The Genus Vernoniopsis Humbert (Asteraceae) in Madagascar

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17. CALLMANDER, Martin W. & Peter B. PHILLIPSON: The genus Vernoniopsis Humbert (Asteraceae) in Madagascar

Introduction

The family *Asteraceae* is the largest flowering plant family with more than 1,600 genera and 23,000 species currently recognized (ANDERBERG & al., 2007). In Madagascar, the family was studied by the renowned Professor Henri Humbert for his PhD. dissertation (HUMBERT, 1923), and this work eventually culminated in the publication of the three volumes treatment in the *Flore de Madagascar et des Comores* series (HUMBERT, 1960-1963). At the time of the flora, 521 native species were known from Madagascar (435 [83%] endemic to the island) placed in 72 native genera (13 [18%] endemic). Relatively little taxonomic research has been undertaken subsequently on the Malagasy *Asteraceae*, and the number of currently accepted species has not changed greatly. However recently, in some problematic groups and particularly those containing large broadly-circumscribed genera, narrower generic concepts have been adopted. As a result, a number of new genera occurring in Madagascar have been described recently, and some older genera have been resurrected from synonymy. Figures derived from the *Catalogue of Vascular Plants of Madagascar* (MADAGASCAR CATALOGUE, 2011), that we have presented elsewhere (CALLMANDER & al., 2011), take into account these taxonomic changes. These figures give a total of 540 native species, of which 441 (82%) are endemic to Madagascar, divided among 80 native genera, of which 18 (20%) are endemic.

The genus *Vernonia* Schreb. (Tribe *Vernonieae* Cass.) is characterized by a continuous stigmatic surface over the inner surface of the style branches. HUMBERT (1955a) discovered that two Malagasy species originally described in *Vernonia: (V. caudata* Drake and *V. sanctae-mariae* Drake) possess stigmatic surfaces that form paired lines (2-banded) on the inner surface of style branches. He concluded that these species, which he considered to be synonyms, should be transferred to the Tribe *Astereae* Cass., and he described a new monotypic genus, *Vernoniopsis* Humbert, to accommodate them. The genus is distinguished by its characteristic style morphology and remarkable *Vernonia*-like habit and inflorescence. He recognized two subspecies within *Vernoniopsis caudata* (Drake) Humbert: the typical subspecies (which included the material described as *Vernonia sanctae-mariae*) and *V. caudata* subsp. *lokohensis* Humbert (HUMBERT, 1955a). Later, he further divided the typical subspecies into two subvarieties: the typical subvariety and subvar. *microcephala* Humbert (HUMBERT, 1960-1963). He did not recognise varieties.

An examination of all the available material of *Vernoniopsis* for the *Catalogue of the Vascular Plants of Madagascar* (MADAGASCAR CATALOGUE, 2011) has enabled us to review taxon delimitations within the genus. We came to the conclusion that two distinct species should be recognised: *V. caudata*, which is restricted to the eastern coastal zone from Antalaha to Taolagnaro, and the second species, based on *V. caudata* subsp. *lokohense*, which is endemic to the Marojejy area, for which we provide a new combination. We designate a lectotype for *V. caudata* subsp. *lokohensis*, and reduce *V. caudata* subvar. *microcephala* to synonymy under *V. caudata*. We provide observations and a brief discussion of the two species and assessment of their conservation status using the current IUCN Red List Categories and Criteria (IUCN, 2001).

Taxonomy and nomenclature

Vernoniopsis Humbert in Mém. Inst. Sci. Madagascar, Sér. B, Biol. Vég. 6: 154. 1955.

Type species: *V. caudata* (Drake) Humbert (≡ *Vernonia caudata* Drake).

Vernoniopsis caudata (Drake) Humbert in Mém. Inst. Sci. Madagascar, Sér. B, Biol. Vég. 6: 154. 1955. ≡ *Vernonia caudata* Drake in Bull. Mus. Hist. Nat. (Paris) 5: 103. 1899.

