WEBBIA Journal of Plant Taxonomy and Geography

Firenze University Press
www.fupress.com/webbia

OPEN ACCESS

Citation: Krishnaraj M.V.N., Saritha Chandran A.C. (2023) Notes on the lectotypification of *Crotalaria nana* Burm.f. (Leguminosae: Papilionoideae). *Webbia. Journal of Plant Taxonomy and Geography* 78(2): 131-134. doi: 10.36253/jopt-14611

Received: April 14, 2023

Accepted: May 24, 2023

Published: October10, 2023

Data Availability Statement: All relevant data are within the paper and its Supporting Information files.

Competing Interests: The Author(s) declare(s) no conflict of interest.

Editor: Lia Pignotti

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Notes on the lectotypification of *Crotalaria nana* Burm.f. (Leguminosae: Papilionoideae)

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Abstract. *Crotalaria nana* Burm.f., is lectotypified using a G-PREL collection after reviewing earlier typifications.

Keywords: *Crotalaria*, Fabaceae, nomenclature, Papilionoideae, typification.

INTRODUCTION

The genus *Crotalaria* L. is represented globally with 702 species displaying its maximum diversity in Africa and Madagascar (Le Roux et al. 2013). In India, the genus is represented by 102 species, 3 subspecies, 19 varieties, and 2 forms (Ansari and Chauhan 2020). After the comprehensive taxonomic study of this genus in India (Ansari 2008), recently Ansari and Chauhan (2020) published an annotated, photographed checklist of *Crotalaria* in the country, where remaining lectotypification was presented. However, due to various reasons, Turner (2021) Lectotypified and Neotypified 17 names under the genus *Crotalaria* L., thus superseding many of the earlier typifications.

During the phytochemical and reproductive biological studies on *Crotalaria* L. in India, with special emphasis on Pyrrolizidine alkaloids, we have collected several accessions of *Crotalaria nana* Burm.f. and *Crotalaria nana* var. *umbellata* (Wight ex Wight) Trimen from various parts of the Southern Western Ghats. While going through the literature, we found some discrepancies in the lectotypification of *Crotalaria nana* Burm.f., which are discussed below. The lectotypes are selected based on Art. 9.3 and 9.12 of the Shenzen Code (Turland et al. 2018). Herbarium acronyms follow Thiers (2016).

Nicolaas Laurens Burman (1734–1793), son of Johannes Burman (1706–1779), was a Dutch physician and a botanist at Amsterdam who described *Crotalaria nana* Burm. f. in 1768. In the protologue, he described *Crotalaria nana* as having "*foliis, simplicibus, oblongis, subsessilibus, glabris, pedunculis lateralibus trifloris, Crotalaria minor benghalensis, flore luteo, Crotalaria mal-*

abarica Garcin. Herb., habitat in India. " From the diagnosis, it is clear that he saw the generative specimen of *Crotalaria nana* with yellow flowers, which are three in number per inflorescence. He might also have seen the collections of Laurent Garcin, a Dutch army physician who travelled in Flanders, Spain, and Portugal and made three trips to the East Indies, India, Ceylon, Arabia, and Persia—between 1720 and 1729. The original collections of Garcin are destroyed, but several sets of specimens collected by Garcin are at G (in the Burman herbarium, and currently cited under the acronym G-PREL in the herbarium of the Conservatory and Botanic Garden of Geneva) and at L (Stafleu and Cowan 1976).

Merrill (1921), who was a pioneer in reviewing the names published in N.L. Burman's *Flora Indica* (1768), cited tab. 48. f.2 "Habitat in India" after *Crotalaria nana* Burm.f. He reviewed 10 names in Leguminosae published in *Flora Indica* without studying the original material either collected by N. L. Burmann or others, at the pre-Linnean collection of the Geneva Herbarium (G-PREL).

