.* – “Hagontoho mainty” (*Réserves Naturelles* 2470); “Hazoambo” (*Raharimalala* 169, *Service Forestier* 5621, 5642, 9513, 10174, 13687, 19951); “Hazombaribe” (*Réserves Naturelles* 7973); “Hazombato” (*Raharimalala* 332, *Réserves Naturelles* 8034); Hazomby

Ludovic et al. 560 “Hazonjia” (Service Forestier 5036); “Maimbo lambo” (Bernard 261, Raharimalala 279); “Malitsy anjahana” (Réserves Naturelles 4939); “Ramisaona” (Service Forestier 4902, 13687); “Ranjombitro” (Service Forestier 7093); “Rotramena-beravina” (Service Forestier 7349); “Tsitakonala” [Bm dialect] “Tsilaïha” (Réserves Naturelles 4547); “Tsitakonala” (Louvel 35, 199, Service Forestier 5734, 10052, 10070); “Tsitakotrala” (Rabenantoandro et al. 820); “Voatoala” (Cours 2978).

The wood of *H. laxiflorum* is used for construction (Service Forestier 19001).

**Distribution, ecology and conservation status.** – *Homalium laxiflorum* occurs primarily in littoral and sublittoral forests on sand, less often in low-elevation humid forest, occasionally on laterite. One collection from 671 m altitude (see below) is from the massif of Ankirindro, where a number of normally littoral species are reported to occur, possibly because the weathered quartzite sand substrate is similar to that of nearby littoral forests (G. Schatz, pers. comm.). The species is widely distributed, with recent collections demonstrating its presence in three provinces, and relatively common; therefore, despite ongoing threats to the remaining littoral forest, its preliminary assessment of conservation status should probably be “Least Concern” [LC].

**Notes.** – SLEUMER (1973) designated “*Aubert du Petit Thouars P & P-Juss 14 412*” as lectotype of *H. laxiflorum*; since this refers to at least two different sheets, one of them in the main herbarium collection at P, second-stage lectotypification is necessary. Only an inadequate image of the sheet in the Jussieu collection was available; it appears to contain material of rather poor quality, poorly labeled, and possibly heterogeneous. The sheet in the main collection at P is both better and more accessible, and is therefore preferred over the P-Juss sheet. In addition, Sleumer marked as “syn- & lectotype” a sheet from Herbarium Richard [P04705842], labeled “Myrianthea”, “Madagascar” and, almost illegibly, “DupetitTh”. It may not be totally certain that this sheet represents the same collection; if it does, it is also inferior to the selected sheet. Sleumer stated that the type was from Foulpointe. None of the specimen labels provide locality data, but it is known that Petit-Thouars collected only around Fort-Dauphin (where *H. laxiflorum* does not occur) and on the “[east] coast near Fenerive” (DORR, 1997: 346), which would make Foulpointe a likely locality.

*Homalium laxiflorum* is the most frequently collected species in the section and is usually quite cohesive. Schatz et al. 3921, the collection from the mid-elevation quartzite massif of Ankirindro, has unusually large flowers and small, broad leaves with very short petioles (1–2 mm long, vs. at least 2.5 mm in all other specimens seen). This may represent environmentally induced variation or a genetically distinct variety, for which there is not sufficient material to permit formal description.

**Additional material examined.** – **MADAGASCAR. Prov. Antsiranana:** Fkt. Antanandava (Anjia), 15°17'14"S 50°20'12"E, 25.II.2001, fl., *Antilabimena et al.* 705 (MO); road between Sanjahana and Ambinaniny Mahorambo, 15°13'25"S 50°26'36"E, 8.VI.2001, fl., *Antilabimena et al.* 746 (MO); Masoala, Fkt. Sahamalaza, Vinanivao, 15°52'S 50°19'E, 0–113 m, 12.XII.1995, fl., *Aridy et al.* 13 (MO, P); *ibid. loc.*, 15°49'S 50°18'E, 0–41 m, 22.II.1996, fl., *Aridy & Moïse* 170 (G, MO, P); *ibid. loc.*, same date, *Aridy & Moïse* 171 (MO, P); Masoala, forêt d'Ambodipont, 15°44'45"S 50°19'25"E, 0–10 m, 15–20. III.1996, fl., Bernard 261 (MO, P); *ibid. loc.*, 3.X.1996, fl., Bernard 368 (G, MO, P); Fampotatrely, Antalaha, Parc Masoala, 15°35'S 50°25'E, 0–50 m, 12.V.1996, post-fl., Bernard 291 (MO, P); entre Antalaha et Sambava, côte NE, XI.1912, fl., *Perrier de la Bâthie* 6696 (P); Masoala, Antsiranaminana, 15°28'S 50°26'E, 27.IX.1994, *Rahajaso* et al. 631 (P); Fkt. Sahafary, forêt d'Antsoha, 15°16'12"S 50°23'14"E, 50 m, 1.X.1997, fl., *Ravololonanahary* 111 (G, K, MO); Fkt. Ambodirafia, 15°16'S 50°28'E, 23 m, 18.III.2001, fl., *Razakamalala et al.* 79 (MO, P); 1.5 km W of Cap Est, 15°16'28"S 50°27'51"E, 35 m, 24.I.1999, fl., *Schatz et al.* 3802 (G, MO, P); env. W d'Ambodipont-Isahana, entre Sambava et Antalaha, 17.IV.1967, fl., *Service Forestier* 27718 (P). **Prov. Fianarantsoa:** forêt d'Ambahy, 20°45'44"S 48°29'20"E, 22 m, 31.I.2012, fl., *Andriamihajarivo & Ravobahangy* 1848 (MO); env. de Farafangana, XII.1963, fl., *Bosser* 18691 (MO, P); Mananjary, 21.XI.1908, fl., *Decary* 13784 (P); Mananjary, III–IV.1909, fl., *Geay* 7260 (P); *ibid. loc.*, same date, fl., *Geay* 7393 (P); *ibid. loc.*, same date, fl., *Geay* 7400 (P); *ibid. loc.*, same date, fl., *Geay* 7412 (P); *ibid. loc.*, same date, fl., *Geay* 7568 (P); *ibid. loc.*, same date, st., *Geay* 7857 (P); *ibid. loc.*, same date, fl., *Geay* 8025 (P); Bassin inférieur du Faraony, côte est, X.1911, fl., *Perrier de la Bâthie* 6695 (P); N de Mahanoro, X.1921, fl., *Perrier de la Bâthie* 14521 (P); Fkt. Ambalavontaka, forêt d'Antaimby, 20°22'22"S 48°33'16"E, 10 m, 16.IV.2004, fl., *Razakamalala et al.* 1109 (MO, P); Fkt. Ampasimanaveva, forêt d'Ambolo, 20°43'59"S 48°27'09"E, 13 m, 15.VI.2004, *Razakamalala et al.* 1473 (MO); Fkt. Marohita, forêt d'Alimamba, 21°28'04"S 48°17'43"E, 13 m, X.2004, fl., *Razakamalala et al.* 1606 (MO, P); Distr. de Mahanoro, Iambola[?], 14. III.1952, fl., *Service Forestier* 4902 (P); Mananjary, Manampona, 7.I.1953, fl., *Service Forestier* 5621 (P); Mananjary, Sakarivo, 23.III.1952, buds, *Service Forestier* 5642 (P); Vohipeno, Analalava, 15.XII.1952, fl., *Service Forestier* 7093 (P); Pangalane, S Mananjary, 24.II.1954, fl., *Service Forestier* 9513 (P); Mananjary, Befoza, 25.III.1954, buds, *Service Forestier* 10174 (MO, P); Mananjary, Ampangalana-Nord, 26.II.1955, fl., *Service Forestier* 13687 (P); Nosy Varika, Ambohitsara I, forêt d'Analalava, 31.III.1961, fl., *Service Forestier* 19951 (P). **Prov. Mahajanga:** Ankatsaka, 3.V.1952, fl., *Service Forestier* 5036 (P). **Prov. Toamasina:** Betampona, piste principale, 17°55'S 49°13'E, 210–410 m, 25.IV.1994, fl., *Andrianarisata* 137 (MO, P); forêt d'Analalava près de Foulpointe, 17°43'19"S 49°28'11"E, 250 m, 30.X.2000, fl., *Andrianjafy & Rakotoarisoa* 136 (P); Fkt. Anamborano, près rivière Ihazoarina, à 10 km au N d'Anamborano, 17°42'04"S 49°00'48"E, 620 m, 12.VI.2004, fl., *Andrianjafy et al.* 441 (MO, P); Fkt. Marovovonana, Ankirindro forest, 15°17'24"S 49°32'51"E, 584 m, 11.I.2003, fl. and post-fl., *Antilabimena et al.* 1693 (MO, P); Foulpointe, X.1962, post-fl., *Bosser* 16993 (MO, P [2 sheets]); Voie ferrée en allant de Tamatave, 13.X.1946, post-fl., *Cours* 2978 (MO, P); road to Analalava, W of Foulpointe, 7.XII.1984, fl., *Dorr & Barnett* 3320 (P); Passimbol [Ampasimbola, 21.VIII.1881], fl., *Humboldt* 34 (P); Foulpointe [18. XII.1881], fl., *Humboldt* 87 (P); Antsianaka [17.XII.1882], st., *Humboldt* 520 (P); Andranokoditra, forêt de Vohibola, 18°34'26"S 49°14'36"E, 17 m, 14.XII.2004, fl., *Lebaviana et al.* 231 (MO, P); Tampina, XI.1925, post-fl., *Louvel* 35 (P); Ambalahasina, forêt de Vohibola partie W, 18°32'S 49°14'E, 3–10 m, 26.X.2002, *Ludovic* 187 (MO); Fkt. Andranokoditra, forêt de Vohibola (partie S), piste Ambodinanto, 18°34'20–53"S 49°14'42–54"E, 53 m, 7.I.2013, fl., *Ludovic & Rakotoarivony* 236 (P); Fkt. Ambalavontaka, forêt d'Antaimby à 2.5 km au S d'Ambalavontaka, 20°22'58"S 48°33'14"E, 10 m, 13.II.2004, fl., *Ludovic et al.* 560 (MO); Manompana, rivière Antsohy, 16°46'11"S 49°42'04"E, 8 m, 25.IX.2010, fl., *Manjato et al.* 251 (MO, P); Near village of Antanambao-Ambodimanga, 16°45'39"S 49°42'29"E, 10 m, 19.V.2003, fl., *McPherson et al.* 18937 (MO, P); Foulpointe, forêt