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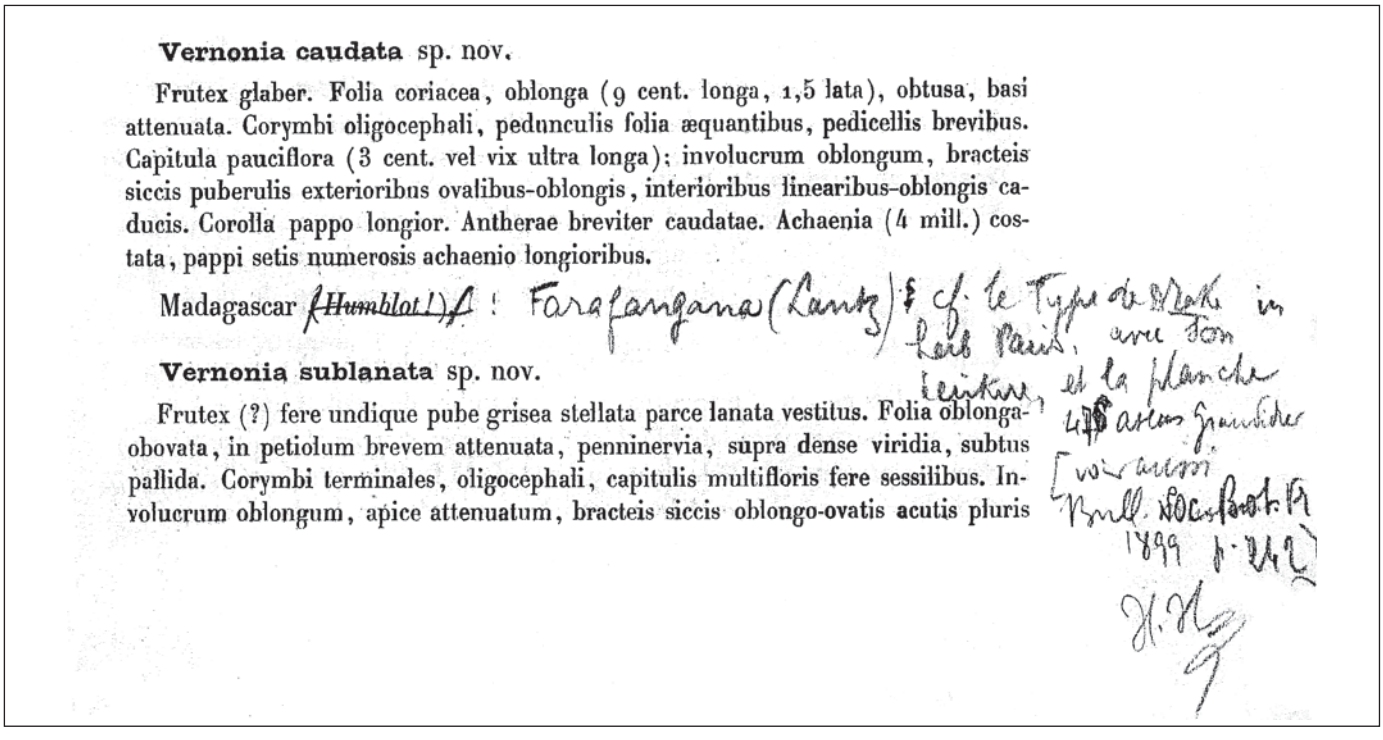
Typus: Madagascar. Prov. Fianarantsoa: Farafangana, 14.IX.1882, fl., *Lantz s.n.* (holo-: P [P00568726]!; iso-: K [K000273991]!, P [P00568725]!).

= *Vernonia sanctae-mariae* Drake in Bull. Soc. Bot. France 46: 241. 1900. **Typus: Madagascar. Prov. Toamasina:** Saint-Marie, forêt de Sangous, IX.1909, *Boivin s.n.* (holo-: P [P00435127]!) (synonymized by Humbert, 1955a).

= *Vernoniopsis caudata* subvar. *microcephala* Humbert, Fl. Madagascar Comores 189: 208. 1960. **Typus: Madagascar. Prov. Fianarantsoa:** Mananajary, zone côtière, [21°13'30''S 48°21'00''E], III-IV.1909, fl., *Geay 7861* (holo-: P [P00627564]!; iso-: K [K000 273991]!), **syn. nov.**

Observations. – *Vernoniopsis caudata* (≡ *Vernonia caudata*) was illustrated by Grandidier (1897: tab. 476) and then formally described by Drake del Castillo (1899a: 103). The holotype designated was "*Humblot s.n.*". However, specimens of this species collected by Humblot have not been found in the Paris herbarium. In a type folder, a note written on a copy of Drake del Castillo's original published description in Humbert's handwriting (Fig. 1) explains that the citation of Humblot as the collector was certainly an error and that the accompanying Lantz collection at P has the words: "*Vernonia caudata*" in Drake's handwriting. Clearly Humbert took this to be simply an editorial error, and we agree. Certainly the Lantz specimen was seen by Drake and it bears a close resemblance to the specimen illustrated by Grandidier, although it is not identical. We therefore consider the *Lantz* collection as the type for *V. caudata*, following Humbert.

