

Noronhia verticillata

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87. *Noronhia verticillata* H. Perrier in Mém. Inst. Sci. Madagascar, Sér. B, Biol. Vég. 2: 284. 1949 (Fig. 67D).

Typus: MADAGASCAR. **Prov. Antsiranana:** Forêt du Sambirano, à la base du massif de Manongarivo, [18°54'30"S 48°37'30"E], 500 m, VI.1909, *Perrier de la Bâthie* 4596 (holo-: P [P00418105]!).

= *Noronhia cruciata* H. Perrier in Mém. Inst. Sci. Madagascar, Sér. B, Biol. Vég. 2: 285. 1949. **Lectotypus** (designated here): MADAGASCAR. **Prov. Toamasina:** Rapides de l'Anosivola, 300 m, X.1927, *Perrier de la Bâthie* 18082 (P [P00413220]!; isolecto-: P [P00413221]!). **Syntypi:** MADAGASCAR. **Prov. Toamasina:** Ambatondrazaka, Onibe, [17°50'S 48°25'E], 1000 m, XI.1938, *Cours* 1027 (P [P00701245]!); Analamazaotra RS, [18°55'48"S 48°25'48"E], 800 m, s.d., *Perrier de la Bâthie* 8810 (P [P00701244]!). Anivorano, Andovoranto, bords de la Sahantandra, [18°55'S 48°30'E], 600 m, 16.X.1912, *Viguiet & Humbert* 750 (P [P03559261]!).

= *Noronhia verticilliflora* H. Perrier in Mém. Inst. Sci. Madagascar, Sér. B, Biol. Vég. 2: 284. 1949. **Typus:** MADAGASCAR. **Prov. Antsiranana:** Haut bassin du Mananjeby, 300 m, VII.1913, *Perrier de la Bâthie* 8814 (holo-: P [P00418106]!; iso-: K [K000233179] image seen, P [P00418107]!).

Description

Shrubs to trees to 8 m tall, trunk to 20 cm diameter; young twigs subquadrangular to quadrangular, 1.7-5.7 mm diameter, glabrous; bark medium gray to brownish, smooth to rugose. *Leaves* verticillate, persistent; bud scales persistent; blades dark green above, lighter below, linear to lanceolate, 5.5-22 × 0.8-4.2 cm, coriaceous, glabrous, domatia casual, base acute, margin flat to slightly revolute, apex retuse to acute, the point 1-8 mm long, midrib slightly sunken above, distinctly raised below, secondary veins conspicuous, 9-24 per side, 5-17 mm apart, looping 0.8-3 mm from the margin; petiole medium gray, 5-21 × 1.2-3 mm, entirely woody, glabrous. *Thyruses* geminate to fasciculate, multiflorous, somewhat diffuse; peduncle 5-38 mm long, very sparsely pubescent; pedicel 2-15 mm long, very sparsely pubescent; calyx very sparsely pubescent outside, glabrous inside, lobes deltate, 0.7-2 × 0.6-1.6 mm; corolla yellow, sometimes greenish, cupuliform to subrotate, 2.5-5.5 mm long, slightly tomentose outside, glabrous inside, the tube 1-2.5 mm long, lobes ovate, apex slightly acute; corona present, 1-2.2 mm long, undivided; stamens 1.6-2.8 mm long, anthers obconical, 1.1-1.7 mm long; pistil 1.5-2.8 mm long, stigma capitate. *Fruiting* pedicel 5-45 × 0.7-3.1 mm; young fruits green, brownish to dark red when mature, ovoid to subglobose, 9-22 × 6.5-18 mm, covered with white dots, apex flat to apiculate; dry pericarp 0.4-1.5 mm thick; endocarp woody; seed 6.5-14.5 × 3-11 mm.

