



Busted ghosts: Rediscovery of supposedly destroyed types of Brazilian *Mimosa* (Leguminosae, Mimosoideae)

LEONARDO MAURICI BORGES* & JOSÉ RUBENS PIRANI

Departamento de Botânica, Universidade de São Paulo, Rua do Matão 277, 05508-900, São Paulo, Brazil

*Corresponding author: aquitemcaqui@gmail.com

Abstract

In his monograph for neotropical *Mimosa*, Rupert Barneby made seemingly effective lectotypifications for a few binomials originally published by Taubert. He chose specimens in the Berlin herbarium (B), which he supposed had been destroyed. We hereby bring new evidence for the absence of these specimens in Berlin, their being in Hamburg (HBG) instead, and we designate them as lectotypes for the names in question.

Key words: Berlin, Brazil, Ernst Ule, Fabaceae, Hamburg, lectotype, nomenclature, typification

Introduction

Mimosa Linnaeus (1753: 516) is a large genus with more than 500 species distributed mainly in the neotropical region (Barneby 1991, Luckow 2005). Although broadly characterized by the constant presence of a craspedium-like fruit (and its derivatives) (Barneby 1991), *Mimosa* shows a wide range of morphological diversity, mainly in habit, encompassing life forms from trees to tiny subshrubs. Pachycaul treelets and shrubs with developed underground systems, apparently associated with fire regimes (Barneby 1991, Simon *et al.* 2009), occur in several *Mimosa* species from the Cerrado Domain in Central Brazil, the South American center of endemism of the genus (Luckow 2005, Simon & Proença 2000).

For a long time the Central Brazilian Plateau has been a target of botanical interest, having been explored by naturalists such as W.J. Burchell, A.F.M. Glaziou and E. Ule (Glaziou 1906, Smith & Smith 1967, Taubert 1896, Urban 1906). Particularly Ule visited some of the altitudinal areas highlighted by Simon & Proença (2000) as major centers of diversity for *Mimosa*, namely Chapada dos Veadeiros, Serra dos Cristais and Serra dos Pirineus in Goiás State, as well as Chapada da Contagem in the Federal District. In his expeditions to those areas, between 1892 and 1894, he collected a few *Mimosa* species that were later described by Taubert (1896), who worked at the Royal Botanical Museum (now the Botanic Garden and Botanical Museum Berlin-Dahlen), in Berlin, from 1889 to 1895 (Stafleu & Cowan 1986). Taubert's descriptions of *Mimosa* species, each based on a single collection, meet all the criteria for valid publication of names of new taxa (Articles 32–45 of the Code; McNeill *et al.* 2012), but they lack information about collections (or herbaria) holding the studied specimens, preventing a proper indication of holotypes.

Barneby (1991), in his comprehensive monograph of the genus and after studying European collections, apparently clarified the situation by making implicit lectotypifications, by citing a particular specimen as “holotypus”. As the protologues lack mention of herbaria, Barneby assumed that the holotypes would have been in the Berlin herbarium (B), where Taubert worked (see above), but he indicated them as having been destroyed (during World War II) by placing a plus sign “+” before the herbarium code “B” (Fig. 1). However, there may never have been duplicates of the types in Berlin, since there are no images of them among the Field Museum Berlin Negatives Collection (<http://fieldmuseum.org/explore/our-collections/berlin-negatives>), and most of Ule's collections below number 5000 were actually sent to Hamburg (HBG) (Matthias Schultz [<http://migre.me/hgGRS>], pers. comm., based on letters archived at HBG). Hence, Barneby's indications of these “holotypes” do not point to actual specimens and, thus, are not in accordance with Article 9.2 and 9.12 of the Code (McNeill *et al.* 2012); they are mere speculation, not to be accepted.

Whereas it is highly probable that those particular specimens collected by Ule were never at Berlin, and consequently were not destroyed, the species names are still lacking types and therefore demand proper lectotypification, which is provided below.

247. *Mimosa longepedunculata* Taubert, Bot. Jahrb. Syst. 21: 432. 1896.—“Habitat in valle fluvii Passa Tempo in ditone Maranhão superioris: ULE n. 2830—Flor. et fruct. m. Sept. [1892].”—Holotypus, +B; isotypi, HBG! P (*Ule* 7 in hb. Glaziov.)!

FIGURE 1. Example of an entry in Barneby (1991), for *Mimosa longepedunculata* Taub., which indicates the holotype as a destroyed specimen in the Berlin herbarium (“+B”).

Nomenclatural arrangements and notes

In order to properly designate lectotypes, we studied specimens held at the herbaria B, HBG, P and R (acronyms according to Thiers 2014+), as well as images personally provided by their staff, or stored at the Global Plants portal (<http://plants.jstor.org/>), the virtual collection of the Muséum National d’Histoire Naturelle (<http://science.mnhn.fr/institution/mnhn/item/search/form>), and the Herbarium Hamburgense Virtual Herbarium (<http://www.herbariumhamburgense.de>).

Labels of specimens collected by Ule usually bear a provisional number (in black ink) at the upper left corner, and his official sequential number added later in blue at the upper right corner (Matthias Schultz, pers. comm.). However, duplicates of several Ule specimens were distributed annotated only with the provisional number. Hence, in the following lectotype designations for *Mimosa* species names published by Taubert (1896), we selected the specimens held at HBG because they are chiefly the ones bearing Ule’s official numbering sequence cited in the protologues.

Notes on information not present in the protologues, but available on the specimen labels, appear inside brackets, and we follow the taxon sequence used by Taubert (1896).