Vernoniopsis caudata occurs in littoral forest on sand along the East Coast of Madagascar from Antalaha in the north to Taolognaro in the south (Fig. 2). It is rather variable: collections from Antalaha to Tampolo, and on Ile Sainte-Marie tend to have distinctly longer peduncles than those from Farafangana (the type locality) to Taolagnaro (Fort-Dauphin), but they have similar capitula. On the other hand, collections from near Mananjary have long peduncles and tend to have rather smaller capitula. In the past these variants have been accorded formal taxonomic status, respectively as *Vernonia sanctae-mariae* Drake by Drake del Castillo (1899b) and *Vernoniopsis caudata* subvar. *microcephala* by Humbert. Despite the fact that there are clear morphological trends correlated with geographical distribution, we do not believe that our current level of knowledge permits us to recognize sufficiently clear-cut entities. However, the variability requires further study in the field, and it is possible that eventually meaningful infraspecific taxa may be able to be defined within *Vernoniopsis caudata*. A complete listing of specimens examined can be obtained from the Madagascar Catalogue (2011).



Vernonia caudata sp. nov.

Frutex glaber. Folia coriacea, oblonga (9 cent. longa, 1,5 lata), obtusa, basi attenuata. Corymbi oligocephali, pedunculis folia æquantibus, pedicellis brevibus. Capitula pauciflora (3 cent. vel vix ultra longa); involucrum oblongum, bracteis siccis puberulis exterioribus ovalibus-oblongis, interioribus linearibus-oblongis caducis. Corolla pappo longior. Antherae breviter caudatae. Achaenia (4 mill.) costata, pappi setis numerosis achaenio longioribus.

Madagascar ~~(Humblot!)~~ : Farafangana (Lantz) & cf. le Type de Drake in Herb. Paris, avec son texte, et la planche 410 dans Grandidier [voir aussi Bull. Soc. Bot. Fr 1899 p. 242]

Vernonia sublanata sp. nov.

Frutex (?) fere undique pube grisea stellata parce lanata vestitus. Folia oblongaobovata, in petiolum brevem attenuata, penninervia, supra dense viridia, subtus pallida. Corymbi terminales, oligocephali, capitulis multifloris fere sessilibus. Involucrum oblongum, apice attenuatum, bracteis siccis oblongo-ovatis acutis pluris

Fig. 1. – Reproduction of the P library copy of *Bull. Soc. Bot. France* (1899b: 242) with Drake del Castillo's description of *Vernonia caudata* Drake in his treatment of Malagasy *Vernonia*, with Humbert's handwriting annotation (see text).

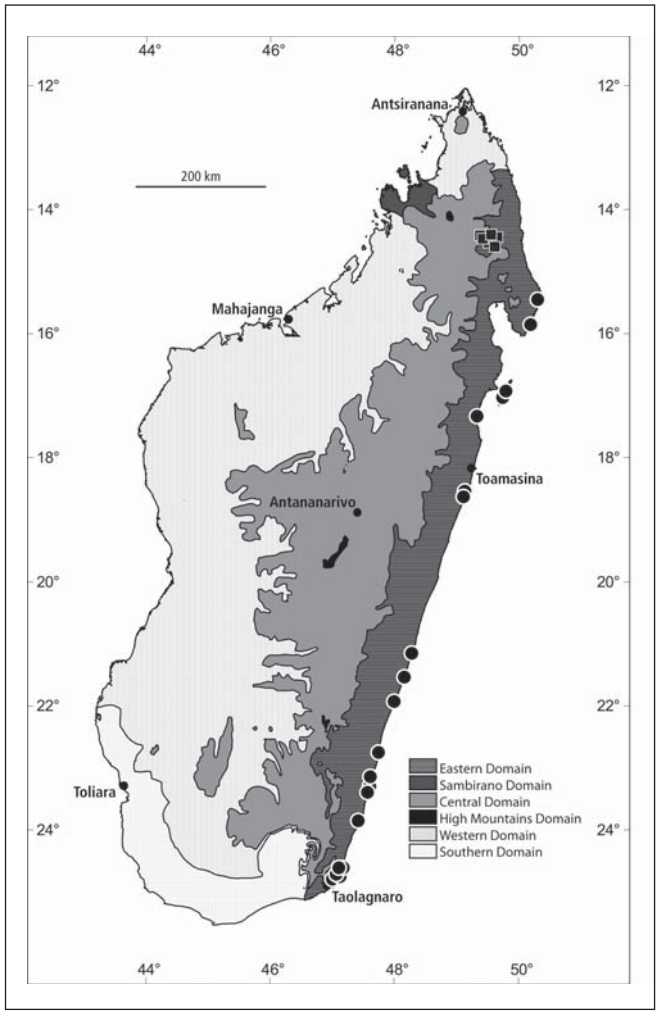


Fig. 2. – Distribution of *Vernoniopsis* Humbert in Madagascar mapped on phytogeographical map of HUMBERT (1955b): *Vernoniopsis caudata* (Drake) Humbert (circles) and *V. lokohensis* (Humbert) Callm. & Phillipson (squares).