Niyomdham (1978) also gave an indication about the type material under the distribution data, however abstained from typification. Adema (2006) while providing notes on Malesian Fabaceae, incorporated a taxonomic key only to *C. nana* and not tried to designate a type. Ansari (2008) cited tab. 48. Fig. 2 of protologue! as the type and not used "designated here" or *hic designatus* or equivalent for effective lectotypification. So this cannot be taken as an inadvertent lectotypification. Later, Ninakaew et al. (2017) cited Walker *s.n.* (K000591116!) as the holotype. Further Ansari & Chauhan (2020) cited it in a different way as Lectotype: tab. 48. fig. 2. of protologue! India; *Walker s.n.* (K000591116!), designated here. Here also, tab 48. fig. 2. of protologue lacks an explicit statement "designated here", or *hic designatus* or an equivalent. Burman filius neither studied a Walker specimen nor gave any indication through the protologue proposed in the publication.

After studying the virtual specimens available at K (K000591116, duplicates at E, M) that have been cited by Ansari and Chauhan (2020) and Ninakaew et al. (2017) as types, we confirmed the identity as *Crotalaria umbellata* (Wight ex Wight) Trimen, (not *Crotalaria umbellata* (Wight ex Wight) Ansari as has been cited in many literature). *Crotalaria umbellata* is characterised by short inflorescences, 4-9 flowers, caducous bracts and glabrous keel margin. The base of the stem has numerous branches. Eventhough *Crotalaria nana* shows profuse branching from the base of the stem, the inflorescence bears just 1-3 flowers, persistent bracts and puberulous keel border (Ninakaew et al. 2017; Ansari 2008). The persistent nature of the bracts and 2-3 flowers are clearly illustrated in the tab. 48 f.2. (See Burman 1768).

According to Stafleu and Cowan (1976), the specimens of N.L. Burman are incorporated in the herbarium of the Conservatory of Geneva, most specifically in the pre-Linnean collection cited as G-PREL, and contain most of the types. Some of the type specimens are also available at L, and M. The Thunberg Herbarium (UPS) contains "Burman" (father and son) material from the Cape that was gathered by Herman, Oldenland, Hartog, and other Burman correspondents.

While going through the historical collections at G-PREL we have found an annotated specimen (G00812546) with the handwriting of Burman filius that closely matches the protologue. The specimen bears, solitary flowers (see the second branch from left to right of Figure 1.) as well as 3 flowers, as mentioned in the protologue. Hence, it is here designated as the lectotype of *Crotalaria nana* Burm.f. A duplicate of the same is also available at Munich herbarium (M0219504), which is here designated as the isolectotype.

The M specimens also bears 1–3 flowers, per inflorescence. In the lower-bottom corner of G-PREL specimen, somebody (May be Augustin Pyramus de Candolle who directly studied it (v.s. in h. Deless.) as evidenced through the notes in his *Prodromus* Volume 2. page no.127.1825) wrote the identity as *Crotalaria biflora* Linn. This might be a later writing when compared with the former elaborate one at the middle right hand side, where N.L. Burman doubted the specimen as *Crotalaria triflora* (because of three flowers per inflorescence) of Linnaeus Sp.Pl. 2: 715. No.5. This reflects his correspondence and involvement with Linnean materials. Currently, *Crotalaria triflora* L. is considered as a synonym of *Rafnia triflora* Thunb. (see POWO 2023).

NOMENCLATURE

Crotalaria nana Burm. f. Fl. Indica 156. 1768.

Type: s.l., s.d., *Anonymous s.n.* (G-PREL!, barcode G00812546!, lectotype designated here; India, s.d., *Anonymous s.n.* (M! barcode M0219504!, isolectotype). Figure 1.

