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28. *Noronhia emarginata* (Lam.) Stadtm. ex Thouars., Gen. Nov. Madagasc. 88. 1806 (Fig. 20).

≡ *Olea emarginata* Lam., Tabl. Encycl. Méthod. 1: 29. 1791.

≡ *Noronhia binia* Roem. & Schult., Syst. Veg. 1: 72. 1817.

≡ *Noronhia chartacea* Stadtm. ex Hook. in Bot. Misc. 2: 167. 1831.

Lectotypus (designated here): **MADAGASCAR** [Cultivé à l'Isle de France (=Mauritius)]: *sine loc.*, s.d., *Stadtmann s.n.* (P-LA [P00356884, P00356885] images seen; isolecto-: G [G00439907] image seen). **Syntypi**: **MADAGASCAR**: cultivé à l'Isle de France, s.d., *Martin s.n.* (G [G00439908, G00439909] images seen). **MADAGASCAR**: *sine loc.*, *Noroña s.n.* (G [G00188773] image seen, P [P03558859, P03558865]! probable syntypes).

Description

Trees to 15 m tall, trunk to 30 cm diameter; young twigs cylindrical, 2-8 mm diameter, glabrous; bark gray to brownish, smooth, with scattered lenticels. *Leaves* opposite, persistent; bud scales persistent; blades dark green above, lighter below, obovate, 5.5-12 × 3-7.5 cm, very coriaceous, glabrous, domatia absent, base rounded, margin slightly revolute and undulate, apex obcordate to rounded (rarely mucronulate), the mucro 0-2 mm long, midrib flat above, distinctly raised below, secondary veins conspicuous, 5-11 per side, 10-21 mm apart, looping 1.5-4 mm from the margin; petiole dark gray to brown, 5-11 × 1.8-4.3 mm, entirely woody, glabrous. *Thyrses* geminate to fasciculate, pauciflorous, diffuse; peduncle 5-20 mm long, glabrescent; pedicel 4.5-12 mm long, glabrescent; calyx sparsely pubescent outside, glabrous inside, lobes triangular, 0.7-2 × 0.9-2 mm; corolla yellow, cupuliform to subrotate, 5-8 mm long, glabrous on both sides, the tube 2-4.5 mm long, lobes widely ovate, apex obtuse; corona present, 1.5-2.5 mm long, undivided; stamens 2.5-2.8 mm long, anthers widely oblong, 2-2.4 mm long; pistil 2.5-3 mm long, stigma capitate. *Fruiting* pedicel 75-14 × 1.5-3 mm; young fruits greenish, purplish black when mature, oblong, 24.5-37 × 17.5-27 mm, smooth, sometimes covered with a white pellicle, apex flat to bluntly pointed or rostellate; dry pericarp 1.7-4.6 mm thick; endocarp woody; seed 14-25 × 8.5-15 mm.

Distribution, ecology and phenology

Noronhia emarginata occurs mostly in littoral to mid-elevation humid forests in the east, from Sambava to Fort-Dauphin (Fig. 19). It produces flowers and fruits all year long except in April and May.

Conservation status

With 34 collections representing 34 localities, the assessment indicated an EOO of 97,176 km², an AOO of 120 km², and 28 subpopulations representing 19 locations, of which 12 occur within protected areas (Agnalazaha, Ambohidena, Antetazana, Betampona, Loky-Manambato, Mandena, Manombo, Masoala, Petriky, Ste Luce, Vohibola, and Zahamena). Although the habitat in which *N. emarginata* is found exhibits some types of degradation, there is little likelihood that they will cause substantial decline in the near future. Therefore, *N. emarginata* is assigned a preliminary status of "Least Concern".