d'Andranampango, 17°41'02"S 49°30'32"E, 12.I.2013, fl., *Miandrimanana* et al. 579 (G, MO); Foulpointe, 22.XII.1995, fl., *Pauly* 756 (P); Mahambo, distr. Fénérive, 12.VIII.1961, st., *Peltier & Peltier* 3422 (P); Fkt. Andranokoditra, forêt CBD à Vohibola, 18°34'50"S 49°15'16"E, 10 m, 8.XII.2001, fl., *Rabenantoandro* et al. 820 (MO, P); Fkt. Rantabe, 15°43'48"S 49°39'21"E, 5 m, 19.II.2002, fl., *Rabenantoandro* et al. 890 (MO, P); Fkt. Andranokoditra, forêt de Vohibola, du côté de l'hôtel Pangalane, 18°35'32"S 49°14'02"E, 5 m, 11.II.2003, fl., *Rabenantoandro* et al. 1219 (MO, P); Ankanin'ny nofy, forêt de Vohibola, 18°35'42"S 49°14'02"E, 10.II.2003, fl., *Rabevohitra* et al. 4388 (MO, P); Mananara-Nord, sur sentier vers pk. 5 avant l'entrepôt Trans 7, 30.I.1990, post-fl., *Rabarimalala* 169 (P); Mananara-Nord, forêt de Beharamy (fkt. Sarahandrano), 12.II.1990, fl., *Rabarimalala* 279 (P); Mananara-Nord, sur sentier pk. 5 à droite avant de passer d'entrepôt Trans 7, 27.II.1990, post-fl., *Rabarimalala* 332 (P); Tanambao-Ambodimanga, forêt de Menagisa-Pointalare [Pointe à Larrée], à 3 km vol d'oiseau au S de Tanambao Forêt, 16°46'35"S 49°41'20"E, 26 m, 9.IV.2011, fl., *Randrianaivo* et al. 1827 (MO, P); Fénérive-Est, Tampolo Station Forestière, 17°17'00"S 49°23'30"E, 10 m, 29.VI.1995, fl., *Razafimandimbison* 149 (MO, P); *ibid. loc.*, 17°17'20"S 49°25'37"E, 10 m, 30.VI.2001, fl., *Razakamalala* et al. 149 (MO); Fkt. Ambalavontaka, forêt d'Antaimby, 20°22'21"S 48°33'15"E, 13 m, X.2004, buds, *Razakamalala* et al. 1579 (P); Tampina, X.1924, fl., *Réserves Naturelles (Dumazer) s.n.* (P); Distr. Tamatave, Ambatomanahafo, 11.III.1950, fl., *Réserves Naturelles* 2470 (P); R.N. I [Betampona], 30.XI.1951, post-fl., *Réserves Naturelles* 3401 (P); *ibid. loc.*, 22.XII.1952, fl., *Réserves Naturelles* 4547 (P [2 sheets]); R.N. II [Masovala], canton Ambohitralanana, 24.I.1953, post-fl., *Réserves Naturelles* 4939 (P); Ambohitralanana, 19.XII.1956, post-fl., *Réserves Naturelles* 7973 (P); Ambodiriana, 9.XII.1956, fl., *Réserves Naturelles* 8034 (P); summit of massif of Ankirindro, ca. 25 air-km NW of Maroantsetra via the Antainambalana and Vohimaro rivers, 15°18'08"S 49°33'04"W, 671 m, 1.II.1999, fl., *Schatz* et al. 3921 (G, MO, P); Ambila - Brickaville, 27.I.1951, fl., *Service Forestier* 1126 (P); Ambila-Lemaitso, s.d., fl., *Service Forestier* 2105 (P); *ibid. loc.*, 22.I.1951, fl., *Service Forestier* 2990 (P); *ibid. loc.*, 17.IV.1951, post-fl., *Service Forestier* 3257 (P); Ampanotoamazina, Ambila-Lemaitso, 14.VII.1952, fl., *Service Forestier* 5734 (P); Ambila-Lemaitso, 17.XII.1952, *Service Forestier* 6456 (P); Ambatomanasy [?], Maroantsetra, 16.XII.1952, fl., *Service Forestier* 7349 (P); Bassin de la Mahalevona, massif d'Ansirosiro aux env. de [Fizoana], 400 m, date illeg., fl., *Service Forestier* 8733 (P); JB-21 Tampolo, 10.IV.1954, fl., *Service Forestier* 10052 (MO, P); forêt de Tampolo, 15.IV.1954, fl., *Service Forestier* 10070 (P); Tampolo, 7.XII.1954, fl., *Service Forestier* 12487 (P); Ambila-Lemaitso, sous parcelle F2K, 20.II.1958, fl., *Service Forestier* 19001 (P); forêt de Mangalimaso à l'W de Foulpointe, 23.XI.1962, fl., *Service Forestier* 22089 (P); env. de Chutes de la Mort (P.K. 51 de la route Moramanga-Anosibe), 11.XII.1965, post-fl., *Service Forestier* 24388 (P); Pangalanes Est, à la virge du lac Ampitabe, 15.I.1967, fl., *Service Forestier* 26234 (P); Chaîne de collines d'Ankirihiry, à l'W d'Antetezana (S de Foulpointe), 23.V.1969, fl., *Service Forestier* 28888 (P [2 sheets]). **Prov. unknown:** *sine loc.*, s.d., fl., *Baron* 5948 (P); forêts côtières de l'E, s.d., fl., *Louvel* 199 (P).

**7. *Homalium maringitra*** H. Perrier in Mém. Mus. Natl. Hist. Nat. 13: 298. 1940.

**Lectotypus** (first step, designated by SLEUMER, 1973: 319): **MADAGASCAR. Prov. Toamasina:** Analamazaotra, 800 m, I.19??, fl., *Perrier de la Bathie* 6725 (P; isolecto-: BM, K).

**Lectotypus** (second step, designated here): **MADAGASCAR. Prov. Toamasina:** Analamazaotra, 800 m, I.19??, fl., *Perrier de la Bathie* 6725 (P [P00624063]!; isolecto-: P [P00624062]!, BM, K [K000231475] image seen, PRE [PRE0297346-0] image seen, S [S-G-3252] image seen,

TAN [TAN000244] image seen, US [US00114727] image seen). **Syntypus:** **MADAGASCAR. Prov. Toamasina:** forêts montagneuses de l'Est, s.d., fl., *Louvel* 250 (P [P00624061]!).

*Tree* to 25 m tall, 28 cm dbh; large twigs grayish (to brown); young twigs dark brown, glabrous; stipules deltoid to lanceolate, 0.6–1.5 mm, glabrous to minutely pubescent. *Leaves* alternate; petiole (2–)3–5.5(–8) mm, glabrous; blade elliptical (narrowly elliptical to oblong-elliptical, obovate), (2–)3.6–5.3(–7.5) × (1.4–)1.8–3.3(–3.7) cm; base rounded to convex (cuneate, basally attenuate); apex round, occasionally emarginate (acute to obtuse with rounded tip); margins bearing several small teeth per side (or shallowly wavy) with small glands; abaxial surface glabrous, drying olive to medium brown; adaxial surface glabrous, drying usually paler, grayish or gray-green to tan (dark brown). *Inflorescences* racemes or narrow racemiform panicles with short 2-flowered branches, lateral, (3.2–)4.3–7.8(–12) cm, minutely pubescent (to glabrous proximally); peduncle (0.6–)1.4–4(8.5) cm, slender and somewhat flat; pedicel (0.5–)1.5–5(–6) mm, short-pubescent; bracts ovate to broadly deltoid, 0.6–1(–1.5) mm, glabrous to short-pubescent; bracteoles ovate to broadly deltoid, 0.3–0.6(–1) mm, glabrous to short-pubescent. *Flowers:* sepals green to pinkish or yellowish green, 4–5, ovate to oblong-ovate (somewhat elliptical to narrowly elliptical, narrowly oblong) with rounded (acute) apex, 2–3.5 mm, abaxial surface sparsely short-pubescent to glabrous; calyx cup funnelform, sparsely short-pubescent to glabrate; sepal glands orange or yellow, semicircular to irregularly rectangular, (0.6–)0.8–1.4 × (0.4–)0.5–0.7 mm, short-pubescent above and sometimes beneath; petals white to greenish, yellowish green, white with pink spots, or yellowish pink, elliptical to obovate or narrowly obovate with a short narrow base, rounded (acute) apex, 3.6–6 × 1.5–2.8 mm, often almost twice as long as sepals, abaxial surface short appressed-pubescent (to glabrous at margins), adaxial surface glabrous (rarely sparsely pubescent towards base); filaments 1.5–2.5 mm, glabrous; anthers yellow, 0.4–0.5 mm; ovary nearly flat, appressed-pubescent; styles 4, 0.7–2.5 mm, basally appressed-pubescent. *Seeds* not seen.

*Vernacular names.* – “Ampitsikahitra” (*Louvel* 250); “Hazomalany” (*Antilahimena & Razafindasy* 3500); “Maringitra” (*Perrier de la Bathie* 6725).

*Distribution, ecology and conservation status.* – *Homalium maringitra* is found in mid-elevation humid forests; it is reported to occur on laterite. The species is only known from two small, well-separated regions, with less than five clearly distinct locations. Most collections have been made from the eastern site of Ambatovy near a mining project, extending to the nearby southern end of the Mantadia national park; two

others have come from the much more northerly reserve of Anjanaharibe-Sud. The first-mentioned location is obviously threatened by human activity, and the species' area of occupancy is, as a consequence of the number of collections, less than 500 km<sup>2</sup>. Hence, a preliminary assessment of conservation status as "Endangered" [EN B2ab(iii)] would be appropriate.

*Notes.* – SLEUMER (1973) designated *Perrier de la Bâthie* 6725 as lectotype and marked both sheets held at P as "Syn & Lectotype" with no indication of preference between them. Art. 9.17 of the ICN (McNEILL et al., 2012) recommends that a second-stage lectotypification be published; the sheet with better inflorescences is herein selected.

*Homalium maringitra* is notable for its small elliptical leaves and small flowers with short, sparsely pubescent to glabrous sepals yet densely pubescent sepal glands. It is believed to form a natural group with the newly described rare species *H. dorrii* and *H. ranomafanicum*. The former has often narrowly obovate leaves and longer sepals, both absolutely and relative to the petals, and is found in low-elevation forest on laterite, while the latter has often broadly obovate leaves, with revolute to subentire margins and few glands, and long paniculate inflorescences and is found in southeastern mid-elevation forest.

*Additional material examined.* – **Prov. Mahajanga:** Anjanaharibe-Sud, Anjiamazava, suivant la route Nationale d'Andapa-Bealanana, piste vers le N approchant le sommet de Bevitsika, 14°42'S 49°27'E, 1100 m, 14.XII.1994, fl., *Ravelonarivo & Rabesonina* 560 (G, MO, P); Manandriana, versant W d'Anjanaharibe-Sud RS, forêt d'Anjiamazava, 14°48'S 49°27'E, 961 m, 3-7.II.1997, fl., *Ravelonarivo et al.* 1064 (G, K, MO). **Prov. Toamasina:** Fkt. Menalamba, Ambatovy, forêt d'Analamay, 18°49'27"S 48°20'13"E, s.d., fl., *Andriatsiferana* 2549 (MO); Fkt. Menalamba, Ambatovy forest up to Berano village, 18°50'13"S 48°19'19"E, 1130 m, 17.I.2005, fl., *Antilabimena et al.* 3202 (MO, P); Fkt. Berano, Ambatovy forest, 18°49'14"S 48°20'07"E, 1120 m, 3.II.2005, buds, *Antilabimena et al.* 3278 (P); *ibid. loc.*, 18°49'19"S 48°20'08"E, 1094 m, same date, fl., *Antilabimena et al.* 3297 (MO, P); *ibid. loc.*, 18°48'33"S 48°19'22"E, 1074 m, 17.II.2005, fl., *Antilabimena et al.* 3420 (MO, P); *ibid. loc.*, Analamay, 18°51'36"S 48°18'03"E, 1134 m, 1.III.2005, post-fl., *Antilabimena & Razafindasy* 3500 (MO, P); *ibid. loc.*, Ampangadianrandraka forest, 18°51'45"S 48°17'44"E, 1035 m, 4.III.2005, fl., *Antilabimena & Félix* 3579 (P); Fkt. Menalamba, Ambatovy forest, 18°50'22"S 48°18'47"E, 1142 m, 24.I.2007, fl., *Antilabimena et al.* 5205 (P); Fkt. Falierana, Mantadia, S boundary of Mantady forest, 18°53'22"S 48°26'53"E, 997 m, 14.XII.2013, fl., *Antilabimena et al.* 8792 (P); Andasibe, forêt de Maromizaha, 18°57'56"S 48°27'34"E, 1020 m, 1.IV.1999, fl., *Labat et al.* 3069 (MO, P); Ambatovy, nickel-mining exploration site, plot 18 of Golder map, 18°51'12"S 48°18'48"E, 1100 m, 26.II.1998, fl., *McPherson* 17471 (MO); Phelps Dodge project site, Ambatovy, SE valley, contour line PDM-Pit-8, 18°51'24"S 48°17'41"E, 1000 m, 6.III.1997, fl., *Rakotomalaza et al.* 1242 (MO, P); Ambatovy, 18°51'33"S 48°17'40"E, 990 m, 25.III.1997, fl., *Rakotomalaza et al.* 1275 (MO); Fkt. Ampitambe, Ambatovy, env. 22 km NE de Moramaga, 18°51'24"S 48°18'39"E, 1082 m, 3.III.2005, fl., *Rakotovoao et al.* 1466 (MO, P); Fkt. Menalamba, 11 km E d'Ampitambe, Ambatovy, 18°49'26"S 48°20'02"E, 1081 m, 31.III.2005, fl., *Rakotovoao et al.* 1694 (MO, P); *ibid. loc.*, 18°49'14"S 48°19'27"E, 1114 m, 4.IV.2005, fl., *Rakotovoao & Edmond* 1766 (MO, P); Fkt. Ampitambe, Ambatovy, coté W de la route vers Andranoverly, 18°51'37"S 48°18'02"E, 1107 m, 21.V.2008, fl., *Rakotovoao* 4056 (MO, P); Fkt. Ampitambe, piste direction S du campement Dynatec, 18°51'26"S 48°18'12"E, 1080 m, 18.I.2005, fl., *Ranaivojaona et al.* 1133 (MO,