Conservation status. – With an EOO of 34,922 km², an AOO of 78 km² and 14 subpopulations, two encompassed in the protected area network (Masoala National Park, Manombo Special Reserve), *V. caudata* is assigned a preliminary status of Least Concern (LC) following the IUCN Red List Categories and Criteria (calculation following CALLMANDER & al., 2007).

Vernoniopsis lokohensis (Humbert) Callm. & Phillipson, **stat. nov.**

≡ *Vernoniopsis caudata* subsp. *lokohensis* Humbert in Mém. Inst. Sci. Madagascar, Sér. B, Biol. Vég. 6: 155. 1955.

Lectotypus (designated here): **MADAGASCAR. Prov. Antsiranana:** Environ d'Andapa, bassin de la Lokoho (NE), [14°39'S 49°38'E], 400-600 m, 25.XI.1948-11.XII. 1948, fl., *Humbert & Capuron 21943* (P [P00435119]!; isolecto-: P [P00435120, P00435121]!).

Observations. – *Vernoniopsis lokohense* was originally recognized as a subspecies of *V. caudata* by HUMBERT (1955a, 1960-1963). This shrubby tree, endemic to the Marorejy area, differs from *V. caudata* by its much smaller leaves c. 1 × 3-6 cm (vs. 2-3 × 10-12 cm in *V. caudata*), and its smaller fruits, the achene c. 3 mm long and the pappus c. 4 mm long (about twice as long in *V. caudata*). *Vernoniopsis lokohense* is only known from the Lokoho basin in the Marojejy area on bare rocks or in ericoid thicket, and has mostly been collected at elevations over 1300 m (Fig. 2), whereas *V. caudata* is known from littoral forests on sand from South of Antalaha to Tolagnaro, mostly at under 50 m. This taxon was described on the basis of four collections: *Humbert & Capuron 21943*, *Humbert 23252*, *Humbert 23556* and *Humbert & Cours 23716*. We designate one of the three P sheets of *Humbert & Capuron 21943* as the lectotype because it is the most representative.

Conservation status. – With an EOO of 458 km², an AOO of 18 km² and 3 subpopulations, one encompassed in a protected area (Marojejy), *V. lokohensis* is assigned a preliminary status of Endangered (EN B1ab[i, iii], B2ab[i, iii]) following the IUCN Red List Categories and Criteria (calculation following CALLMANDER & al., 2007).

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References

ANDERBERG, A. A., B. G. BALDWIN, R. G. BAYER, J. BREITWIESER, C. JEFFREY, M. O. DILLON, P. ELDENAS, V. FUNK, N. GARCIA-JACAS, D. J. N. HIND, P. O. KARIS, H. W. LACK, G. NESOM, B. NORDENSTAM, C. OBERPRIELER, J. L. PANERO, C. PUTTOCK, H. ROBINSON, T. F. STUESSY, A. SUSANNA, E. URTUBEY, R. VOGT, J. WARD & L. E. WATSON (2007). Compositae. *In:* KADEREIT J.W. & C. JEFFREY (ed.), *The families and genera of vascular plants*, 8: 61–588.

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* 42: 168-176.

DRAKE DEL CASTILLO, E. (1899a). Sur deux genres de Madagascar, de la famille des Composées: Cullumiopsis n. gen. et Centauropsis Bojer. *Bull. Mus. Hist. Nat. (Paris)* 2: 100-104.

DRAKE DEL CASTILLO, E. (1899b). Les Vernonia de Madagascar. *Bull. Soc. Bot. France* 46: 225-244.

GRANDIDIER, A. (1897). *Histoire physique, naturelle et politique de Madagascar* 6. Paris, Hachette.

HUMBERT, H. (1923). *Les Composées de Madagascar*. Thèse de Doctorat, Université de Caen.

HUMBERT, H. (1955a). Une merveille de la nature à Madagascar. Première exploration botanique du massif du Marojejy et ses satellites. *Mém. Inst. Sci. Madagascar, Sér. B, Biol. Vég.* 6: 1-211.

HUMBERT, H. (1955b). Les territoires phytogéographiques de Madagascar. Leur cartographie. *Année Biol.* ser. 3, 31: 439-448.

HUMBERT, H. (1960-1963). Composées. *In:* HUMBERT, H. (ed.), *Fl. Madagascar Comores* 189. Muséum national d'Histoire naturelle, Paris.

IUCN (2001). *IUCN Red List Categories and Criteria: Version 3.1.* IUCN Species Survival Commission, IUCN, Gland, Switzerland; Cambridge, United-Kingdom.

MADAGASCAR CATALOGUE (2011). Catalogue of the Vascular Plants of Madagascar [http://www.efloras.org/madagascar].