# A synoptic revision of the genus Deidamia (Passifloraceae)

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# A synoptic revision of the genus Deidamia (Passifloraceae)

**Laurent Gautier & Martin W. Callmander**


## Abstract

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*Deidamia* Noronha ex Thouars (*Passifloraceae*) is a small genus known from Madagascar and the Comoro Islands. The previous treatment by Henri Perrier de la Bâthie for the *Flore de Madagascar et des Comores* recognized five species: *Deidamia alata* Noronha ex Thouars, *Deidamia bicolor* H. Perrier, *Deidamia bipinnata* Tul., *Deidamia commersoniana* DC. and *Deidamia setigera* Tul. A complete study of all material available in G, K, MO and P has facilitated a critical review of the taxonomy of the genus. Only three species are here recognized: *Deidamia alata*, *Deidamia commersoniana* and *Deidamia thompsoniana* DC. Three names are proposed as new synonyms and five lectotypes are designated. An identification key is provided, as well as data concerning distribution, ecology and conservation status for each accepted species.

## Résumé

GAUTIER, L. & M.W. CALLMANDER (2021). Une révision synoptique du genre Deidamia (Passifloraceae). *Candollea* 76: 293–297. En anglais, résumés anglais et français. DOI: http://dx.doi.org/10.15553/c2021v762a10

*Deidamia* Noronha ex Thouars (*Passifloraceae*) est un petit genre connu de Madagascar et des Comores. Le dernier traitement par Henri Perrier de la Bâthie pour la *Flore de Madagascar et des Comores* reconnaissait cinq espèces: *Deidamia alata* Noronha ex Thouars, *Deidamia bicolor* H. Perrier, *Deidamia bipinnata* Tul., *Deidamia commersoniana* DC. et *Deidamia setigera* Tul. Une étude complète de tout le matériel disponible à G, K, MO and P nous permet de proposer une révision critique de la taxonomie du genre, dans laquelle nous ne reconnaissons que trois espèces: *Deidamia alata*, *Deidamia commersoniana* et *Deidamia thompsoniana* DC. Trois nouvelles synonymies sont proposées et cinq nouveaux lectotypes sont désignés. Une clé d'identification est fournie ainsi que des données sur la répartition, l'écologie et une évaluation du risque d'extinction pour chacune des espèces reconnues.



## Keywords

*PASSIFLORACEAE* – *Deidamia* – Madagascar – Francisco Noroña – Conservation – New synonyms – Nomenclature



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## Introduction

*Deidamia* Noronha ex Thouars is a small genus of *Passifloraceae* known from Madagascar and the Comoro Islands. The genus is morphologically close to the continental African genus *Efulensia* C.H. Wright but they differ in their floral morphology (see Wilde, 1974a, 1974b; Feuillet & MacDougal, 2007). Molecular phylogenetic analyses have retrieved these two genera in a clade sister to two other monotypic continental African genera: *Crossostemma* Planch. ex Benth. and *Schlechterina* Harms (Tokuoka, 2012; Sun et al., 2016).

*Deidamia* was described by du Petit-Thouars (1805) along with its type species *D. alata* Noronha ex Thouars in the first edition of his *Histoire des végétaux recueillis dans les îles australes d'Afrique*. Thouars was able to study the unpublished work left by the Spanish botanist Francisco Noroña (1748–1788), who died abruptly of malaria, and whose manuscripts are now kept at the Bibliothèque centrale of the Muséum national d'Histoire naturelle in Paris (BC: Ms 43) (see Pinar, 1997). Direct references to Noroña by Thouars are perceptible by the attribution "Nor." added to some of the genera described in his *Genera nova madagascariensia* (du Petit-Thouars, 1806). In his *Discours préliminaires* of his *Mélanges de botanique et de voyage*, du Petit-Thouars (1811: 16–17) wrote: "J'ai emprunté, le plus que j'ai pu, les noms d'un savant Botaniste espagnol, Noronha, qui m'a précédé dans ce pays. […] J'aurais conservé avec d'autant plus de plaisir les noms de ce botaniste, qu'ils sont généralement bien composés" – clearly indicating that he respected and followed Noroña's work as far as possible. Du Petit-Thouars (1805, 1806, 1806–1808) validated 15 genera recognized by Noroña but not validly published. Among these, only *Blyxa* Noronha ex Thouars (*Hydrocharitaceae*), *Brexia* Noronha ex Thouars (*Celastraceae*), *Deidamia* and *Paropsia* Noronha ex Thouars (*Passifloraceae*), and *Physena* Noronha ex Thouars (*Physenaceae*) are still in use; the others have been reduced to synonymy (Madagascar Catalogue, 2021).