P); Analamazaotra, Amboasary, 18°57'07"S 48°25'53"E, 1040 m, 18.XII.2013, fl., *Rasoazanany et al.* 559 (MO, P); Mantadia, boucle chute sacrée - Rinasoa, 18°49'48"S 48°26'25"E, 1074 m, 19.XII.2013, fl., *Rasoazanany et al.* 566 (P); Fkt. Menalamba, forêt d'Ampangadiatrandraka, 18°51'15"S 48°17'52"E, 1110 m, 8.XII.2006, fl., *Razanatsoa & Marcellin* 255 (MO, P).

**8. *Homalium nobile*** Baill. in Bull. Mens. Soc. Linn. Paris 1: 575. 1889.

**Lectotypus** (designated by SLEUMER, 1973: 325): **MADAGASCAR. Prov. Toamasina:** Ampasimbola, 21.VIII.1881, fl., *Humblot* 33 (P [P04734254]!; isolecto-: W). **Syntypus:** **MADAGASCAR. Prov. Toamasina:** Antsianaka, 5.III.1883, fl., *Humblot* 659 (K [K000231464, K000231466, K000231467] images seen, P [P04734255, P04734274]!, TAN [TAN000594] image seen, W).

*Tree* to 16 m tall, 20 cm dbh; large twigs dark brown to greenish- or grayish-brown; young twigs dark brown to grayish- or red-brown, sparsely to moderately short-pubescent when young; stipules narrowly lanceolate to linear, 2-3.3 mm, short-pubescent. *Leaves* alternate (rarely subopposite); petiole 7-23 mm, sparsely short-pubescent (sometimes becoming glabrous); blade elliptical to obovate (broadly obovate), (5.5-)6.5-18 × (3-)4-9 cm; base convex (rarely to rounded or cuneate); apex rounded to emarginate (shallowly cuspidate); margins entire to slightly revolute (very slightly repand) with 1-5 glands in margins towards base, usually not forming teeth; abaxial surface short-pubescent on midrib (sparsely and inconspicuously pubescent throughout), drying brown to dark brown (olive-tinged); adaxial surface glabrous, drying brown to dark brown (olive-tinged). *Inflorescences* racemose, lateral (usually not clustered near apices), (1.5-)2.3-10(-13.5) cm, densely to moderately short-pubescent; peduncle (0.2-)0.5-4 cm, thick; pedicel 1-5 mm, densely pubescent; bracts broadly ovate, 1.5-2.3 mm, moderately to densely pubescent; bracteoles ovate to lanceolate, 1-2.5 mm (unequal), densely pubescent. *Flowers*: sepals 5, greenish-white to yellowish-green, lanceolate-oblong to elliptical (obovate) with acute (to obtuse or rounded) apex, 5-8.4 mm, abaxial surface densely pubescent to sericeous (to moderately so near margins), with a shallow keel usually visible for over half of length; calyx cup funnelform, densely sericeous; sepal glands yellow, irregularly shaped, 1.2-1.4 × 0.7-0.8 mm, upper surface glabrous and wrinkled; petals white to greenish white, obovate to broadly obovate with a narrowed base, round (to rounded-obtuse) apex, 5.5-9 × 3.4-5 mm, slightly longer than sepals, abaxial surface densely sericeous especially along central axis but not prominently keeled, adaxial surface glabrous (sparsely pubescent); filaments white, 2.5-4 mm, glabrous; anthers yellow to brown, 0.5 mm; ovary rounded-conic, pilose; styles 3-4, 3-4 mm, pilose to sericeous at base or for much of length. *Seeds* possibly 4 or more per fruit (only very young fruit seen).



*Vernacular names and uses.* – “Fotsiavadika” (*Réserves Naturelles* 8731); “Hazomborondreo” (*Service Forestier* 1370); “Mahitsiantjaha” (*Service Forestier* 21516); “Tsitakonala à g.f. [grands feuilles]” (*Service Forestier* 15218).

The wood of *Homalium nobile* is used for construction (*Service Forestier* 21516).

*Homalium nobile* is usually native to littoral or low-elevation humid forests, but Antsianaka, the reported location of *Humblot* 659, is believed to be a locality near Lac Alaotra, well inland at moderate elevation. No more than 10 distinct locations are known, and the littoral forest is fragmented and, outside protected areas, faces continuing loss; hence a preliminary conservation status assessment of “Vulnerable” [VU B2ab(iii)] is appropriate.

*Notes.* – SLEUMER (1973: 325) designated *Humblot* 33 as lectotype; the collection number was given as 333 by typographical error. The label of the sheet at P does not specify a locality or date, but Humblot’s field book records that this specimen was collected at “Passimbal” on 21 August 1881. Sleumer gave the type locality as “Nosy Varika, Befotaka, ‘Passimbal’ = Ampasimbola”, but this appears to be an error based on the assumption that Passimbal must have referred to the only well-known locality named Ampasimbola (located at 19°49’S 48°22’E). That locality is well inland at an unusually high altitude for *H. nobile* (ca. 500 m), and, given the roads of the time, it was an inconveniently long distance away from other sites at which Humblot collected around the same time. On 19 August 1881 and 25 August respectively, Humblot made collections at Foulpointe and “Ambatmalam”, which a later annotation to the field books suggests may have been a locality north of Foulpointe. The same annotator suggested that Passimbal was an Ampasimbola located south of Andevoranto (18°55’S 49°08’E) on the east coast, which is not shown on the relatively modern official maps of Madagascar. However, those maps do indicate the existence of an Ampasimbola next to Andondabe (17°45’S 49°22’E), which is only 22 km southwest of Foulpointe [Mahavelona]. This, or someplace nearby, is probably the locality most likely to have been the source of the type collection (and of *Humblot* 34, a specimen of *H. laxiflorum*).

*Homalium nobile* belongs to the apparently cohesive group of species of eastern littoral or low-elevation forests with racemose inflorescences and pubescent perianths, within which it is distinctive for its sometimes quite large leaves. It is noted above to be most similar to *H. brevipedunculatum*, which has leaves of a smaller maximum size, normally short inflorescences, and oblanceolate to narrowly obovate petals. The distribution of the two overlaps in Fianarantsoa, and one apparent hybrid specimen is known. The widespread *H. laxiflorum* also has moderate-sized leaves and smaller flowers; it is distinguished from both *H. nobile* and *H. brevifolium* in that the sepals are usually 4 in number, oblong to

broad-based obovate with a rounded apex; in normal individuals the petals are substantially longer than the sepals; and the petal indument, though usually dense, is not exceptionally long as in the other two species. The inflorescences of both *H. nobile* and *H. brevipedunculatum* are often densely pubescent throughout, though that is not entirely consistent, whereas the inflorescence of *H. laxiflorum* is typically less pubescent on the proximal portion.

*Additional material examined.* – **MADAGASCAR. Prov. Antsiranana:** Sahamalaza-Anovandrano, Masoala, 15°18’45”S 50°20’30”E, 75–150 m, 24.XI.1995, *Bernard* 145 (MO, P); Distr. Antalaha, canton Ambohitralana, 15.I.1957, fr., *Réserves Naturelles* 8731 (P); Masoala, inside park boundary 2 km W of Cap Est, 15°16’23”S 50°27’24”E, 5 m, 23.I.1999, fl., *Schatz et al.* 3768 (MO, P). **Prov. Fianarantsoa:** forêt de Mahabo, 23°10’39”S 47°43’06”E, 10 m, 25.IX.2002, fl., *Rabenantoandro et al.* 1002 (MO); Trail to Analamena, 23°10’45”S 47°42’58”E, 28 m, 8.XI.2004, fl., *Randrianasolo et al.* 885 (MO); Mahabo, 23°10’39”S 47°42’24”E, 14 m, 11.XI.2002, fl., *Razakamalala & Ludovic* 333 (MO). **Prov. Toamasina:** Ambila au S de Tamatave, 10.V.1928, fl., *Decary* 6494 (P); Station Forestier de Tampolo, 10 km N of Fénéry, 29.XI.1985, fr., *Dorr* 4396 (P); forêt de Tampolo, près du village Tanambao-Tampolo, 17°17’S 49°25’E, 0–5 m, 5–15.IV.1997, fl., *Ralimanana et al.* 85 (MO); Ambila-Lemaitso, forest along road from Brickaville a few km before ferry place, 18°49’S 49°08’E, 0–5 m, 11.XI.1999, *Randrianasolo & Ranaivojaona* 646 (MO, P); Andatsakala, 10.V.1950, fl., *Service Forestier* 1370 (P); env. de la baie d’Antongil, Anondrivala, au S de Rantabe, I.1954, fl., *Service Forestier* 8935 (P [4 sheets]); Tampolo, 9.XII.1955, fr., *Service Forestier* 15218 (P); Mahambo, au S de Fénéry, 30.VIII.1957, fl., *Service Forestier* 18140 (P); Manambia, Marosoroka, 30.XI.1963, fl., fr., *Service Forestier* 21516 (MO, P).

**9. *Homalium oppositifolium*** (Tul.) Baill. in Bull. Mens. Soc. Linn. Paris 1: 575. 1889.

= *Myriantheia oppositifolia* Tul. in Ann. Sci. Nat., Bot. sér. 4, 8: 65. 1857 [as *Myrianthea*].

**Typus:** MADAGASCAR: *sine loc.*, s.d., fl., *du Petit-Thouars s.n.* (P [P04705657]!; iso-: P [P04705659]!)

= *Homalium fasciculatum* Scott-Elliot in J. Linn. Soc., Bot. 29: 21. 1891. **Lectotypus** (designated by SLEUMER, 1973: 323): MADAGASCAR. **Prov. Toliara:** Fort-Dauphin, V.18??, fl., *Scott Elliot* 2617 (K [K000231470] image seen; isolecto-, PRE [PRE0602205-0] image seen). **Syntypus:** MADAGASCAR. **Prov. Toliara:** Fort-Dauphin, V.18??, post-fl., *Scott Elliot* 2639 (K [K000231471] image seen, P [P04705656]!).

= *Homalium lanceolatum* Scott-Elliot in J. Linn. Soc., Bot. 29: 23. 1891. **Typus:** MADAGASCAR. **Prov. Toliara:** Fort-Dauphin, s.d., fl., *Scott Elliot* 3056 (holo-: K [K000231472] image seen; iso-, P [P04705661]!, L [L0010982] image seen).

