A Revision of the Genus *Minthostachys* (Labiatae)

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ABSTRACT

Schmidt-Lebuhn, A. N. (Abteilung Systematische Botanik, Albrecht-von-Haller-Institut für Pflanzenwissenschaften, Georg-August-Universität Göttingen, Untere Karspüle 2, 37073 Göttingen, Germany. Present address: Abteilung Pflanzenökologie, Institut für Biologie/Geobotanik und Botanischer Garten, Martin-Luther-Universität Halle-Wittenberg, Am Kirchtor 1, 06108 Halle, Germany. schmidtleb@yahoo.de). A revision of the genus *Minthostachys* (Labiatae). Mem. New York Bot. Gard. 98: 1–75. 2008.—The present taxonomic revision of *Minthostachys* (Benth.) Spach (Labiatae, subfamily Nepetoideae, tribe Mentheae) is the first treatment of the genus since 1936. The genus is considered to include 17 species, one of them with three varieties and four of them forming a species group. *Minthostachys acris*, *M. dimorpha*, *M. elongata*, *M. fusca*, *M. latifolia*, *M. mollis* var. *hybrida*, *M. rubra*, and *M. septentrionalis* are described as new, and *M. mollis* var. *mandoniana* represents a change in status. For all species and varieties, full descriptions, illustrations, and information on distribution, ecological preferences, common names, and uses are provided.

RESUMEN

Schmidt-Lebuhn, A. N. (Abteilung Systematische Botanik, Albrecht-von-Haller-Institut für Pflanzenwissenschaften, Georg-August-Universität Göttingen, Untere Karspüle 2, 37073 Göttingen, Germany. Dirección actual: Abteilung Pflanzenökologie, Institut für Biologie/Geobotanik und Botanischer Garten, Martin-Luther-Universität Halle-Wittenberg,

Am Kirchtor 1, 06108 Halle, Germany. schmidtleb@yahoo.de). A revision of the genus *Minthostachys* (Labiatae). Mem. New York Bot. Gard. 98: 1–75. 2008.—La presente revisión de *Minthostachys* (Benth.) Spach (Labiatae, subfamilia Nepetoideae, tribus Mentheae) representa la primera investigación taxonómica y sistemática del género desde el año 1936. Aquí, el género está considerado como incluir a 17 especies, una de ellas divisa en tres variedades, y cuatro de ellas formando un grupo de especies. *Minthostachys acris*, *M. dimorpha*, *M. elongata*, *M. fusca*, *M. latifolia*, *M. mollis* var. *hybrida*, *M. rubra* y *M. septentrionalis* estan descritos como nuevas, y *M. mollis* var. *mandoniana* representa un cambio en estatus. Por todas especies y variedades, se hace disponible descripciones, ilustraciones y informaciones detalladas sobre distribución, preferencias ecológicas y usos.

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INTRODUCTION

Minthostachys (Benth.) Spach (Labiatae) is a genus of aromatic, scandent shrubs distributed along the Andes from Venezuela to Argentina. Members of the genus are of considerable interest as medicinal plants and a source of ethereal oils (e.g., Lagroteria de Galán et al., 1987; Bocco et al., 1997), and are used by the local population much like plants of the superficially similar genus *Mentha* L. in Europe. Consequently, numerous publications deal with the oil content, potential uses, and cultivation of *Minthostachys*. In contrast, our knowledge of the morphological variability and distribution of species is fragmentary and outdated, with the last examination of the genus dating back about 70 years (Epling, 1936). Since then, exhaustive new collections have become available, and differing opinions about the usefulness of species delimitations in *Minthostachys* (Epling & Játiva, 1963; Harley & Heywood, 1992) have led to the uncomfortable situation that new collections are either determined to species according to Epling (1936), assigned to an extremely polymorphic *M. mollis* s.l. regardless of provenance or morphology, or are simply dismissed as indeterminable. This not only hampers our understanding of the diversity of the genus, but also negates the comparability of ethnobotanical, pharmacological, and other studies. The aim of the present study, therefore, was to provide a modern taxonomic treatment of *Minthostachys*, to accompany molecular studies published elsewhere (Schmidt-Lebuhn, 2007; Schmidt-Lebuhn, 2008).

TAXONOMIC HISTORY

The first specimens of *Minthostachys* were probably collected between 1777 and 1788 by Ruiz and Pavón, who labeled them "*Mentha* spec. nov. del Peru" (and, in one case, "*Lantana* spec. nov."), but did not describe them as a new species. Thus, the publication of the oldest name, *Bystropogon mollis*, was a result of the voyage of Humboldt and Bonpland (Kunth, 1816). Besides the type specimen, Humboldt and Bonpland collected at least two other specimens, deposited at B, which were not cited in the original species description. They are labeled with the specific epithets "confertus" and "reticulatus," but these names were obviously disregarded before publication.

