RESEARCH ARTICLE

Phylogenomics of African Melastomateae (Melastomataceae): Revisiting generic relationships, placement of three enigmatic taxa and description of two new genera

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DOI https://doi.org/10.1002/tax.13349

Abstract Evolutionary relationships within the Melastomateae, a diverse tribe within the Melastomataceae, are not yet completely resolved, and some putatively paleoendemic taxa that might alter relationships are still unsampled. This study employs a phylogenomic approach, utilizing target capture data, to revisit generic relationships and shed light on the placement of three enigmatic taxa (*Dionychastrum schliebenii*, *Dissotis leonensis*, *Diss. splendens*) within the African Melastomateae. Using 90 accessions (64 newly sequenced), spanning known genera, unplaced taxa and phylogenetically unsampled taxa, and leveraging high-throughput sequencing and Melastomataceae-specific baits, we captured a set of 384 putative single-copy protein-coding nuclear loci. Overall, our phylogenomic analyses reaffirm the monophyly of the Paleotropical Melastomateae, its two primary lineages (Euheterotis clade, Pseudoheterotis clade), and a sister-group relationship of the Malagasy and Asian Melastomateae which are nested within the African Melastomateae. Except for *Melastomastrum* and *Osbeckia*, which are not monophyletic in our analyses, the rest of the Paleotropical genera previously circumscribed are again recovered. For the Guinea endemic *Dissotis splendens* we create the new genus *Allodissotis* and the new combination *Allodissotis splendens*. We also elevate *Dissotis* subg. *Paleodissotis* to the rank of genus, with *D. leonensis* from Guinea and Sierra Leone as the lone species, for which we create the new combination *Paleodissotis leonensis*. Morphologically, seed and wood anatomy of *Allodissotis splendens* and *Paleodissotis leonensis* support their placement in the tribe Melastomateae, with the latter being sister to the rest of the Pseudoheterotis clade. Our study presents a molecular insight into the Uluguru Mountains (Tanzania) endemic species *Dionychastrum schliebenii*, revealing it as sister to the eastern African endemic *Dissotidendron* clade.

Keywords Guinea; morphology; paleoendemic; phylogeny; rediscovery; Sierra Leone; systematics; Tanzania; target capture; taxonomic treatment

Supporting Information may be found online in the Supporting Information section at the end of the article.

■ INTRODUCTION

Sometimes rare and isolated taxa that are geographically remote and/or morphologically unique represent cases of paleoendemism, i.e., evolutionarily old lineages that survived in a certain area. Such taxa are precious but due to their rarity in collections often difficult to obtain. As they might link distantly related lineages and strongly impact phylogenetic reconstructions it is worth undertaking an extra effort to include them in phylogenetic studies. Cai & al. (2023) identified warm and wet climates, geographic isolation, and long-term climatic stability as drivers of phylogenetic endemism which is often found in tropical mountainous areas. The African Melastomateae belonging to the tribe Melastomataceae revealed quite a number of enigmatic taxa which remained unplaced at first.

Melastomataceae are one of the largest families of flowering plants with ~173 genera, more than 5800 species, and with greatest diversity in the Neotropics and Southeast Asia (Ulloa Ulloa & al., 2022). Within the subfamily Melastomatoideae, the pantropical Melastomateae are one of 21 tribes currently recognized (Penneys & al., 2022). The previous study by

Article history: Received: 16 Feb 2024 | returned for (first) revision: 10 Aug 2024 | (last) revision received: 12 Feb 2025 | accepted: 13 Feb 2025 | published online: 26 Apr 2025 | **Associate Editor:** Domingos Cardoso | © 2025 International Association for Plant Taxonomy | © 2025 The Author(s). *TAXON* published by John Wiley & Sons Ltd on behalf of International Association for Plant Taxonomy.
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Michelangeli & al. (2013) showed that the Melastomateae (excluding Marcetieae) are a monophyletic group, but not its New World members because the Old World subclade is phylogenetically nested within the tribe. The first phylogeny and comprehensive overview of generic relationships within African Melastomateae (Veranso-Libalah & al., 2017) had significant implications, including a revised classification that led to the reinstatement, description and re-delimitation of several genera. However, phylogenetic relationships within the large *Dissotis* Benth. s.l. and allies clade remained unresolved. This clade is comprised of *Antherotoma* (Naudin) Hook.f., other African *Osbeckia* L., and species of *Dissotis* s.l. Notably, the study pointed out that the relationships within the tribe would benefit from additional sampling and more data, particularly for the monospecific genera *Cailliella* Jacq.-Fél., *Dionychastrum* A. Fern. & R.Fern., and *Nerophila gentianoides* Naudin. The latter, formerly known as *Chaetolepis gentianoides* (Naudin) Jacq.-Fél., represented an African Melastomateae species originally included in the Neotropical genus *Chaetolepis* (DC.) Miq.

In a subsequent publication, a new genus, *Nothodissotis* Ver.-Lib. & G.Kadereit, endemic to Atlantic Central Africa, was described integrating molecular and morphological data (Veranso-Libalah & al., 2019). In the next publication, Veranso-Libalah & al. (2020) delved into the intricate task of resolving phylogenetic relationships within the previously ambiguous *Dissotis* and allies clade. Utilizing molecular phylogenetic findings and ancestral character reconstruction, *Dissotis* s.l. remained polyphyletic with no morphological synapomorphies. This study provided a revised classification of *Dissotis* s.l. and its allies, and led to the description of five additional new genera and generic reinstatements and recircumscriptions. Remarkably, the circumscription of *Dissotis* s.str. underwent a substantial reduction to only six species (Veranso-Libalah & al., 2020), a notable refinement from its previous representation of around 108 species (see Renner, 1993; Jacques-Félix, 1995), prior to Veranso-Libalah & al. (2017). In 2016, the threatened monospecific *Cailliella praerupticola* Jacq.-Fél. was rediscovered, a species endemic to the sandstone plateau region of Guinea and previously known only from its type material. Veranso-Libalah & al. (2021) conducted a phylogenetic analysis that positioned this species within African Melastomateae and suggested that *C. praerupticola* might be an "evolutionary relict" or "paleoendemic" within African Melastomateae.

Despite significant advancements in unraveling phylogenetic relationships and establishing generic boundaries within African Melastomateae, certain taxa with intriguing and distinctive morphologies, such as *Dionychastrum schliebenii* A.Fern. & R.Fern., *Dissotis splendens* A.Chev. & Jacq.-Fél., and *Dissotis leonensis* Hutch. & Dalziel, have remained unsampled in a phylogenetic context. Remarkably, the latter two species remain unplaced within any of the currently accepted African Melastomateae genera (Veranso-Libalah & al., 2017, 2019, 2020, 2021, 2022; Ulloa Ulloa & al., 2022).

Out of the 199 known mainland African Melastomataceae species belonging to the subfamily Melastomatoideae, Guinea is home to approximately 63 species, with 9 of them being endemic, and 6 narrowly near-endemic species that also extend to Sierra Leone (Couch & al., 2019a; Gosline & al., 2023). Among these near-endemics, *Dissotis leonensis* (Fig. 1A–H) was initially described from the Kessewe Hills (Kasewi Hills) in Sierra Leone by Hutchinson & Dalziel (1927). Subsequently, it was also collected on Mont Gangan in Guinea during Chevalier's collection expedition in 1934. This distinctive species occurs on sandstone table mountains at elevations above 500 m in Guinea (Couch & al., 2019b) and on granite hills and inselbergs in Sierra Leone, at 200–1500 m.

Jacques-Félix (1981) proposed an infrageneric classification for *Dissotis* introducing four subgenera (*D.* subg. *Dissotis*, subg. *Dissotidendron* A.Fern. & R.Fern., subg. *Dupineta* (Raf.) A.Fern. & R.Fern., subg. *Paleodissotis* Jacq.-Fél.). However, with the exception of *D.* subg. *Paleodissotis*, the other three subgenera are now recognized as distinct genera (Veranso-Libalah & al., 2017, 2020). *Dissotis leonensis* is the sole species in *D.* subg. *Paleodissotis* (Jacques-Félix, 1981). In recent years, newly collected specimens of *D. leonensis* from extensive fieldwork in Guinea in 2013–2019 became available. Now with silica-dried samples available, issues related to DNA quality and quantity have been addressed, enabling the phylogenetic placement of this species among other African Melastomataceae.

