



Lectotypifications and a New Combination in *Polygala* L. (*Polygalaceae*) from Madagascar

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33. WAHLERT, Gregory A., Peter B. PHILLIPSON & George E. SCHATZ: Lectotypifications and a new combination in *Polygala* L. (Polygalaceae) from Madagascar

Introduction

The genus *Polygala* L. (Polygalaceae) was last treated for Madagascar by PERRIER DE LA BÂTHIE (1955) in the *Flore de Madagascar et des Comores* series, and later, PAIVA (1998) provided a taxonomic conspectus of African and Malagasy species. In the course of re-evaluating species diversity for the Catalogue of Vascular Plants of Madagascar (MADAGASCAR CATALOGUE, 2013), *Polygala longeracemosa* var. *retamoides* H. Perrier stood out as a morphologically distinctive taxon and was found to occupy a geographic range separate from that of the nominate species. In addition, *P. longeracemosa* var. *retamoides* is a narrowly distributed edaphic specialist restricted to thin, rocky soils derived from marbles and quartzites in the vicinity of Ambatofinandrahana in the High Plateau of Fianarantsoa Prov. We disagree with PAIVA (1998) who placed *P. longeracemosa* var. *retamoides* in synonymy under *P. longeracemosa* H. Perrier. Given the morphological and ecological differentiation as well as the separate distributions of the two taxa, we propose to recognize *P. longeracemosa* var. *retamoides* at the rank of species.

Here, we designate lectotypes for *P. longeracemosa* and *P. longeracemosa* var. *retamoides*, and we propose the necessary new nomenclatural combination and status for the latter at the species level. We also provide a key to separate the two species, a distribution map, and preliminary IUCN conservation assessments for both taxa following IUCN Red List Categories and Criteria (IUCN, 2012; calculations following CALLMANDER & al., 2007).

Key to separate *Polygala longeracemosa* from *P. retamoides*

1. Stem glabrous to sparsely pubescent with simple white hairs; leaves up to 3.3 cm long, 0.5 cm wide
..... **1. *P. longeracemosa***
- 1a. Stem densely pubescent with simple white hairs; leaves absent or up to 1.2 cm long, 0.2 cm wide.....
..... **2. *P. retamoides***

Taxonomy

1. *Polygala longeracemosa* H. Perrier in Bull. Trimestriel Acad. Malgache ser. 2, 14: 9. 1932.

Lectotypus (designated here [second step]): **MADAGASCAR. Prov. Toliara:** Bassin supérieur du Mandrare (SE): Mont Amboahangy près d'Esira, [24°15'S 46°39'E], 1000-1150 m, 25.XI.1928, fl., *Humbert 6830* (P [P00375348]!; isolecto-: P [P00375346, P00375347]!) (Lectotype [first step] designated by PAIVA, 1998: 258). **Paralectotypus:** **MADAGASCAR. Prov. Toliara:** Massif de Beampingaratra (SE): Mont Papanga, versant NW, c. 1200 m, 3-4.XI.1928, fl. & fr., *Humbert 6405* (P [P00375343]!; isoparalecto-: P [P00375344, P00375345]!).

Observations. – PAIVA (1998) cited *Humbert 6830* (P) as the holotype of the name *P. longeracemosa* and effected lectotypification in accordance with the ICBN (MCNEILL & al., 2012, Arts. 9.2, 9.11). However, the gathering of *Humbert 6830* at P consists of three specimens. Consequently, we designate the sheet [P00375348] as the [second-step] lectotype as allowed under Art. 9.17 because it is the most complete specimen and the label was annotated with the word “type” in Perrier’s hand.

Distribution and habitat. – *Polygala longeracemosa* is distributed in the mountains of southeastern Madagascar, including the massifs of Andohahela, Kalambatritra and Ivakoany and on the Horombe Plateau at elevations from 900-1750 m. The species occurs in secondary or degraded grasslands, ericoid shrublands, and forests edges, usually in rocky areas (Fig. 1).