Notes *Noronhia emarginata* can be recognized by its coriaceous, obovate leaf blades, long-pedunculate inflorescences with yellow flowers, and large, oblong fruits with a thick pericarp. PERRIER DE LA BÂTHIE (1949) indicated that the type specimen [P03558857] was collected by Louis-Marie Aubert du Petit-Thouars in eastern Madagascar. However, du Petit-Thouars returned from the island with his herbarium in 1802 (ALLORGE, 2003), which certainly postdates Lamarck's description in 1791. Moreover, LAMARCK (1791: 29) clearly referred to a specimen collected by Joseph Martin (1788-1826), a French botanist from French Guiana, who also collected on Martinique and Mauritius (STAFLEU & COWAN, 1976-1988: 320), as "ex Insula Madagascar".

A thorough search of type specimens at G and P revealed several interesting collections. In particular, one of two specimens kept in the P-LA herbarium [P00356884, P00356885] bears the name Radtmann, which is undoubtedly a mistake for Jean Frédéric Stadtmann (1762-1807), who worked extensively in South Africa and the Malagasy Floristic Region (i.e. Madagascar, the Comoros, and the Mascarenes). Another collection found at G [G00439907] has the same handwriting and was annotated as "Noronhia Stadtman en l'honneur d'un naturaliste espagnol" (Fig. 20), which should thus be considered as a duplicate of the P-LA collection. Furthermore, two of Joseph Martin's collections were found at G [G00439908, G00439909] bearing a different handwriting and with only part of the same annotation as the P-LA material [P00356884]. These collections should also be considered as type material. The specimen *Stadtmann s.n.* (as *Radtman s.n.* in P-LA) is here designated as the lectotype since it is housed in Lamarck's original herbarium, and is thus certainly the one he used to describe the species. The specimens *Martin s.n.* are here considered as syntypes.

It is also interesting to note that one collection at G [G00188773] was made by Francisco Noroña (c. 1748-1788), which explains why Jean Frédéric Stadtmann chose to name this new genus after his Spanish botanist friend, who died in Mauritius shortly after he visited Madagascar (ALLORGE, 2003). During his visit to the Big Island, Noroña collected material that was later acquired by Delessert and is now kept at G (GUILLEMIN, 1833; STAFLEU & COWAN, 1976-1988: 773). Some of Noroña's duplicates are also housed at P, where they have been incorporated in various historical collections, and two collections from the Desfontaines herbarium at P may represent duplicates of the G sheet [P03558859, P03558865]. Noroña was very likely the first to collect *N. emarginata* in Madagascar and to bring the seeds back to the Jardin de Pamplemousse in Mauritius, where cultivated plants were subsequently sampled by various botanists such as Stadtmann and Martin. The cultivated plant sampled was used by LAMARCK (1791) as the type material for *Olea emarginata* before du Petit-Thouars validated the genus *Noronhia* in 1806.

Additional selected specimens examined

MADAGASCAR. Prov. Antsiranana: Sambava, [14°16'S 50°10'E], 9.IV.1967, *Service Forestier* 27697 (MO, P, TEF). **Prov. Fianarantsoa:** Mananjary, [21°13'S 48°21'E], III-IV.1909, *Geay* 7934 (P); Bassin inférieur de Matitana, X.1911, *Perrier de la Bâthie* 2382 (P); Nosy Varika, Ambahy, 20°46'57"S 48°28'54"E, 17.XI.2003, *Rabevohitra et al.* 4829 (MO, P, TEF); Manombo RS, 23°03'46"S 47°46'15"E, 14 m, 24.IX.2005, *Rakotonirina et al.* 464 (MO, P, TAN). **Prov. Toamasina:** Maroantsetra, Anjahana, Andranofotsy, 15°26'08"S 49°49'14"E,