Dissotis splendens (Fig. 1I–L), the other unplaced Guinea endemic species, was originally described by Chevalier and Jacques-Félix (in Chevalier, 1932). This species is restricted to the high-altitude sandstone bowal grasslands plateaus of Kounounkan, Kindia, and Mont Gangan, all of which are part of the unique Fouta Djallon habitat in Guinea. Until recently, only five collections of *D. splendens* were known (GBIF, 2024a). However, during fieldwork in Guinea between 2016 and 2019, Guinean and Kew botanists collected five new specimens of the species. Initially, Jacques-Félix (1981) assigned this species to *D.* subg. *Dissotis* sect. *Macrocarpae* A.Fern. & R.Fern. (now recognized as *Feliciotis* Ver.-Lib. & G.Kadereit), despite having quite distinct emergence compared to those found in species of *Feliciotis*. With these recent collections now available, *D. splendens*, which had remained unplaced in the updated classifications of African Melastomateae (Veranso-Libalah & al., 2017, 2020; Ulloa Ulloa & al., 2022), can be included in molecular phylogenetic studies.

Another phylogenetically enigmatic species of African Melastomateae is *Dionychastrum schliebenii*, an endemic to the Uluguru Mountains of Tanzania. This species was thought to morphologically share affinities with *Dionycha* Naudin, a Melastomateae genus endemic to Madagascar (Fernandes & Fernandes, 1956; Jacques-Félix, 1995). Both taxa are deciduous shrubs with cymose inflorescences, isomorphic stamens, calyx-tube, and capsules that are not contracted above. Unfortunately, there have been no recent collections of *D. schliebenii*, with the last collection dating back to 1970. Only a single herbarium collection has been made, since 1933 (GBIF, 2024b).

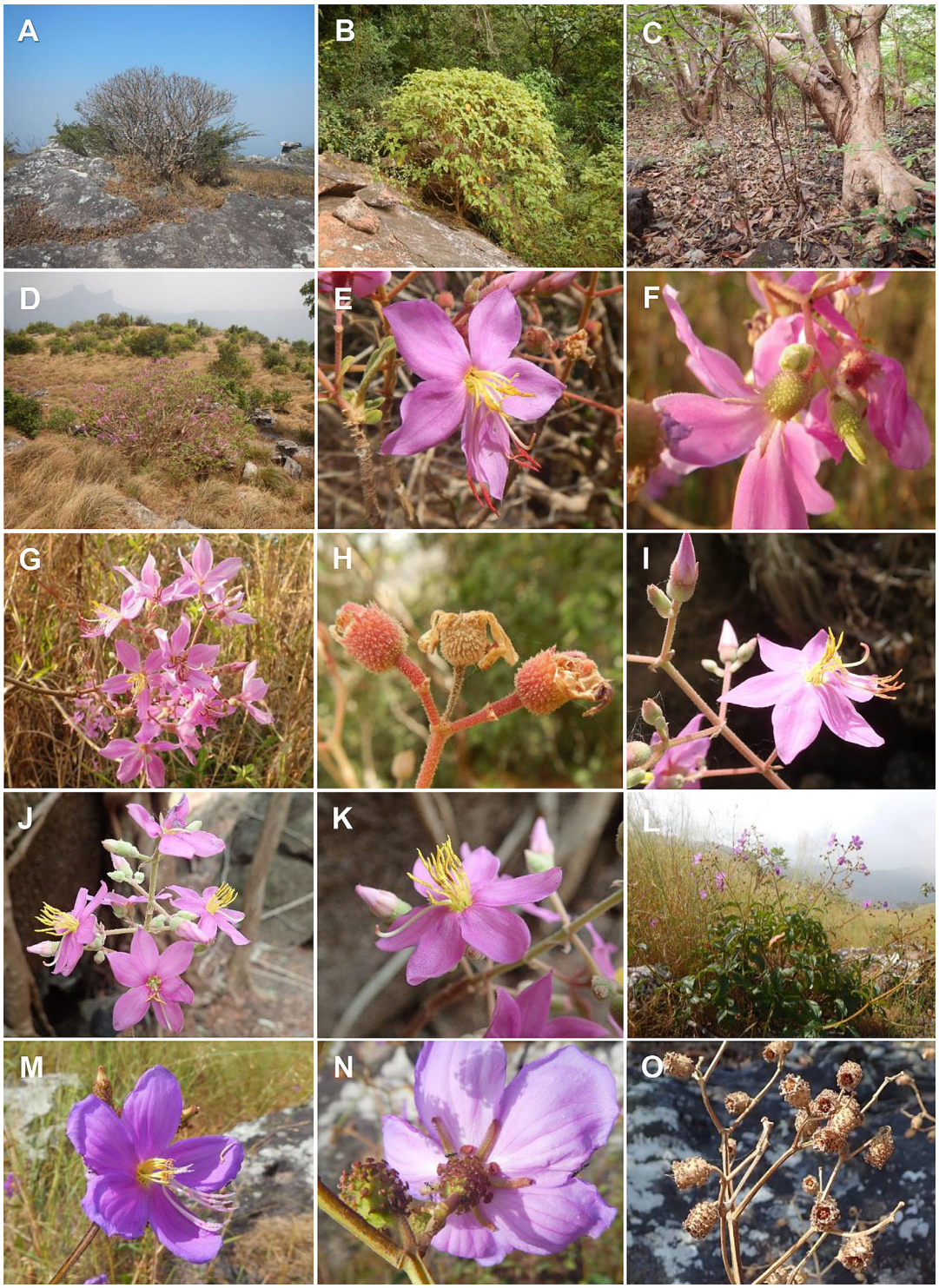


Fig. 1. Morphology and habitat of: **A–K**, *Paleodissotis leonensis* (Hutch. & Dalziel) Ver.-Lib. & Burgt: **A**, Leafless and sterile plant in high-altitude grassland habitat; **B**, Sterile plant with leaves; **C**, Stem; **D**, Flowering plant in high-altitude grassland habitat; **E**, Flower showing dimorphic stamens with no leaves on the branches; **F**, Flower showing hypanthium; **G**, Inflorescence; **H**, Mature fruits; **I**, Flower showing dimorphic stamens; **J–K**, Flowers showing isomorphic stamens. **L–O**, *Allodissotis splendens* (A.Chev. & Jacq.-Fél.) Ver.-Lib. & Burgt: **L**, Plant in high-altitude grassland habitat; **M**, Flower showing dimorphic stamens; **N**, Flower showing hypanthium with capitate appendages; **O**, Mature fruits. — A: observation on Kounounkan Plateau, Guinea, 1 Dec. 2017; B & C: observation, same loc., 25 Nov. 2017; D: observation, same loc., 19 Apr. 2017; E: from *Burgt & al. 2103*, 16 Apr. 2017; F & G: observation in Sula Mts, Sierra Leone, 14 Mar. 2014; H: from *Burgt & al. 2103*, 16 Apr. 2017; I–K; from *Hoban & al. 24*, Gbenabe Hills, Sierra Leone, 25 Feb. 2025; L–N: from *Burgt & al. 2163*, 28 Nov. 2017; O: from *Burgt & al. 2254*, 3 Feb. 2019. Photos: Xander van der Burgt.

While fieldwork is generally crucial for re-collecting iconic taxa alongside silica-dried samples, this is not always feasible for all taxa. Despite being an extraordinary resource for researching the world's plant diversity, herbaria collections are largely underutilized in molecular research (Buerki & Baker, 2016). The high-throughput sequencing approach has shown success in dealing with highly fragmented herbarium DNA (Brewer & al., 2019; Kates & al., 2021). The development of Melastomataceae-specific baits by Jantzen & al. (2020), targeting 384 loci, including 266 from the Angiosperms353 project (Johnson & al., 2019), now enables the capture of hundreds of putative single-copy protein-coding nuclear genes. By utilizing target capture data and ensuring a comprehensive representation of African Melastomateae genera, our study aims to address pivotal questions: (i) Are the previously established phylogenetic relationships, derived from Sanger sequencing data, still valid? (ii) What are the phylogenetic positions of previously unsampled enigmatic taxa? Ultimately, our study concludes with a revised classification of African Melastomateae.

