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**Artikel:** A taxonomic revision of the genus Noronhia Stadtm. ex Thouars (Oleaceae) in Madagascar and the Comoro Islands

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**44. *Noronhia linoceroides*** H. Perrier in Mém. Inst. Sci. Madagascar, Sér. B, Biol. Vég. 2 : 288. 1949 (Fig. 30C).

**Typus:** MADAGASCAR. Prov. Toamasina: Près de Vatomandry, [19°20'S 48°59'E], IX.1921, Perrier de la Bâthie 14111 (holo-: P [P00701478]!; iso-: P [P00701477, P00418112]!).

**Description** Trees to 14 m tall, trunk to 20 cm diameter; young twigs cylindrical, 0.5-1.7 mm diameter, glabrous; bark medium gray, smooth. Leaves opposite, persistent; bud scales rarely persistent; blades medium green glossy above, lighter below, narrowly to broadly elliptic, 3.5-13 × 1.5-5.5 cm, chartaceous, glabrous, domatia absent, base acute, margin flat to slightly undulate, apex acuminate, the acumen (0-)2-17 mm long, midrib flat to slightly sunken above, distinctly raised above, secondary veins conspicuous, 5-14 per side, 5-21 mm apart, looping 1-5 mm from the margin; petiole orange to red, 4-15 × 0.6-2.5 mm, not woody, glabrous. Thyrse geminate to fasciculate, pauciflorous, compact to somewhat diffuse; peduncle 3-18 mm long, moderately to sparsely pubescent; pedicel 1.5-24 mm long, sparsely pubescent; calyx sparsely pubescent to glabrous outside, glabrous inside, lobes triangular, 0.5-1.2 × 0.6-1.5 mm; corolla pale yellow, subrotate, 2.2-5 mm long, glabrous on both sides, the tube 0.5-2.3 mm long, lobes ovate, apex slightly acute; corona present, 1-1.8 mm long, undivided; stamens 1.2-2 mm long, anthers depressed obovate, 0.8-1.5 mm long; pistil 1.2-2.2 mm long, stigma slightly bilobed. Fruiting pedicel 3-23 × 0.4-2.5 mm; young fruits green, dark red when mature, ovoid, 8-17.5 × 6-15 mm, surface smooth, covered with white dots, apex bluntly pointed to rostellate; dry pericarp 0.2-1.6 mm thick; endocarp woody; seed 6-14 × 4-10 mm.

**Distribution, ecology and phenology**

*Noronhia linoceroides* occurs in low- to high-elevation humid forests in the east, from Daraina to Fort-Dauphin, and in the Sambirano region in the northwest (Fig. 27). It produces flowers and fruits all year.

**Conservation status**

*Noronhia linoceroides* is widely distributed, ranging throughout almost the entire eastern part of Madagascar, the northeast, and the Sambirano region. Ninety-one collections representing 73 localities were available for analysis. With an EOO of 193,559 km<sup>2</sup>, an AOO estimated at 268 km<sup>2</sup> but that is certainly much larger, and 50 subpopulations representing 43 locations, of which 15 occur within protected areas (Analalava, Anjanaharibe-Sud, Lokobe, Loky-Manambato, Makira, Makirovana, Mandena, Manombo, Masoala, Ranomafana, Ste Luce, Tsaratanana, Tsaratanana-Ambohimirahavavy-Corridor Marojejy, Tsitongambarika, and Zahamena), *N. linoceroides* is assigned a preliminary status of “Least Concern”.

**Notes** *Noronhia linocerioides* can be recognized by its reddish petioles, chartaceous leaf blades, and short-tubed, yellow flowers. It differs from *N. brevituba* by the shape of its leaves and flowers and the apex of its fruits, as discussed under that species. Most specimens placed in *Olea ambrensis* H. Perrier by GREEN (2002) fall within the range of morphological variation of *N. linocerioides*. Among these, Schatz 3605 (erroneously cited as Schatz 3405 in GREEN (2002), which is actually a collection of *Sideroxylon betsimisarakum* Lecomte) is phylogenetically related to other specimens clearly belonging to *Noronhia linocerioides* (HONG-WA & BESNARD, 2013, 2014). Thus, most specimens formerly recognized as *Olea ambrensis* are transferred here to *Noronhia linocerioides*, whereas others were also embedded within another clade comprising species of *Noronhia* (HONG-WA & BESNARD, 2013, 2014). Their placement is addressed below under *N. olearia*.

