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Author: Applequist, Wendy L.

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Recognition of a second species in the *Homalium involucratum* complex (Salicaceae)

Wendy L. Applequist

Abstract

APPLEQUIST, W.L. (2022). Recognition of a second species in the *Homalium involucratum* complex (Salicaceae). *Candollea* 77: 53–56. In English, English and French abstracts. DOI: <http://dx.doi.org/10.15553/c2022v771a4>

The most recent published treatment of *Homalium involucratum* (DC.) Hoffm. (Salicaceae) in Madagascar treats three regional variants at the rank of forma. The southeastern forma *lucidum* (Scott Elliot) H. Perrier is very well distinguished and should be recognized at the species level. The new combination *H. viride* (H. Perrier) Appleq. is published for this taxon, and its distinguishing morphological features are summarized. A risk of extinction assessment indicates that *H. viride* is “Vulnerable”.

Résumé

APPLEQUIST, W.L. (2022). Reconnaissance d'une seconde espèce dans le complexe de *Homalium involucratum* (Salicaceae). *Candollea* 77: 53–56. En anglais, résumés anglais et français. DOI: <http://dx.doi.org/10.15553/c2022v771a4>

Le traitement le plus récemment publié de *Homalium involucratum* (DC.) Hoffm. (Salicaceae) à Madagascar distingue trois variants régionaux, reconnus au rang de forme. La forme *lucidum* (Scott Elliot) H. Perrier du Sud-Est est clairement distincte de la forme typique et doit être reconnue au rang d'espèce. La nouvelle combinaison *H. viride* (H. Perrier) Appleq. est publiée pour ce taxon, et ses caractéristiques morphologiques spécifiques sont résumées. Une évaluation du risque d'extinction indique que *H. viride* est “Vulnérable”.

Keywords

SALICACEAE – *Homalium* – *Homalium* sect. *Antinisa* – Madagascar – Taxonomy

Address of the author:

Missouri Botanical Garden, 4344 Shaw Blvd., St. Louis, MO 63110, USA. E-mail: wendy.applequist@mobot.org

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Introduction

Madagascar is the primary center of diversity of *Homalium* Jacq. (Salicaceae) as it has been circumscribed since WARBURG (1893), with six of the ten currently accepted sections present in the country and five of these endemic (APPLEQUIST, 2016a). The most recent full taxonomic treatment of the Malagasy species was published by SLEUMER (1973). Recent revisionary studies (APPLEQUIST, 2016b, 2018a, 2018b, 2020; WASSEL & APPLEQUIST, 2020) have substantially increased the number of species recognized in most sections, partly due to the availability of newer collections, and partly because Sleumer was inclined to lump distinct taxa or recognize them only at infraspecific levels if their floral anatomy was similar.

The last Malagasy section of *Homalium* not yet addressed by the author and her collaborators is *Homalium* sect. *Antinisa* (Tul.) Baill. ex Warb., which according to PERRIER DE LA BÂTHIE (1940, 1946) and SLEUMER (1973) only contained one species: *H. involucratum* (DC.) Hoffm. This vegetatively unremarkable taxon has an inflorescence morphology unique in the genus. The paired reniform bracts subtending each inflorescence node are strongly accrescent and become very large, especially at the inflorescence base. At anthesis the bracts spread to expose the flower(s) (Fig. 1), but later completely enclose them and overlap with the bracts from the two alternating nodes above. *Homalium involucratum* is occasionally confused with species of *Tisonia* Baill., also Salicaceae, which have huge accrescent sepals, but otherwise resembles no other species in the family.

SLEUMER (1973) recognized three formae within *Homalium involucratum*. He considered most specimens to fall within *H. involucratum* f. *involucratum*, which is widespread in littoral to low-elevation eastern forests, while two other formae are geographically localized. *Homalium involucratum* f. *lucidum* (Scott Elliot) H. Perrier is confined to the extreme southeast of Madagascar; he distinguished it from f. *involucratum* by its more coriaceous, greenish-drying leaves with sometimes subcordate bases (vs. usually brownish-drying leaves with convex bases). *Homalium involucratum* f. *hildebrandtii* (Baill.) H. Perrier is native to extreme northern Madagascar, usually in mid-elevation forests; it is distinguished by its often larger, longer-petiolate, sometimes ovate-elliptic and acuminate leaves.