= *Homalium cymosulum* Scott-Elliot in J. Linn. Soc., Bot. 29: 22. 1891. **Typus:** MADAGASCAR. **Prov. Toliara:** Fort-Dauphin, VII.18??, fl., *Scott Elliot* 3037 (holo-: K [K000231469] image seen; iso-: P [P04705658]!) [Hybrid of *H. oppositifolium* × *H. trigynum*].

*Tree* to 20 m tall, 40(-80) cm dbh, with smooth whitish bark; large twigs grayish to brown; young twigs brown to tan, short-pubescent to glabrous; stipules linear to narrowly deltoid or narrowly lanceolate, (1-)1.5-3 mm, short-pubescent. *Leaves* mostly opposite; petiole 2-6(-10) mm, short-pubescent (especially when young) to glabrous; blade elliptical to broadly elliptical (narrowly elliptical or oblong-elliptical, obovate, very rarely oblanceolate), 4.2-7.2(-9.5) × 1.8-3.5(-5) cm; base rounded to convex (cuneate, probably only when young); apex rounded (to apiculate, short-attenuate, emarginate, obtuse to acute); margins serrulate at least basally (to subentire), often somewhat revolute, with glands usually borne in small teeth, sometimes absent or only 2 or 3; abaxial surface short-pubescent on midrib (seldom on other veins or surface), often becoming glabrous, drying brown; adaxial surface glabrous (short-pubescent along midrib), drying darker brown than abaxial surface. Inflorescences racemose with flowers often opposite or clustered, lateral, (1.5-)4-10(-14) cm, densely (moderately) short-pubescent (rarely glabrate distally); peduncle 0.3-3 cm, moderately thick; pedicel 1-4(-6.5) mm, densely pubescent with crinkly hair; bracts occasionally numerous on lower part of rachis, ovate to elliptical, lanceolate or oblong (broadly ovate to broadly oblong), (1-)1.7-3(-4.5) mm, usually densely pubescent; bracteoles lanceolate to oblong-elliptical, 1-3(-4.4) mm, usually densely pubescent. *Flowers*: sepals 5-6, white to pale or yellowish green, oblong-ovate to narrowly elliptical or elliptical, narrowly oblong-elliptical, or oblanceolate with rounded to acute apex, (2.6-)3-6 mm, abaxial surface pubescent with appressed and protruding crinkly hairs, less so near apical margin, adaxial surface also sometimes sparsely pubescent; calyx cup funnelform (sometimes to cup-shaped or cylindrical), pubescent; sepal glands yellow (ringed with orange, or with dark guides), broadly elliptical (oblong), sometimes prominently elevated on pubescent stalk, 0.6-1 (-1.4) × 0.4-0.7 mm, upper surface short-pubescent (sometimes minutely or only in the center); petals white, obovate (oblanceolate) with rounded apex, (3-)3.4-7.3 × 1.3-2.8 mm, moderately longer than sepals, abaxial surface densely to moderately, mostly appressed long-pubescent (less pubescent along apical margins), adaxial surface sparsely pubescent or glabrous; stamens normally 3 per fascicle (aberrantly in part 4 per fascicle); filaments white or pale pink, 2.4-4 mm, glabrous or sparsely villous; anthers red to reddish brown or purple, 0.2-0.4 mm; ovary more or less conic, densely pubescent; styles 3(-4), (1-)1.6-2.4 mm, basally pubescent. *Seeds* probably 1 per fruit, to 1.2 mm (mature seeds not seen).

*Vernacular names and uses*. – “Fotsivony” (*Service Forestier* 5627); “Hazomalany” (*Birkinshaw et al.* 333); “Hazombato” (*Service Forestier* 21905); “Hazombatondrano” (*Service Forestier* 4805); “Hazompoza” (*Service Forestier* 8014, 9412, 16446);

“Hazondrano” (*Service Forestier* 14475); “Hazondroka” (*Service Forestier* 9743); “Hazontreka” (*Service Forestier* 6126); “Hazo-poza” (*Service Forestier* 14747); “Iatongoro” (*Réserves Naturelles* 4757); “Ioharia” (*Réserves Naturelles* 7461); “Karaka” (*Louvel* 76); “Lalimboay” [Bara dialect] (*Service Forestier* 2238); “Rohandria” (*Service Forestier* 5327, 9743); Samanta (*Service Forestier* 14429); “Sana” (*Decary* 5044); “Tadolo [?]” (*Decary* 5127); “Tafaran” (*Cloisel* 230); “Tanteliravina” (*Service Forestier* 12284, 14461); “Tateliravina” (*Service Forestier* 14414); “Tsitakonala” [Betsimisaraka dialect] (*Service Forestier* 10566, 17711 18159); “Tsitakonala à p.f. [petits feuilles]” (*Service Forestier* 10821); “Tsitakonalafofotsy” (*Service Forestier* 14176); “Tsivalandra” (*Réserves Naturelles* 3814); “Vatongero” (*Réserves Naturelles* 4734).

The wood of *H. oppositifolium* is used for construction, for manufacture of wooden objects including fence stakes, and as firewood (*Cloisel* 230; *Service Forestier* 16446, 17711, 21905). Flowers are said to be sweet-scented (*Nikolov* 1848).

*Distribution, ecology and conservation status*. – *Homalium oppositifolium* occurs in low- to mid-elevation humid forests and in littoral or marsh forests, and very rarely extending into dry deciduous forest; it is reported on sand, gneiss, and clay. Though sometimes described as locally rare, it is widespread; hence the preliminary conservation status assessment is “Least Concern” [LC].

*Notes*. – There is only one complete herbarium specimen of the type collection of *H. oppositifolium* at P, which can be considered the holotype; the second sheet comprises only fragments in two paper packets. As for *H. laxiflorum*, above, SLEUMER (1973: 323) stated that the type came from Foulpointe, though its label included no locality data. Du Petit-Thouars collected both on the coast near Fénérive (including Foulpointe) and around Fort-Dauphin (DORR, 1997: 346). *Homalium oppositifolium* is found at both of those locations, but since the bracts on the type specimen are not particularly large (see discussion below), it is more likely to have been collected from the region of Fénérive.

*Homalium oppositifolium* is distinguished by its small, opposite leaves and very pubescent flowers, with perianth indument often extending to the adaxial surfaces of sepals and petals. Several specimens from the region around Fort-Dauphin, at the southeastern extreme of the species’ distribution, have enormous bracts and bracteoles, more than twice the typical length of those on more northerly specimens and unusually broad. Since some intermediate sizes are observed, and no other obvious characters were noted that consistently separate Fort-Dauphin populations from others, this is considered to be a local variant rather than a distinct taxon to be recognized under one of Scott-Elliot’s previously published names. However, further study of the populations in this area would be desirable.

*Homalium cymosulum* was published based on *Scott Elliot* 3037, a reddish-flowered collection from Fort-Dauphin with a cylindrical calyx cup. The P isotype appears to be identifiable as a hybrid of *H. oppositifolium* × *H. trigynum*.

*Kotozafy & Rasabo* 862 (MO, P) from Ranomafana has densely pubescent glands and some resemblance to *Homalium oppositifolium*, but the leaves are alternate and the sepals are much shorter than the petals and very weakly pubescent. *Service Forestier* 17711 (P) comes from the coastal locality of Tampolo; it has short-acuminate leaves, small long-stalked glands, and very weak gland and perianth indument. These specimens are suspected to represent hybrids, but the identity of the other parent is uncertain.

**Additional material examined.** – MADAGASCAR. **Prov. Antsiranana:** Ambodivapaza, forêt de Farahangitra, 14°08'20"S 49°54'50"E, 315 m, 12.IV.2013, fl., *Rakotonirina et al.* 122 (G, K, MO); canton Marovato, district Ambanja [probably Tsaratanana RN], 13.XII.1952, fl., *Réserves Naturelles* 4734 (P); *ibid. loc.*, same date, fl., *Réserves Naturelles* 4757 (P). **Prov. Fianarantsoa:** Midongy du Sud, National Park buffer zone, 23°36'41"S 47°02'05"E, 577 m, 23.VIII.2008, post-fl., *Bussmann et al.* 15112 (MO, P); Vangaindrano, edge of Midongy du Sud NP, Ambalabe Forest, 23°36'08"S 47°02'58"E, 687–775 m, 23.VIII.2008, post-fl., *Bussmann et al.* 15127 (MO, P); Vondrozo, 17.VI.1925, fl., *Decary* 3852 (P); Midongy du Sud, 21.VIII.1926, post-fl., *Decary* 5044 (P); *ibid. loc.*, same date, fl., *Decary* 5127 (MO [3 sheets], P); Prov. de Farafangana, 23.VIII.1926, post-fl., *Decary* 5151 (MO, P); Vallée de l'Itomampy, VI.1919, *Perrier de la Bâthie* 12654 (P); RN 25, 7 km W of Ranomafana town, 21°15'S 47°25'E, 600–900 m, 14.VI.1994, fl., *Randrianasolo et al.* 63 (MO); 2 km W d'Andrambovato, bord de la rivière Tatamaly, 21°30'S 47°24'E, 1075 m, 19.X.2000, fl., *Randriantafika* 170 (MO, P); Farafangana, rivière Tohakondra, 6.XI.1950, fl., *Service Forestier* 2238 (P); Fianarantsoa, Fort-Carnot, Sahavia, 30.VI.1951, post-fl., *Service Forestier* 4805 (P); Farafangana, Manombo, 11.VII.1952, fl., *Service Forestier* 5627 (P); Ambohimanga du Sud, Ambaro, 17.XI.1952, fl., *Service Forestier* 7049 (P); env. du Manombo, au S de Farafangana, 26.VI.1954, *Service Forestier* 9201 (P); Andrambovato, 30.VII.1954, post-fl., *Service Forestier* 12284 (P); Fort-Carnot, Andrambovato, parcelle B-8, 10.VI.1954, fl., *Service Forestier* 14414 (P); Mananjary, Amboropotsy, 16.V.1954, fl., *Service Forestier* 14429 (P); Andrambovato, 12.VI.1954, *Service Forestier* 14461 (P); Mananjary, Ifanadiana, 1.VI.1954, fl., *Service Forestier* 14475 (P); Androrangavola, Ifanadiana, 21.IV.1954, post-fl., *Service Forestier* 14544 (MO, P); Nosy-Varika, Ampasinambo, Antanifotsy, 9.X.1954, fl., *Service Forestier* 14747 (P); Farafangana, Anjorozero, 4.IV.1966, fl., *Service Forestier* 25853 (MO, P). **Prov. Mahajanga:** Ambodiriana, rive droite du fleuve, 700 m, 14.XII.1944, fl., *Cours* 1957 (MO, P); Ambendriana, forêt d'Ampoakafobe, à 6 km W du village d'Antsiatsiaka, 16°01'34"S 49°04'19"E, 769 m, 8.XI.2004, fl., *Lehavana et al.* 190 (MO, P); Antsakoabe, formation sur le lavaka Antakoanibata, Tsingy Beanka, 18°05'48"S 044°31'57"E, 211 m, 21.XI.2012, fl., *Rakotoavao et al.* 6323 (MO). **Prov. Toamasina:** Fkt. Anjahely, 15°24'00"S 49°26'12"E, 740 m, 14.XII.2002, post-fl., *Antilabimena et al.* 1476 (MO, P); *ibid. loc.*, 15°23'04"S 49°26'58"E, 1005 m, 20.XII.2002, post-fl., *Antilabimena et al.* 1534 (MO, P); Soanierana Ivongo-Ampasimbola, 50 m SE of track, PDOP 2.5, 16°57'26"S 49°33'55"E, 60 m, 3.VII.1996, fl., *Birkinshaw et al.* 333 (MO, P); Antanambao, river Antsohihi, 16°47'18"S 49°41'54"E, 58 m, 30.VI.2007, fl., *Birkinshaw & Andriamiarinoro* 1755 (MO); Ambatondrazaka, bords de la Mahamaro, Anosibe, 700 m, XI.1938, fl., *Cours* 866 (P); Tampina, 25.VIII. fl., *Louvel* 76 (P); Pointe à Larrée, fkt. Ambohitsara/Ampeny, forêt de Menagisy, 16°46'30"S 49°40'45"E, XI.2008, *Nikolov* 1848 (MO); Haut Anosivola, bassin du Mangoro, XI.1911, fl., post-fl., *Perrier de la Bâthie* 6711 (P); [Analamazaoatra] vers 1000 m alt, X.1922, *Perrier de la Bâthie* 15476 (P); Fénérive-Est, Tampolo forestry station, along