■ MATERIALS AND METHODS

Taxon sampling. — In our study, we incorporated a total of 90 accessions (Appendix 1). Of these, 23 were obtained from Maurin & al. (2021) based on Angiosperms353 baits. Additionally, transcriptomes of three Southeast Asian taxa were included: *Melastoma candidum* D.Don (SRR22574045), *M. dodecandrum* Lour. (CRR290829), and *Osbeckia stellata* Buch.-Ham. ex D.Don (SRR22557471). We generated new target capture data for 63 accessions and genome skimming data for one accession (*Osbeckia chinensis* L.). In total, our sampling included 51 African Melastomateae species, covering all traditionally recognized African genera (Jacques-Félix, 1995; Veranso-Libalah & al., 2017, 2020, 2022), as well as *Dionychastrum schliebenii*, *Dissotis splendens*, and *D. leonensis* (one, three, and four accessions, respectively). The accession of *Dion. schliebenii* was from a herbarium specimen collected in 1933. As outgroup, we included six Neotropical Melastomateae species (see Michelangeli & al., 2013; Maurin & al. 2021).

DNA extraction and sequencing. — Total genomic DNA was extracted from silica-dried leaves or herbarium specimens using a modified CTAB protocol (Doyle & Doyle, 1987; Majure & al., 2019). DNA concentration was quantified using a Qubit 4 fluorometer (Thermo Fisher Scientific, Waltham, Massachusetts, U.S.A.). Subsequently, the extracted DNA samples were sent to Rapid Genomics (Gainesville, Florida, U.S.A.) for library preparation, hybrid enrichment, and next-generation sequencing. The Melastomataceae-specific baits developed by Jantzen & al. (2020) were used to target and capture 384 loci, of which 266 are from the Angiosperms353 project (Johnson & al., 2019). All raw sequencing data newly generated in this study are deposited in the National Center for Biotechnology Information (NCBI) Sequence Read Archive (BioProject: PRJNA1202206). See Appendix 1 for the SRA accession numbers.

Assembly of target loci. — FastQC v.0.12.1 (http://www.bioinformatics.babraham.ac.uk/projects/fastqc/) was used to check quality of the raw data. We used Fastp v.0.23.2 (Chen & al., 2018) (-g -x -r -l 30 -5 --cut_front_window_size 1 -3 _tail_window_size 1 --detect_adapter_for_pe) to cut adapters and filter sequences. Target loci recovery was carried out using HybPiper v.2.1.2 (Johnson & al., 2016) with DIAMOND (Buchfink & al., 2021) as the mapping tool. As a cleaned Melastomataceae probe set (Dagallier & Michelangeli, 2024) can improve recovery, we used it as the target file when running HybPiper. Recovery statistics were checked in HybPiper, and both the main sequence (selected among contigs based on the coverage depth or, when depth is similar, the percent identity to the reference) and alternative gene copies (possible paralogs) were retrieved using "paralog_retriever" for subsequent phylogenetic analyses.

Phylogenetic analyses. — Following Chen & al. (2023), the retrieved sequences were aligned using MAFFT v.7.453 (Katoh & Standley, 2013). Subsequently, the alignments were trimmed using Phyutility v.2.7.1 (Smith & Dunn, 2008), and sequences that were either very short (<50 bp) or exhibited significant gaps (missing 90% of sites) were removed. Single gene trees were then built using IQ-Tree v.2.2.0.3 (Minh & al., 2020). After masking monophyletic and paraphyletic tips of the gene trees following Yang & Smith (2014) and Morales-Briones & al. (2021), we deleted abnormally long branches using TreeShrink v.1.3.7 (Mai & Mirarab, 2018). Three different methods were employed to infer the final species tree.

Firstly, DISCO v.1.3.1 (Decomposition Into Single-COpy gene trees; Willson & al., 2022) was used to infer orthology by decomposing multi-copy gene trees into single-copy trees based on Astral-Pro's (Zhang & al., 2020) rooting and tagging algorithms. Only trees with at least nine tips were retained, and a coalescent-based species tree was subsequently inferred with ASTRAL v.5.7.8 (Zhang & al., 2018). Secondly, we concatenated gene alignments corresponding to single-copy gene trees identified by the first method into a supermatrix using AMAS (Borowiec, 2016) and performed partitioned phylogenetic analysis based on it in IQ-TREE (Minh & al., 2020) with 1000 ultrafast bootstraps. "MFP + MERGE" option in IQ-TREE was employed to find the best-fitting partitioning scheme and substitution models. Lastly, ASTRAL-Pro v.1.15.1.3 (Zhang & Mirarab, 2022) was used to directly infer a species tree from multi-copy gene trees. The resulting trees were visualized using ggtree v.3.10.0 (Yu, 2020) in R v.4.3.2 (R Core Team, 2023).

Wood anatomy. — A wood sample of *Dissotis leonensis* (*Burgt 2199*) was obtained from K. Initially, the dried wood sample underwent a softening process by soaking it in a glycerin/water mixture (1:10 volume ratio) for a duration of five days. Tangential sections 20–35 µm thick were cut with a sledge microtome (Microm, Heidelberg, Germany). These sections were mounted on slides and embedded in ROTI Histokitt (Carl Roth, Karlsruhe, Germany). The embedded slides were observed under a light microscope (Leica DM750,

Wetzlar, Germany) equipped with Leica LAS X software. Terminology follows (Van Vliet, 1981; Van Vliet & al., 1981a,b).

Seed morphology. — Using the seeds of *Dissotis leonensis* (*Burgt 2103*) and *D. splendens* (*Burgt 2254*), both obtained from K, seed morphological characters were examined using a scanning electron microscope (Leo 438VP, Carl Zeiss, Oberkochen, Germany). Seed morphology was described following Ocampo & al. (2014).

■ RESULTS

Recovery statistics and datasets. — Recovery statistics for all samples obtained via HybPiper are provided in suppl. Table S1. Transcriptomic and genome skimming data yielded significantly better results, generating between 52,696,792 and 141,268,822 reads, and recovering 356 to 377 loci. In contrast, the target capture approach produced 131,414 to 13,011,506 reads and recovered between 103 and 331 loci. In the ASTRAL-Pro analysis, 385 gene trees containing paralogs were directly used to infer the species tree. For the DISCO analysis, these gene trees were employed in the identification of 685 putative single-copy gene trees, which were then utilized for the DISCO-ASTRAL analysis. The alignments of these single-copy gene trees were concatenated into a supermatrix for the DISCO-IQTREE analysis, covering 635,444 columns and including 99,750 parsimony-informative sites.

Phylogenetic relationships. — The nuclear phylogenetic trees generated using two coalescent-based methods (DISCO-ASTRAL and ASTRAL-Pro) and one concatenation-based method (DISCO-IQTREE) have overall similar topologies (Figs. 2, 3). Generally, the backbone of the phylogenetic trees is well-supported except for three nodes having relatively low local posterior probability (LPP < 0.7) in the ASTRAL-Pro tree (Fig. 3B). The Paleotropical Melastomateae are monophyletic, but the African Melastomateae are not, as the Malagasy and Asian endemic genera are nested within them (Figs. 2, 3).

All Paleotropical genera are recovered as monophyletic, except for *Melastomastrum* Naudin, *Osbeckia*, and the Malagasy endemic genera. In all three trees, *Tristemma* Juss. and *Melastomastrum* form a clade, while the latter forms three distinct lineages. All sampled accessions of *M. theifolium* (G.Don) A.Fern. & R.Fern. and *M. segregatum* (Benth.) A.Fern. & R.Fern. each form well-supported clades. *Melastomastrum porteresii* (Jacq.-Fél.) Ver.-Lib. & G.Kadereit forms another segregate clade with another *Melastomastrum* sp. (Fig. 2). The Asian endemic genera form a monophyletic group that is sister to a clade composed of Malagasy endemic genera. *Osbeckia* is biphyletic, with all accessions of *O. stellata* forming one clade and *O. chinensis* and *O. nepalensis* forming another clade that is sister to *Melastoma* L. (Fig. 2). The three Malagasy endemic genera (i.e., *Rousseauxia* DC., *Amphorocalyx* Baker, and *Dionycha*) do not separate from each other, and the relationships among different accessions are not well supported in the coalescent trees (Fig. 2; suppl. Figs. S1, S2).