Candolle (1828), in his *Prodromus*, recognized three species of *Deidamia*, namely *D. commersoniana* DC., *D. noronhiana* DC. and *D. thompsoniana* DC. Later Tulasne (1857) described two additional species: *D. bipinnata* Tul. and *D. setigera* Tul., and Perrier de la Bâthie (1940) eventually published one more new species: *D. bicolor* H. Perrier, accepting a total of five species in his treatment for the *Flore de Madagascar et des Comores*: *D. alata* (= *D. noronhiana*), *D. bicolor*, *D. bipinnata*, *D. commersoniana* (= *D. thompsoniana*) and *D. setigera* (Perrier de la Bâthie, 1945).

We were able to study all material available in G (incl. G-DC) and P (incl. P-JU) in order to re-assess species delimitation; in addition, we studied digital images of specimens kept at K and MO. We recognize three species in the genus. A full list of exsiccatae including complete localities with coordinates are available through the Madagascar Catalogue (2021), as well as images of taxa (if available) and distribution maps. Area of Occupancy (AOO) and Extent of Occurrence (EOO) were calculated using GeoCat (Bachman & Moat, 2012) for the preliminary risk of extinction assessment using the IUCN Red List criteria (IUCN, 2012).

## Key to the species of Deidamia

1. Leaflets up to 5, generally discolorous, chocolate-brown below, chartaceous (evergreen); one pair of glands, ¼ from petiole base; gynoecium 3(–4)-merous ..... 3. ***D. thompsoniana***

1a. Leaflets usually 7 (two additional leaflets attached to lower petiolules), more or less concolorous, chartaceous (evergreen) or membranaceaous (deciduous); generally more than one pair of glands; gynoecium (3–)4–5-merous .... 2

2. Leaflets chartaceous, tertiary venation even on both surfaces on dry specimens; second pair of glands (if present) below lower petiolules, rarely in contact with them (no further additional glands); gynoecium mostly 5-merous ... ..... 2. ***D. commersoniana***

2a. Leaflets coriaceous, tertiary venation prominent on both surfaces on dry specimens; second pair of glands in contact with lower petiolules, further additional glands sometimes present at intersection of rachis / second pair of leaflets; gynoecium mostly 4-merous ..... 1. ***D. alata***

## Taxonomic treatment

***Deidamia*** Noronha ex Thouars, Hist. Vég. Isles Austral. Afriq.: 61. 1805.

**Typus:** *Deidamia alata* Noronha ex Thouars

= *Thompsonia* R. Br. in Trans. Linn. Soc. London: 13. 221. 1820. **Typus:** *Thompsonia browniana* M. Roem. [nom. illeg.] (≡ *Deidamia thompsoniana* DC.).

1. ***Deidamia alata*** Thouars, Hist. Vég. Isles Austral. Afriq.: 61, tab. 20. 1805.

– *Deidamia noronhiana* DC., Prodr. 3: 337. 1828 [nom. illeg.].

**Lectotypus** (designated here): **Madagascar:** *sine loco,* s.d., *Noroña s.n.* (P-JU nº 16699 [P06975619]!; isolecto-: P [P00137322 fragm. packet]!, P-JU nº 16699 [P06975620]!). **Syntypus: Madagascar: Reg. Atsinanana [Prov. Antsiranana]:** "Foulpointe", s.d., *Thouars s.n.* (P [P00137322 excl. fragm. packet]!; P [P00137323]!).