the "Grand Layon" towards the ocean, 17°17'S 49°23'E, 5 m, 31.VII.1996, fl., post-fl., *Randrianasolo* 451 (MO, P); Ambinanitelolo, forêt d'Anjiabe, limite entre Befandriana Nord et Maroantsetra, suivant la piste vers Andranomena Mantsoandakana, 15°35'S 49°23'E, 17.II.2008, fl., *Ravelonarivo et al.* 2879 (MO); Moramanga, Sahanomby, 4.VII.1952, sterile, *Service Forestier* 6126 (P); Marolambo, Ambalamena, 13.XII.1953, fl., *Service Forestier* 8014 (P); *ibid. loc.*, same date, fl., *Service Forestier* 9412 (P); Tampolo, 112 bis JB. 21, 1.VI.1954, fl., *Service Forestier* 10506 (P); Tampolo, 24.IX.1954, fl., *Service Forestier* 10821 (P); *ibid. loc.*, 16.V.1955, post-fl., *Service Forestier* 14176 (P); district Marolambo, Morafeno, côté gauche du chemin, 29.X.1956, *Service Forestier* 16446 (P); Tampolo, 28–29.VIII.1957, fl., *Service Forestier* 18150 (P); Distr. Vavatenina, Ampasimazava, Nosibe, 3.IX.1964, fl., *Service Forestier* 21905 (P). **Prov. Toliara:** Route de Fort-Dauphin à Mahakalaky, s.d., fl., *Boiteau* 2141 (MO, P); Fort-Dauphin, s.d., fl., *Cloisel* 230 (P); *ibid. loc.*, 15.VI.1926, fl., *Decary* 4027? (P); *ibid. loc.*, 8.VII.1926, fl., *Decary* 4270 (MO, P); Mandena 7.5 km N of Fort-Dauphin, 24°58'S 46°59'E, 0–10 m, *Gerreau et al.* 3295 (MO, P); forêt de Manantantely près Fort-Dauphin, 50–300 m, 1.III.1947, *Humbert* 20380 (P); Antsotso, TKG 42, forêt de Bemangidy, 24°35'17"S 47°08'42"E, 28 m, s.d., fl., *Randriantafika* 861 (MO); Fort-Dauphin, Ifarantsa, 24.IV.1952, fl., *Réserves Naturelles* 3814 (MO [2 sheets], P); *ibid. loc.*, 25.V.1955, fl., *Réserves Naturelles* 7461 (P); Fort-Dauphin, May, post-fl., *Scott Elliot* 2639 (P); Mandena, 11.VI.1952, fr., *Service Forestier* 5327 (P); Fort-Dauphin, Andreô, 2.IV.1954, fl., *Service Forestier* 9743 (P).

#### 10. *Homalium pseudoboinense* Appleg., spec. nova (Fig. 2B–C, 3).

**Typus:** MADAGASCAR. **Prov. Toamasina:** env. de la Baie d'Antongil, bassin de la Mahalevona, entre Ankovana et Ambatondradama, III.1953, fl., *Service Forestier* 8866 (P [P04734315]!; iso-: P [P04734251, P04734314, P04734316, P04734317]!).

*Homalium pseudoboinense* Appleg. differs from *H. boinense* *H. Perrier* in having larger flowers, stamens in groups of 3, and sepals with densest pubescence near margins.

*Tree* described as large; large twigs brown; young twigs brown, glabrous; stipules narrowly lanceolate, 1.6–3 mm, glabrous to minutely pubescent, occasionally persistent. *Leaves* alternate; petiole 6–14 mm, glabrous or glabrate; blade broadly elliptical, 5–10.7 × 3.5–6.2 cm; base convex to rounded (to broadly cuneate, sometimes minutely attenuate at petiole attachment); apex rounded to cuspidate or emarginate; margins subentire, revolute, usually with 1 or more small glands in margins not associated with toothings; abaxial surface glabrous, drying brown; adaxial surface glabrous, drying darker brown. *Inflorescences* paniculate, with well-separated, few-flowered short side branches, at least the upper portions mostly racemiform, lateral, largely confined to twig apices, 5–15 cm, moderately to densely pubescent with very short appressed hairs; peduncle (0.2–)1–3.5 cm, thick and somewhat angular; pedicel 3.5–11 mm, short-pubescent; bracts broadly ovate to suborbicular, 1.3–2.3 mm, pubescent; bracteoles lanceolate to ovate, 1.5–2.8 mm, pubescent. *Flowers:* sepals 5, elliptical with rounded to broadly acute apex, 5.5–6 mm, abaxial surface short appressed-pubescent, the margins usually broad, pale and more densely pubescent than central portions above the base; calyx cup very shortly funnelform to cup-shaped, short appressed-pubescent; sepal glands irregularly trapezoid, sometimes elevated,





Fig. 3. – Holotype of *Homalium pseudoboinense* Appleq.  
 [Service Forestier 8866, P] [© Muséum national d'Histoire naturelle, Paris. Reproduced with permission]

possibly 2-lobed, 1.3–1.4 × 0.7–0.8 mm, upper surface densely pubescent; petals obovate with rounded apex, mostly ascending, 9–10.5 × 4.2–5.4 mm, much longer than sepals, abaxial surface appressed-pubescent, densely so at base and in center, adaxial surface glabrous; stamens in groups of 3 or 4; filaments 3–3.6 mm, glabrous; anthers 0.4 mm; ovary conic, densely villous; styles (4–)5, 1.5–2 mm, pubescent at base. *Seeds* not seen.

*Homalium pseudoboinense* is known from only a single collection, which is over 60 years old. The locality is inland humid forest, close to the boundary between Toamasina and Antsiranana provinces, at around 500 meters in elevation. The lack of collections from a well-botanized region of Madagascar suggests that the species is likely to be very rare or a highly localized endemic. However, the type locality may be within the boundaries of the protected area of the Masoala National Park, reducing the threat of imminent extinction. In view of the lack of information available for this species, a preliminary conservation status assessment of “Data Deficient” [DD] seems most appropriate.

*Notes.* – *Homalium pseudoboinense* most closely resembles the sole western species of the section, *H. boinense*, but has much larger flowers with only 3 stamens per bundle and sepals more densely pubescent towards the margins; the latter character is quite unusual. Of the other species around the Baie d’Antongil, it most closely resembles the large-leaved, sometimes large-flowered littoral species *H. nobile*, which has a racemose inflorescence and sepals most densely sericeous in the central portions, sometimes appearing keeled, and only slightly shorter than the petals.

**11. *Homalium pulchrum*** Sleumer in Bull. Jard. Bot. Natl. Belg. 43: 320. 1973.

**Typus:** MADAGASCAR. Prov. Fianarantsoa: Farafangana, Ihorombe, Manombo, 10.I.1955, fl., *Service Forestier 12931* (holo-: P [P00375173]!; iso-: L [L0010994] image seen, P [P04734398]!).

*Tree* to 22 m tall; large twigs grayish brown; young twigs grayish or dark brown, glabrous; stipules deltoid, ca. 0.5 mm, glabrous. *Leaves* partly alternate, partly opposite; petiole 3–6(–10) mm, glabrous; blade oblanceolate to elliptical or narrowly elliptical, 4–9(–13.7) × 1.5–3.6(–4.4) cm; base cuneate to convex or attenuate; apex cuspidate to rounded (or acute); margins subentire, seldom minutely revolute (or with few shallow rounded teeth), with 2–4 small glands per side embedded in margins toward base; abaxial surface glabrous, drying medium to pale brown or pale greenish; adaxial surface glabrous, drying dull greenish to grayish. *Inflorescences* racemose (rarely partly paniculate with a few flowers in small

clusters on very short branches), the surviving flowers mostly distal, lateral, 2.3–10 cm, glabrous (sparsely minutely pubescent); peduncle 0.6–5 cm, slender; pedicel 1–2(–2.5) mm, glabrous (sparsely minutely pubescent); bracts lanceolate to deltoid, 0.4–1.5(–2.2) mm, glabrous; bracteoles usually absent. *Flowers:* sepals 4–5, creamy beige or whitish, narrowly oblong to oblong-elliptical or elliptical with irregularly rounded apex, 2.8–4 mm, abaxial surface glabrous; calyx cup funnel-form, glabrous; sepal glands irregularly elliptical, 0.6–1 × 0.4–0.5 mm, upper surface glabrous and slightly wrinkled; petals white, obovate to lanceolate with rounded apex, (3–)4–6 × 1.5–3.6 mm, usually significantly longer than sepals (rarely equal in length), abaxial surface pubescent with short appressed hairs primarily on central basal portion, with a central darker stripe, adaxial surface glabrous (sparsely pubescent at extreme base); filaments 0.7–1(–2) mm, glabrous; anthers 0.3 mm; ovary conic, densely pubescent; styles 4(–5), 0.5–1.4 mm, basally pubescent. *Seeds* not seen.

*Vernacular names.* – “Ropasy” (*Service Forestier 13192*); “Tsatoky” (*Réserves Naturelles s.n.*).

*Distribution, ecology and conservation status.* – *Homalium pulchrum* is native to low-elevation humid forests in southeastern Madagascar; it is reported to occur on laterite, including laterite of basalt. It is known from only five locations, only one of which is protected; its apparent rarity and the ongoing loss of habitat in most of its range justify a preliminary conservation status assessment of “Endangered” [EN B2ab(iii)].

*Notes.* – SLEUMER (1973) did not note in the protologue of *H. pulchrum* that two sheets of the type were present at P. However, in this case he labeled only one sheet as the holotype and marked the inferior second sheet as “pars holotypi”, effectively making it an isotype.

*Homalium pulchrum* is part of the *H. capuronii* species group (see Table 1). It is among two species in that group with normally racemose inflorescences; the other is the distinctive *H. schatzii*, another species of low-elevation northeastern forests, which has elliptical to obovate leaves, unusual petal indument, and huge sepal glands. It is also notable for often having narrow, oblanceolate to narrowly elliptical leaves and glabrous pedicels and rachises.

*Razakamalala et al. 2583* (MO, P) is an atypical specimen with longer leaves and petioles and shorter inflorescences than any other and with petals little longer than the sepals. More typical material has been collected from the same location.

*Additional material examined.* – MADAGASCAR. Prov. Fianarantsoa: Manombo RS, parcel W of Route Nationale 12, 23°02'S 47°02'E, 100 m, 9–11. III.1991, fl., *Schatz et al. 3192* (P); Manombo, 17.X.1964, fl., *Service Forestier 23633* (P). Prov. Toliara: Antsotso, forêt d’Ivohibe, 24°56'22"S 47°20'27"E, 440 m, 2.XII.2005, fl., *Razakamalala et al. 2583* (MO, P); *ibid. loc.*, same



date, buds, *Razakamalala et al.* 2586 (MO, P); Antsotso Avaratra, 24°34'03"S 47°11'57"E, 403 m, 10.XII.2007, fl., *Razakamalala et al.* 3852 (MO, P); *ibid. loc.*, 24°34'16"S 47°12'06"E, 271 m, 8.XII.2007, fl., *Razakamalala et al.* 3780 (MO, P [2 sheets]); Canton Ampasimena, Editsaky, 22.XI.1949, fl., *Réserves Naturelles s.n.* (P); Fort-Dauphin, Bemangidy, 31.III.1955, *Service Forestier* 13192 (P).