All sampled accessions of *Dissotis leonensis* form a monophyletic group placed as sister to the rest of the Pseudoheterotis clade sensu Veranso-Libalah & al. (2017). *Argyrella* Naudin and the monospecific *Anaheterotis* Ver.-Lib. & G.Kadereit form a clade sister to *Guyonia* Naudin. *Cailliella praerupticola* is sister to the *Tristemma-Melastomastrum* clade.

Within the Euheterotis clade sensu Veranso-Libalah & al. (2017), *Dichaetanthera* Juss. is sister to the remaining taxa and is further subdivided into two lineages. In the DISCO-ASTRAL and ASTRAL-Pro trees, one lineage consists of the African endemic *Dichaetanthera* species, while the other comprises the Malagasy endemic species (suppl. Figs. S1, S2). In the DISCO-IQTREE tree, the Tanzanian and Zambian endemic *D. erici-rosenii* (R.E.Fr.) A.Fern. & R.Fern. is sister to the Malagasy endemic species, and the other two African species form a clade (Fig. 2). *Heterotis* Benth. diverges next, followed by a clade composed of *Dissotidendron* and *Dionychastrum schliebenii*. *Dionychastrum schliebenii* is either sister to *Dissotidendron* (A.Fern. & R.Fern.) Ver.-Lib. & G.Kadereit as in the DISCO-IQTREE and ASTRAL-Pro trees, or weakly resolved within *Dissotidendron* as in the DISCO-ASTRAL tree (Figs. 2, 3).

The remaining clades branch off successively: the Asian and Malagasy endemic clades, *Nothodissotis*, *Dupineta* Raf., *Dissotis splendens*, the monospecific *Pseudosbeckia* A.Fern. & R.Fern., *Rosettea* Ver.-Lib. & G.Kadereit, *Derosiphia* Raf., *Dissotis*, and the FAEP clade (composed of *Feliciotis speciosa* (Taub.) Ver.-Lib. & G.Kadereit, *Almedanthus pachytrichus* (Gilg ex R.E.Fr.) Ver.-Lib. & R.D.Stone, *Eleotis welwitschii* (Cogn.) Ver.-Lib. & R.D.Stone and *Pyrotis gilgiana* (De Wild.) Ver.-Lib. & R.D.Stone), followed by *Nerophila* Naudin and *Antherotoma*. Within the FAEP clade, the internal relationships vary across the three different trees, with low LPP in the two coalescent trees (Figs. 2, 3).

■ DISCUSSION

With all currently recognized genera sampled in our phylogenomic analysis of target capture data, we have largely improved our knowledge of evolutionary relationships among African Melastomateae. Despite some differences among the trees, the clades identified in previous phylogenetic studies based on Sanger sequencing data are reaffirmed. As reported in previous studies (Michelangeli & al., 2013; Veranso-Libalah & al., 2017), Paleotropical Melastomateae form a monophyletic lineage. The relationships within African Melastomateae based on our analysis are largely congruent with previous phylogenetic trees generated from concatenated datasets of one or two nuclear loci and two or three plastid loci (Veranso-Libalah & al., 2017, 2019, 2020, 2021). The two primary clades of Paleotropical Melastomateae identified in

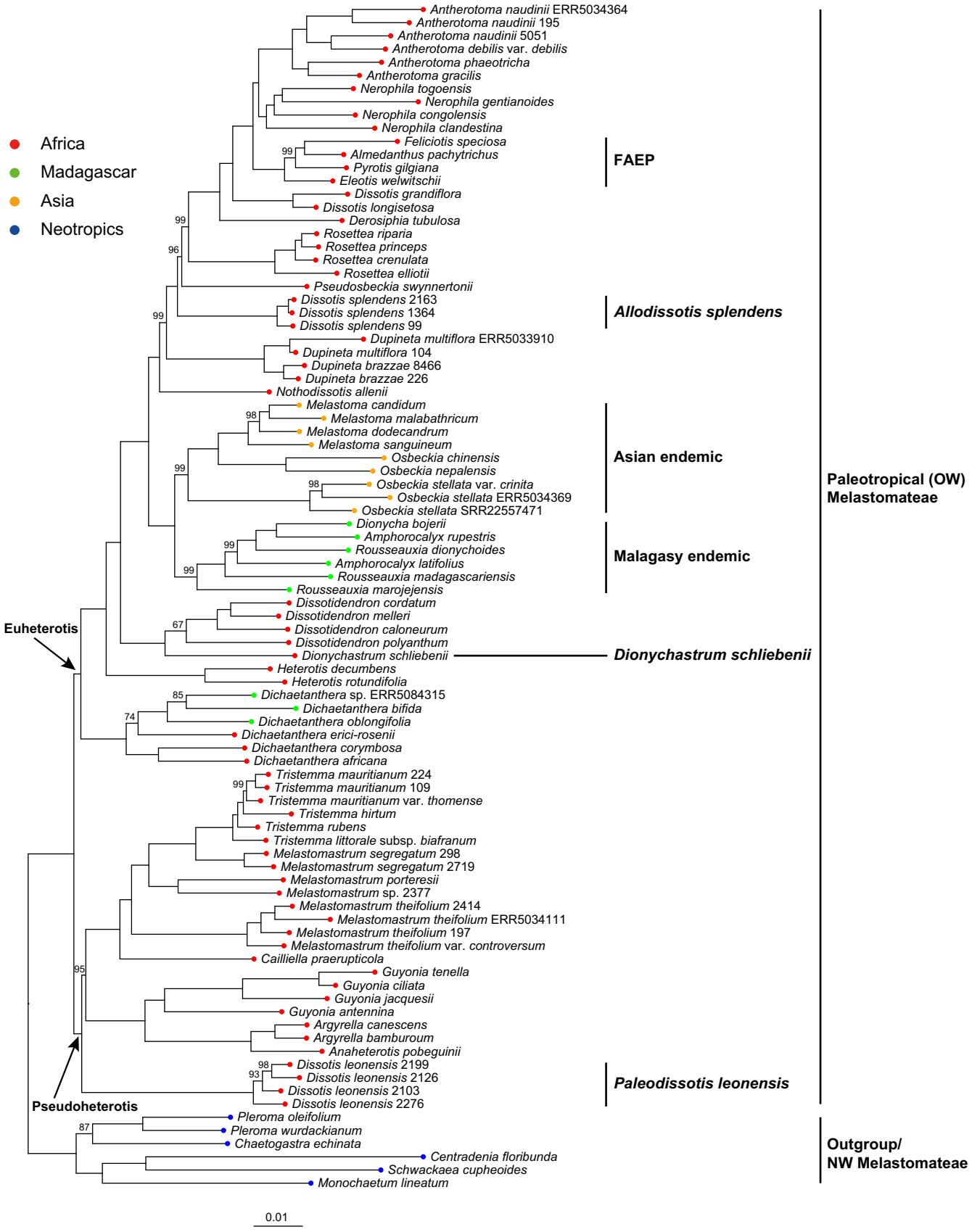


Fig. 2. Phylogenetic tree inferred using the concatenation-based method (DISCO-IQTREE) showing relationships of African Melastomateae and the placement of *Allodissotis*, *Dionychastrum* and *Paleodissotis*. Bootstrap support values below 100% are indicated on the branches.