*Distribution and ecology*. – *Deidamia alata* is distributed from sea-level to c. 1400 m, in humid and sub-humid bioclimatic zones, in eastern and northern Madagascar. It is a

liana recorded to grow up to 25 m high in lowland to medium altitude moist evergreen forest.

*Conservation status*. – With an EOO of 11,664 km² and an AOO of 20 km² (which could qualify respectively for Vulnerable or for Endangered under criterion B), *Deidamia alata* is known from five locations with respect to the most plausible threat which is habitat destruction for agriculture. However, although the species has seldom been collected and is probably rare and likely has a severely fragmented distribution, four out of five locations are within the protected area network (COMATSA Nord, Makirovana Tsihomanaomby, Nosy Mangabe and Tsaratanana) and no decline can be inferred. The species is therefore assessed as "Near Threatened" [NT] (IUCN, 2012).

*Notes*. – The description of *Deidamia alata* was based on two collections from Madagascar: *Noroña s.n.* and *Thouars s.n.* Thouars collected the fruit in the Foulpointe [Mahavelona] region but was unable to collect flowers (Thouars, 1805: 62). Back to Paris, he was able to study new collections thanks to Antoine-Laurent de Jussieu (1748–1836), among them several Noroña's collections from Madagascar (now in P-JU) including the flowers of *D. alata* (Thouars, 1805: 63). Original material in P consists of the flowering collection made by Noroña, which is mounted on a single sheet in P-JU, and of the fruiting collection of Thouars mounted on two sheets in the general collection in P. We designate here Noroña's flowering material in P-JU [P06975619] as the lectotype of *D. alata*; the lose flowers contained in a fragment packet glued to one of Thouars' specimens in P [P00137322] is considered as an isolectotype.

2. ***Deidamia commersoniana*** DC., Prodr. 3: 337. 1828 (Fig. 1).

**Lectotypus** (designated here): **Madagascar:** *sine loco,* s.d., *Commerson s.n.* (P-JU nº 16698 [P06975621]!; isolecto-: G-DC [G00659428, G00207194]!; P [P00137326]!).

= *Deidamia bipinnata* Tul. in Ann. Sci. Nat., Bot. sér. 4, 8: 49. 1857, **syn. nov. Lectotypus** (designated here): **Madagascar. Reg. DIANA [Prov. Antsiranana]:** "Nossi-bé au pied du Loucoubé", VIII.1848, *Boivin 2127* (P [P00137325]!). **Syntypus: Mayotte:** "Montagnes de Moussa Péré", X.1848, *Boivin 3301* (P [P00209164]!).

= *Deidamia setigera* Tul. in Ann. Sci. Nat., Bot. sér. 4, 8: 49. 1857, **syn. nov. Lectotypus** (designated here): **Madagascar:** *sine loco,* 1847–1852, *Boivin s.n.* (P [P00137328]!; isolecto-: P [P00137327]!).

= *Modecca membranifolia* Baker in J. Linn. Soc., Bot. 25: 317. 1890. **Holotypus: Madagascar:** "Chiefy from North-West Madagascar", IX.1897, *Baron next5866* (K [K000311049] image!).

**Fig. 1. –** Flowers of *Deidamia commersoniana* DC. [*Bardot-Vaucoulon 835*] [Picture: © M. Bardot-Vaucoulon]

*Distribution and ecology*. – *Deidamia commersoniana* is widely distributed in Madagascar throughout the eastern escarpment, from Marojejy southward to Andohahela NP, as well as in the Highlands, the Sambirano, and in the far North, from sea-level to 1200 m in humid, sub-humid, and dry bioclimatic regions. The species is also found on the island of Mayotte (Comoros Islands). It is a large liana with the main stem recorded to reach a basal diameter of 10–15 cm (Perrier de la Bâthie, 1945) and to grow up to 8 m high (but likely much higher) in lowland to medium altitude moist evergreen and semi-evergreen forests, often collected in secondary environments and forest margins.