- Distribution, ecology and phenology** *Noronhia verticillata* occurs in low- to mid-elevation humid forests in the Sambirano region and along the east, from Vohémar to Fort-Dauphin (Fig. 68). It produces flowers and fruits throughout the year except in April and May.
- Conservation status** The assessment included 52 collections representing 45 localities and indicated an EOO of 195,817 km², an AOO of 164 km², and 36 subpopulations representing 27 locations, of which 13 occur within protected areas (Ampasindava, Analamazaotra, Andohahela, Anjanaharibe-Sud, Corridor Ankeniheny-Zahamena, Manongarivo, Marojejy, Masoala, Ranomafana, Tsaratanana, Tsitongambarika, and Zahamena). With such a large distribution and presence within many protected areas, *N. verticillata* is assigned a preliminary status of “Least Concern”.
- Notes** *Noronhia verticillata* can be recognized by its verticillate leaves and somewhat punctate fruits. Although *Noronhia cruciata* and *N. verticilliflora*, both of which have verticillate leaves, were distinguished from *N. verticillata* by PERRIER DE LA BÂTHIE (1949, 1952) based on a rotate corolla and verticillate flowers, respectively, they are placed here in synonymy because these character states fall within the range of variation of *N. verticillata*, as circumscribed here. PERRIER DE LA BÂTHIE (1949, 1952) also mentioned the presence of four stamens and the absence of a corona in *N. verticilliflora*, which he only knew from the type specimen, but these features were not observed in any other collections and their presence is ambiguous in the type. *Noronhia cruciata* was based on four syntypes: *Cours 1027*, *Perrier de la Bâthie 8810* and *18082*, and *Viguiier 750*. *Perrier de la Bâthie 18082* has been chosen as the lectotype as it comprises the best material.
- Additional specimens examined** **MADAGASCAR. Prov. Antsiranana:** Antalaha, Ambohitralalana (Cap-Est), Tanandava-hely, 15°18'S 50°29'E, 0-15 m, 8.IX.1994, *Bernard et al. 5* (K, MO, P, TAN); Tsaratanana Massif, 13°52'03"S 48°50'43"E, 557 m, 13.XI.2001, *Birkinshaw 1024* (MO, TAN); Besinkara, Ambalafary, 350 m, 24.IV.1994, *Gautier 2436* (G, P, TAN); Ampasindava, 13°47'17"S 47°59'04"E, 242 m, 6.XI.2009, *Gautier et al. 5323* (G, K, MO, P, TEF, WAG); Maroambihy, Mandena, Marojejy PN, 14°26'13"S 49°46'32"E, 460 m, 20.III.2009, *Hong-Wa et al. 634* (MO, P, TAN); Massif du Marojejy, [14°18'S 49°33'E], 100-300 m, 14-15.III.1949, *Humbert 23398* (MO, P); Antongondriha, [14°12'S 49°52'E], 100-250 m, 1-24.XI.1951, *Humbert & Capuron 23957* (G, P); Marojejy PN, base of Mt. Beondroka, 14°27'S 49°47'E, 180-230 m, 20.X.1989, *Miller & Randrianasolo 4306* (MO, P, TAN); Ambodimanga, Tsaratanana RNI, 13°52'04"S 48°50'39"E, 900 m, 5.X.1998, *Rabenantoandro & Birkinshaw 43* (G, K, MO, P, TAN); Marojejy PN, Mandena, Maroambihy, 14°26'13"S 49°46'32"E, 460 m, 9.X.1996, *Rakotomalaza et al. 720* (G, K, MO, P); Anketrakabe, Manongarivo RS, 13°55'03"S 48°27'04"E, 180 m, 23-25.VII.1998, *Ranaivojaona et al. 211* (G, MO, P, TAN); Andapa, Marojejy PN, 14°31'S 49°38'E, 603 m, 1-3.II.1994, *Rasoavimbahoaka et al. 61* (MO, P, TAN); Anjanaharibe-Sud RS, 14°46'S 49°30'E, 985 m, 10.VII.1996, *Razafimandimbison et al. 237* (K, MO, P, TEF); Ambanja, Marovato, [13°58'S 48°50'E], 15.VII.1953, *Réserves Naturelles 5739* (P, TAN, TEF); Sambava, Andrah-

anjo, [14°18'30"S 49°49'00"E], 200 m, 3.XI.1950, *Service Forestier 741* (P, TEF); Ambanja, Ankaramy, Antsambalahy-Beraty, [14°01'30"S 48°14'40"E], 100-200 m, 4.XI.1950, *Service Forestier 1612* (P, TAN, TEF); Sambava, Antelimana, [14°27'30"S 49°42'30"E], 75-2123 m, 26.III.1953, *Service Forestier 7251* (MO, P, TEF); Beampongy, [13°40'30"S 48°27'00"E], 0-100 m, 4.X.1953, *Service Forestier 7714* (MO, P, TEF); Andapa, Doany, Androranga, bord de Bemarivo, [14°11'30"S 49°52'00"E], 100 m, 20.X.1953, *Service Forestier 7781* (P, TEF); Antsahalava, [14°04'30"S 48°16'00"E], 360 m, 19.VII.1954, *Service Forestier 10455* (P, TEF); Andapa, Doany, Androranga, [14°27'30"S 49°42'30"E], 75-2123 m, 23.VII.1988, *Service Forestier 34007* (TEF); Ampasindava, forêt de Betsistsika, [13°40'37"S 47°59'16"E], 110 m, 24.I.2009, *Tahinarivony et al. 279* (G, MO, TEF); Ambahatra, cours supérieur, [13°57'S 48°26'E], 350 m, 11.VIII.1998, *Wohlhauser 60024* (G, MO, P, TEF). **Prov. Fianarantsoa:** Ranomafana PN, [21°10'S 47°29'E], 1955, *Rauh 689* (TAN); Ambohimanga, Antanjona, [21°20'S 47°35'E], 30.IX.1955, *Service Forestier 16292* (P, TEF). **Prov. Toamasina:** Ambatovy, [18°50'24"S 48°18'15"E], 1092 m, 16.V.2010, *Bernard et al. 1570* (MO, P, TAN); Androrangabe, 1200 m, 9.X.1945, *Cours 2776* (MO, P); Analamazaotra RS, [18°55'21"S 48°25'23"E], 876 m, 3.V.2010, *Hong-Wa & Ortiz 654* (MO, P, TAN); Andasibe, [18°56'S 48°25'E], 860 m, 20.X.1996, *Miller 8747* (K, MO, TAN); Vatomandry, Ambalabe, Tobin'i Foara, [19°11'18"S 48°33'08"E], 500 m, 17.III.2005, *Razanatsima et al. 14* (MO, P, TAN); Ambatondrazaka, Manakambahiny Est, [17°46'S 48°39'E], 21.X.1963, *Réserves Naturelles 12629* (TEF); Soanierana Ivongo, [16°54'30"S 49°35'00"E], 0-50 m, 27.XII.1949, *Service Forestier 2347* (P, TEF); Andriantantely, Brickaville, [18°44'S 48°38'E], 200-300 m, 21.IV.1955, *Service Forestier 13177* (TEF). **Prov. Toliara:** Andohahela PN, Parcelle 3, [24°40'S 46°48'E], 200-700 m, 9-26.VIII.1993, *Randriamampionona 589* (K, MO, P); Bevoay, Fenombany, Androranga, [24°29'39"S 47°05'39"E], 171 m, 15.XI.2009, *Razakamalala et al. 4532* (G, MO, P, TAN); Fort-Dauphin, Enaniliha, [24°39'S 46°52'E], 15.VII.1956, *Service Forestier 17334* (TEF).