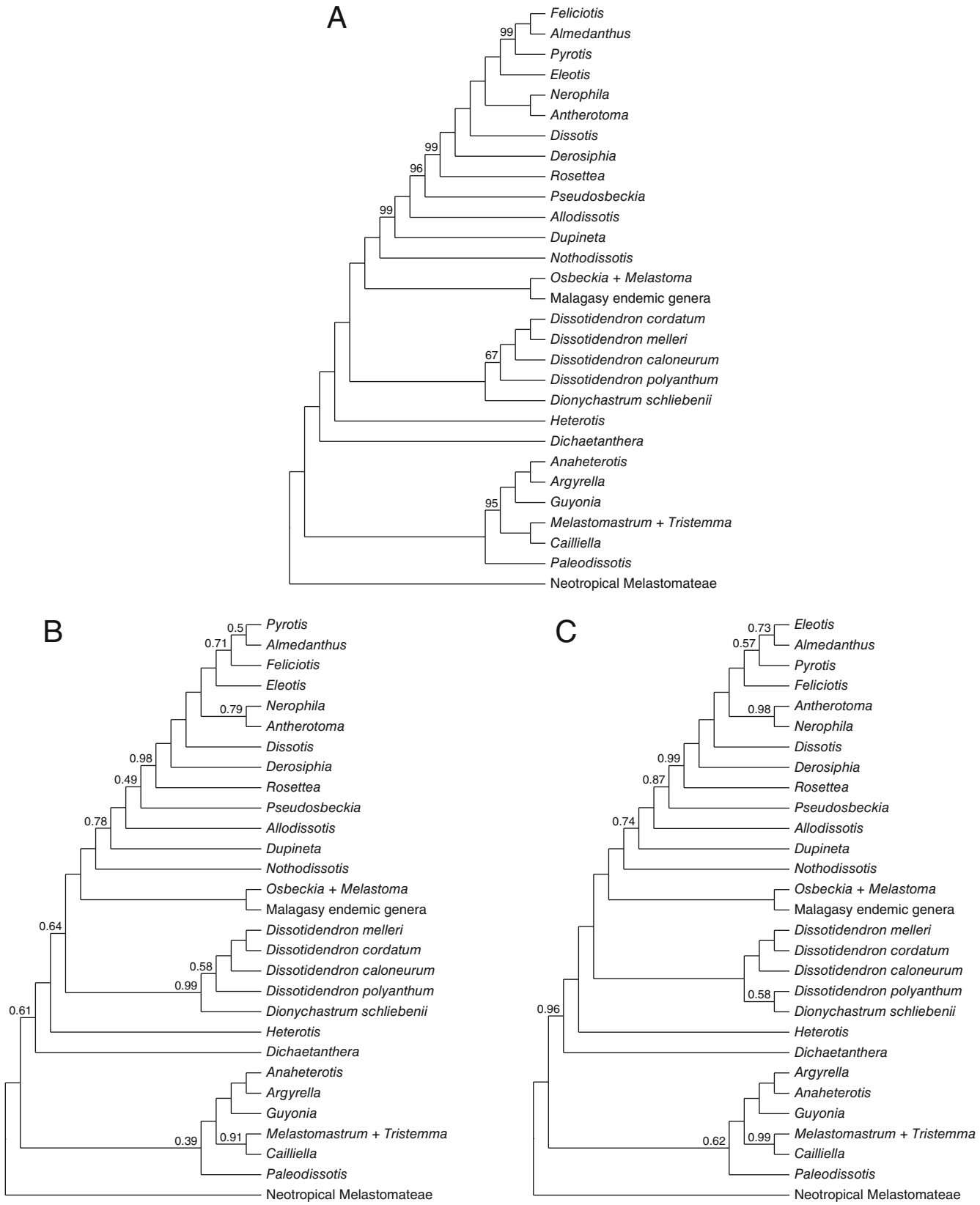


Fig. 3. Phylogenetic trees inferred with the concatenation-based method (**A**, DISCO-IQTREE) and coalescent-based methods (**B**, ASTRAL-Pro; **C**, DISCO-ASTRAL) comparing generic relationships among Paleotropical Melastomateae. In the DISCO-IQTREE phylogeny, bootstrap support values below 100% are shown on the branches. In the ASTRAL-Pro and DISCO-ASTRAL phylogenies, local posterior probabilities below 1 are indicated on the branches.

our results correspond to the Euheterotis clade and the Pseudoheterotis clade proposed by Veranso-Libalah & al. (2017). The main incongruence with former analyses is *Melastomastrum*, which was previously recovered as monophyletic, albeit with weak internal support. In our current analyses, all *Melastomastrum* species sampled diverge successively and *Tristemma* is nested within them (Fig. 2). To gain a better understanding of its phylogenetic relationships with *Cailliella*, *Tristemma*, and within the group, more extensive sampling of *Melastomastrum* is required.

Like previous studies, the Malagasy and Asian endemic Melastomateae lineages are nested within the African Melastomateae (Veranso-Libalah & al., 2017, 2022). In our results, both the Malagasy and Asian Melastomateae are each monophyletic and sister clades (Figs. 2, 3). Within the Malagasy clade, none of the three endemic genera is well delimited. Within the Asian clade, *Melastoma* is nested within *Osbeckia*. Veranso-Libalah & al. (2020) identified two distinct clades for Malagasy endemic and Asian endemic Melastomateae. However, these two clades were not sister groups, and the sampling was inadequate for generic delimitation. Maurin & al. (2021) also recovered a monophyletic group of both Malagasy and Asian genera, but *O. stellata* was positioned as the sister to Malagasy endemic genera which were not well delimitated, while the rest of the Asian species formed a monophyletic group. To elucidate the generic boundaries and the relationship between Asian and Malagasy endemic taxa, more extensive sampling of both groups is needed.

In all trees generated in our study, the FAEP clade—comprising *Feliciotis* Ver.-Lib. & G.Kadereit, *Almedanthus* Ver.-Lib. & R.D.Stone, *Eleotis* Ver.-Lib. & R.D.Stone and *Pyrotis* Ver.-Lib. & R.D.Stone—is consistently well supported (Figs. 2, 3). However, the internal relationships within this clade vary among the different trees. This clade was previously identified by Veranso-Libalah & al. (2020). Both *Almedanthus* and *Pyrotis* are monotypic genera, whereas *Feliciotis* and *Eleotis* contain 12 and 4 species, respectively. To gain a better understanding of the phylogenetic relationships within this clade, additional sampling of *Feliciotis* and *Eleotis* is necessary.

Phylogenetic placement of *Dissotis leonensis*. — Our phylogenetic analyses confirm the placement of *Dissotis leonensis* in the tribe Melastomateae, as suggested by Jacques-Félix (1981, 1995), who considered this species as one of the earliest diverging lineages of the tribe with several primitive characters. Indeed, *D. leonensis* represents a lineage of African Melastomateae and is undoubtedly a paleoendemic and relictual species, restricted to the sandstone table mountains in Guinea and granite inselbergs in Sierra Leone. Although all the Pseudoheterotis genera plus *D. leonensis* have tardily caducous to persistent sepals, other morphological characters in the latter are quite unique.

Morphologically, *Dissotis leonensis* is atypical by several unique features. It is a shrub or treelet, typically attaining a height of about 3 to 4 m, deciduous during dry season with new leaves emerging after flowering (Fig. 1A–E). The twigs and branches are densely covered with fine warty and stellate hairs (Fig. 1H). The inflorescence is a cyme, and each flower bears two caducous bracts. The hypanthium is campanulate and covered with tubercules and stellate hairs (Fig. 1F,H). The seed characters of *D. leonensis* are very similar to those of other Melastomateae taxa (Figs. 4E–H) (see Whiffin & Tomb, 1972; Grimm & Almeda, 2013; Ocampo & al., 2022). The inflorescence and wedge-shaped seeds of *D. leonensis* resemble those of *Sakersia* Hook.f. (= *Dichaetanthera* Endl.) (Chevalier, 1934; Jacques-Félix, 1995). The presence of staminal dimorphism, along with its capsular fruit, has been the primary basis for placing *D. leonensis* within *Dissotis* (Chevalier, 1934; Jacques-Félix, 1995). Normally, *D. leonensis* has dimorphic stamens (Fig. 1E,H), but two deviating specimens with isomorphic stamens were noted (Fig. 1J,K; *Burgt 2276*, collected on 12 Feb. 2019 in Guinea and *Hoban 24 & al.*, collected 25 Feb. 2025 in Sierra Leone). These two collections are leafless, as are other flowering collections of *D. leonensis*. The collectors of *Hoban 24* (including the second author Xander van der Burgt) recorded plants with isomorphic stamens growing in the same population as other plants with dimorphic stamens. We are unsure if the plants with isomorphic stamens represent a new, closely related species, or just a different form of the same taxon. More collections are necessary during various phenological stages of the plants before a decision can be made.