Mimosa cyclophylla Taub. (Taubert 1896: 429–430). Lectotype (designated here): BRAZIL. Goiás: habitat in ditone Tocantini superioris in campis ad Paraizo, September 1892, fl., fr., *E. Ule* 2825 (HBG photo! [also annotated as “2”; “in der Chapadões unterhalb des Paraizo], isolectotype: R photo! [only annotated as “2”; “nos campos da região do Tocantins superior, Paraizo”]).

Mimosa paraizensis Taub. (Taubert 1896: 430). Lectotype (designated here):—BRAZIL. Goiás: habitat in ditone Tocantini superioris in campis ad Paraizo, September 1892, fl. [, fr. imm.], *E. Ule* 2824 (HBG photo! [also annotated as “1”; “in den Chapadões am Paraizo”]), isolectotypes: CORD photo! [also annotated as “1”; “in den Chapadões am Paraizo Maranhãogebiet”], P [indicated by Barneby 1991 as being annotated as “1”, but not found at the online database], R photo! [only annotated as “1”; “Nos campos da região do Tocantins superior, Paraizo”]).

Mimosa paraizensis was considered by Barneby (1991: 674) a synonym of *M. radula* var. *imbricata* (Bentham 1841: 378) Barneby.

Only two collections identified as *Mimosa paraizensis* were found in P’s online database (P03151832, P03151833). However, both were collected by Glaziou in January 1895. A personal examination of this collection is necessary in order to confirm the existence of an isotype at P.

Mimosa pyrenea Taub. (Taubert 1896: 430–431). Lectotype (designated here):—BRAZIL. Goiás: habitat in montibus Serra dos Pyreneos, August 1892, fl., *E. Ule* 2854 (HBG photo! [also annotated as “102”, “in der Serra dos Pyreneos”]), isolectotypes: P photo! [only annotated as “102”], R photo! [only annotated as “102”; “in der Serra dos Pyreneos”]).

Barneby (1991: 666) indicated that, in 1984, no duplicate of *Ule* 2854 was found at HBG and that the specimen *Ule* 2852 could be a misnumbered isotype. We were not able to verify whether this particular collection is a specimen of *Mimosa pyrenea*, but it is clearly not an isotype since *Ule* 2854 is indeed at HBG. Probably Barneby was not able to find this material due to organizational problems related to the evacuation of the Hamburg herbarium (Poppendieck 2001).

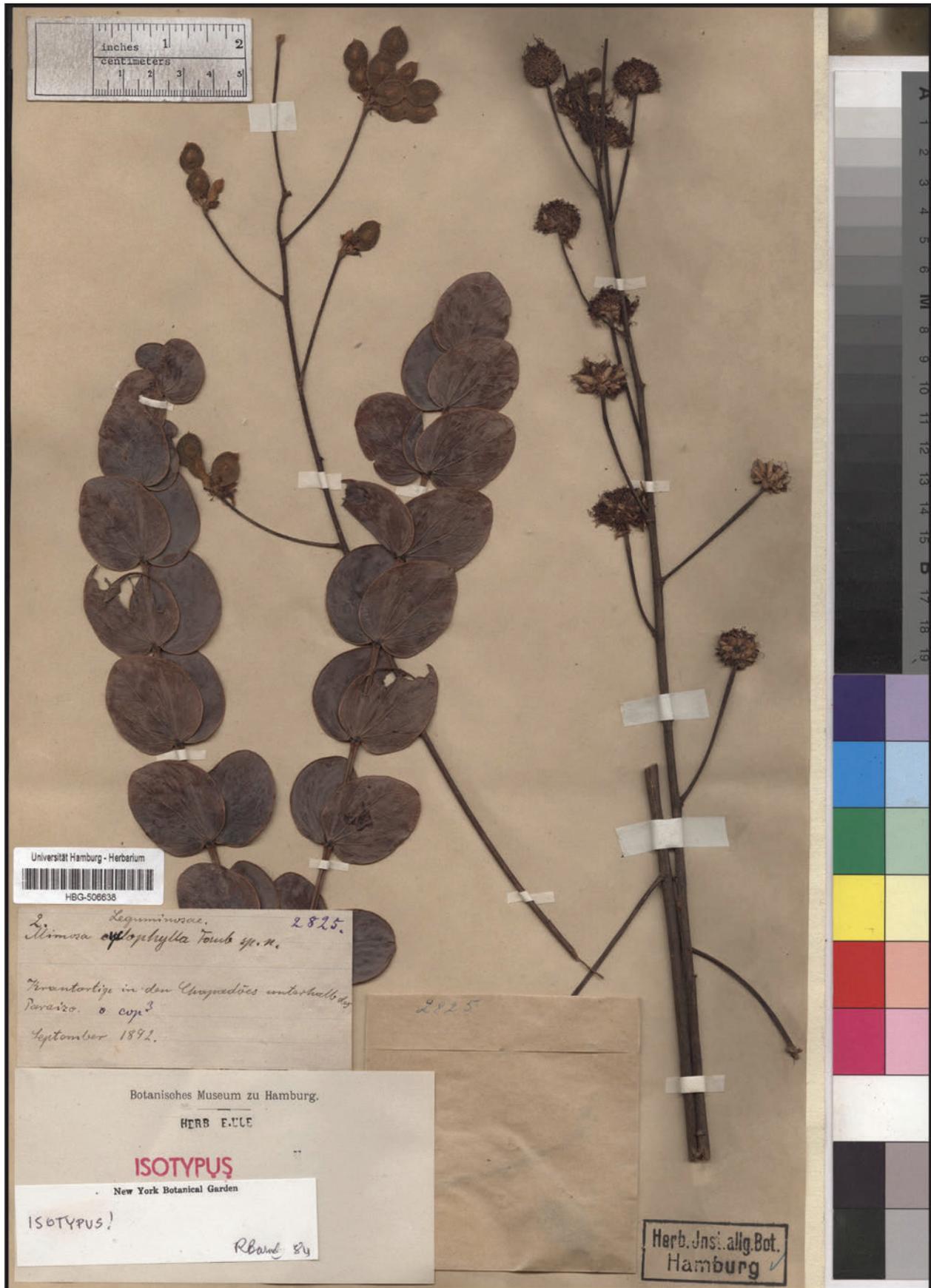


FIGURE 2. Lectotype of *Mimosa cyclophylla* Taub. (HBG 506638). Image used with permission and provided by the Herbarium Hamburgense.