Both geographically restricted formae accepted by SLEUMER (1973) were first published at higher ranks, *Homalium involucratum* f. *lucidum* as var. *lucidum* Baill. and f. *hildebrandtii* as *H. hildebrandtii* Baill., and both were reduced to the rank of forma by PERRIER DE LA BÂTHIE (1940, 1946), both of which SLEUMER (1973) maintained. *Homalium involucratum* has two other formae published by PERRIER DE LA BÂTHIE (1940), f. *viride* H. Perrier and f. *cloiselii* H. Perrier, treated as synonyms of f. *lucidum* by SLEUMER (1973). *Homalium vatkeanum* Hoffm. has been treated as an older species-level synonym for f. *hildebrandtii*. The synonymy of the latter two may be

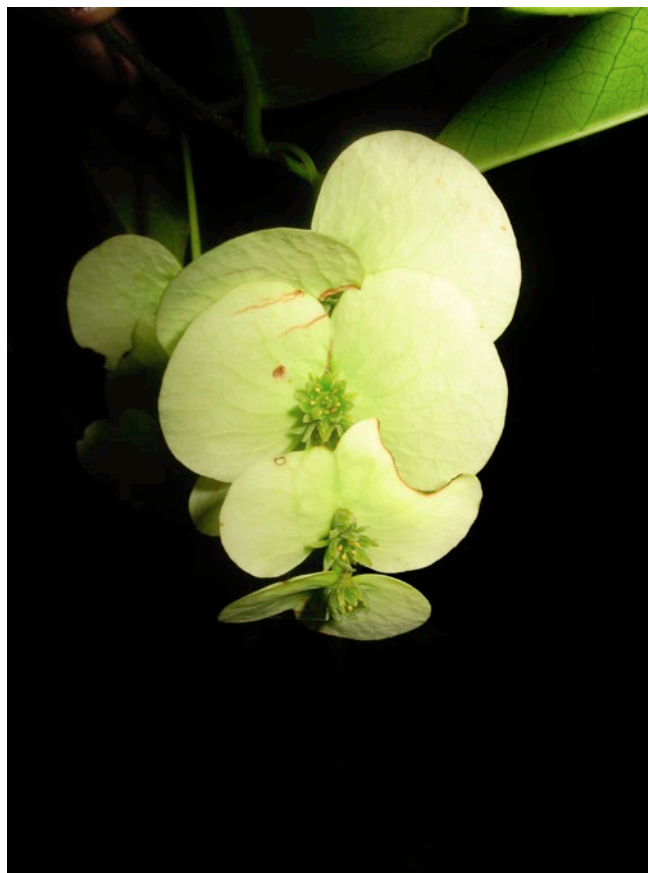


Fig. 1. – *Homalium involucratum* (DC.) Hoffm.: inflorescence at anthesis, with pairs of large bracts at each node spread open to expose the small greenish flowers.

[Andriambololonera et al. 133] [Picture: D. Rabehevitra]

questionable, but their status cannot be addressed at this time as closer study of type material is necessary.

I and most recent taxonomists consider it inappropriate to use the rank of forma for morphological variants that are well distinguished, often apparently fixed within populations, and with distinct ecological preferences. Available specimens were examined to support a proposal to recognize forma *lucidum* at a higher rank. This study was primarily based upon specimens available at MO, especially for the biometric data. Types and other specimens at P had been briefly observed during a visit to that institution several years previously, and specimen images were available through its website; images of types at other institutions were seen through JSTOR Global Plants website [<https://plants.jstor.org>].

