



Revisiting the tangled taxonomy of *Scleria* subgenus *Scleria* section *Hymenolytrum*: a lectotype replacement, a new synonym, and the reestablishment of *Scleria cyperinoides* as an accepted name

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ABSTRACT

During a taxonomic investigation of the names classified under *Scleria* subgenus *Scleria* section *Hymenolytrum*, it was necessary to replace the lectotype of *S. macrogynae*, as the specimen does not agree with the original description. In addition, we propose *S. ramosa* as a new synonym of *S. macrogynae* and discuss the reestablishment of *S. cyperinoides* as an accepted name.

Keywords: Nomenclature; nut rushes; Sclerieae; sedges; taxonomy

Introduction

Scleria P.J.Bergius is one of the largest genera of Cyperaceae Juss., with about 260 species (Larridon 2022). It is recognized as monophyletic and subdivided into four subgenera and 17 sections (Bauters *et al.* 2016; 2018). Among the recognized sections, *Scleria* subgenus *Scleria* section *Hymenolytrum* (Schrad. ex Nees) Core currently

includes 15 species (Bauters *et al.* 2016). These species have many morphological similarities such as scabrous and/or sharp stems and leaves, winged sheaths, membranous appendage on the contraligule, densely branched paniculate inflorescence among others. Some useful characteristics to recognize the species (i.e., winged sheaths, trichome ligule, and hypogynium shape) are not mentioned in the original descriptions, are treated ambiguously, or are not easily

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visualized in the photographs of the nomenclatural types available online, causing problems in their delimitation. During the study of the flora of *Scleria* in Pará state, Brazil (Schneider & Gil 2021), and the *Scleria* monograph in the Flora do Brasil 2020 project (Schneider & Gil 2020), the importance of developing a taxonomic investigation with this section was recognized to clarify some taxonomic and nomenclatural issues. Here, we present some results of this investigation, highlighting the need for the lectotype replacement of *Scleria macrogyne* C.B. Clarke, proposing *S. ramosa* C.B. Clarke as a new synonym of *S. macrogyne*, and reestablishing *S. cyperinoides* C.B. Clarke as an accepted name.

Material and methods

The taxonomic revision was carried out through the original descriptions and by consultation of nomenclatural types and other specialized literature cited in the species comments. Herbaria were consulted by loans (K and NY) or virtually (B, LD, P); when necessary, direct contacts were made with the curators. The acronyms and the virtual herbarium websites follow Thiers (2023). Nomenclatural decisions follow Turland *et al.* (2018). Images of the fruits were taken using a stereoscopic microscope Leica M205A.

Results and Discussion

Scleria macrogyne C.B. Clarke, Bull. Misc. Inform. Kew, Addit. Ser. 8: 59. 1908. Type: [GUYANA] BRITISH GUIANA. [Mazaruni River] Massaruni River, Aug. 1889, *Jenman 6088* (lectotype [designated here]: K [barcode K001081684]! Figure 1; isolectotype: NY [barcode NY00021645]).

Originally cited syntypes: *Parker s.n.* (K [barcode K001081681]!), *Appun 448* (K [barcode K001081683]!), *Jenman 2463* (K [barcode K001081682]!), and *Jenman 6088* (NY [barcode NY00021645]!, and K [barcode K001081684]!) - *Scleria macrogyne*; *Ule 6065* (G [barcode G00098567]!, L [barcode L0042773]!, and K [barcode K001081680]!) - *Scleria cyperinoides*; *Gardner 2985* (BM [barcode BM000629129]!, K [barcode K000189713]!, and K [barcode K000189714]!) - *Scleria martii* (Nees) Steud.

= *Scleria ramosa* C.B. Clarke, Bull. Misc. Inform. Kew, Addit. Ser. 8: 59. 1908, **syn. nov.** Type: BRAZIL. *Sine loco*, *s.d.*, *Burchell 8413* (holotype: K [barcode K001081679]! Figure 2).