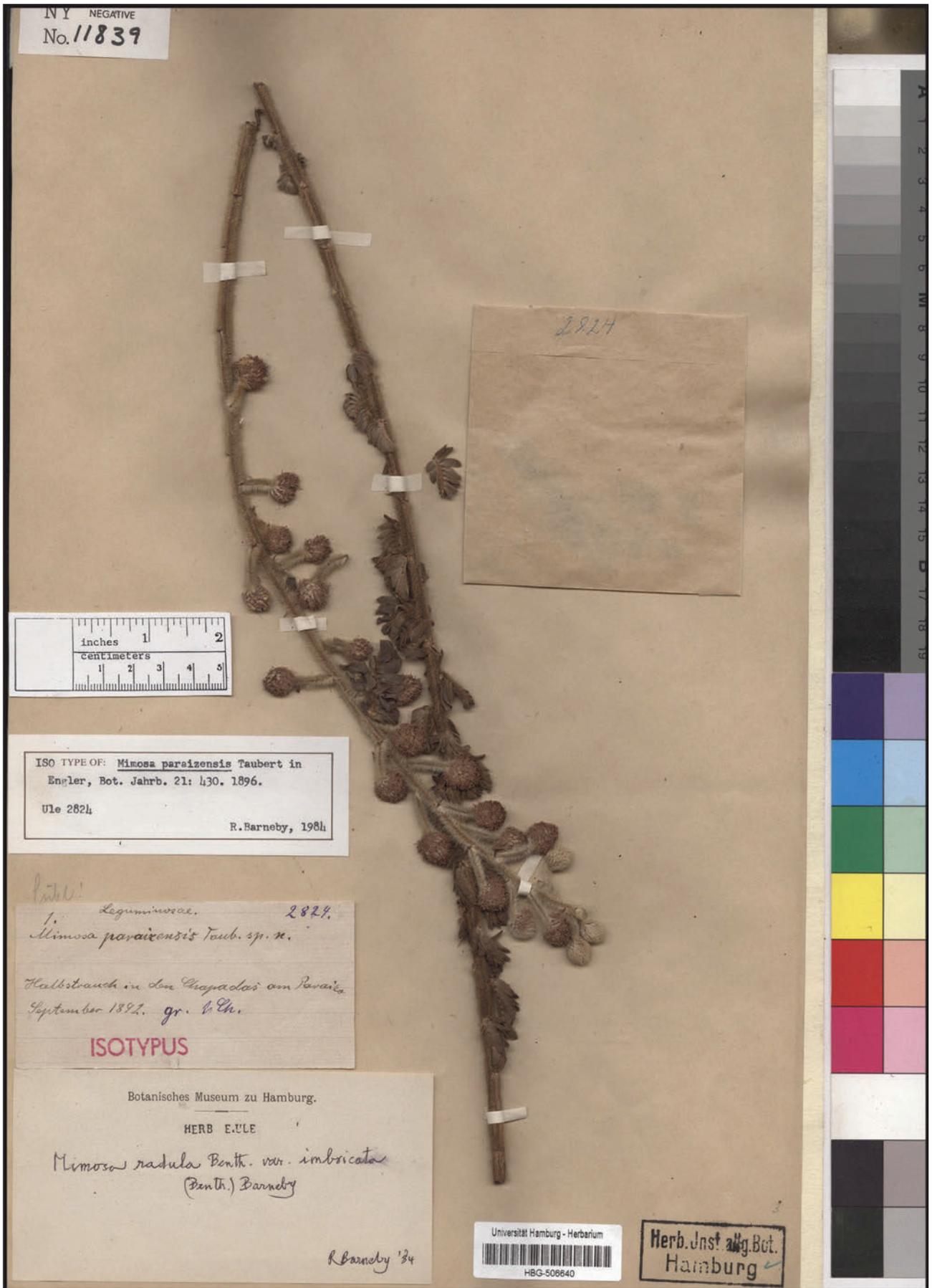


FIGURE 3. Lectotype of *Mimosa paraizensis* Taub. (HBG 506640). Image used with permission and provided by the Herbarium Hamburgense.