**12. *Homalium randrianasoloi* Appleq., spec. nova** (Fig. 2D, 4).

**Typus:** MADAGASCAR. **Prov. Toliara:** Manantenina, forêt de Marovony [24°06'S 47°20'E], 29.X.1990, fl., *Randrianasolo et al.* 191 (holo-: MO-4028861!; iso-, P [P04734076]!).

*Homalium randrianasoloi* Appleq. differs from *H. capuronii* Sleumer in having larger leaves, some panicles with well-developed side branches, sepals and petals sometimes 5.

Tree to 10 m tall; large twigs grayish; young twigs brown, glabrous; stipules linear to narrowly deltoid, < 1 mm (few seen), glabrate. Leaves alternate; petiole 5–10 mm, glabrous; blade elliptical to obovate or broadly (narrowly) elliptical, 6–12.5 × 2.8–6.6 cm; base convex to rounded (cuneate in young leaves), at extreme base short-attenuate; apex rounded-acute to cuspidate, rounded, or shallowly emarginate; margins minutely revolute with 0 to 2 basal glands just inside margin; abaxial surface glabrous, drying greenish; adaxial surface glabrous, drying greenish. Inflorescences paniculate, short-branched, ridged, with most flowers borne in small clusters, sometimes with short but well-developed proximal branches, lateral mostly near twig apices, 7–10.5 cm, glabrate or glabrous proximally, the distal rachis and branches sparsely (moderately) minutely pubescent; peduncle 1–4.8 cm, moderately sturdy; pedicel 1.5–4.3 mm, sparsely (moderately) minutely pubescent; bracts ovate, 0.3–2.5 mm, minutely pubescent; bracteoles ovate, 0.5–1 mm, minutely pubescent. Flowers: sepals 4(–5), oblong with rounded apex, 2.4–4.2 mm, abaxial surface sparsely minutely pubescent; calyx cup funnelform, moderately (sparsely) minutely pubescent; sepal glands irregularly oblong, 0.6–1 × 0.4–0.6 mm, upper surface glabrous or sparsely short-pubescent to moderately short-pubescent in the depressed center; petals white or pink (possibly only after anthesis), obovate to narrowly obovate with a narrow base and rounded apex, 3.7–6 × 1.6–2.6 mm, significantly longer than sepals, abaxial surface minutely pubescent especially at base and in center, adaxial surface glabrous; filaments 1.7–2.4 mm, glabrous; anthers 0.3 mm; ovary flat-conic, short-pubescent; styles 4(–5), 1.5–2.5 mm, glabrous or sparsely pubescent especially on short fused basal portion. Seeds not seen.

*Distribution, ecology and conservation status.* – *Homalium randrianasoloi* is known from only two collection numbers made two days apart at the low-elevation humid forest of Marovony near the southeast coast north of Fort-Dauphin and southeast of Befotaka. This area has not been frequently

collected, so the paucity of specimens is not clear evidence of local rarity. However, the type locality is under extreme and immediate threat: only small fragments of the Marovony forest remained at the time of the most recent vegetation mapping (MADAGASCAR VEGETATION MAPPING PROJECT, 2006), and the larger low-elevation forests to its west and southwest were at that time already completely or almost completely gone. Thus, a preliminary conservation status assessment of “Critically Endangered” [CR B1ab(iii)+2ab(iii)] seems justified. An attempt to locate another population of the species in the larger remaining forested areas of Alan'i Tsidikamboro, to the north of Amparihy Atsinanana, would be highly desirable.

*Notes.* – *Homalium randrianasoloi* is part of the *H. capuronii* group (see Table 1). It is most similar to *H. capuronii*, from which it is visually distinguished by its typically larger, broader leaves with sometimes rounded bases and sometimes better-developed panicles. The leaves of the type are comparable in size to the aberrant extreme of *H. capuronii*'s size range, while the paratype has even larger leaves, elliptical with broad bases and rounded-acute apices, but only short-branched panicles. Flowers of *H. capuronii* are consistently 4-merous, whereas some flowers of *H. randrianasoloi* are 5-merous. Known specimens of *H. randrianasoloi* dry greenish, which is uncommon in *H. capuronii* (though this character is not consistent in the latter species, and might not be in the former). In addition, *H. capuronii* is native to the northern province of Antsiranana and occurs only at medium to high elevations. This provides further reason to presume that these taxa are genetically distinct, though their similarity and the variability of some features within *H. capuronii* may make them difficult to differentiate.

The other low-elevation southeastern species in this group, *H. pulchrum*, has narrower leaves, oblanceolate to elliptical or narrowly elliptical with usually cuneate to convex bases and subentire margins having 2 to 4 glands per side, and its inflorescences are racemose and usually glabrous. It does not seem plausible that the observed morphology of *H. randrianasoloi* could have resulted from hybridization of *H. pulchrum* with any of the other species known from the region, which include *H. brevipedunculatum*, *H. oppositifolium*, and *H. trigynum*.

*Paratypus.* – MADAGASCAR. **Prov. Toliara:** Fort-Dauphin, Marovony Forêt, 27.X.1990, post-fl., *Dumetz* 1348 (MO-3853942, P [P04705534]).



Fig. 4. – Holotype of *Homalium randrianasoloi* Appleg.

[Randrianasolo et al. 191, MO] [© Missouri Botanical Garden, Saint Louis. Reproduced with permission]



**13. *Homalium ranomafanicum* Appleg., spec. nova**  
(Fig. 2E, 5).

**Typus:** MADAGASCAR. **Prov. Fianarantsoa:** Ranomafana National Park, parcelle 3, S of National Road 25 at 7 km W of Ranomafana town, 21°15'30"S 47°25'00"E, 953 m, 900–1100 m, 15.XII.1994, fl., *Randrianasolo & Bernardin* 209 (holo-: MO-6669934!; iso-: BR!, CAS!, G!, K!, L!, TAN, USMS).

*Homalium ranomafanicum* Appleg. differs from *H. maringitra* H. Perrier in having larger, broadly obovate (to obovate or broadly elliptical) leaves with revolute, untoothed margins bearing 0 to 2 basal glands, paniculate inflorescences.

Tree to 20 m tall, 25 cm dbh; large twigs grayish brown; young twigs dark brown, glabrous; stipules broadly deltoid to ovate, 0.5–1 mm, glabrate. Leaves alternate (to subopposite); petiole (3–)5–8 mm, glabrous; blade broadly obovate (to obovate, broadly elliptical), 4–7.3 × 2.1–5.1 cm; base convex (to cuneate or rounded); apex rounded (to shallowly emarginate or rounded-cuspidate); margins revolute, sometimes strongly, with 0 to 2 basal glands just inside margin; abaxial surface glabrous, drying a warm medium brown; adaxial surface glabrous, drying dull to pale or greenish brown. Inflorescences paniculate, often with multiple well-developed proximal branches and with many flowers borne in small clusters on short branches, lateral mostly near twig apices, (3.3–)8–16 cm, sparsely pubescent proximally, the distal branches moderately minutely pubescent; peduncle 0.6–5.6 cm, sturdy; pedicel 1–2(–2.5) mm, at least moderately minutely pubescent; bracts deltoid to ovate, 0.5–1.2 mm, short-pubescent; bracteoles broadly deltoid, 0.3–0.6 mm, short-pubescent. Flowers: sepals 4, broadly oblong to oblong with rounded apex, 1.4–2.6 mm, abaxial surface sparsely minutely pubescent; calyx cup funnelform, moderately minutely pubescent; sepal glands irregularly oblong to trapezoid, (0.8–)0.9–1.2(–1.5) × 0.6–0.7 mm, upper surface densely short-pubescent; petals white, obovate with a narrow base and rounded apex, 3.6–5.2 × 1.5–2.3 mm, about twice as long as sepals, abaxial surface minutely pubescent especially at base and in center, adaxial surface glabrous; filaments 1.7–2 mm, glabrous; anthers 0.2–0.3 mm; ovary nearly flat-topped at anthesis, short-pubescent; styles 4, 1.5–2.4 mm, short appressed-pubescent on fused basal portion. Seeds not seen.

*Distribution, ecology and conservation status.* – *Homalium ranomafanicum* is native to mid-elevation southeastern humid forest. The type collection, made over two decades ago, is from the national park of Ranomafana. No further collections have been seen, though thousands of specimens have been collected from Ranomafana. It is thus likely that this represents a very rare species. However, given the lack of knowledge regarding this species and the fact that its known habitat is relatively well protected, a preliminary conservation status assessment of “Data Deficient” [DD] seems most conservative.

*Notes.* – The type collection of *H. ranomafanicum* is the only known collection of its kind from the very well-collected site of Ranomafana National Park. It is notable for having broadly obovate leaves, long panicles with well-developed branches, and small 4-merous flowers with short pedicels, very short sparsely pubescent sepals, and densely pubescent sepal glands. *Homalium ranomafanicum* is likely to be closely related to *H. maringitra* and the newly described *H. dorrii*, which share small flowers with mostly sparsely pubescent sepals and densely pubescent sepal glands. It seems most similar to *H. maringitra*, which is known from mid-elevation humid forests much farther north, and which similarly has petals almost twice as long as the sepals. The leaves of *H. maringitra* are usually smaller, or at least narrower, and mostly elliptical rather than obovate; its leaf margins are toothed or wavy with multiple glands, its inflorescences racemose or racemiform, and its pedicels and sepals frequently longer than those of *H. ranomafanicum*. *Homalium dorrii* has narrower leaves and longer sepals, so that the petals only modestly exceed the sepals (see Fig. 2A and 2E for a comparison). The only species of sect. *Eumyriantheia* previously known from southeastern mid-elevation humid forest is *H. oppositifolium*, which differs from *H. ranomafanicum* in numerous characters (e.g., its leaves are mostly elliptical, inflorescences racemose, sepals 5–6 in number and longer both absolutely and relative to the petals, and abaxial surfaces of the sepals and petals densely pubescent).

**14. *Homalium schatzii* Appleg., spec. nova** (Fig. 2F–G, 6).

**Typus:** MADAGASCAR. **Prov. Toamasina:** 1–2 km E of Fampanambo, 15°22'35"S 49°37'46"E, 20 m, 28.I.1999, fl., *Schatz et al.* 3850 (holo-: P [P04705556]!; iso-: G!, K!, MO!, TEF).

*Homalium schatzii* Appleg. differs from *H. randrianasoloi* Appleg. in its racemose inflorescence, larger sepal glands, and abaxial surface of petals densely appressed-pubescent with a pronounced narrow glabrate stripe.

