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Journal international de botanique systématique

2010 Année Internationale de la Diversité Biologique

CONSERVATOIRE ET JARDIN BOTANIQUES
DE LA VILLE DE GENÈVE

65(2)

Editions des Conservatoire
et Jardin botaniques

DÉPARTEMENT DE LA CULTURE VILLE DE GENÈVE

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The genus Korthalsella (Santalaceae) in Madagascar

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9 décembre 2010

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3. CALLMANDER Martin W., Peter B. PHILLIPSON, Roy E. GEREAU, Gérard AYMONIN & Amir SULTAN: The genus Korthalsella (Santalaceae) in Madagascar

Introduction

Philibert Commerson was the first person known to have used the name *"Viscum taenioides",* handwritten on labels for his collections from Reunion Island and Madagascar. For nearly two centuries, the nomenclatural validation of this species name in the literature has been attributed to CANDOLLE (1830), both in the genus *Viscum* L. and after its transfer by ENGLER (1897) to the genus *Korthalsella* Tiegh. (now treated as *Santalaceae).* Recently, MOLVRAY (1997), in her synopsis of the genus based on morphometric (MOLVRAY, 1990) and molecular phylogenetic studies (MOLVRAY & al., 1999), treated it as a broadly circumscribed species distributed from Africa, the Indian Ocean basin, and Oceania to the Pacific Islands.

Our review of the genus *Korthalsella* for Madagascar has revealed that Commerson's name was first validly published by JUSSIEU (1789) and not by CANDOLLE (1830), and should be cited as *Viscum taenioides* Juss. Furthermore, we judge Jussieu's original material to represent a different species from the specimens that were later seen by CANDOLLE (1830), which have been associated wrongly with *V. taenioides* ever since. The name *Korthalsella taenioides* (Juss.) Engl. has thus been consistently misapplied. We aim to clarify this confusion in the present note, and to account for the other species of the genus that are known from Madagascar: *K. gaudichaudii* (Tiegh.) Lecomte, *K. japonica* (Thunb.) Engl. and *K. madagascarica* Danser.

The identity of *Korthalsella taenioides*

The name *Viscum taenioides* (or the orthographic variant *"Viscaria taenioides")* appears on original handwritten collector's labels that accompany a Commerson gathering from "Bourbon" (now Reunion Island). The known specimens comprise: one sheet at P-JUSS (n° 10117); two sheets in the general collection at P [P00578618, P00578617] and a single sheet at G [G0096606]. These herbarium sheets bear other labels in Antoine-Laurent de Jussieu's handwriting, stating that he hesitates whether the species is new or should be identified as *Viscum opuntioides* L. (see also DANSER, 1937: 139). A second Commerson gathering from Madagascar is known, comprising a specimen at P-JUSS (n° 10118), a duplicate in the general herbarium at P [P00648559] and another at G [G0009 6606]. These specimens also bear labels with the name *"Viscum taenioides"* in Commerson's handwriting. The specimen at P-JUSS also bears a label on which it is written in the hand of Adrien-Henri de Jussieu's (Antoine-Laurent Jussieu's son): "… J'ai adopté néanmoins le nom [Viscum] taenioides pour ce gui…" [… I have nevertheless adopted the name taenioides for this mistletoe…].

The earliest publication of the name *V. taenioides* was by the elder JUSSIEU (1789: 213) who, referring to the genus *Viscum*, wrote in his *Genera Plantarum: "Frutices aut suffrutices parasitici; quidam aphylli ramis compressis quasi articulatis, ut in V. opuntioïde L. & in V. taenioïde Commers. cujus articuli breviores creberrimi";* i.e. "parasitic shrubs or

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subshrubs; some leafless with branches flattened and almost articulated, as in *V. opuntioides* and *V. taenioides* Comm. whose articles [i.e. of the latter species] are shorter and very crowded". This final phrase clearly refers to the peculiar and distinctive short, broad internodes (articles) and congested overlapping branches of the specimen from Madagascar that contrast with the much longer and narrower internodes and more open branching of the gathering from Reunion, and this phrase thus constitutes a validating diagnosis for *Viscum taenioides* Juss. It is clear that Jussieu regarded the specimen from Madagascar and the plant from Reunion to represent different species, a view with which we entirely concur.

Viscum taenioides was later mentioned by Du Petit-Thouars (1811: 43), who provided no descriptive information, but clearly referred to Jussieu, and stated the plant to be common in W. Indian Ocean islands as a whole. However in his treatment of *Viscum,* Candolle (1830: 283) appears to have overlooked the fact that the name *V. taenioides* had been published by Jussieu, referring only to Du Petit-Thouars (1811). Under the name *V. taenioides,* Candolle referred to a species from Mauritius and Reunion based on material he had in his herbarium (G-DC), attributing it to "Comm. ex Thouars". By referring to Du Petit-Thouars, Candolle (1830) was making an indirect reference to an already existing name, i.e. *V. taenioides*, but misapplied the name to a different species. Because Candolle (1830) did not fulfill the requirements for valid publication of a new name, his circumscription of *V. taenioides* does not constitute the publication of a later homonym and has no nomenclatural status.

Engler (1897: 138) transferred *V. taenioides* to the genus *Korthalsella*. He referred to the origin of the plant as "Bourbon", perpetuating the incorrect application of the name. The lectotypification of *K. taenioides* by Molvray (1997: 269) cannot be accepted either because the specimen selected (G [G0096606]) is not part of the original material studied by Jussieu. Actually, no lectotypification is required, since the P-JUSS specimen should be regarded as the holotype.