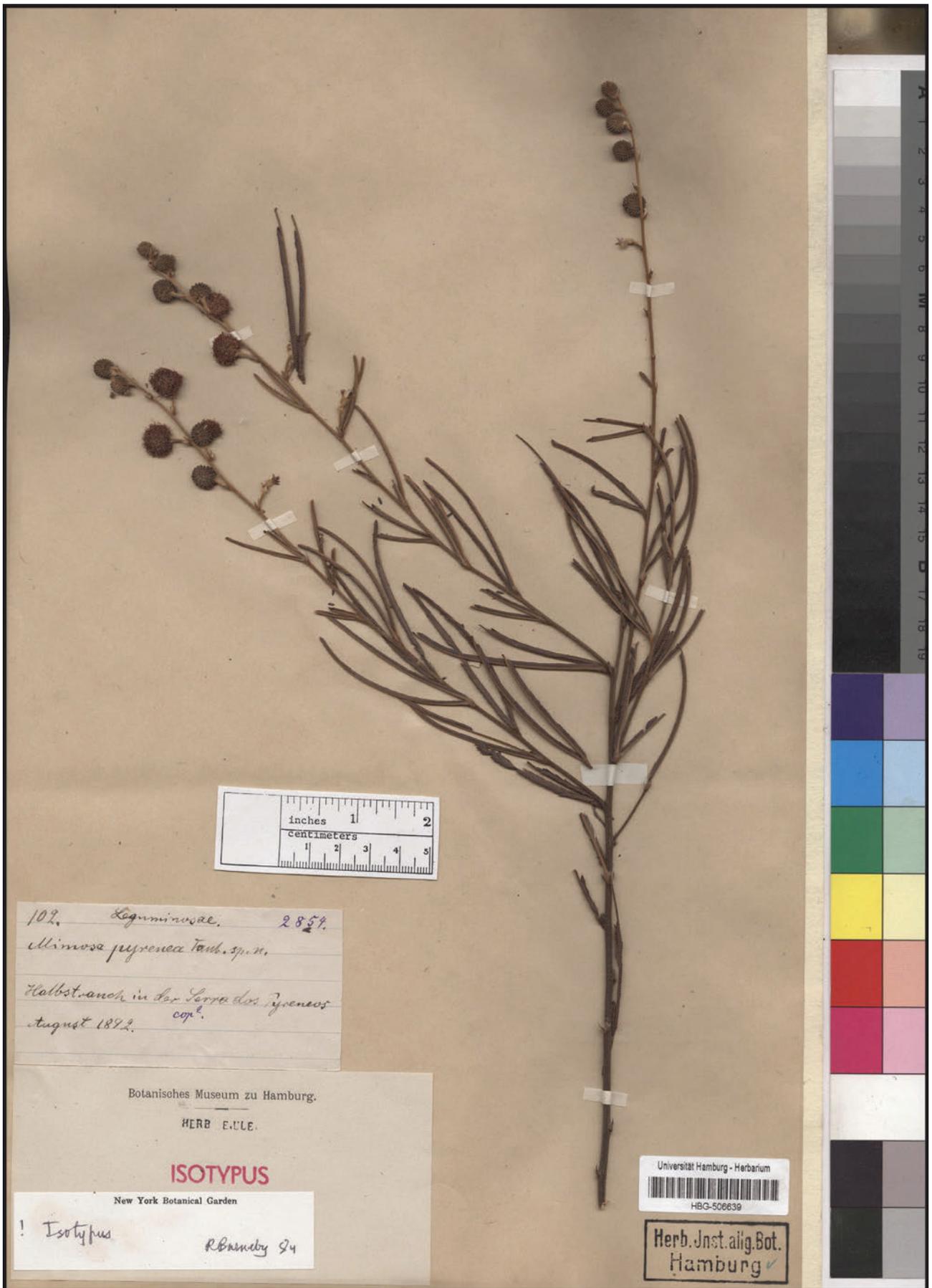


FIGURE 4. Lectotype of *Mimosa pyreneae* Taub. (HBG 506639). Image used with permission and provided by the Herbarium Hamburgense.

Mimosa speciosissima Taub. (Taubert 1896: 431). Lectotype (designated here):—BRAZIL. Goiás: Habitat in montibus Serra da Baliza, September 1892, fl., *E. Ule* 2828 (HBG! [also annotated as “5”], isolectotype: P! [only annotated as “5”; “Serra da Baliza”])).