Critical examination of these specimens and images led to the conclusion that forma *lucidum* is clearly distinguished from the other two formae, which are more similar to one another and more overlapping in morphology, by multiple characters. In one locality where forma *lucidum* and forma *involucratum* are sympatric, they remain well distinguished. Recognition of the southeastern endemic taxon as a distinct species seems

clearly to be merited. The epithet of var. *lucidum* Scott Elliot cannot be used at the species level because of the prior existence of *Homalium lucidum* Scott Elliot (a species in sect. *Odontolobus* Warb.). The epithet of the heterotypic synonym *H. involucratum* f. *viride* H. Perrier is therefore herein elevated to species rank. It is preferred over that of f. *cloiselii* because it is more informative, as usually greenish leaves are a notable characteristic of herbarium specimens.

Nomenclature and distribution of this species are provided below. Selected specimens listed favor collections present at both MO and P (which should usually also be at TAN or TEF). A preliminary assessment of its conservation status was made following IUCN (2012) criteria, with GeoCAT (BACHMAN & MOAT, 2012) used to calculate Area of Occupancy and Extent of Occurrence.

***Homalium viride* (H. Perrier) Appleg., comb. et stat. nov.**

- = *Homalium involucratum* f. *viride* H. Perrier in Mém. Mus. Natl. Hist. Nat. 13: 296. 1940.

Holotypus: MADAGASCAR. **Reg. Anosy [Prov. Toliara]:** Fort-Dauphin, 1.VII.1926, *Decary* 4246 (as “2446”) (P [P04677691]!).

- = *Homalium involucratum* var. *lucidum* Scott Elliot in J. Linn. Soc., Bot. 29: 23. 1891. *Homalium involucratum* f. *lucidum* (Scott Elliot) H. Perrier in Mém. Mus. Natl. Hist. Nat. 13: 296. 1940. **Holotypus:** MADAGASCAR. **Reg. Anosy [Prov. Toliara]:** Fort-Dauphin, s.d., *Scott Elliot* 2304 (K [K000231506] image!; iso-: P [P04677688]!).
- = *Homalium involucratum* f. *cloiselii* H. Perrier in Mém. Mus. Natl. Hist. Nat. 13: 296. 1940. **Holotypus:** MADAGASCAR. **Reg. Anosy [Prov. Toliara]:** Fort-Dauphin, s.d., *Cloisel* 179 (P [P04677692]!).

Distribution, ecology and conservation status. – Using the typology of GAUTIER et al. (2018), *Homalium viride* (H. Perrier) Appleg. occurs primarily in littoral forests on sand, seldom in lowland moist evergreen forests to at least 200 m, in a small portion of the Anosy Region (formerly part of Toliara Province). It is sometimes evaluated as rare (*Randriatafika* et al. 63) and sometimes as frequent (*Randrianaivo* et al. 2047). The Area of Occupancy is estimated as 52 km² and the Extent of Occurrence as 400 km² (localities are distributed in a semi-linear curved pattern, since they are all close to the coast). Fewer than ten distinct locations exist. These include the protected areas of Mandena, Petriky, and Andohahela. However, most subpopulations are unprotected, and all unprotected habitat in this area is both fragmented and at ongoing risk of anthropic damage, primarily woodcutting and burning, because the terrain is easily accessible and there are large human populations nearby.

Therefore, a preliminary assessment of this species’ conservation status is “Vulnerable” [VU B1ab(iii)+B2ab(iii)].

Vernacular names and uses. – “Hazofotsy” (*Ludovic* 1544), “Menahihy” (*Randriatafika* et al. 63), “Ramirisa” (*Rajoharison* & *Tsiatrefy* 84, *Ramison* 204, *Randriatafika* & *Stéphan* 394, *Service Forestier* 5576), “Takinandro” (*Service Forestier* 7398), “Tsian(ih) ihmiposa” (*Ludovic* 1630, *Ramison* 204, *Randriatafika* et al. 483).

Wood of the trunk is used for construction and branches for firewood (*Ludovic* 1544, 1630). Though the plant is usually described as a small tree or large shrub, it can have a trunk of substantial thickness, and reach at least 15 m height and 25 cm dbh. (*Rabevohitra* 1782).

Notes. – *Homalium viride* is distinguished from *H. involucratum* by several characters (see Table 1). Its leaves usually dry greenish (hence the epithet) and are more strongly coriaceous, with strongly revolute margins. The inflorescences are usually smaller, with fewer nodes and somewhat smaller bracts, and the bracts more commonly dry pale-colored. The bracteoles are more densely pubescent, or sometimes sericeous, and the flowers are sericeous not only on the calyx cup but on portions of the free petals and sepals.