ACKNOWLEDGEMENTS

Authors are grateful to Dr. Subir Bandyopadhyay, Retired Scientist, Botanical Survey of India (CAL) for all the help. We are also thankful to Geneva and Munich

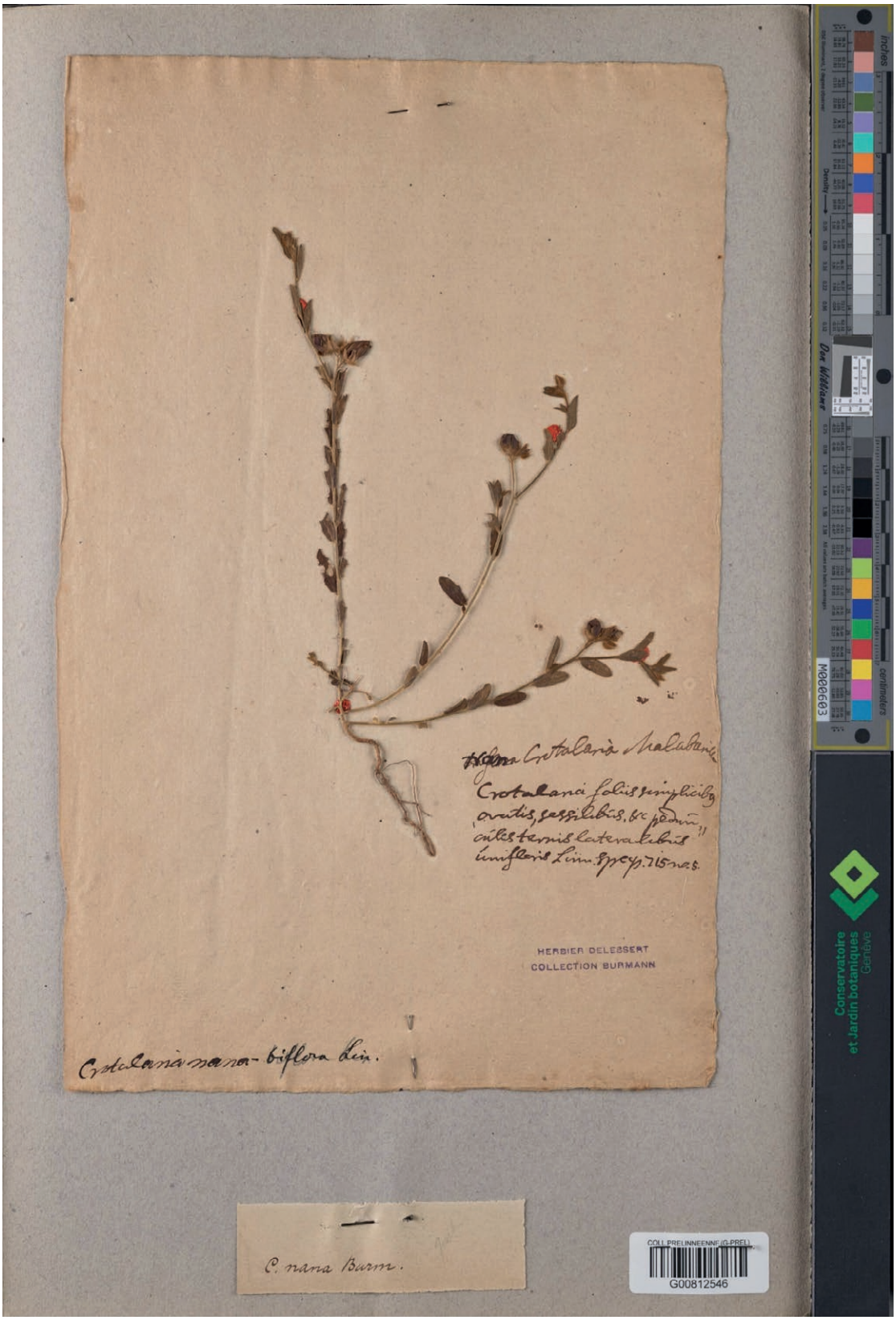

Figure 1. Lectotype of *Crotalaria nana* Burm.f. (G00812546). @ Conservatoire & Jardin botaniques de la Ville de Genève.

Herbaria (G-PREL & M) for providing digitised images of types, that helped to sort the problem.

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