Within the Melastomataceae, interxylary (included) phloem is found only in *Pternandra* Jack and members of subfamily Olisbeoideae but not among woody members of the Melastomatoideae (Van Vliet & al., 1981a; Dahlgren & Thorne, 1984; Van Vliet & Baas, 1984). Jacques-Félix (1995: 250) cited unpublished data by D. Normand reporting that *Dissotis leonensis* has intraxylary phloem, and erroneously referring to it as "included phloem". He made a further error by comparing the character of intraxylary phloem present in *D. leonensis* with the character of interxylary (included) phloem found in the Memecyleae (= Olisbeoideae). In *D. leonensis*, the intraxylary phloem is present, similar to other taxa in Melastomatoideae, as opposed to interxylary phloem in the form of elongated tangential clusters in the Olisbeoideae (Van Vliet, 1981; Van Vliet & al., 1981a,b).

Dissotis leonensis is clearly unrelated to *Dissotis* s.str. and can no longer be treated in *D.* subg. *Paleodissotis*. With its unique morphology and phylogenetic placement, *D.* subg. *Paleodissotis* is elevated to the rank of genus (see Taxonomic Treatment section).

Phylogenetic placement of *Dissotis splendens*. — This is the first time *Dissotis splendens* has been included in any molecular phylogenetic analyses. As previously proposed based on morphology (Jacques-Félix, 1955, 1981), its placement in Melastomateae is here confirmed. In all three phylogenetic trees, *D. splendens* is sister to a large clade composed of *Almedanthus, Antherotoma*, *Derosiphia*, *Dissotis*, *Eleotis*, *Feliciotis*, *Nerophila*, *Pseudosbeckia*, *Pyrotis* and *Rosettea*.

Morphologically distinct from other African Melastomateae, *Dissotis splendens* is a shrub up to 2 m in height with

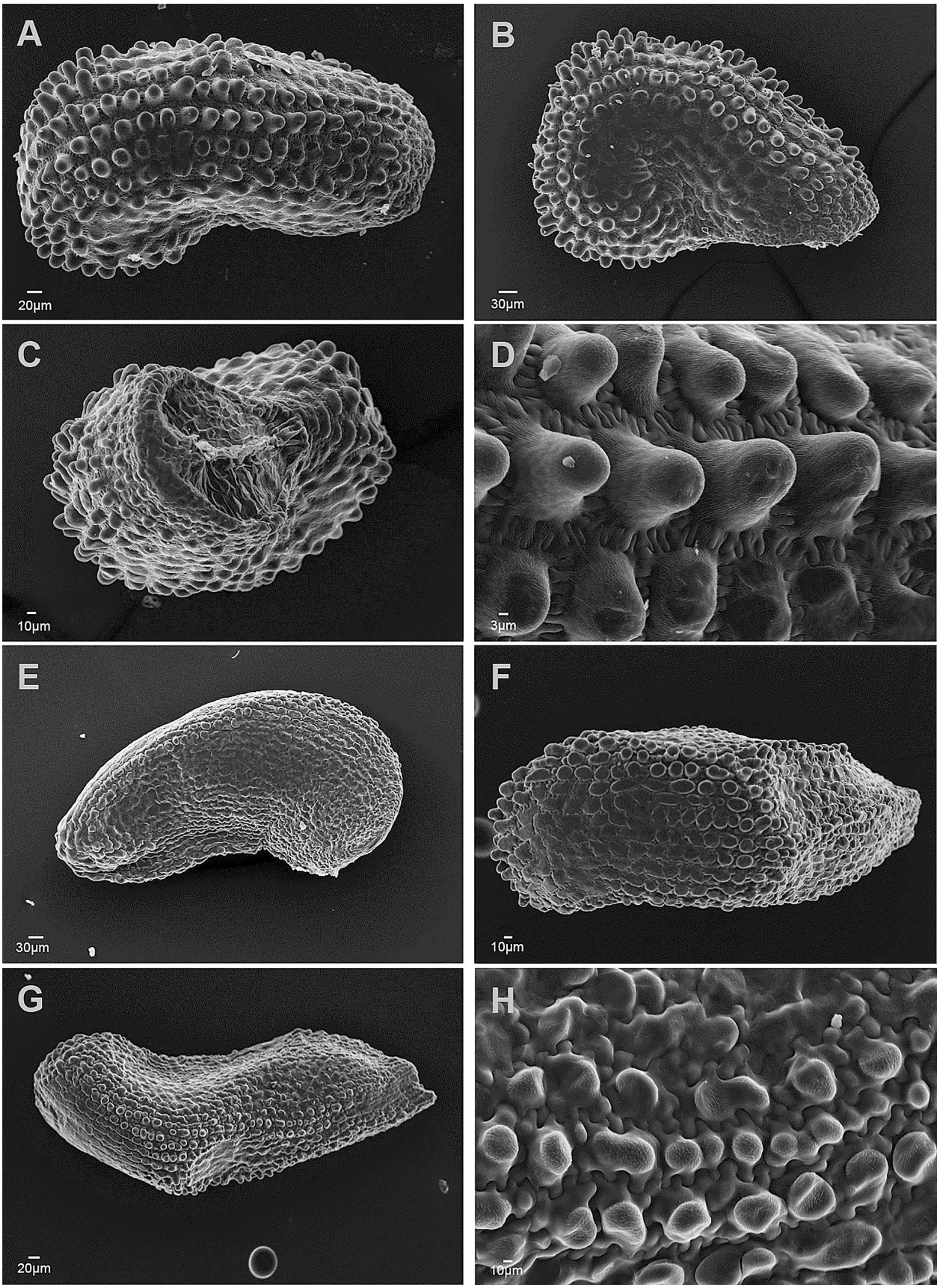


Fig. 4. Scanning electron micrographs. **A–D**, Seeds of *Allodissotis splendens* (*Burgt 2254*); **E–H**, Seeds of *Paleodissotis leonensis* (*Burgt 2103*).

quadrangular stems and an inflorescence forming a terminal panicle (Fig. 1L). The bracts are caducous. The hypanthium is covered by scabrid, long-stalked stellate hairs, and has discoid or orbicular apex (Fig. 1N). The sepals are early caducous and have an apex with stellate hairs (Fig. 1K). The stamens are dimorphic, with a connective and two ventral appendages just above the filament (Fig. 1M). The seeds of *D. splendens* are cochleate with tubercules (Fig. 4A–D) and very similar to those of other taxa of Melastomateae (see Whiffin & Tomb, 1972; Grimm & Almeda, 2013; Ocampo & al., 2022). Initially, Jacques-Félix (1981) assigned this species to *D.* subg. *Dissotis* sect. *Macrocarpae*. *Feliciotis* species exhibit recognizable synapomorphies, including 5-merous flowers usually arranged in terminal cymes or occasionally panicles, bracts that are either scarious or foliaceous, and densely silvery-sericeous pubescence on the hypanthium (Fernandes & Fernandes, 1970; Wickens, 1975; Jacques-Félix, 1981, 1995; Veranso-Libalah & al., 2020). Despite having the apex of these emergences being discoid or orbicular, *D. splendens* was placed under *D.* sect. *Macrocarpae* (Jacques-Félix, 1981).

Our molecular analyses neither support this species as part of *Dissotis* sect. *Macrocarpae* (now *Feliciotis*) nor *Dissotis* s. str. It is clearly a unique evolutionary entity based on molecular and morphological data. So far, this taxon is only known from Guinea. Based on the evidence outlined, *D. splendens* is best placed in a genus of its own (see Taxonomic Treatment section).

Phylogenetic placement of *Dionychastrum schliebenii*. — *Dionychastrum schliebenii* is known only from the Uluguru Mountains of Tanzania. In all trees, it is recovered either within or sister to the *Dissotidendron* clade. *Dissotidendron* currently consists of 11 species; all but *Dissotidendron cordatum* (Gilg) Ver.-Lib. & G.Kadereit, which is endemic to the Katanga region of the Democratic Republic of the Congo, are endemic to East Africa.