Selected specimens examined. – MADAGASCAR. **Reg. Anosy [Prov. Toliara]:** W side of Fort Dauphin, around airport, 10 m, 10.V.1983, *D’Arcy* & *Rakotozafy* 15416 (MO, P); Vinanibe, 10.VII.1932, *Decary* 10067 (MO, P); Mandena Station Forestière, c. 1.5 air-km S of QMM experimental nursery, 24°57’45”S 47°00’33”E, 5 m, 12.III.1998, *Lowry* et al. 5020 (MO, P); fkt. Manfiaty, Ebakika sud, forêt d’Agnalavinaky, 24°46’25”S 47°08’58”E, 21 m, 5.IX.2012, *Ludovic* 1630 (MO); NW of village of St. Luce, 24°47’S 47°10’E, 20 m, 16.I.1990, *McPherson* et al. 14813 (MO, P); 5 km S of Manambara, 23 km W of Fort Dauphin, 25°05’S 46°49’E, 150 m, 30.III.1991, *Müller* & *Randrianasolo* 6226 (MO); 44 km N of Fort Dauphin on road to St. Luce, 24°46’45”S 47°10’30”E, 50 m, 22.III.1992, *Phillipson* et al. 3957 (MO, P); NE de la rivière Antorendrika avant Bala Venary, 24°52’S 47°07’E, 0–20 m, 22.III.1989, *Rabevohitra* 1782 (MO, P); fkt. Mandena, forêt de Mandromomotra, 24°55’16”S 47°01’35”E, 10 m, 4.VI.2004, *Rajoharison* & *Tsiatrefy* 84 (MO); Ampasy Nahampoana, Ambavarano, forêt d’Ambavarano, 24°57’S 47°02’E, 7 m, 12.II.2007, *Ramison* 204 (MO); Andohahela, 25°02’S 46°58’E, 200–500 m, 1.II.1993, *Randriamampionona* 110 (MO, P); fkt. Ambanihazo, village Epapango, forêt d’Analandrasambo, 24°40’55”S 47°11’56”E, 22 m, 22.X.2012, *Randrianaivo* et al. 2047 (MO); forêt de Mandena, Ampasinahampoina, 24°57’08”S 47°00’11”E, 96 m, 12.VI.1999, *Randriatafika* et al. 63 (MO, P); fkt. Mandena, 24°56’30”S 47°00’48”E, 10 m, 15.II.2004, *Randriatafika* & *Stéphan* 394 (MO, P); forêt de Petriky, 25°03’23”S 46°52’00”E, 2.III.2004, *Randriatafika* et al. 483 (MO); Mandena region, c. 10 km NNE of Fort-Dauphin, 24°57’S 47°02’E, 10 m, 11.VI.1991, *Zarucchi* et al. 7587 (MO).