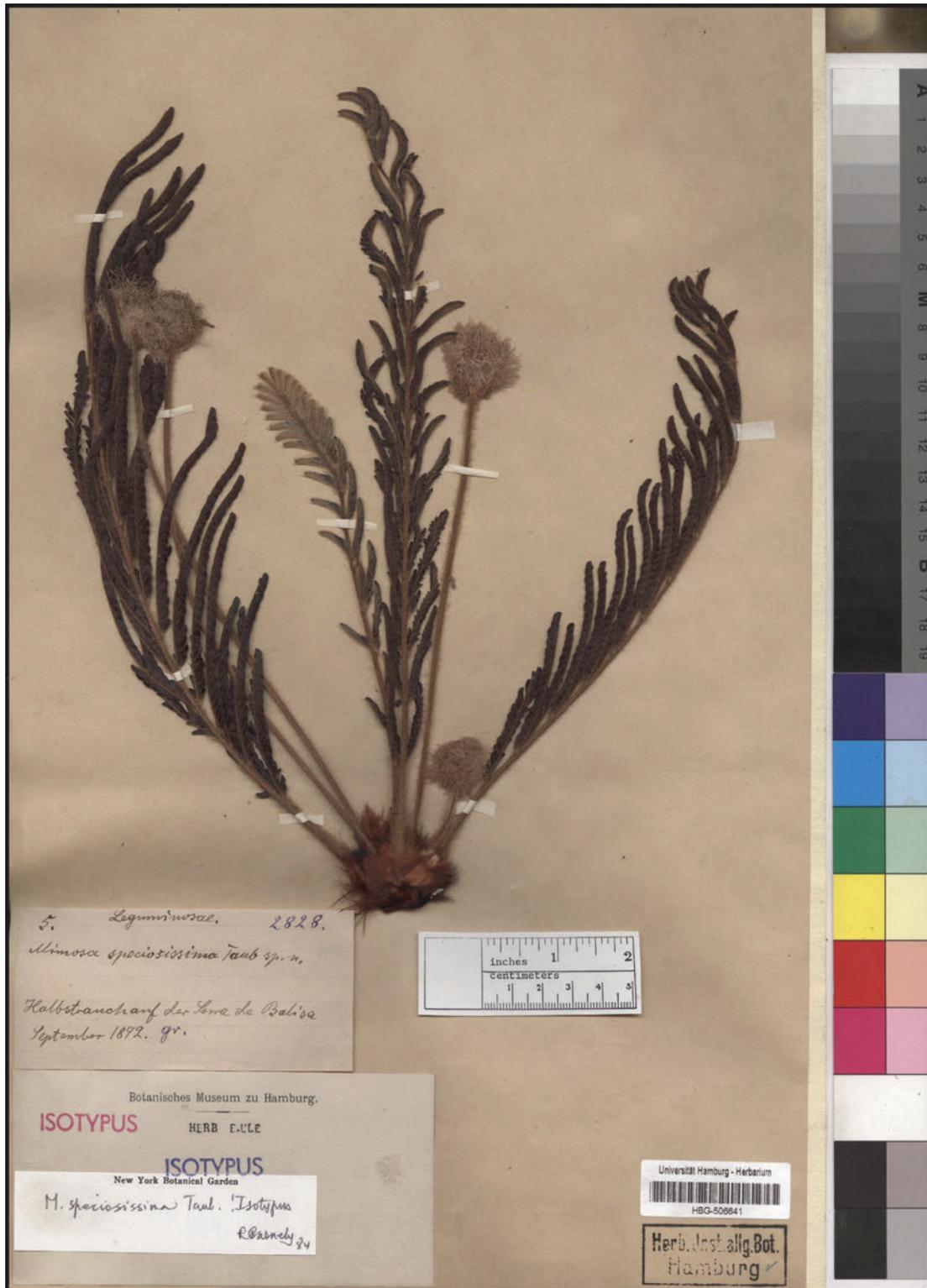


FIGURE 5. Lectotype of *Mimosa speciosissima* Taub. (HBG 506641). Image used with permission and provided by the Herbarium Hamburgense.

Mimosa tocantina Taub. (Taubert 1896: 431–432). Lectotype (designated here):—BRAZIL. Goiás: Habitat in ditione Tocantini superioris in montosis ad Vargem grande, September 1892, fl., *E. Ule* 2826 (HBG! [also annotated as “3”], isolectotype: P! [only annotated as “3”; “nos morros da regio do Tocantins superior, Pizarao” = Ribeirão Pizarão, 14°10’S, 47°35’W (Barneby 1991)]).

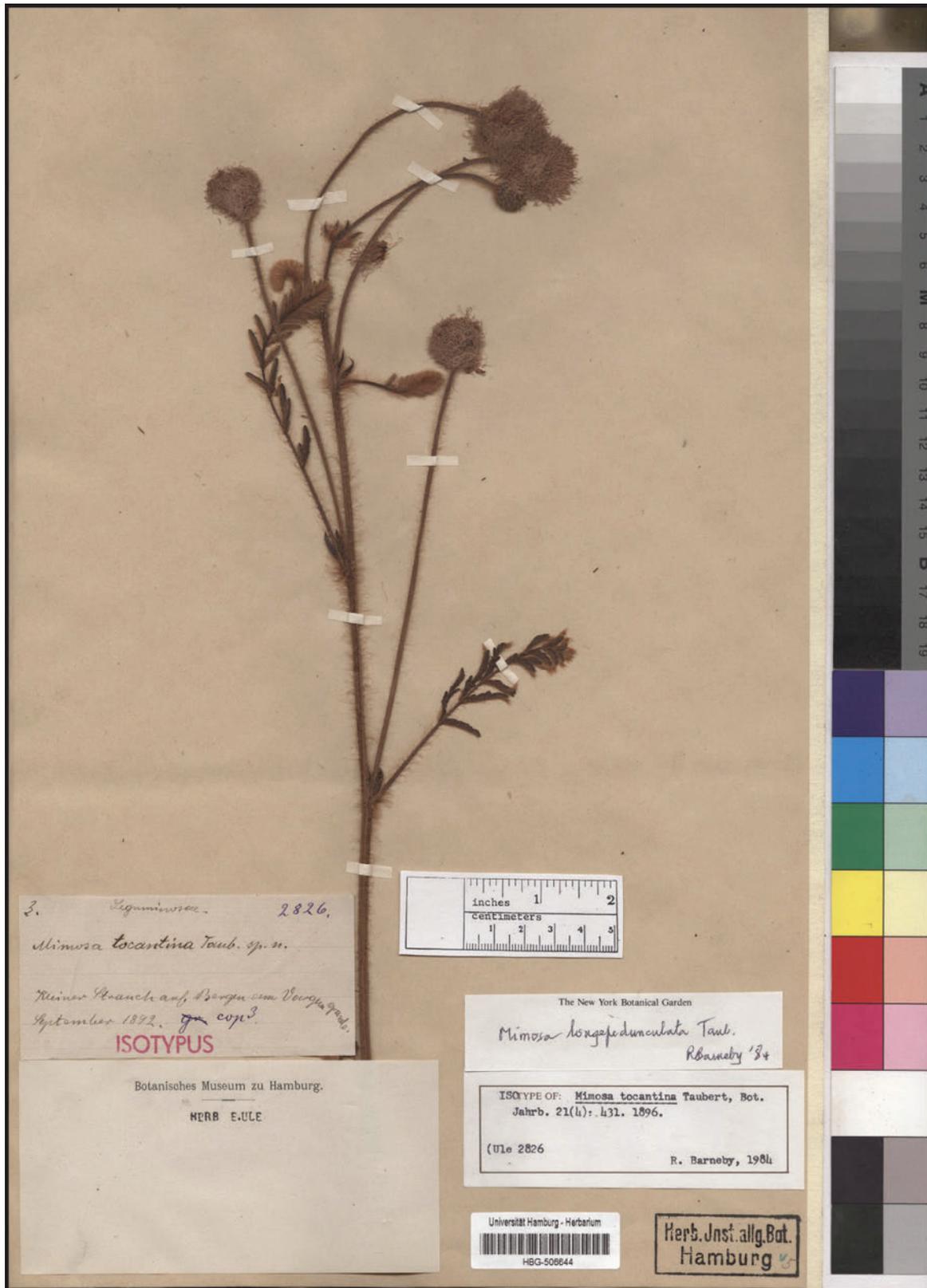


FIGURE 6. Lectotype of *Mimosa tocantina* Taub. (HBG 506644). Image used with permission and provided by the Herbarium Hamburgense.