Dionychastrum schliebenii is the only African Melastomateae species lacking a crown of hairs on the ovary apex, a character often used to define the tribe Melastomateae. Nevertheless, it is unquestionably a Melastomateae. Previous publications (Fernandes & Fernandes, 1956; Jacques-Félix, 1995) suggested that this species is closely related to the Malagasy endemic *Dionycha*. However, our molecular results clearly show otherwise. *Dionychastrum* can be differentiated from *Dionycha* by having 5-merous flowers, persistent calyx lobes, curved pedoconnectives, anthers with a single anterior pore, and a glabrous and exserted capsule apex (Veranso-Libalah & al., 2017). Morphologically, *Dionycha* is a shrub or treelet with deciduous leaves, 4-merous flowers, caducous sepal lobes, isomorphic stamens, and connectives lacking a posterior claw but having lateral appendages. Jacques-Félix (1995) suggested that the lengthening process of the connective might have independently occurred in *Dionychastrum* (compare *Dionycha*) and other genera like *Dichaetanthera* and *Dissotis*. This is confirmed by our molecular results, as none of these genera are closely related.

Morphologically, *Dionychastrum* is more closely related to *Dissotidendron*. They both share the following characteristics: shrubs or shrublets, rarely trees; mostly deciduous; leaf surfaces rugose to bulbous; flowers 5-merous; calyx-lobes caducous, or persistent, without intersepalar appendages. Except for *Dion. schliebenii* with homomorphic stamens, the rest of the *Dissotidendron* species have markedly unequal or dimorphic stamens. We recommend retaining *Dionychastrum* as a separate genus from *Dissotidendron*, unless further evidence emerges to suggest otherwise.

■ TAXONOMIC TREATMENT

Based on morphology and phylogeny, we establish a new genus for *Dissotis* subg. *Paleodissotis* and *D. splendens*, respectively. To accommodate these changes, two new combinations are made. We also designate a lectotype. An updated key to the African Melastomateae is also provided.

Revised key to the genera of African Melastomateae including *Allodissotis* and *Paleodissotis*

1. Trees or shrubs; hypanthium margin truncate or with short sepals, leaving the corolla exposed in bud; flowers tetramerous; seeds with dorsal hyaline papillae ..... ***Dichaetanthera***
1. Herbs, subshrubs or shrubs; hypanthium with well-developed sepals, contorted and concealing the corolla in young bud stage; flowers tetra- or pentamerous (rarely hexa- or heptamerous); seeds without hyaline papillae ... 2
2. Herbs; sepals persistent; stamens isomorphic (except *T. cornifolium*), with anthers erect; hypanthium with hairs often arranged in complete or incomplete rings (rarely glabrous or hairy all over); fruit fleshy, baccate, irregularly bursting ..... ***Tristemma***
2. Herbs, subshrubs or shrubs; sepals persistent or caducous; stamens heteromorphic or isomorphic with anthers spreading or curved; hypanthium variously pubescent but not arranged in rings; fruit dry, capsular, bursting regularly via valves.....3
3. Leaves sessile or amplexicaul 4
3. Leaves petiolate (except *Feliciotis sessilicordata*) 6
4. Stems, leaves and hypanthium covered with dense stellate and/or glandular hairs appearing dusty; sepals persistent ..... ***Argyrella***
4. Stems, leaves and hypanthium glabrous or glabrescent; sepals persistent or caducous.....5
5. Stems thick and somewhat fleshy, winged; hypanthium glabrous with prominent longitudinal nerves; bracts and sepals persistent; leaf and calyx margins conspicuously ciliate, appearing dentate..... ***Anaheterotis***
5. Stems slender and non-fleshy, unwinged; hypanthium glabrous or glabrescent without longitudinal nerves; bracts and sepals caducous; leaf and calyx margins entire..... ***Eleotis***
6. Sepals persistent; intersepalar appendages absent or present 7

6. Sepals caducous (sometimes tardily so); intersepalar appendages always present 15
7. Herbs or subshrubs; flowers solitary or arranged in heads or cymes (rarely panicles), separately involucrate by several pairs of leaves or bracts 8
7. Herbs, subshrubs or shrubs; flowers in cymes or panicles but not involucrate 11
8. Herbs; intersepalar appendages present; flowers tetra- (rarely penta-)merous; bracts small (<4 mm long), persistent or caducous 9
8. Herbs, subshrubs or shrubs; intersepalar appendages absent; flowers pentamerous; bracts large (>4 mm long), persistent 10
9. Flowers tetra- or pentamerous, solitary or arranged in cymes or panicles; bracts caducous; pedoconnective and staminal appendages rudimentary or absent .... ***Nerophila***
9. Flowers tetramerous, arranged in heads (panicle in *A. gracilis*); bracts persistent; pedoconnective present with bilobed staminal appendages ..... ***Antherotoma***
10. Shrubs; flowers solitary; stamens isomorphic, with two ventral appendages and one dorsal appendage, pedoconnective not developed, anthers erect; seeds finely echinulate, curved only towards the top, cuneate at base with an elongated hilum ..... ***Cailliella***
10. Herbs or subshrubs/shrubs; flowers solitary or in heads; stamens iso- or dimorphic, with two ventral appendages, no dorsal appendage, pedoconnectives well developed, anthers falcate or sigmoid; seeds tuberculate, cochleate and without a hilum ..... ***Melastomastrum***
11. Herbs, decumbent or rooting at the nodes (sometimes erect); flowers solitary or in cymes (rarely panicles); bracts small (<4 mm long), persistent or caducous 12
11. Subshrubs or shrubs; flowers in cymes or panicles; bracts large (>4 mm long), caducous 13
12. Decumbent herbs; hypanthium with stalked stellate emergences (simple eglandular hairs in *H. decumbens*); flowers in cymes; seeds rough with tubercles arranged in parallel rows, with a basal aril (this sometimes very short) ..... ***Heterotis***
12. Decumbent or erect herbs; hypanthium usually glabrous or with glandular hairs (simple eglandular hairs in *G. pygmaea*); flowers solitary (panicle in *G. jacquesii*); seeds smooth or with tubercles not arranged in parallel rows, not arillate ..... ***Guyonia***
13. Leaves evergreen, small, 15–25 × 1–15 cm; intersepalar appendages present but reduced to a bristle; stamens isomorphic ..... ***Dionychastrum***
13. Leaves deciduous, much larger; intersepalar appendages absent; stamens usually dimorphic 14
14. Branches finely verrucose and covered with stellated hairs; inflorescence cyme; hypanthium campanulate, and covered with tubercules and stellate hairs ..... ***Dissotidendron***
14. Branches glabrous or with simple hairs; inflorescence cymes or panicles; hypanthium campanulate, and covered with tubercules and stellate hairs ..... ***Paleodissotis***
15. Shrubs; sepals asymmetrical, notched at apex; leaves deciduous ..... ***Nothodissotis***
15. Herbs, subshrubs or shrubs; sepals ± symmetrical, entire; leaves evergreen 16
16. Low perennial herb with numerous stems arising from a woody rootstock; leaf base attenuate, with an indistinct or contracted petiole ..... ***Pyrotis***
16. Annual or perennial herbs, subshrubs or shrubs without a woody rootstock; leaf base cuneate to rounded or subcordate, with a distinct petiole 17
17. Annual or perennial herbs; hypanthium with simple or stellate hairs or both 18
17. Subshrubs or shrubs; hypanthium pubescence various but not stellate 20
18. Stems and petioles reddish-maroon; hypanthium with a distinct subspherical base and cylindrical apex, base covered with stellate emergences, apex with simple pubescence; stamens isomorphic ..... ***Derosiphia***
18. Stems and petioles not reddish maroon; hypanthium urceolate, tubulate or campanulate, glabrous or with simple or stellate hairs; stamens dimorphic 19
19. Hypanthium with persistent stellate-pedicellate hairs, not accrescent in fruit; intersepalar appendages present; sepals glabrous or with sparse simple hairs on the back, apex with stellate appendages; fruits lacking a long neck with longitudinal ribs ..... ***Dissotis***
19. Hypanthium with caducous, simple or stellate hairs, accrescent in fruit; intersepalar appendages present or absent; sepals with short simple hairs on the back, apex ciliate; fruits developing a long neck with longitudinal ribs ..... ***Dupineta***
20. Sepals tardily caducous; stamens isomorphic, opening by an extrorse pore; leaves distinctly bicoloured, dark green above and yellowish green beneath ..... ***Pseudosbeckia***
20. Sepals early caducous; stamens dimorphic (except *Rosettea thollonii*), opening by an introrse pore; leaves dark green on both surfaces 21
21. Hypanthium sparsely covered with large, reflexed scale-like appendages or scabrid, long-stalked stellate hairs, apex disc-like or orbicular 22
21. Hypanthium densely silvery-sericeous, squamous, setulose, entire or pectinate pubescence 23
22. Endemic to Guinea; hypanthium with scabrid, long stalked stellate hairs, apex disc-like or orbicular; sepals apex with stellate hairs, flowers ..... ***Allodissotis***
22. Endemic to East Africa (Tanzania, Zambia, Democratic Republic of the Congo), hypanthium with large, reflexed scale-like appendages abruptly narrowed to 1 or several setae; flowers 1–3 ..... ***Almedanthus***
23. Stems with always opposite leaves arising from each node; leaf margins entire, third-order veins absent on both surfaces; true and leafy bracts present, tardily caducous; hypanthium covered with dense silvery-sericeous pubescence ..... ***Feliciotis***
23. Stems with whorled or opposite leaves arising at each node; leaf margins serrate, dentate or crenate, third-order