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References

- APPLEQUIST, W.L. (2016a). A reconsideration of the infrageneric classification of *Homalium* Jacq. (Salicaceae). *Candollea* 71: 231–256. DOI: <https://doi.org/10.15553/c2016v712a9>
- APPLEQUIST, W.L. (2016b). A revision of the Malagasy species of *Homalium* sect. *Eumyriantheia* Warb. (Salicaceae). *Candollea* 71: 33–60. DOI: <https://doi.org/10.15553/c2016v711a7>
- APPLEQUIST, W.L. (2018a). A revision of *Homalium* sect. *Odontolobus* (Salicaceae) endemic to Madagascar. *Candollea* 73: 27–48. DOI: <https://doi.org/10.15553/c2018v731a4>
- APPLEQUIST, W.L. (2018b). A revision of the Malagasy species of *Homalium* sect. *Blackwellia* (Salicaceae). *Candollea* 73: 221–244. DOI: <https://doi.org/10.15553/c2018v732a7>
- APPLEQUIST, W.L. (2020). A revision of *Homalium* sect. *Rhodonisa* (Salicaceae) endemic to Madagascar. *Candollea* 75: 245–268. DOI: <https://doi.org/10.15553/c2020v752a8>
- BACHMAN, S. & J. MOAT (2012). GeoCAT – an open source tool for rapid Red List assessments. *Bot. Gard. Conserv. Int. J.* 9 [http://geocat.kew.org]
- GAUTIER, L., J.A. TAHINARIVONY, P. RANIRISON & S. WOHLHAUSER. (2018). Vegetation. In: GOODMAN, S.M. et al. (ed.), *The terrestrial protected areas of Madagascar: Their history, description, and biota*: 207–242. Association Vahatra, Antananarivo.
- IUCN (2012). *IUCN Red List Categories and Criteria: Version 3.1*. Ed. 2. IUCN Species Survival Commission, Gland and Cambridge.
- PERRIER DE LA BÂTHIE, H. (1940). Révision des Flacourtiacées de Madagascar et des Comores. *Mém. Mus. Natl. Hist. Nat.* 13: 261–301.
- PERRIER DE LA BÂTHIE, H. (1946). Flacourtiacées. In: HUMBERT, H. (ed.), *Fl. Madagascar Comores* 140.
- SLEUMER, H. (1973). Révision du genre *Homalium* Jacq. (Flacourtiacées) en Afrique (y compris Madagascar et les Mascareignes). *Bull. Jard. Bot. Natl. Belg.* 43: 239–328.
- WARBURG, O. (1893). Flacourtiaceae. In: ENGLER, A. & K. PRANTL (ed.), *Nat. Pflanzenfam.* III(6a): 1–56. Leipzig.
- WASSEL, A.C. & W.L. APPLEQUIST (2020). A revision of *Homalium* sect. *Nisa* (Salicaceae) endemic to Madagascar. *Candollea* 75: 1–23. <https://doi.org/10.15553/c2020v751a1>

Table 1. – Morphological distinctions between *Homalium involucrellum* (DC.) Hoffm. and *H. viride* (H. Perrier) Appleq., with the most useful distinguishing features of the latter in boldface.

| | <i>H. involucrellum</i> | <i>H. viride</i> |
|--|---|--|
| Leaf size [cm] | (2.6–)3.5–11.7(–12.4) × 1.5–5.7 | 3–11.1 × 1.5–4.1 |
| Leaf shape | variable, usually more or less elliptic, (obovate, ovate-elliptic) | elliptic (to broadly or narrowly elliptic), sometimes tending towards obovate (oblanceolate) |
| Leaf texture | subcoriaceous to moderately coriaceous | coriaceous |
| Leaf margins | crenulate to wavy or entire, not revolute or minutely or very shallowly revolute | strongly (but not tightly) revolute at maturity , often with small crenulations |
| Leaf color (dried) | brown to greenish brown below, greenish brown to brown or gray-green above; f. <i>hildebrandtii</i> sometimes partially gray-green to green or dark brown | green to pale greenish brown (medium brown) below, green to greenish or dark brown above, often darker green than lower surface |
| Abaxial leaf surface | glabrous | glabrous or in part sparsely pilose |
| Nodes (pairs of bracts) per inflorescence | (1–)4–9(–14) | (2–)3–4 |
| Largest bract shape and size [mm] (half of a fused pair, post-anthesis) | (8–)10.5–15(–18) × (11.5–)13–20.5(–22.5) | 8–11.5(–14) × 8–14(–17) |
| Bract color (dried) | reddish brown to orangish pale brown or dull brown (partly light tan) | pale orangish brown to tan, less often reddish or dull brown |
| Bracteoles | suborbicular (to broadly ovate), sparsely pubescent and usually more or less ciliate (rarely tiny, lanceolate, or caducous) | ovate to suborbicular, outer surface moderately appressed-pubescent to sericeous |
| Perianth outer surface indument | often densely sericeous on lower part of calyx cup, the free parts moderately (to densely) appressed-pubescent to velutinous | densely sericeous on calyx cup and basal and medial portions of free parts , to velutinous laterally and apically (sparse laterally, mostly in older flowers) |