Scleria macrogyne C.B. Clarke was described based on six syntypes from different countries and localities, four of them collected in Guyana (*Parker s.n.*, *Appun 448*, *Jenman 2463* and *Jenman 6068* - Fig. 1) and two in Brazil (*Gardner 2985*

and *Ule 6065* - Fig. 3). Clarke (1908) described it as a robust plant with a scabrous stem at the angles, winged sheaths with an appendage on the contraligule, leaf-blades 40–50 × 1 cm, scabrous on the margins, inflorescence paniculate and dense, pilose rachis, smaller panicles below the terminal panicle, numerous staminate spikelets 5–6 mm in length, ferruginous or chestnut-colored glumes, pistillate spikelets 10 mm long, fruit 3 mm long, oval-acuminate, with a slightly reticulate and pubescent surface, thin hypogynium, with yellowish lobes, patent and with a crenate-subdentate apex. Clarke (1908) compared *S. macrogyne* with *S. martii*, the latter having a more robust inflorescence. However, when analyzing the syntypes of *Scleria macrogyne*, it was possible to recognize that some of them do not correspond to the same species, and consequently, some specimens do not agree with the original description. Charpin *et al.* (1993) designated specimens preserved in herbarium G as the lectotypes for some Cyperaceae names, and thus elected *Ule 6065* (G [barcode G00098567]) as the lectotype of *S. macrogyne*. However, *Ule 6065* has some taxonomic relevant characteristics that are very distinct from the original description of *S. macrogyne*, such as the vinaceous glumes of the spikelets (Fig. 3) and the erect and fimbriate lobes of the hypogynium (Fig. 4K and M) (ferruginous or chestnut-colored glumes and patent and crenate-subdentate hypogynium lobes in the *S. macrogyne* original description). In addition, the specimen *Ule 6065* is distinguished from the other syntypes by not having a ligule of trichomes, a feature not cited by Clarke (1908), but taxonomically important among the species of *Scleria* (Camelbeke & Goetghebeur 1999; Schneider & Gil 2021).

Among the remaining syntypes, *Gardner 2985* (BM, K) has a smooth stem, apterous sheaths, and hypogynium with erect lobes (Fig. 4I–J) (*vs.* scabrous stem at the angles, winged sheaths, and hypogynium with patent lobes in the *S. macrogyne* original description). *Parker s.n.* (K) (Fig. 4, G–H) with vinaceous glumes also differs from the ferruginous or chestnut-colored glumes described in the original description of *S. macrogyne*. Thus, under the main characteristics described by Clarke (1908), only three syntypes remain: *Appun 448* (K) (Fig. 4E–F), *Jenman 2463* (K) (Fig. 4C–D), and *Jenman 6088* (Fig. 4A–B). As the previously designated lectotype is conflicting (Charpin *et al.* 1993), and other nonconflicting original material remains, we selected *Jenman 6088* (K) as a replacement lectotype (art. 9.19 of ICN, Turland *et al.* 2018). This specimen is best conformed to the name description and still has a duplicate in the NY herbarium.

By replacing the lectotype of *Scleria macrogyne*, *Scleria ramosa* C.B. Clarke would appear as a synonym of this name, because when analyzing the types of both names, the characteristics highlighted in *S. ramosa* are not exclusive for its maintenance as an accepted name.



Figure 1. Replacement lectotype of *Scleria macrogyne* C.B.Clarke (Jenman 6088 – K [K001081684]). Image: © The Board of Trustees of the RBG, Kew (United Kingdom).



Scleria ramosa was described as a robust species with winged sheaths, leaves 20–30 × ca. 1 cm, panicle ca. 10 × 7 cm, with rachis slightly pubescent, stramineous or chestnut glumes, fruit 2 mm long, with narrow-apiculate apex, rarely acute, stramineous to brownish, hypogynium obconic, truncate, almost the same color as the fruit (Clarke 1908). What is remarkable in the original description is that the plant fragment analyzed in the *Burchell 8413* has a stem with five branches, four of these with terminal panicles (Fig. 2). However, when examining this specimen, the hypogynium shows triangular lobes with crenate or subdentate apex, as described in *S. macrogyne*. Depending on the angle of analysis, the hypogynium apex can be mistaken as truncate and even described as annular. Furthermore, stem branching and the number of panicles can be a variable character state depending on the environment. When collecting specimens of *Scleria* subgenus *S.* section *Hymenolytrum*, some species have a branched stem and a higher number of panicles related to the solar incidence in forest edges or clearings, as in *S. secans* (L.) Urb. and *S. stipularis* Nees. Therefore, after analyzed the types of the names mentioned, and verified the morphological features overlapping (e.g. winged sheaths, a ligule of trichomes, a membranaceous appendix of the contraligule and hypogynium with lacinate lobes), we propose here *Scleria ramosa* as a heterotypic synonym of *S. macrogyne*.