Conservation status. – *Polygala longeracemosa* is known from 13 locations and subpopulations, four of which are situated in Protected Areas (Andohahela National Park and Kalambatritra Special Reserve), but with a somewhat restricted Area of Occupancy (minimum of 140 km²) and Extent of Occurrence (c. 14,000 km²), it is assigned a preliminary conservation status of “Near Threatened” (NT).

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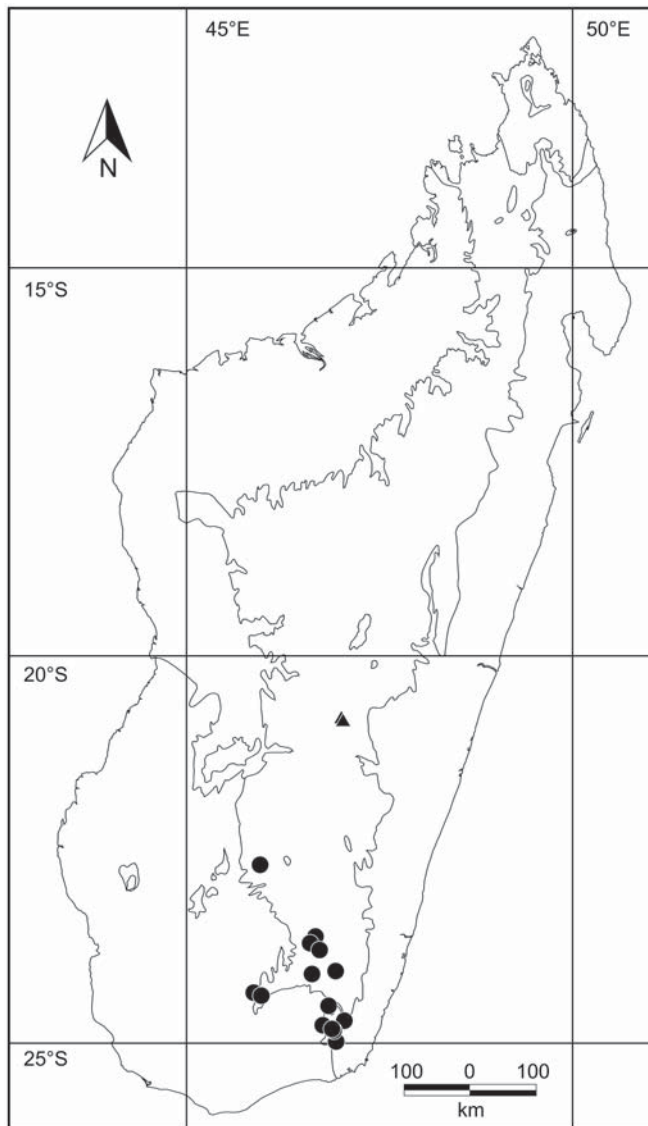


Fig. 1. – Distribution of *Polygala longeracemosa* H. Perrier (circles) and *Polygala retamoides* (H. Perrier) Wahlert, G. E. Schatz & Phillipson (triangles) in Madagascar mapped on the biogeographic zones of CORNET (1974).

Additional material examined. – **MADAGASCAR. Prov. Fianarantsoa:** Iakora, Begogo, Bekora, forêt de Sahalava au S du village d'Androizaha, 23°32'09"S 46°32'21"E, 1404 m, 27.I.2005, fl. & fr., *Andrianjafy & al.* 704 (MO!, P [P06241680, P06241681]!). **Prov. Toliara:** Betroka, Ivahona, Mt. Kalambatritra, forêt d'Analamaro, 23°27'38"S 46°24'40"E, 1540 m, 6.XI.2005, fl., *Andrianjafy & al.* 536 (MO!, P [P02998108]!); Ampandrandava, [24°05'S 45°42'E], [900 m], s.d., fl. & fr., *Herb. Jardin Bot. Tananarive* 6276 (P [P06241684]!); Massif du Kalambatritra (Centre-Sud), [23°22'S 46°29'E], 1600-1750 m, XI.1933, fl. *Humbert* 11772 (BR, G!, K!, MO!, P [P03008170, P06241683]!, PRE, TAN, WAG); haute vallée de la Manambolo, affluent de l'Ionaivo, [24°30'S, 46°35'E], 900-1100 m, XI.1933, fl. & fr., *Humbert* 12132 (P [P06241678]!); Massif de l'Ivakoany, [23°50'30"S, 46°26'E], 1250 m, XI-XII.1933, fl. & fr., *Humbert* 12253 (P [P06241685]!); Vallée de la Sakamalio, affluent de la Manambolo, bassin du Mandrare, [24°32'S 46°41'E], 900-