The duplicate held at HBG is composed by a synflorescence axis with a few young leaves, not fully developed. On the other hand, the one at P bears leaves completely expanded and is, in that sense, more complete. Still, since both specimens can be identified as *Mimosa tocantina*, we decided to follow our selection criteria and chose the HBG specimen as the lectotype.

Mimosa longepedunculata Taub. (Taubert 1896: 432). Lectotype (designated here): BRAZIL. Goiás: Habitat in valle fluvii Passa Tempo in ditone Maranhao superioris, September 1892, fl., fr., *E. Ule* 2830 (HBG! [also annotated as “7”; “im Thale des Passa Tempo”]; isolectotypes: P! [only annotated as “Nº 7”; “Serra dos Viadeiros; no Valle do Passa Tempo”], R! [two sheets annotated only as “7”; R 000003324 indicated as “im Thale des Passa Tempo obere Paranangebiet” and R 000003324a, “Serra dos Viadeiros; no Valle do Passa Tempo”]).



FIGURE 7. Lectotype of *Mimosa longepedunculata* Taub. (HBG 506643). Image used with permission and provided by the Herbarium Hamburgense.

Mimosa ulei Taub. (Taubert 1896: 432–433). Lectotype (designated here): BRAZIL. Goiás: Habitat in campis ad fluvium Rio Preto in ditone Maranhão [Tocantins, not Maranhão] superioris, September 1892, fl., fr. [present only at the R duplicate and not seen by Taubert (1896)], *E. Ule* 2829 (HBG! [also annotated as “6”; “Rio Preto”]), isolectotypes: CORD photo! [also annotated as “6”; “im oberen Tocantins gebiet”], P! [two sheets only annotated as “6”, “região do Tocantins superior”], R! [three sheets annotated only as “6”, “região do Tocantins superior”].

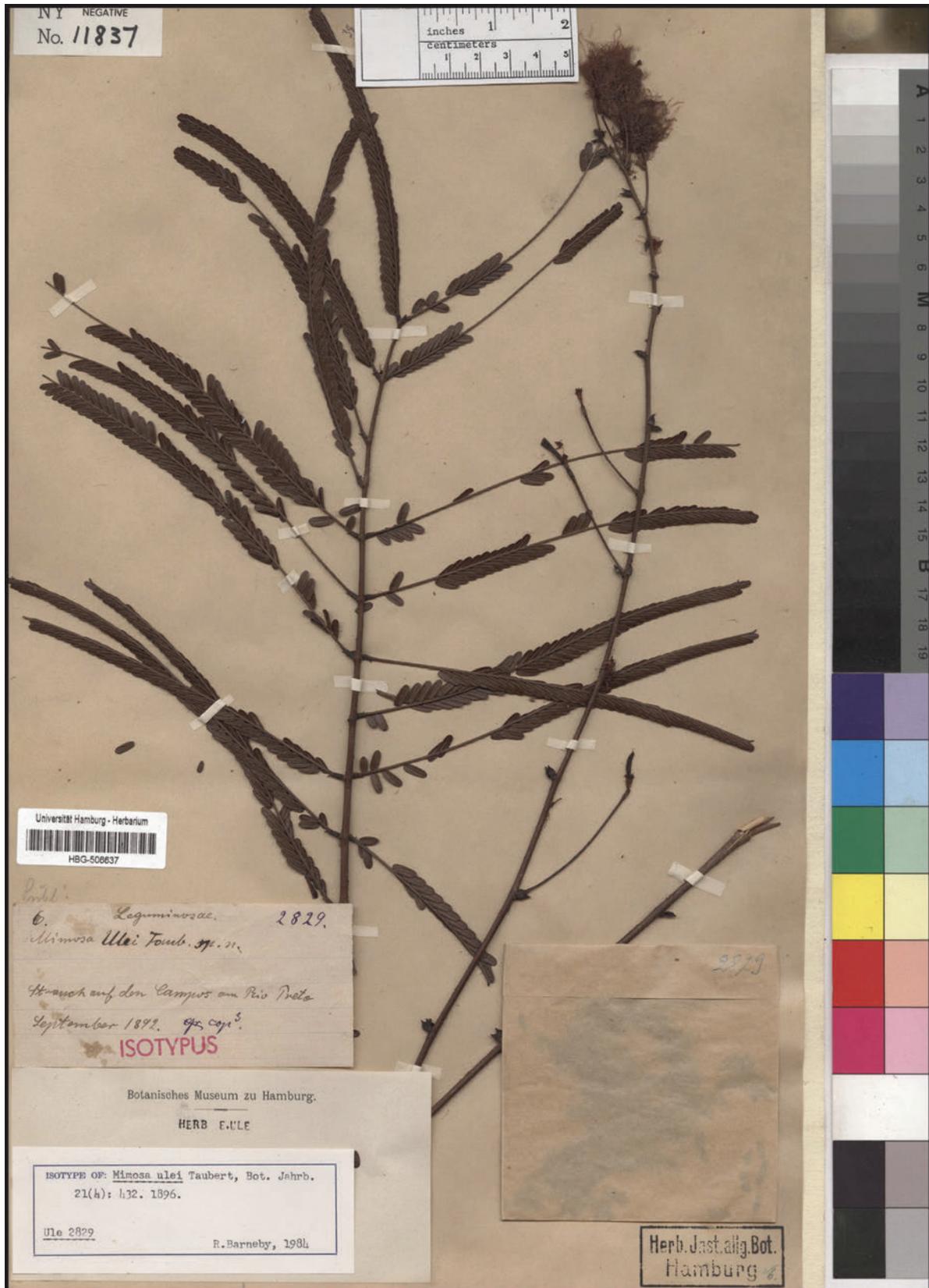


FIGURE 8. Lectotype of *Mimosa ulei* Taub. (HBG 506637). Image used with permission and provided by the Herbarium Hamburgense.