**Additional specimens examined**

**MADAGASCAR.** **Prov. Antsiranana:** Vinanivao, Masoala PN, 15°41'33"S, 50°13'30"E, 12-100 m, 15.IX.1996, Bernard 323 (K, MO, P, TAN); Anjanaharibe-Sud RS, 10 km SW of Befingotra, 14°45'S 49°29'E, 1100-1300 m, 7.IX.1997, Birkinshaw et al. 467 (MO, P, TAN); Antalaha, between Sahantaha and Andongozabe, 15°02'S 50°20'E, 10 m, 20.IX.1997, Birkinshaw 492 (MO, P, TAN); Ambatobiribiry, [14°11'S 50°05'E], 50-345 m, 29-30.XI.1950, Humbert & Capuron 24420 (G, MO, P); Masoala PN, Sahamalaza, Vinanivao, 15°35'S 50°25'E, 0 m, 18.IX.1994, Rahajasoa et al. 408 (K, MO, TAN); Masoala PN, Andrombazaha, 15°16'S 50°29'E, 4.X.1994, Rahajasoa et al. 751 (K, MO, P, TAN); Marojejy RNI, 14°02'30"S 49°48'20"E, 805 m, 8-16.VII.1994, Rasoavimbahoaka 328 (K, MO, P, TAN); Marotolana, à 7 km à l'E de Beangona-Ambevy, 14°01'54"S 48°47'01"E, 700-1300 m, 26.XI.2000, Rato-voson 347 (MO, P, TAN); Andapa, Bealampona, Anjanaharibe-Sud RS, 14°45'03"S 49°30'03"E, 875 m, 18.X.1994, Ravelonarivo et al. 394 (G, K, MO, P, TAN); Sambava, Anjangoveratra, Antanandava, forêt de Bevagnana, 14°10'38"S 49°57'11"E, 417 m, 5.II.2011, Ravelonarivo et al. 3606 (MO, P, TAN); Antalaha, Ambohitralanana, Sahafary, 15°17'27"S, 50°22'39"E, 29.IX.1997, Ravololonganahary & Zera 101 (G, K, MO, P, TAN); Nosy-Be, Lokobe RNI, [13°24'S 48°19'E], 20.V.1952, Réserves Naturelles 4323 (P, TAN); Andapa, Doany, Andranovola, [14°22'S 49°31'E], 0-400 m, 31.X.1967, Service Forestier 26451 (MO, P, TEF). **Prov. Fianarantsoa:** Manombo RS, 23°00'S 47°42'E, 5.III.2009, Hong-Wa et al. 613 (MO, P, TAN); Ranomafana PN, Parcille 1, S of Ambohimiera, 21°04'S 47°29'E, 880-1100 m, 15-17.IX.1992, Malcomber et al. 1561 (MO, P, TAN); Ifanadiana, [21°18'S 47°37'E], 1000 m, 10.XII.1954, Service Forestier 13818 (P, TEF). **Prov. Mahajanga:** Matsoandakana, Andasinanantsomanga Amparify, 14°55'34"S 49°24'59"E, 1155 m, 24.II.2008, Bernard 929 (G, MO, P, TAN). **Prov. Toamasina:** Maroantsetra, Anjaha, Ambanizana, 15°37'02"S 49°58'10"E, 20 m, 8.VI.2002, Antilahimena 1064 (G, MO, P); Tampolo STF 17°16'S 49°25'E, 0-10 m, 15.IV.1997, Birkinshaw et al. 421A (G, MO, P); Toamasina, [18°49'S 49°08'E], 3-5 m, 13.X.1946, Cours 2994 (G, MO, P); Maroantsetra, Hiaraka, 15°30'S 49°55'E, 100 m, 11.X.1986, Lowry et al. 4070 (MO, P, TAN); Masoala Peninsula, Ambanizana, 15°38'S 49°58'E, 5-10 m,

10.II.1999, *McPherson et al.* 17546 (G, K, MO, TAN); Soanierana-Ivongo, Manompana, forêt d'Andakibe,  $16^{\circ}47'06''S$   $49^{\circ}44'18''E$ , 1.XI.2008, *Nikolov* 1780 (MO, P); Ambila-Lemaitso,  $18^{\circ}49'S$   $49^{\circ}08'E$ , 10 m, 3.VII.1995, *Razafimandimbison* 172 (G, K, MO, P, TAN); 5-12 km SW of Maroantsetra,  $15^{\circ}30'S$   $49^{\circ}39'E$ , 10 m, 28.XI.1987, *Schatz* 1796 (MO, P, TAN); Fénérive-Est, Ambodimanga, Tampolo STF,  $17^{\circ}16'52''S$   $49^{\circ}24'44''E$ , 10 m, 25.XI.1994, *Schatz* 3605 (G, K, MO); Manakambahiny Est, Ranomainty, près de Nonokambo, [ $17^{\circ}45'S$   $48^{\circ}45'E$ ], 24.XII.1967, *Service Forestier* 26558 (MO, P, TEF); Tampolo STF,  $17^{\circ}17'S$   $49^{\circ}23'E$ , 8.XI.1981, *Service Forestier* 32269 (TEF); Ampasin' Onibe, Mahatsara STF,  $17^{\circ}38'S$   $49^{\circ}29'E$ , 19.X.1990, *Service Forestier* 34124 (MO, TEF); 4 km S of Vatomandry,  $18^{\circ}53'49''S$   $49^{\circ}07'43''E$ , 14 m, 10.I.2006, *Tosh et al.* 69 (BR, K, MO, P, TAN). **Prov. Toliara:** Fort-Dauphin, Lakandava,  $24^{\circ}58'13''S$   $46^{\circ}57'47''E$ , 1.X.2000, *Rabevohiatra et al.* 3723 (G, MO); Mahatalaky, Sainte Luce,  $24^{\circ}08'04''S$   $47^{\circ}16'38''E$ , 5 m, 9.XI.2006, *Ramison et al.* 28 (G, MO, P, TEF).