Scleria cyperinoides C.B. Clarke, Bull. Misc. Inform. Kew, Addit. Ser. 8: 61. 1908. Type: BRAZIL. [Amazonas], [Manaus] “Barra”, Jan. 1851, *Spruce 1252* (lectotype [designated by Camelbeke et al. 2000]: K [barcode K000584483]! Figure 5, isolectotypes: LD [access LD1621288] photo!, NY [barcode NY00021646]!, P [barcode P00274193] photo!, P [barcode P00274194] photo!).

Originally cited syntypes: *Vaughan 28* (K [barcode K001081672]), *Spruce 1252* (K [barcode K000584483], LD [access LD1621288], NY [barcode 00021646], P [barcode P00274193], and P [barcode 00274194]), and *Burchell 9789* (K [barcode K001180336]).

According to Clarke (1908), *Scleria cyperinoides* was described as a robust plant, leaves with 20–60 × ca. 1 cm, winged sheaths with membranous appendix at the apex of the contraligule, and scabrous margins, inflorescence with 18 × 12 cm, terminal panicle with 5 × 4 cm, reddish and slightly pilose rachis, staminate spikelet with 3–4 mm long, blood-brown, pedicels 5 mm long, pistillate spikelet ca. 6 mm long, ovoid and long-lanceolate apex, fruit 2.5 mm long, obscurely triangular in cross-section, slightly sparse-pilose,

purplish-dark hypogynium, lobes with whole teeth of the same color (Fig. 4L-N). In this description, Clarke (1908) compared this species with others from *Scleria* subg. *S.* sect. *Schizolepis* (Schrad. ex Nees) C.B. Clarke due to the shape of the hypogynium with deep lacinia (present in most species of this section), as opposed to *S. cyperina* Willd. ex Kunth (a species compared by Clarke), which presents entire lobes. Clarke (1908) cites three syntypes, all collected in Brazil, two in the North, *Vaughan 28* and *Spruce 1252*, and one in the South, *Burchell 9789*. Therefore, Camelbeke et al. (2000) designated *Spruce 1252* (Fig. 5), kept in K, as a lectotype of *S. cyperinoides*. The designated specimen is consistent with the original description.

In the *Scleria* flora of Bolivia, Camelbeke et al. (2003) synonymized *S. cyperinoides* under *S. martii*, the latter described as a species with winged sheaths. However, Nees (1842) in the original description of *S. martii* does not cite winged sheaths and this structure is not observed in the illustration of the species, provided in the protologue and also on the holotype (M [barcode M-0010466] photo!). Concerning this structure, Core (1936) distinguished *S. martii* and *S. violacea* from *S. cyperinoides* and *S. macrogyne* because the first two are species with apterous sheaths, while the latter two are winged. Even with these striking differences, the synonymization of *S. cyperinoides* was followed by other authors, confusing the recognition of *S. martii* (BFG 2015; Schneider & Gil 2020; POWO 2023). Besides the morphology, *S. cyperinoides* also differentiates by being a species of shaded environments (underwood), with a closed canopy, while *S. martii* occurs in open environments, such as forest edges and clearings. Thus, we understand that *S. cyperinoides* is a different species from *S. martii* and should no longer be a heterotypic synonym. Here, we are reestablishing *S. cyperinoides* as an accepted name in *Scleria* subgenus *S.* section *Hymenolytrum*.

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Figure 2. Holotype of *Scleria ramosa* C.B. Clarke (Burchell 8413 – K [K001081679]). © The Board of Trustees of the RBG, Kew (United Kingdom).





Figure 3. Previous isoelectotype of *Scleria macrogyne* C.B. Clarke (Ule 6065 – K 10 [K001081680]). Image: © The Board of Trustees of the RBG, Kew (United Kingdom).