*Conservation status*. – With an EOO of 489,792 km² and an AOO of 100 km² (qualifying for Endangered under criterion B), *Deidamia commersoniana* is known from 17 locations with respect to the most plausible threat which is habitat destruction for agriculture. However, most of these locations are within the protected area network (Ampasindava, Analamazaotra, Andohahela, Ankarana, Corridor Forestier Ambositra-Vondrozo, Lokobe, Loky Manambato, Montagne d'Ambre, Marojejy, and Tsaratanana) and no decline can be inferred. Furthermore, the species apparently thrives in secondary environments. It is therefore assessed as "Least Concern" [LC] (IUCN, 2012).

*Notes*. – Candolle (1828: 337) described *Deidamia commersoniana* on the basis of an unnumbered Commerson collection. Original material consists of four specimens (two in G-DC, one in P and one in P-JU). The P-JU sheet, annotated in Candolle's hand "Deidamia commersoniana DC.", is the best-preserved material and is designated here as the lectotype. The original material in G-DC consists of a sheet with sterile material filed under *D. commersoniana* [G00659428] and another with flowering material under *Crateva obovata* Vahl [G00207194]. A note on G00659428 in Candolle's hand

"ces feuilles qui me paraissent celles d'un *Bignonia* ou d'un *Deidamia* étaient mélangées et entortillées avec le *Crateva obovata* sans y adhérer [these leaves which seem to me to be those of a *Bignonia* or a *Deidamia* were mixed and twisted with the *Crateva obovata* without adhering to it]" testifies that the two collections in G-DC were received as a single specimen, probably under the name *Crateva obovata*. Candolle separated the leaf material that could clearly not belong to any *Crateva* and filed it under *Deidamia commersoniana*, whereas he kept the poor flowering material under *Crateva obovata.* However, the flowers clearly belong to *Deidamia commersoniana* and we therefore consider both G00207194 and G00659428 as part of original material of this species.

We consider *Deidamia bipinnata* to be a synonym of *D. commersoniana*. Tulasne (1857: 50) already noticed the evident similarities between the two taxa and differentiated his new species by the presence of occasional bipinnate leaves, an unreliable character as these two forms of leaves are often found on the same specimen. Perrier de la Bâthie (1940: 63) also questioned the morphological differences between these two taxa but maintained them as distinct in his treatment. *Deidamia bipinnata* was described on the basis of two syntypes and the best-preserved specimen in P, *Boivin 2127*, is designated here as the lectotype.

*Deidamia setigera* was described on a sterile unnumbered Boivin collection. Tulasne (1857: 50) distinguished it from his *D. bipinnata* by the presence of two small flagella on the margins of the proximal part of some of the leaflets. Another sterile collection from Mayotte (*Barthelat 1295*) is the only other specimen that displays such flagella, and this character has not been observed on a fertile specimen. We are convinced it is a character of juvenile individuals, possibly to enhance prehensility during its early development stages, and in later stages of growth the flagella are replaced by marginal glands. As the leaves of these two specimens match the widespread *D. commersoniana* in all other aspects, we consider *D. setigera* as a synonym of this species.

3. ***Deidamia thompsoniana*** DC., Prodr. 3: 337. 1828 (Fig. 2).

   – *Passiflora octandra* J.V. Thomps. ex DC. [nom. illeg.].

   – *Thompsonia browniana* M. Roem., Fam. Nat. Syn. Monogr. 2: 138. 1846 [nom. illeg.].

   **Holotypus: Madagascar:** *sine loco,* s.d., *Thompson s.n.* (BM [BM000902557] image!; iso-: G-DC [G00659429]!).

   = *Deidamia bicolor* H. Perrier in Notul. Syst. (Paris) 9: 62. 1940, **syn. nov. Lectotypus** (designated here): **Madagascar. Reg. Alaotra-Mangoro:** Analamazoatra, X.1914, *Perrier de la Bâthie 5284* (P [P00137324]!). **Syntypus: Madagascar. Reg. Alaotra-Mangoro:** Nord d'Anosibe, aux env. de Moramanga, 17.II.1930, *Decary 7174* (P [P04766810]!); *sine loco*, VII.1884, *Curtis s.n.* (K image!).