Mimosa formosana Taub. (Taubert 1896: 433). Lectotype (designated here): BRAZIL. Goiás: [Formosa], “prope Formosa”, September 1894, fl., *E. Ule* 2827 (HBG! [also annotated as “4”; “Chapadões bei Formosa”]).

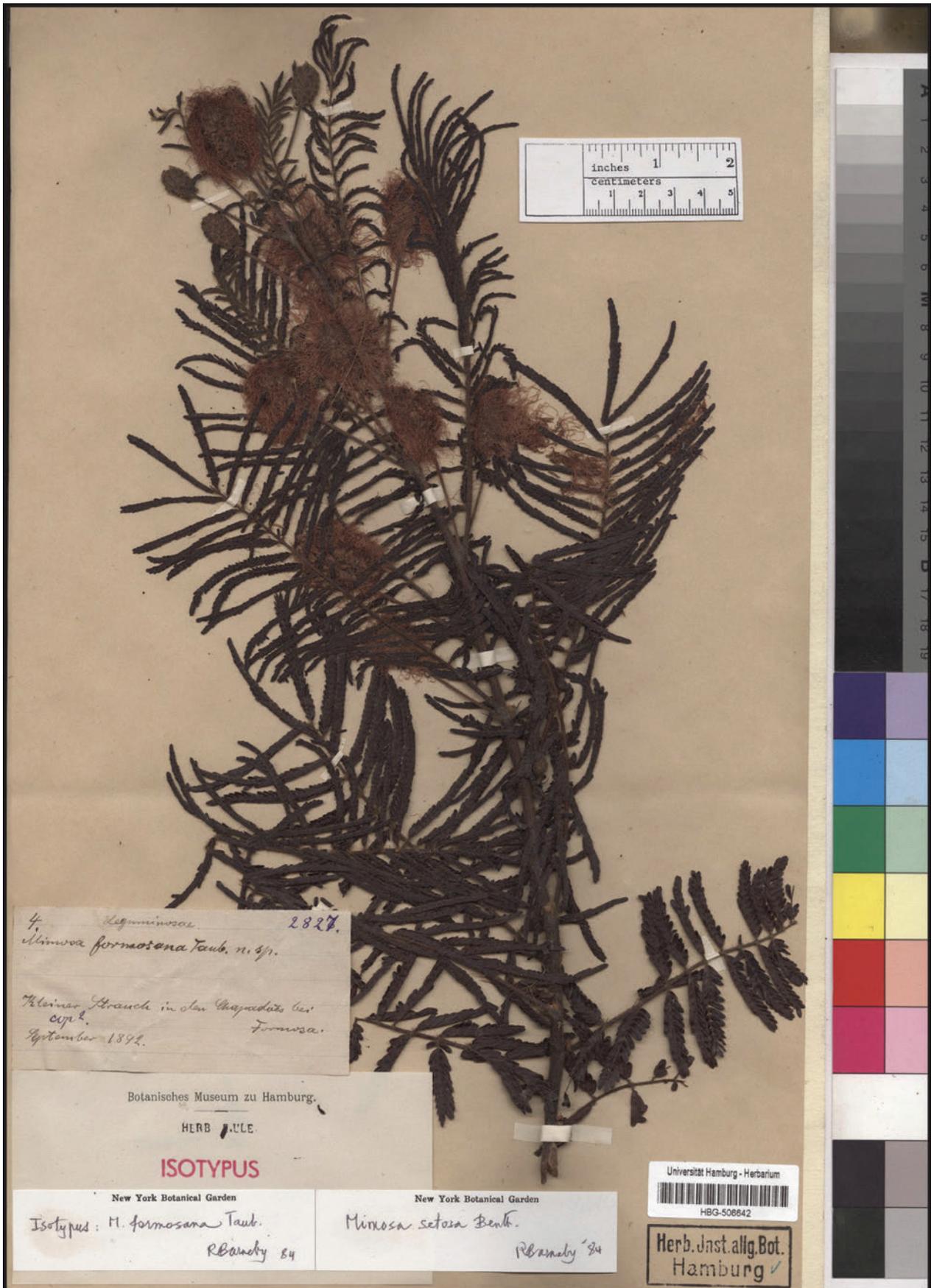


FIGURE 9. Lectotype of *Mimosa formosana* Taub. (HBG 506642). Image used with permission and provided by the Herbarium Hamburgense.

Mimosa albolanata Taub. (Taubert 1896: 433–434). Lectotype (designated here): BRAZIL. Goiás: Serra Dourada, January 1893, fl., *E. Ule* 2872 (HBG! [also annotated as “415”], isolectotype: R! [two sheets only annotated as “415”]).



FIGURE 10. Lectotype of *Mimosa albolanata* Taub. (HBG 506647). Image used with permission and provided by the Herbarium Hamburgense.