1100 m, XII.1933, fl., *Humbert* 13412 (P [P06241677]!); Massif de l'Andohahela, 1700 m, I.1934, fl., *Humbert* 13673 (P [P06241675]!); Horombe, 1300 m, V.1919, fl., *Perrier de la Bâthie* 12680 (P [P03008169]!); Mt. Trafonaomby, parcelle I d'Andohahela RNI, 24°33'S, 46°43'E, 1000-1957 m, 7.IV.1994, fl., *Randriamampionona* 752 (P [P02998110]!); Forêt de Befarafara, Kalambatritra AP, 23°24'44"S 46°27'58"E, 1575 m, 26.V.2005, fl., *Razakamalala & al.* 2046 (MO!, P [P02998109]!, TAN!); à l'E d'Ampandrandava, entre Bekily et Tsivory, vers la source de la Menakompy, [24°07'S 45°48'E], 1000-1200 m, IV.1943, fl. & fr., *Seyrig* 646 (P [P06241679]!).

2. *Polygala retamoides* (H. Perrier) Wahlert, Phillipson & G. E. Schatz, comb. et stat. nova (Fig. 2).

= *Polygala longeracemosa* var. *retamoides* H. Perrier in Bull. Trimestriel Acad. Malgache ser. 2, 14: 10. 1932.

Lectotypus (designated here): **MADAGASCAR. Prov. Fianarantsoa:** Rocailles cipolins [marble outcrops], Ambatofinandrahana [20°35'S 46°49'E], II.1919, fl., *Perrier de la Bâthie* 12441 (P [P00375349]!; isolecto-: P [P00375350]!).

Observations. – PERRIER DE LA BÂTHIE (1932) designated his own collection, *Perrier de la Bâthie* 12441, as the type of *P. longeracemosa* var. *retamoides*. The only known material of the collection are two specimens at P, both of which are annotated with this name in Perrier de la Bâthie's handwriting and both bear "Type" labels. We designate the sheet [P00375349] as the lectotype because it includes complete stems and inflorescences, as well as the woody base of the stem - an important morphological feature lacking on the sheet [P00375350].

Polygala retamoides is similar to *P. longeracemosa* by its habit, racemose inflorescence, and morphology of the flowers and seeds, but it differs by its densely pubescent stems (vs. glabrous to sparsely pubescent in *P. longeracemosa*) and its smaller leaves (when present) up to 1.2 × 0.2 cm (vs. leaves up to 3.3 × 0.5 cm). *Polygala retamoides* also differs ecologically by being restricted to marble and quartzite substrates, whereas *P. longeracemosa* grows on soils derived from laterite and gneiss.

Distribution and habitat. – *Polygala retamoides* is restricted to high elevation grasslands on thin, rocky soils overlaying marble and quartzite substrates from 1300-1800 m, near Ambatofinandrahana, Fianarantsoa Province in the eastern part of the Itremo Complex (Fig. 1).

Conservation status. – Data on the occurrence of *P. retamoides* is very limited, with only two of the eight known gatherings bearing precise geo-references. However all of these were apparently made near the town of Ambatofinandrahana, and none are known from the western part of the Itremo Complex which is now under temporary protection as a new protected area. These gatherings probably represent a single location and sub-population with a highly restricted Extent of



Fig. 2. – Living plant of *Polygala retamoides* (H. Perrier) Wahlenk., G. E. Schatz & Phillipson, growing in its natural habitat on the marble outcrops south of Ambatofinandrahana. [Labat & al. 2370] [Photo: J.-N. Labat]

Occurrence and Area of Occupancy of no more than a 10 km² in an area that is under considerable human pressure from fire and mining; *Polygala retamoides* is therefore assigned a preliminary conservation status of “Critically Endangered” [CR B 1ab(i,ii,iii,v)+2ab(i,ii,iii,v)]. It is interesting to note that other species also appear to be endemic to the marble outcrops near Ambatofinandrahana but are not known from elsewhere in the Itremo Complex, for example *Buxus cipolinica* Lowry & G. E. Schatz (LOWRY & SCHATZ, 2006), suggesting the importance of this area to be brought into the protected area network of Madagascar.