*Description.* – Tree to 16 m tall; large twigs pale brown; young twigs pale brown, glabrous; stipules deltoid, 0.5 mm, glabrous. Leaves alternate; petiole 5–8 mm, glabrous; blade elliptical to obovate, 6–11.5 × 2.8–6.2 cm; base convex; apex rounded to rounded-cuspidate, rounded-obtuse or emarginate; margins subentire with 1–2 small basal glands per side; abaxial surface glabrous, drying brown; adaxial surface glabrous, drying dark brown. Inflorescences racemose with flowers borne in groups of 1 to 3 at the termination of a prominent ridge, lateral, 5–8.3 cm, glabrous proximally to minutely pubescent distally; peduncle 3.5–4.3 cm, noticeably flattened; pedicel 3–5 mm, minutely pubescent; bracts deltoid, 0.3–1.5 mm, glabrous; bracteoles usually absent. Flowers: sepals 4, narrowly oblong to oblong-ovate with rounded (to rounded-acute) apex, 3.4–4.6 mm, abaxial surface glabrate to



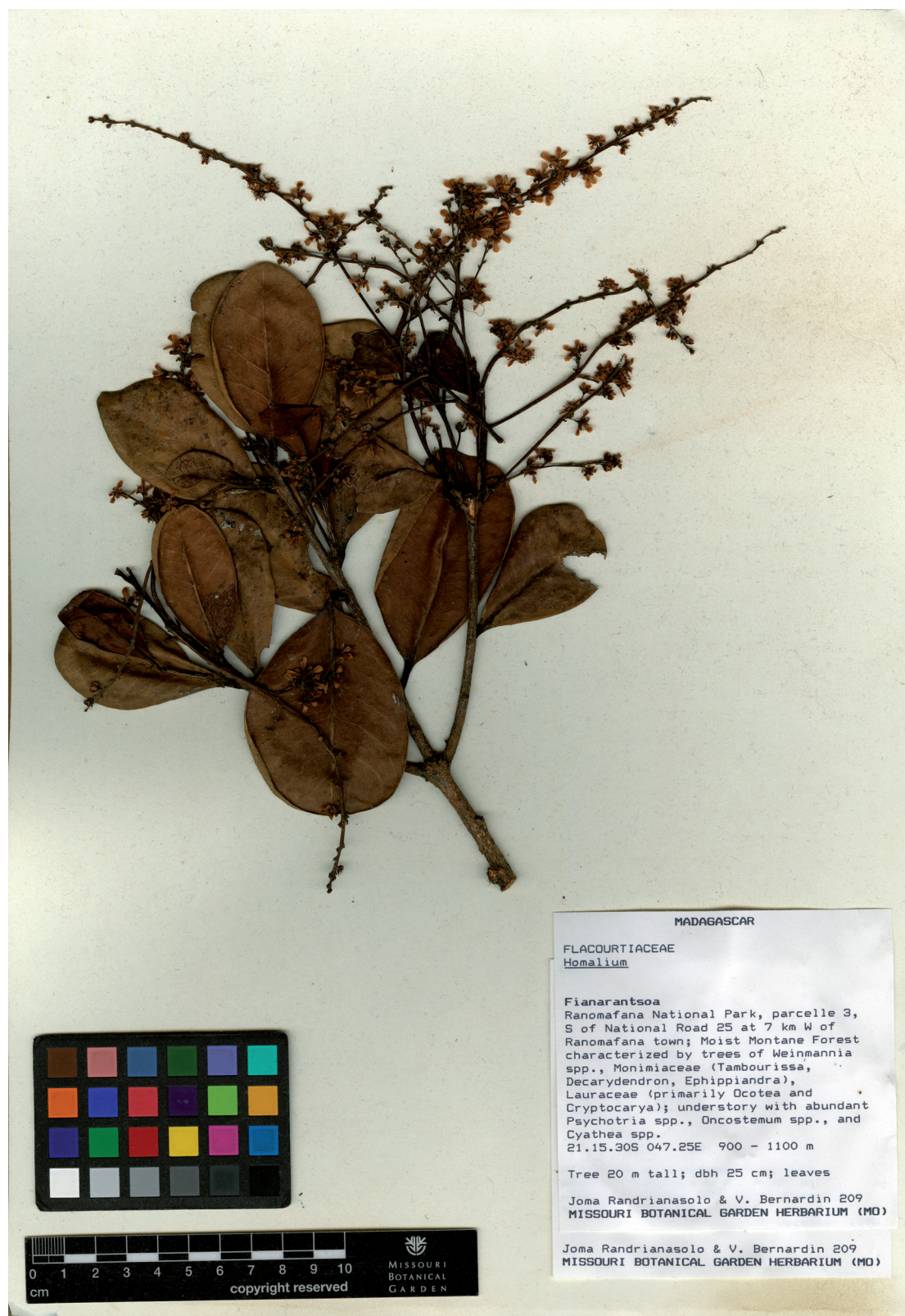


Fig. 5. – Holotype of *Homalium ranomafanicum* Appleg.

[Randrianasolo & Bernardin 209, MO] [© Missouri Botanical Garden, Saint Louis. Reproduced with permission]





Fig. 6. – Holotype of *Homalium schatzii* Appleq.  
[Schatz et al. 3850, P] [©Muséum national d'Histoire naturelle, Paris. Reproduced with permission]

sparsely and minutely pubescent; calyx cup funnellform, glabrate to sparsely and minutely pubescent; sepal glands roughly trap-ezoid to elliptical or nearly square,  $0.9\text{--}1.6 \times 0.7\text{--}1$  mm, upper surface glabrous; petals obovate with rounded apex,  $4.7\text{--}6.5 \times 2.4\text{--}2.8$  mm, much longer than sepals, abaxial surface moderately to densely short appressed-pubescent with a conspicuous glabrate stripe down center, adaxial surface glabrous; filaments  $2.4\text{--}3.2$  mm, glabrous; anthers  $0.4$  mm; ovary conic, short-pubescent; styles  $4\text{--}5$ ,  $2\text{--}2.5$  mm, short appressed-pubescent especially at base. *Seeds* not seen.

*Distribution, ecology and conservation status.* – *Homalium schatzii* is native to low-elevation humid forest on laterite in northeastern Madagascar; it is known from only the type collection, from a locality that is subject to ongoing degradation. As for *H. pseudoboinense*, from a quite different habitat but also near the Baie d'Antongil, the dearth of specimens despite a relatively large number of collections made in that region of Madagascar allows the presumption that the species is very rare or a highly localized endemic. Thus a preliminary conservation status assessment of "Critically Endangered" [CR B2ab(iii)] seems appropriate.

*Notes.* – *Homalium schatzii* is part of the *H. capuronii* group (see Table 1), and is the only species of that group that occurs near Masoala in the northeast. It is distinguished within that group of species by the combination of racemose inflorescences, very large sepal glands, and an unusual pattern of corolla indument, glabrate in a stripe down the center but often relatively dense to near the apical margins, where most species have sparser indument. Two other large-leaved species, *H. nobile* and *H. pseudoboinense*, occur in the same region. Both have larger, 5-merous flowers that have dense sepal indument and lack the unusual corolla indument seen in *H. schatzii*.

**15. *Homalium trigynum*** (Baker) Sleumer in Bull. Jard. Bot. Natl. Belg. 43: 316. 1973.

= *Weinmannia trigyna* Baker in J. Bot. 20: 109. 1882.

**Typus:** MADAGASCAR. Prov. Fianarantsoa: Tanala country [E de .], Baron 292 (holo-: K [K000231476] image seen; iso-: L [L0011032] image seen).

= *Homalium urceolatum* Scott-Elliot in J. Linn. Soc., Bot. 29: 22. 1891. **Typus:** MADAGASCAR. Prov. Toliara: Fort-Dauphin, V.18??, fl., Scott Elliot 2662 (holo-: K [K000231477] image seen; iso-: P [P04679671]!).

*Tree* to 15 m tall, 50 cm dbh, with brownish to whitish bark; large twigs brown; young twigs brown to pale brown, short-pubescent (glabrous); stipules deltoid,  $0.5\text{--}0.8$  mm, short-pubescent or glabrous. *Leaves* alternate to opposite, arrangement often variable; petiole  $4\text{--}10$  (–16) mm, short-pubescent (glabrous);

blade narrowly elliptical to elliptical (to oblanceolate or obovate),  $4.2\text{--}8.5$  (–10.7)  $\times$   $1.5\text{--}4$  (–4.5) cm; base convex (to cuneate); apex rounded to obtuse, acute, or cuspidate (emarginate); margins shallowly serrulate (crenate-serrulate) with several glands inside tooth apices or entire to subentire (sometimes revolute) with 0 to 2 glands near base; abaxial surface pubescent on midrib (glabrous), drying brown; adaxial surface glabrous (sparsely pubescent on midrib), drying brown, darker than abaxial surface or grayish. *Inflorescences* racemose or spicate with flowers borne singly, lateral, (2-)3-14 cm, short-pubescent (to glabrous on peduncle); peduncle (0.3-)0.5-2.5 cm, slender; pedicel 0.5-1 (–3) mm or absent, short-pubescent; bracts broadly deltoid to ovate, (0.3-)0.6-1.5 mm, short-pubescent; bracteoles broadly deltoid to ovate, (0.3-)0.5-1.2 mm, short-pubescent. *Flowers:* sepals 4-5, white to cream (sometimes becoming pink), ovate with acute apex,  $1.3\text{--}2.4$  (–3.5) mm, abaxial surface moderately to densely (sparsely) appressed-pubescent; calyx cup cup-shaped, usually elongated, or cylindrical with a broad rounded base, appressed-pubescent; sepal glands irregularly elliptical to suborbicular, often little elevated,  $0.7\text{--}1 \times 0.4\text{--}0.7$  mm, upper surface short-pubescent; petals white to cream (sometimes becoming pink), oblanceolate to spatulate with acute apex,  $1.7\text{--}2.9$  (–3.4)  $\times$   $0.6\text{--}1$  (–1.3) mm, modestly shorter or longer than sepals, abaxial surface appressed-pubescent, adaxial surface glabrous; filaments (1.3-)1.7-2.5 mm, glabrous; anthers  $0.2\text{--}0.3$  mm; ovary flat-conic, pubescent; styles 3-4,  $1.3\text{--}1.8$  mm, pubescent at base (or for most of length). *Seeds* 1-2, ovoid to subglobose, ca. 2 mm.

*Vernacular names and uses.* – "Andrafeko" (*Service Forestier* 1142); "Fandramanara [?]" (*Service Forestier* 3245); "Hazon-drano" (*Service Forestier* 21663); Marandravy (*Rabevohitra et al.* 3713); Troihy (*Cours* 5286); "Tsimioroka" [Tsimihety dialect] (*Service Forestier* 19050); "Varona" (*Service Forestier* 2303).

The wood of *H. trigynum* is reported to be used in the manufacture of items including canoes (*Service Forestier* 19050). A strong infusion of the bark is used to treat hemorrhage (*Cours* 5286).

*Distribution, ecology and conservation status.* – *Homalium trigynum* is widespread, justifying a conservation status of "Least Concern" [LC], though it might be noted that it is not particularly common, that most known habitat is unprotected, and that distinctive morphological variants, found in a smaller number of localities, might be considered vulnerable if they were formally recognized. Those variants may have different ecological preferences. The southern or eastern form described below usually occurs in low-elevation to sublittoral humid forests, while the northern form is found in mid- and low-elevation forests, with intermediates appearing at high altitudes in the southeast. The species has been reported on gneiss and clay.



*Notes.* – *Homalium trigynum* is widespread and very distinctive; it is the only species in sect. *Eumyriantheia* with small flowers having both sepals and petals with acute apices, a broad, round-based calyx cup, very short or sometimes absent pedicels, and sometimes sparse pubescence inside the upper part of the ovary, to which the seeds are confined. Though it is an outlier within this section, placement within sect. *Polyanthera* would be even more problematic (Applequist, unpubl. data). The slender racemose inflorescences with short-pedicellate to sessile flowers borne singly have a characteristic appearance that allows easy identification.