10 m, 16.VII.2002, *Antilahimena* 1188 (G, MO); between Anantoraka and Manambia, 15°30'S 49°39'E, 10 m, 12.X.1997, *Birkinshaw et al.* 506 (MO, P, TAN); Sainte-Marie, [16°53'S 49°53'E], V.1847, *Boivin* 1776 (P); 1 km S of Ambila-Lemaitso, 18°48'S 49°09'E, 0-5 m, 7.XI.1988, *Miller* 3646 (K, MO, P, TAN); Sainte Marie, Lokinty, forêt d'Ambohidena, 16°51'11"S 49°57'10"E, 1.VI.2004, *Rabehevitra et al.* 1206 (G, MO, P, TEF); Masoala PN, Antalavia, 15°47'S 50°02'E, 0 m, 20.XI.1994, *Rahajaso et al.* 948 (MO, P, TAN); 6-10 km S of Ambila-Lemaitso, 18°54'S 49°08'E, 0-20 m, 6.III.1988, *Schatz et al.* 1942 (MO, P, TAN); Brickaville, Ambila, Andranokoditra, [18°36'S 49°15'E], 24.XI.1983, *Service Forestier* 32510 (TEF); Andrafetana, Mahatsara, 17°38'S 49°29'E, 5.VI.1991, *Service Forestier* 34304 (MO, TEF). **Prov. Toliara:** Fort-Dauphin, Eoala, 25°04'S 46°57'E, 0-10 m, 10.III.1989, *Dumetz et al.* 551 (MO, P, TAN, TEF); Fort-Dauphin, entre le pic St Louis et la mer, 1-5 m, 20.IX-6.X.1928, *Humbert* 5977bis (P); *ibid. loc.*, 16.II.1955, *Humbert* 28962 (P); Petriky, 25°05'S 46°52'E, 10 m, 22.I.1990, *McPherson et al.* 14856 (G, MO, P, TAN, TEF); Mandena forest, 24°57'S 47°00'E, 2-15 m, 23.I.1990, *McPherson et al.* 14870D (MO); Ste. Luce, 24°46'S 47°09'E, 0-10 m, 17-18.I.1990, *Rabevohitra* 2162 (K, MO, P, TAN, TEF); Fort-Dauphin, *Scott-Elliot* 3050 (E, K, P); Manafiay, 24°47'S 47°11'E, 17.I.1990, *Service Forestier* 33391 (TEF).

Noronhia emarginata* var. *garcinioides H. Perrier in Mém. Inst. Sci. Madagascar, Sér. B, Biol. Vég. 2: 296. 1949.

Typus: MADAGASCAR. **Prov. Mahajanga:** haut bassin du Bemarivo, Analamahitso, [16°11'S 48°14'E], 900 m, VIII.1907, *Perrier de la Bâthie* 4497 (holo-: P [P00608379]!).

Distribution, ecology and phenology

Noronhia emarginata var. *garcinioides* occurs in mid-elevation humid forests in the northern High Plateau (Fig. 19). It has been collected in flowers and fruits in August.

Conservation status

Noronhia emarginata var. *garcinioides* is known only from a single location from within a remote protected area (Tampoketsa d'Analamaitso) that is difficult to access. Although degradation can be observed in the areas surrounding the reserve, disturbance is assumed to be minimal within it, with the closest village being 41 km away. Therefore, *N. emarginata* var. *garcinioides* is assigned a preliminary status of "Least Concern". It is, however, worth noting that this taxon has only been collected once, more than a century ago.

Notes

Noronhia emarginata var. *garcinioides* differs from the typical variety mostly by its oblong (vs. obovate) leaf blades and urceolate (vs. cupuliform to subrotate) flowers. It is morphologically intermediate between *N. emarginata* and *N. edentata* (formerly recognized as a variety of *N. emarginata* by PERRIER DE LA BÂTHIE, 1949, 1952), and more closely resembles the latter, except for the lack of woody petiole and the length of the corolla (8 vs. 5.5 mm). *Noronhia emarginata* var. *garcinioides* might be a hybrid between *N. emarginata* and *N. edentata* or a distinct species altogether. Additional material is needed to assess its pattern of variation and ascertain its status.