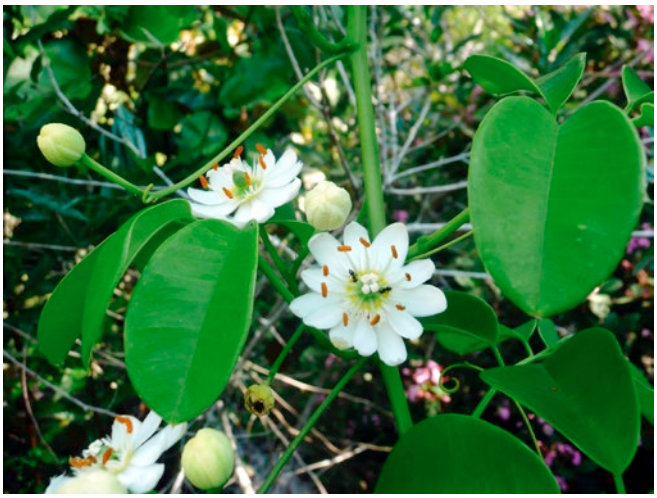

**Fig. 2. –** Flowers of *Deidamia thompsoniana* DC. [*Ramahenina 127*] [Picture: © R. Randrianaivo]

*Distribution and ecology*. – *Deidamia thompsoniana* is distributed along the eastern escarpment of Madagascar, from Masoala southward to Manombo, as well as in the Sambirano, between 100 and 1100 m in sub-humid and humid bioclimatic zones. It is a liana recorded to reach a basal diameter of more than 5 cm (Perrier de la Bâthie, 1945) and to grow up to 20 m long (but likely longer), in lowland to medium altitude moist evergreen and semi-evergreen forests, often collected in secondary environments and forest margins.

*Conservation status*. – With an EOO of 109,261 km² and an AOO of 104 km² (which could qualify for Endangered under criterion B), *Deidamia thompsoniana* is known from 18 locations with respect to the most plausible threat which is habitat destruction for agriculture. Eight of these locations are within the protected areas network (Analamazaotra, Betampona, Corridor Ankeniheny-Zahamena, Mantadia, Mangabe-Ranomena-Sahasarotra, Masoala, Ranomafana and Torotorofotsy); however, no decline can be inferred as the species apparently thrives in secondary environments. It is therefore assessed as "Least Concern" [LC] (IUCN, 2012).

*Notes*. – *Deidamia thompsoniana* was based on an unnumbered Thompson collection from Madagascar deposited in the Lambert herbarium cited as "in herb. Lamb. (v.s.)" by Candolle (1828: 337). The herbarium of Ayhner Bourke Lambert (1761–1842), a British botanist, was sold at auction after his death divided into 317 lots and bought by 16 buyers (Miller, 1970). Candolle visited Lambert in 1816 and consulted his herbarium (Candolle, 2014). Following this visit, Candolle received 100 miscellaneous specimens from Lambert in 1819 (Candolle, 1830); among this material there was a fragment of *Thompson s.n.*, which is now in G-DC, while the original specimen is deposited in BM. We consider that Candolle

saw the BM specimen during his consultation of Lambert herbarium and therefore that it represents the holotype of *D. thompsoniana* as cited by Masters (1875: 162). The fragment at G is an isotype.

Probably because he had no access to the type, Perrier de la Bâthie (1940, 1945) erroneously treated *Deidamia thompsoniana* as a synonym of *D. commersoniana*. To accomodate the very distinctive specimens with coriaceous, discolorous leaves, dark green adaxially and reddish-brown abaxially, he described *D. bicolor*. We therefore consider *D. bicolor* as a synonym of *D. thompsoniana*. The misinterpretation of the taxonomy of these species by Perrier de la Bâthie (1940, 1945) can best be explained by the fact that he never saw the original material of *D. thompsoniana* either in BM or G, and his understanding of the species was based only on the brief Latin diagnoses by Candolle (1828: 337).

*Deidamia bicolor* was described on the basis of two syntypes and the best-preserved specimen, *Perrier de la Bâthie 5284*, is designated here as the lectotype.