Mimosa setosissima Taub. (Taubert 1896: 434). Lectotype (designated here): BRAZIL. Goiás: habitat in montibus Serra dos Pyreneos, August 1892, fl, *E. Ule* 2853 (HBG! [also annotated as “101”, “in den Chapadões der Serra dos Pyreneos”], isolectotypes: P! [only annotated as “101”, “Serra dos Pyreneos”], R! [two sheets, both numbered “101”; R 000003315 also annotated “Serra dos Pyreneos” and R 000003315a “in den Chapadões der Serra dos Pyreneos”])

Duplicates of *Ule* 2853 at R are also labelled “*Mimosa nettoana* sp. n.”. A name never published (*nomen nudum*), which is crossed and replaced by “*Mimosa setosissima* n. sp” at the specimen R 000003315.



FIGURE 11. Lectotype of *Mimosa setosissima* Taub. (HBG 506645). Image used with permission and provided by the Herbarium Hamburgense.

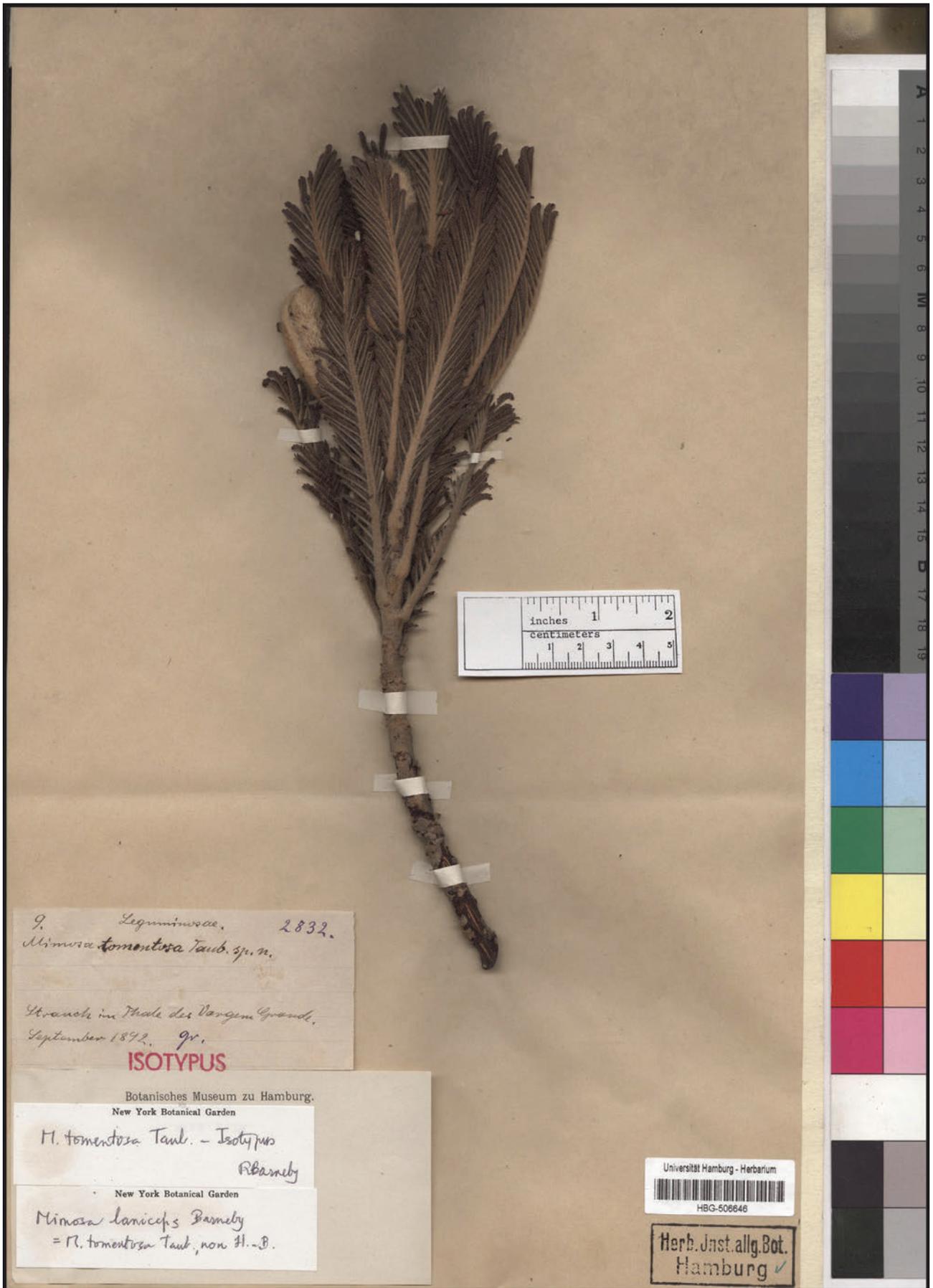


FIGURE 12. Lectotype of *Mimosa laniceps* Barneby. (HBG 506646). Image used with permission and provided by the Herbarium Hamburgense

Mimosa laniceps Barneby (1991: 412) ≡ *Mimosa tomentosa* Taub. (Taubert 1896: 434), nom. illeg. [non *M. tomentosa* Humb. & Bonpl. ex Willd. (Willdenow 1806: 1033), nec *M. tomentosa* Rottler (Rottler 1803: 208). Lectotype (designated here): BRAZIL. Goiás: Valle rivi Vargem Grande, September 1892, fl., *E. Ule* 2832 (HBG! [also annotated as “9”]), isolectotype: P! [2 sheets; only annotated as “9”]]

In order to correct the illegitimate publication of *Mimosa tomentosa* Taub., which is a later homonym, Barneby (1991: 412) chose *M. laniceps* as the replacement name for the taxon.

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