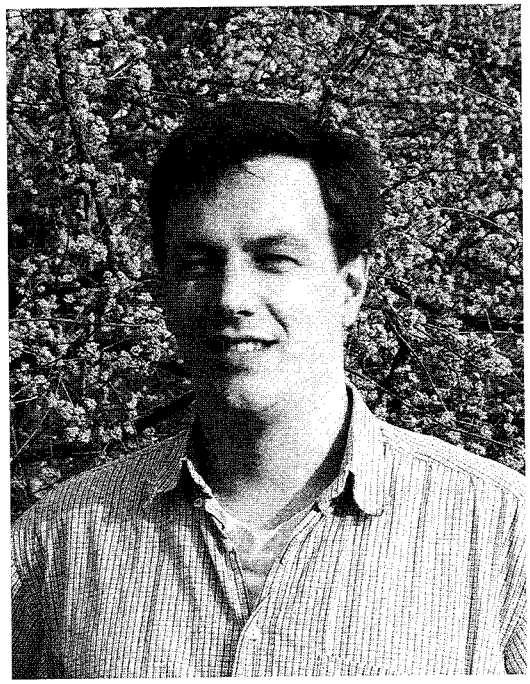
In his monumental attempt to present all species of the Labiatae in one work, Bentham (1832) transferred *Bystropogon mollis* to *Mentha*, but also described *Bystropogon spicatus*, *B. tomentosus*, and *B. canus*. At the same time, he created the section *Minthostachys* to accommodate the South American species of *Bystropogon*. Later (1839), he added *B. glabrescens* as a fourth species.

In his work for de Candolle's *Prodromus*, Bentham (1848) had another opportunity to reorganize *Bystropogon*. He maintained his concept of sections *Minthostachys* for South America and *Bystropogon* for Macaronesia, but had to exclude a multitude of mostly South American species of various affiliations, which had been placed in *Bystropogon* by other authors, many of them today members of *Hyptis* Jacq. He also corrected his earlier mistake concerning *Mentha mollis,* listing it again as a *Bystropogon,* so that the section now comprised five species.

The treatment of *Minthostachys* as a separate genus was first proposed by Spach (1840) and later by Bunge (1873), but neither publication was accompanied by a diagnosis, and no species were transferred. Grisebach (1874) supplied a diagnosis for the new genus with explicit reference to Bunge's suggestion, though the only taxon he transferred was *Minthostachys mollis*. In the same publication, Grisebach described *Xenopoma verticillatum* as a new species without recognizing its affiliation with the new genus.

The turn of the century witnessed a rapid increase in the number of taxa belonging to our genus, but all these additions were first described as members of *Bystropogon*. Briquet (1896, 1897a) created *Bystropogon andinus* var. *hypoleucum* [sic], *B. kuntzeanus*, *B. mandonianus*, *B. ovatus*, *B. pavonianus*, and *B. setosus*, but also *B. minutus* and *B. uniflorus*, which are today synonymized with species of *Clinopodium* s.l. (Harley & Granda, 2000). Unfortunately, many of these names were based on rather poor specimens collected by Kuntze, and some are obvious synonyms. Another oversight was the publication of a *B. andinus* var. *hypoleucus* Briquet without defining *B. andinus* (var. *andinus*). *Bystropogon andinus* was therefore validated shortly thereafter by Rusby (1900). Kuntze himself (1898) added two varieties of *B. setosus* based on type of aromatic scent.

The most extensive study of *Minthostachys* as a whole was published by Epling (1936) as part of his "Synopsis of the South American Labiatae." Like Bentham before him, he postulated a very close relationship with *Bystropogon* s.str. and, especially, North American *Pycnanthemum* Michx. After commenting at length about the difficulties of delimiting the species ("Yet to find a formula for a rigid separation of species upon single characters is impossible")



ALEXANDER N. SCHMIDT-LEBUHN

Alexander N. Schmidt-Lebuhn was born on August 25, 1976, in Johannesburg, Republic of South Africa. He received his diploma in Biology (MS) at the Department of Systematic Botany of the University of Göttingen, Germany, in 2002, and went on to obtain his Doctor rerum naturalium (PhD) at the same university in 2005, submitting a dissertation about the Andean genera *Polylepis* (Rosaceae) and *Minthostachys*. Since 2006, he has been working as a postdoc researcher at the Department of Plant Ecology of the University of Halle, Germany. While his current research focuses on pollination ecology and genetic structure of selected species of New World *Justicia* (Acanthaceae), he is also continuing his work on *Minthostachys*.