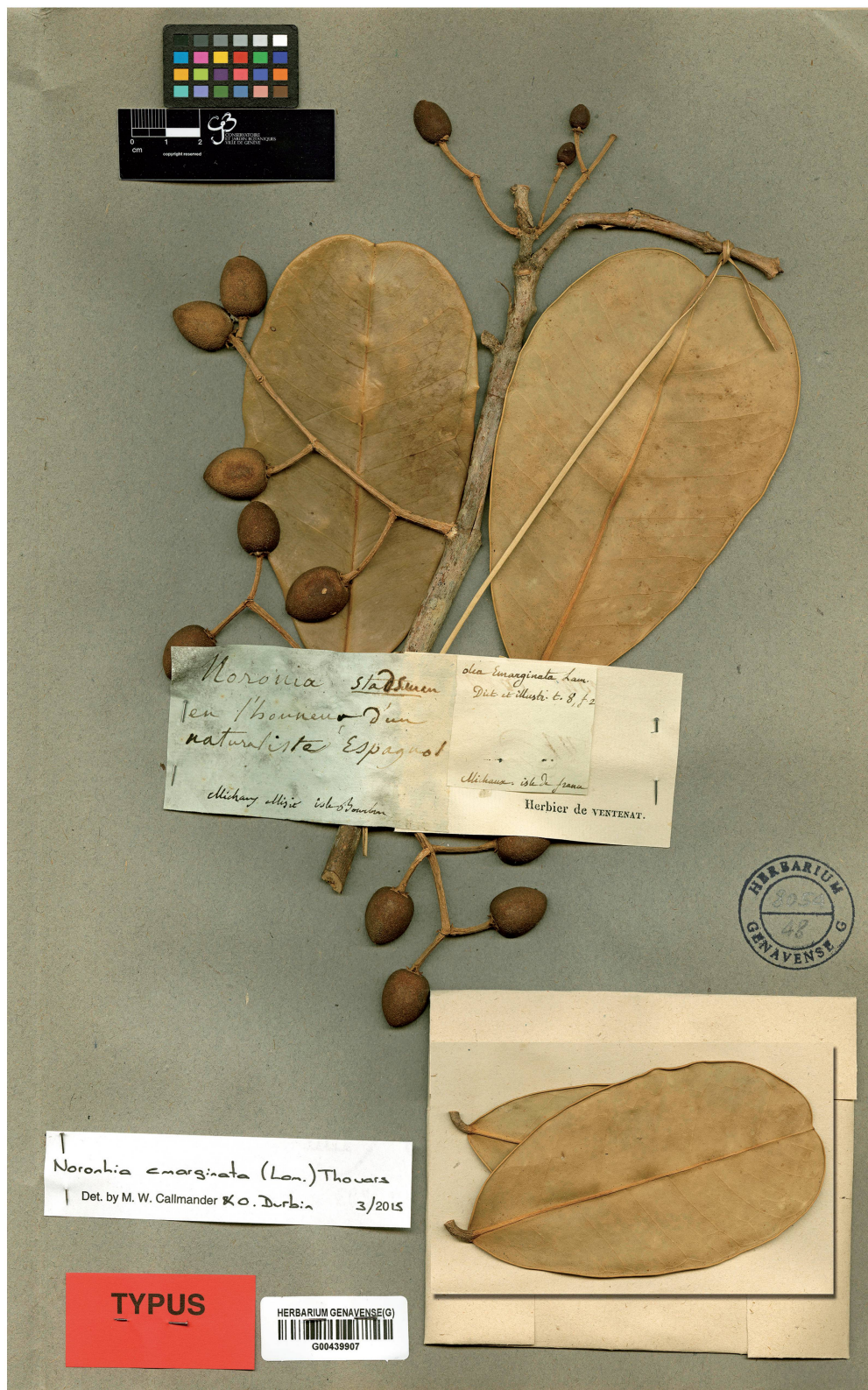


Fig. 20.
Isolectotype of *Noronhia emarginata* (Lam.) Thouars

[Stadmann s.n., G]