Tieghem (1896) independently described *Bifaria commersonii* Tiegh. (≡ *Korthalsella commersonii* (Tiegh.) Danser) based on the Commerson collection in the general herbarium in P [P00648559] that is an isotype of *Viscum taenioides,* without reference to Jussieu's publication. *Bifaria commersonii* Tiegh. is therefore a heterotypic synonym of *K. taenioides.*

Korthalsella taenioides (Juss.) Engl. in Engler & Prantl, Nat. Pflanzenfam. Nachtr. II-IV: 138. 1897.

≡ *Viscum taenioides* Juss., Gen. Pl.: 213. 1789.

Typus: Madagascar. *Commerson s.n.* (holo-: P-JUSS [cat. n° 10118]!; iso-: G [G00096602]!; P [P00648559]!).

= *Bifaria commersonii* Tiegh. in Bull. Soc. Bot. France 43: 176. 1896. ≡ *Loranthus commersonii* (Tiegh.) Lecomte, Cat. Pl. Madagascar: 7. 1932. ≡ *Korthalsella commersonii* (Tiegh.) Danser in Bull. Jard. Bot. Buitenzorg 14: 154. 1937. **Typus: Madagascar:** 1770 or 1771, *Commerson s.n.* (holo-: P [P00648559]!; iso-: G [G00096602]!; P-JUSS [cat. n°10118]!).

Commerson's Madagascar collections generally lack any collection localities or dates, but are believed to have been made in 1770 and 1771 along the east coast, mainly in the south-east near the town Taolagnaro (Dorr, 1997); we therefore cannot determine the exact collection locality of the type of *K. taenioides.* In 1924, some 150 years after Commerson first collected it, a second gathering of the species was made *(Perrier de la Bâthie 16157)* in the Tsaratanana Mountain in northern Madagascar. In the last four years, the species was rediscovered on the eastern slopes of Madagascar at Ambatovy, near Moramanga (Fig. 1) *(Antilahimena & al. 6790 & 7526, Razanatsoa & Marcellin 274).* After a careful examination of the specimens available, and keeping in mind the exceptionally rich and highly endemic biota of Madagascar (Goodman & Benstead, 2005), we consider *K. taenioides* to be endemic to Madagascar, where it is known only from two rather distant localities. A more complete molecular study is currently being undertaken by one of us (AS), to better understand this extraordinary species and its systematic position within the genus.

The other species of *Korthalsella* in Madagascar

Much of the material wrongly referred to *K. taenioides* (or *Viscum taenioides*) by Candolle (1830) and latter authors is probably best referred to *Korthalsella japonica* s.l. (= *K. opuntia* (Thunb.) Merr. sensu Danser, 1937). This includes some specimens from the Western Indian Ocean Islands (Fig. 2), notably type material of the following: *Bifaria bojeri* Tiegh. (≡ *Korthalsella opuntia* var. *bojeri* (Tiegh.) Danser), holotype from the Mascarenes; *Bifaria humblotii* Tiegh. (≡ *Korthalsella humblotii* (Tiegh.) Engl.), holotype from the Comoros; *Bifaria richardii* Tiegh. (≡ *Korthalsella richardii* (Tiegh.) Engl.), syntypes from Madagascar and the Mascarenes. The taxonomy of *K. japonica,* a widely-distributed species that also occurs in Africa, the Himalayas, southern China, Tropical Asia, and Australia, is complex and is currently under investigation by one of us (AS).

Fig. 1. – Living plant of *Korthalsella japonica* (Thunb.) Engl. at Kalabenono corresponding to collection *Callmander & al. 640.* [Photo: M. W. Callmander]

Among other material from Madagascar and the Mascarenes that has been variously treated as a separate species or as a variety of *K. japonica* (or the misunderstood *K. taenioides)* is a plant that stands out morphologically, having distinctive long, flattened internodes with typically five longitudinal ribs that are broadest towards the apex and attenuate at the base. The correct name for this plant is *K. gaudichaudii;* it was effectively lectotypified by Molvray (1997) on a specimen from Reunion at P *(Gaudichaud s.n.;* lecto-: P [P00568720]!).

The fourth species that occurs in Madagascar is *K. madagascarica.* Molvray (1997) placed it in synonymy under *K. salicornioides* (A. Cunn.) Tiegh., which is endemic to New Zealand. Both species have cylindrical internodes and decussate phyllotaxy, but *K. madagascarica* is distinct from *K. salicornioides* in being somewhat larger and having longer internodes (see Danser, 1937). *Korthalsella salicornioides* is parasitic on *Leptospermum scoparium* Forst. & Forst. f. s.l. and *Kunzea ericoides* (A. Rich.) Joy. Thomps. s.l. (both *Myrtaceae*), while *Korthalsella madagascarica* has been recorded on *Diospyros* L. *(Ebenaceae)* and *Leptolaena* Thouars (*Sarcolaenaceae,* a family endemic to Madagascar) (Balle, 1960). Palynological data suggest a smaller pollen size for *Korthalsella madagascarica* (P axis 25 µm, E plane 16 µm) (Muller & al., 1989) compared with *K. salicornioides* (P axis 26-33 µm, E plane 20-25 µm) (Moar, 1993).

Acknowledgements

We thank Nicolas Fumeaux at the Conservatoire et Jardin botaniques in Geneva for his kind assistance and help with the Candolle herbarium (G-DC) and Patrice Antilahimena (Missouri Botanical Garden, Antananarivo) for photographing and recollecting specimens at Ambatovy. Financial support was provided to MWC and PBP by grants from the U.S. National Science Foundation (0743355) and the Andrew W. Mellon Foundation.

Fig. 2. – Living plant of *Korthalsella taenoides* (Juss.) Engl. at Ambatovy corresponding to collection *Antilahimena & al. 7526*. [Photo: P. Antilahimena]

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