Geographically correlated morphological variation exists. Almost all specimens from eastern and southeastern forests have petals longer than the sepals and usually toothed leaf margins with several glands, while northern specimens (from the province of Antsiranana and rarely into Mahajanga, usually in high-elevation forests) have petals shorter than the sepals and usually subentire leaf margins with 2 (less often 0 or 1) glands. However, a few intermediate specimens exist, including two specimens with toothless leaf margins from very high altitudes at the southeastern locality of Ambatofinandrahana. Further, one specimen entirely consistent with northern morphology appears to be from the southeast (the locality is given as Mania, a river in Fianarantsoa). It is suspected that ecological preferences play a strong role in creating separation between these forms. Since their geographic distributions are not entirely consistent, it seems most conservative not to formally recognize them at this time.

*Réserves Naturelles 8422* (P) from Sambava has flowers that resemble those of *Homalium trigynum*, with a broad-based calyx cup, but at least some inflorescences are long panicles, with flowers in clusters and sometimes borne on long side branches well above the base. This specimen is suggested to be a hybrid involving *H. trigynum* and an unidentified second species (possibly *H. capuronii*).

*Homalium cymosulum*, known only from the type, is noted above under *H. oppositifolium* to represent a probable hybrid of *H. oppositifolium* × *H. trigynum*.

*Additional material examined.* – **MADAGASCAR. Prov. Antsiranana:** Anjahana, 13°21'15"S 49°11'01"E, 118 m, 7.VI.2005, fr., *Hong-Wa et al.* 313 (MO, P); Région du Sambirano, Mananjeba, 300 m, VIII.1913, fr., *Perrier de la Bâthie* 6701 (P); Bassin supérieur de la Loky, XI.1909, fr., *Perrier de la Bâthie* 6713 (P); forêt de Maromaniry, à 5 km au N d'Ampisarahina, 13°38'41"S 49°32'27"E, 1199 m, 10.XI.2007, buds, *Randriambololomamonjy et al.* 357 (P); N à 6 km d'Antsarabasia, 13°35'39"S 49°59'10"E, 13.XI.2001, fl., *Randrianaivo* 755 (MO); Sambava, Ambendrana, bord rivière, 2.XII.1948, fl., *Service Forestier* 1142 (P [2 sheets]); Diego-Suarez, Sahafary, 6.VII.1956, fl., *Service Forestier* 15978 (P); *ibid. loc.*, same date, fr., *Service Forestier* 15980 (P); Sambava, village le plus proche Analampotsy, Andaimpotsy, 800 m, 23.VIII.1956, fl., *Service Forestier* 19050 (P); Sambirano, bord de cours d'eau à la base SW de l'Ambohipiraka (Ambilobe), 9.III.1964, fl., *Service Forestier* 23408 (MO, P [2 sheets]). **Prov. Fianarantsoa:** Dist. Farafangana, Vondrozo, 2.IX.1926, fr., *Decary* 4874 (P); *ibid. loc.*, 28.VIII.1926, fr., *Decary* 5075 (P); env. d'Ambatofinandrahana, 1600–1800 m, 16.II.1938, fl., *Decary* 12946 (P);

Mananjary zone côtière, III–IV.1909, fl., *Geay* 8019 (P); *ibid. loc.*, same date, fl., *Geay* 8020 (P); *ibid. loc.*, same date, fr., *Geay* 8021 (P); *ibid. loc.*, same date, fl., *Geay* 8022 (P); Mania, bords du torrents, 700 m, 19.III, *Perrier de la Bâthie* 12547 (P); Fkt. et village Antaviavola, bord de la rivière Matanga, 23°30'47"S 47°32'32"E, 40 m, fl., *Raharimampionona et al.* 180 (MO, P); District Ivohibe, canton Ivongo, 22.X.1959, fl., *Réserves Naturelles* 10350 (P); District de Mananjary, Pohimasy 17.IV.1954, fl., *Service Forestier* 10179 (P); Fort-Carnot, village le plus proche Ambohimahavelo, Tintahaly, 17.II.1964, fl., *Service Forestier* 21663 (P); Berges de la Namorona, près de Mangalanihelatra, entre Ifanadiana et Tolongoïna, 29.I.1964, fl., *Service Forestier* 23219 (P [2 sheets]); Berges de la Kelibezizitra, près d'Ankafotra, sur le plateau d'Itremo (entre Itremo et Amborompotsy), Ambatofinandrahana, vers 1450 m, 20.II.1970, fl., *Service Forestier* 29055 (MO, P [2 sheets]). **Prov. Mahajanga:** Befandriana Nord [station], Antsirebika, Ampombilava, 25.VIII.1942, fl., *Cours* 5286 (P). **Prov. Toamasina:** Soanierana Ivongo, 27.XII.1949, fl., *Service Forestier* 2303 (P); Vatomaniry, Analatsara, 17.III.1951, fl., *Service Forestier* 3245 (P). **Prov. Toliara:** Fort-Dauphin, suivant torrent barrage JIRAMA, 24°58'05"S 46°58'03"E, 1.X.2000, post-fl., *Rabevohitra et al.* 3713 (G, K, MO); Fkt. Analambendrana, forêt de Lakandava, 24°58'14"S 46°57'49"E, 180 m, 23.XI.2002, fl., *Randrianaivo et al.* 833 (MO, P).

## Acknowledgements

I thank the Muséum national d'Histoire naturelle for permitting study of collections at P; Sovanmoly Hul, Peter Phillipson, Simon Verlynde, and Jacques Florence for assistance during my visit and useful discussions; George Schatz and Sue Zmarzty for helpful comments on a draft version of the manuscript; Robbie Hart for assistance with image file formatting; Martin Callmender for editing, and Matthieu Berthod for assembling Fig. 2.

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## Appendix

Index to collectors. Collections are listed alphabetically by first collector's last name, with determinations indicated by numbers corresponding to those of species in the taxonomic treatment; types are indicated in boldface.

*Andriamihajarivo* 1848 (6); *Andrianarisata* 137 (6), 200 (3); *Andriatsiferana* 2549 (7); *Andrianjafy* 136 (6), 441 (6); *Antilahimena* 705 (6), 746 (6), 1476 (9), 1534 (9), 1693 (6), 3202 (7), 3278 (7), 3297 (7), 3420 (7) 3500 (7), 3579 (7), 5205 (7) 8792 (7); *Aridy* 13 (6), 171 (6).

*Baron* 292 (**15**), 5948 (6); *Bernard* 145 (8), 261 (6), 291 (6), 368 (6); *Birkinshaw* 333 (9), 1434 (4), 1755 (9); *Boiteau* 2141 (9); *Bosser* 16993 (6), 18691 (6); *Bussmann* 15112 (9), 15127 (9).

*Chapelier s.n.* (6); *Cloisel* 125 (2), 230 (9); *Cours* 866 (9), 1957 (9), 2978 (6), 5286 (15).

*Decary* 3852 (9), 4027[?] (9), 4270 (9), 4874 (15), 5044 (9), 5075 (15), 5127 (9), 5151 (9), 6494 (8), 12946 (15), 13784 (6); *Derleth* 107 (3); *Dorr* 3320 (6), 4396 (8), 4432 (**4**); *Dumetaz* 631 (2), 1348 (12); *du Petit-Thouars s.n.* (**6**), *s.n.* (**9**).

*Faliniaina* 37 (2).

*Geay* 7260 (6), 7393 (6), 7400 (6), 7412 (6), 7568 (6), 7857 (6), 8019 (15), 8020 (15), 8021 (15), 8022 (15), 8025 (6); *Gereau* 3295 (9).

*Hong-Wa* 313 (15); *Humbert* 20380 (9), 24560 (3); *Humblot* 33 (**8**), 34 (6), 87 (6), (6), 659 (8).

*Kotozafy* 862 (9×?).

*Labat* 3069 (7); *Lehavana* 190 (9), 231 (6); *Louvel* 35 (6), 76 (9), 199 (6), 250 (7); *Lowry* 6756 (2); *Ludovic* 187 (6), 236 (6), 560 (6).

*Manjato* 251 (6); *McPherson* 14168 (2), 14274 (2), 14808 (2), 16390 (3), 16420 (3), 17471 (7), 18358 (2), 18937 (6); *Miandrimanana* 579 (6).

*Nikolov* 1848 (9); *Nusbaumer* 1626 (3).

*Pauly* 756 (6); *Peltier* 3422 (6); *Perrier de la Bâthie* 338 (**1**), 699 (1), 6279 (1), 6695 (6), 6696 (6), 6701 (15), 6711 (9), 6713 (15), 6725 (**7**), 12547 (15), 12654 (9), 14521 (6), 14833 (1), 15476 (9).

*Rabehevitra* 558 (2); *Rabenantoandro* 333 (2), 820 (6), 890 (6), 954 (2×8), 1002 (8), 1219 (6), 1540 (2); *Rabevohitra* 3713 (15), 4388 (6); *Rahajasoa* 631 (6); *Raharimalala* 169 (6), 279 (6), 332 (6); *Raharimampionona* 180 (15), 204 (5); *Rakotomalaza* 1242 (7), 1275 (7); *Rakotonirina* 122 (9); *Rakotovao* 1466 (7), 1694 (7), 1766 (7), 3893 (3), 4056 (7), 4736 (2), 4909 (2), 6323 (9); *Ralimanana* 85 (8); *Ramison* 139 (2); *Ranaivojaona* 1133 (7); *Randriambololomamonjy* 357 (15); *Randrianaiivo* 755 (15), 833 (15), 865 (2), 1827 (6); *Randrianasolo* 63 (9), 191 (**12**), 209 (**13**), 451 (9), 646 (8), 885 (8); *Randriatafika* 170 (9), 861 (9); *Rasoazanany* 559 (7), 566 (7); *Ravelonarivo* 560 (7), 635 (3), 1064 (7), 1337 (3), 2879 (9); *Ravololonanahary* 111 (6); *Razafimandimbison* 149 (6); *Razakamalala* 79 (6), 149 (6), 333 (8), 1109 (6), 1473 (6), 1579 (6), 1606 (6), 2458 (2), 2583 (11), 2586 (11), 3852 (11), 3780 (11), 4025 (2); *Razanatsoa* 255 (7); *Réserves Naturelles s.n.* (6), *s.n.* (11), 2470 (6), 3401 (6), 3814 (9), 4547 (6), 4734 (9), 4757 (9), 4939 (6), 7461 (9), 7973 (6), 8034 (6), 8422 (15×?), 8731 (8), 10350 (15).

*Schatz* 2999 (2), 3192 (11), 3768 (8), 3802 (6), 3850 (**14**), 3921 (6); *Schmidt* 4339 (aff. 3); *Scott Elliot* 2600 (**2**), 2617 (9), 2639 (9), 2662 (15), 3037 (9×15), 3056 (9); *Service Forestier* 952 (**3**), 1126 (6), 1142 (15), 1370 (8), (6), 2238 (9), (15), 2788 (**5**), 2990 (6), 3245 (15), 3257 (6), 4805 (9), 4902 (6), 5036 (6), 5327 (9) 5621 (6), 5627 (9), 5642 (6), 5734 (6), 6126 (9), 6456 (6), 6610 (2), 7049 (9), 7093 (6), 7349 (6), 7851 (2), 8014 (9), 8733 (6), 8866 (**10**), 8935 (8), 9201 (9), 9412 (9), 9513 (6), 10052 (6), 10070 (6), 10174 (6), 10179 (15), 10506 (9), 10821 (9), 11447 (3), 12284 (9), 12487 (6), 12931 (**11**), 13192 (11), 13687 (6), 14176 (9), 14414 (9), 14429 (9), 14461 (9), 14475 (9), 14544 (9), 14747 (9), 15218 (8), 15978 (15), 15980 (15), 16446 (9), 17711 (9×?), 18140 (8), 18150 (9), 19001 (6), 19050 (15), 19951 (6), 21516 (8), 21663 (15), 21905 (9), 22089 (6), 23219 (15), 23408 (15), 23633 (11), 24388 (6), 25853 (9), 26234 (6), 27718 (6), 28619 (2), 28888 (6), 29055 (15).