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## Unpublished sources

BC: Bibliothèque centrale, Muséum national d'Histoire naturelle, Paris: Ms 43.

Candolle, A.P. de (1830). *Catalogue de l'herbier d'après les époques et les origines des échantillons qui le composent*. Collection privée de Candolle, Genève.

## References

Bachman, S. & J. Moat (2012). GeoCAT – An open source tool for rapid Red List assessments. *Bot. Gard. Conservation Int. J.* 9. [http://geocat.kew.org]

Candolle, A.P. de (1828). Deidamia. *Prodr.* 2: 337.

Candolle, A.P. de (2004). *Mémoires et souvenirs (1778–1841)*. Candaux, J.-D. et al. (ed.). Georg, Genève.

Du Petit-Thouars, L.-M.A.A. (1805). *Histoire des végétaux recueillis dans les isles australes d'Afrique*. Paris.

Du Petit-Thouars, L.-M.A.A. (1806). *Genera nova madagascariensia secundum methodum Jussiaeanam disposita*. Paris.

Du Petit-Thouars, L.-M.A.A. (1806–1808). *Histoire des végétaux recueillis dans les isles australes d'Afrique*. Ed. 2. Paris.

Du Petit-Thouars, L.-M.A.A. (1811). *Mélanges de botanique et de voyages*. Paris.

Feuillet, C. & J.M. MacDougal (2007). Passifloraceae. *In*: Kubitzki, K. (ed.), *The Families and Genera of Vascular Plants* 9: 270–281. Springer.

IUCN (2012). *IUCN Red List Categories and Criteria. Version 3.1.* Ed. 2. IUCN Species Survival Commission, Gland and Cambridge.

Madagascar Catalogue (2021). *Catalogue of the Plants of Madagascar*. Missouri Botanical Garden, St. Louis and Antananarivo. [http://www.tropicos.org/project/mada]

Miller, H.S. (1970). The Herbarium of Aylmer Bourke Lambert: Notes on its acquisition, dispersal, and present whereabouts. *Taxon* 19: 489–553.

Perrier de la Bâthie, H. (1940). Les Passifloracées de Madagascar. *Not. Syst. (Paris)* 9: 42–64.

Perrier de la Bâthie, H. (1945). Passifloracées. *Fl. Madagascar Comores* 143.

Pinar, S. (1997). Little-known travellers and natural systems: Francisco Noroña's exploratory voyage through the islands of the Indian Ocean (1784–1788). *Arch. Nat. Hist.* 24: 127–144.

Sun, M., R. Naeem, J.-X. Su, Z.-Y. Cao, J.G. Burleigh, P.S. Soltis, D.E. Soltis & Z.-D. Chen (2016). Phylogeny of the Rosidae: A dense taxon sampling analysis. *J. Syst. Evol.* 54: 363–391.

Tokuoka, T. (2012). Molecular phylogenetic analysis of Passifloraceae sensu lato (Malpighiales) based on plastid and nuclear DNA sequences. *J. Plant Res.* 125: 489–497.

Tulasne, L.R. (1857). Florae madagascariensis fragmenta. *Ann. Sci. Nat., Bot.* sér. 4, 8: 44–163.

Turland, N.J., J.H. Wiersema, F.R. Barrie, W. Greuter, D.L. Hawksworth, P.S. Herendeen, S. Knapp, W.-H. Kusber, D.-Z. Li, K. Marhold, T.W. May, J. McNeill, A.M. Monro, J. Prado, M.J. Price & G.F. Smith (2018). International Code of Nomenclature for algae, fungi, and plants (Shenzhen Code) adopted by the Nineteenth International Botanical Congress Shenzhen, China, July 2017. *Regnum Veg.* 159.

Wilde, W.J.J.O. de (1974a). Account of Efulensia (Passifloraceae). *Blumea* 22: 31–35.

Wilde, W.J.J.O. de (1974b). The genera of tribe Passifloreae (Passifloraceae), with special reference to flower morphology. *Blumea* 22: 37–50.