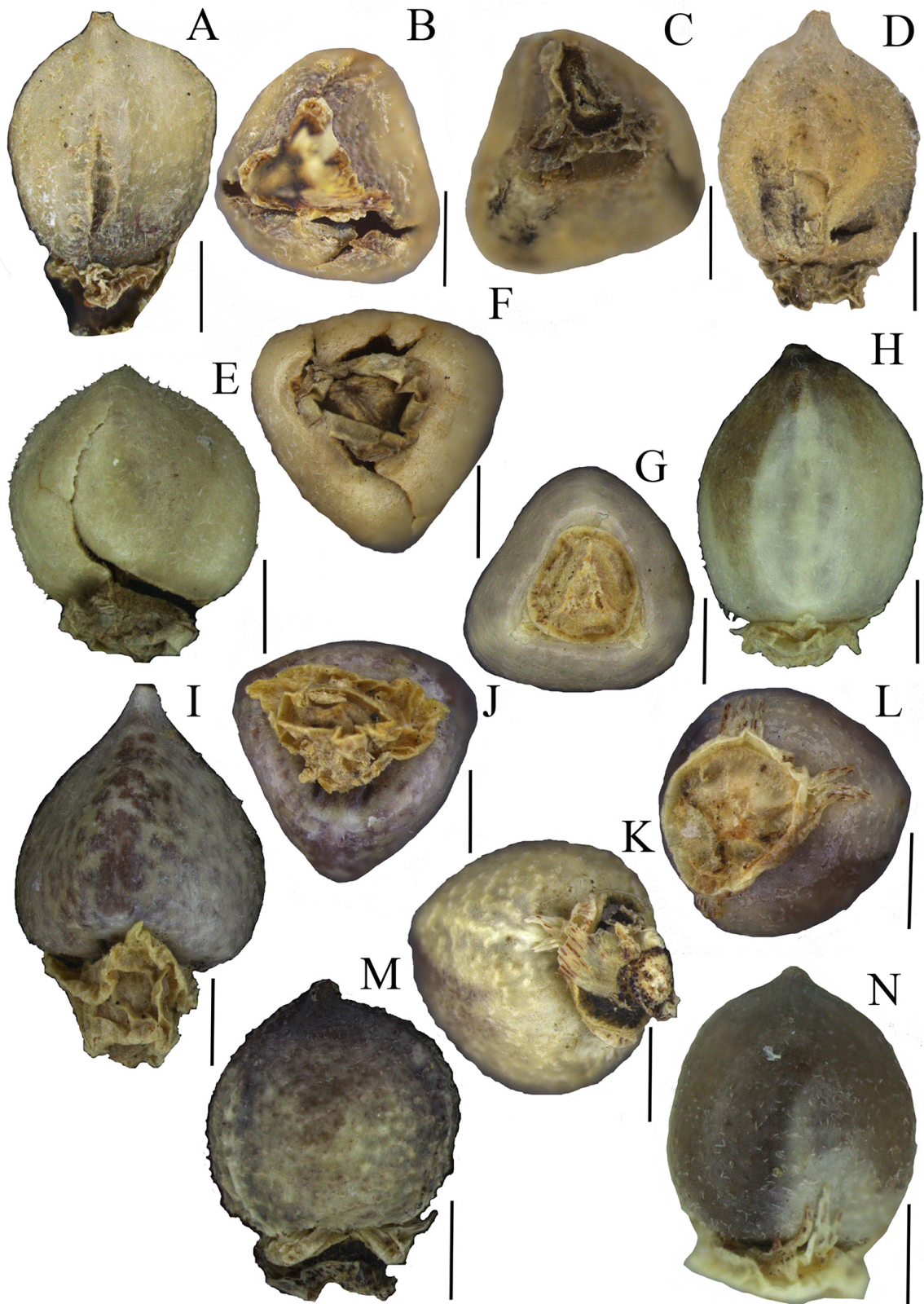


Figure 4. Nutlets in lateral and basal views, highlighting the hypogynies. *Scleria macrogyne*, A and B: Jenman 6065. *Scleria macrogyne*, C and D: Jenman 2463. *Scleria macrogyne*, E and F: Appun 448. *Scleria macrogyne*, G and H: Parker s.n. *Scleria martii*, I and J: Gardner 2985. *Scleria cyperinoides*, K and M: Ule 6065. *Scleria cyperinoides*, L and N: Spruce 1252. Image: © The Board of Trustees of the RBG, Kew (United Kingdom). Scale: 1 mm.





Figure 5. Lectotype of *Scleria cyperinoides* C.B. Clarke (Spruce 1252 – K [K000584483]). Image: © The Board of Trustees of the RBG, Kew (United Kingdom).

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Authors' Contributions

LJCS and ASBG determined the specimens. LJCS scanned and made the photographs. All the authors participated in the writing of the text.

Conflict of Interest

This paper has no conflict of interest.