Additional material examined. – **MADAGASCAR. Prov. Fianarantsoa:** Ambatofinandrahana, [20°35'S 46°49'E], X.1963, fl., *Bosser 18119* (P!); *ibid. loc.*, 1964, fl., *Bosser 19611* (P!); au S d' Ambatofinandrahana, [20°35'S 46°49'E], 13.XII.1976, fl., *Cremers 3645* (P!, TAN!); env. d' Ambatofinandrahana [20°37'19"S 46°50'09"E], 1600-1800 m, 21.II.1938, fl., *Decary 13174* (MO!, P [2 sheets!]); Ambatofinandrahana [20°35'S 46°49'E], III.1960, fl., *Keraudren 219*

(P!); Mahavanino, 7 km au S d' Ambatofinandrahana, sur la route de Fenoarivo, lieu-dit de Analalehibe, Ambatofinandrahana, 20°37'43"S 46°50'32"E, 1350 m, 19.XI.1993, fl., *Labat & al. 2370* (K!, MO!, P [P001718!], TAN!); Ambatofinandrahana, 9 km from Ambatofinandrahana, 20°36'47"S 46°49'56"E, 1398 m, 18.III.2004, fl., *Skema & al. 46* (MO!, TAN).

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References

- CALLMANDER, M. W., G. E. SCHATZ, P. P. LOWRY II, M. O. LAIVAO, J. RAHARIMAMPIONONA, S. ANDRIAMBOLOLONERA, T. RAMINOSOA & T. CONSIGLIO (2007). Application of IUCN Red List criteria and assessment of Priority Areas for Plant Conservation in Madagascar: rare and threatened Pandanaceae indicate new sites in need of protection. *Oryx* 41: 168-176.
- CORNET, A. (1974). *Essai de cartographie bioclimatique à Madagascar*. Notice Explicative 55. ORSTOM.
- LOWRY, P. P. II & G. E. SCHATZ (2006). A new restricted-range species of *Buxus* L. (Buxaceae) from central Madagascar. *Adansonia* ser. 3, 28: 67-70.
- MCNEILL, J., F. R. BARRIE, W. R. BUCK, V. DEMOULIN, W. GREUTER, D. L. HAWKSWORTH, P. S. HERENDEEN, S. KNAPP, K. MARHOLD, J. PRADO, W. F. PRUD'HOMME VAN REINE, G. F. SMITH, J. H. WIERSEMA & N. J. TURLAND (2012). International Code of Nomenclature for algae, fungi and plants (Melbourne Code) adopted by the Eighteenth International Botanical Congress Melbourne, Australia, July 2011. *Regnum Veg.* 154.
- PAIVA, J. A. R. (1998). *Polygalarum Africanarum et Madagascarien-sium prodromus atque gerontogaei generis Heterosamara Kuntze, a genere Polygala L. segregati et a nobis denuo recepti, synopsis monographica. Fontqueria* 50.
- PERRIER DE LA BÂTHIE, H. (1932). Les *Polygala* de Madagascar. *Bull. Trimestriel Acad. Malgache* ser. 2, 14: 1-30.
- PERRIER DE LA BÂTHIE, H. (1955). *Polygalacées*. In: HUMBERT, H. (ed.), *Fl. Madagascar Comores* 109.
- IUCN (2012). *IUCN Red List Categories and Criteria: version 3.1*. 2nd edition. IUCN Species Survival Commission, Gland & Cambridge.
- MADAGASCAR CATALOGUE (2013). *Catalogue of the Vascular Plants of Madagascar*. Missouri Botanical Garden, St. Louis & Antananarivo [<http://www.efloras.org/madagascar>].