veins prominent on both surfaces; true bracts present, leafy bracts absent, early caducous; hypanthium pubescence various but not densely silvery-sericeous..... ***Rosettea***

Allodissotis Ver.-Lib. & Burgt, **gen. nov.** – Type: *Allodissotis splendens* (A.Chev. & Jacq.-Fél.) Ver.-Lib. & Burgt (≡ *Dissotis splendens* A.Chev. & Jacq.-Fél.).

Morphological description. – In comparison to other African Melastomateae, *Allodissotis* is a shrub up to 2 m tall with quadrangular stems; inflorescence a terminal panicle; hypanthium with scabrid, long-stalked stellate hairs, apex disc-like or orbicular; sepals early caducous, apex with stellate hairs; stamens dimorphic, connective and two ventral appendages present just above the filament (Fig. 1L–O).

Allodissotis splendens (A.Chev. & Jacq.-Fél.) Ver.-Lib. & Burgt, **comb. nov.** ≡ *Dissotis splendens* A.Chev. & Jacq.-Fél. in Bull. Mus. Natl. Hist. Nat., ser. 2, 4: 686. 1932 – **Lectotype (designated here):** Guinea, Environs de Kindia, 1929–1932, *Jacques-Félix 207* (P barcode P00412558!; isolectotypes: P barcodes P00412555, P00412556, P00412557).

Distribution. – Guinea (Fig. 5A).

Etymology. – The Greek prefix *allo-* (from *allos*, *alle*, *allo*) is similar to the Latin word *alius*, meaning "other, different, strange, foreign". Therefore, *Allodissotis* can be interpreted as "Other *Dissotis*" or "Different *Dissotis*".

Seed morphology. – Seed ovoid; lateral symmetrical plane ovate, antiraphal symmetrical plane ovate to suboblong. Individual cells isodiametric to elongated, anticlinal boundaries undulate; periclinal walls flat to convex or par-convex, microrelief sometimes striate or verrucose (Fig. 4A–D).

Note. – In the protologue of *Dissotis splendens*, Chevalier & Jacques-Félix (in Chevalier, 1932: 686) cited *Jacques-Félix 207* as the type specimen. We located four specimens housed in P, all part of the same field collection as the type in the original description but none of them was designated as the holotype. We selected P00412558 as the lectotype, and P0041 2555, P00412556 and P00412557 as isolectotypes.

Dionychastrum A.Fern. & R.Fern. in Bol. Soc. Brot., sér. 2, 30: 169. 1956 – Type: *Dionychastrum schliebenii* A.Fern. & R.Fern.

Dionychastrum schliebenii A.Fern. & R.Fern. in Bol. Soc. Brot., sér. 2, 30: 170. 1956 – Holotype: Tanzania, Morogoro, Uluguru Mountains, Mbambaku Peak, 26 Feb 1933, *H.-J.E. Schlieben 3601* (PRE barcode PRE0342271-0!; isotypes: BR barcode BR0000006260293!, EA barcodes EA000002110!, EA000002111!, K barcodes K000312750!, K000312751!, LISC barcode LISC 002432!, MO barcode MO-313699 [No. 1707055]!)

Distribution. – Tanzania (Fig. 5B).

Paleodissotis (Jacq.-Fél.) Ver.-Lib. & Burgt, **stat. nov.** ≡ *Dissotis* subg. *Paleodissotis* Jacq.-Fél. in Adansonia, sér. 2, 20(4): 421. 1981 – Type: *Paleodissotis leonensis* (Hutch. & Dalziel) Ver.-Lib.

Morphological description. – In comparison to other African Melastomateae, *Paleodissotis* is a shrub, treelet up to 3 to 4 m in height, deciduous during dry season with new leaves emerging after flowering; young branches finely verrucose and covered with stellated hairs; inflorescence a cyme; each flower bears two caducous bracts; hypanthium campanulate, and covered with tubercules and stellate hairs; calyx-lobes tardily caducous; stamens isomorphic or dimorphic, with a connective and bilobed appendages (Fig. 1A–K).

Paleodissotis leonensis (Hutch. & Dalziel) Ver.-Lib. & Burgt, **comb. nov.** ≡ *Dissotis leonensis* Hutch. & Dalziel, Fl. W. Trop. Afr. 1: 211. 1927 – Holotype: Sierra Leone, Mangui Trig point 4 Kessewe Hills, 500 m, 22 Feb 1913, *Lane-Poole 126* (K barcode K000313149!).

– "*Dissotis leonensis* Hutch. ex Lane-Poole", Trees, Shrubs, Herbs & Climbers Sierra Leone: 34. 1916, nom. nud.

Distribution. – Guinea, Sierra Leone (Fig. 5C).

Seed morphology. – Seed ovoid occasionally angled; lateral symmetrical plane ovate, antiraphal symmetrical plane ovate to suboblong. Individual cells isodiametric to elongated, anticlinal boundaries undulate; periclinal walls flat to convex or par-convex, microrelief verrucose (Fig. 4E–H).

Wood anatomy. – Growth rings faint. Vessels diffuse (7) 9–11(18)/mm^2, solitary and in radial multiples of 2–5(–9), tangential diameter (28–)52–86(–109) µm, radial diameter up to 127 µm, walls 2–4 µm thick. Vessel member length (140–)250–320(–480) µm. Inter-vessel pits alternate (6–16 µm). Vessel-ray and vessel-parenchyma pits large and simple or with narrow borders, alternate/opposite to transitional and scalariform. Fibres dimorphous, (460)530–680(–910) µm long, septate. Rays (8–)11–16(–19)/mm, uniseriate, rarely with a small biseriate portion (Fig. 6).

■ CONCLUSION

Target capture appears promising even for very old samples of Melastomataceae with highly fragmented DNA and low DNA concentration. Overall, the phylogenetic results previously obtained using Sanger-sequenced data are congruent with target capture data using hundreds of loci.

While numerous papers have been published in recent years to elucidate phylogenetic relationships among African Melastomateae, Malagasy and Asian Melastomateae have remained poorly sampled. Since these lineages are nested within African Melastomateae, resolving their generic relationships will provide a better understanding of the evolution of the Paleotropical Melastomateae. Moreover, comprehensive sampling of *Melastomastrum* is essential to verify the monophyly of the genus and to ascertain whether the distinct Guinean species, *M. porteresii* and *M. theifolium* var. *controversum*, are part of this clade. In the current study, only 3 of the 14 currently recognized species have

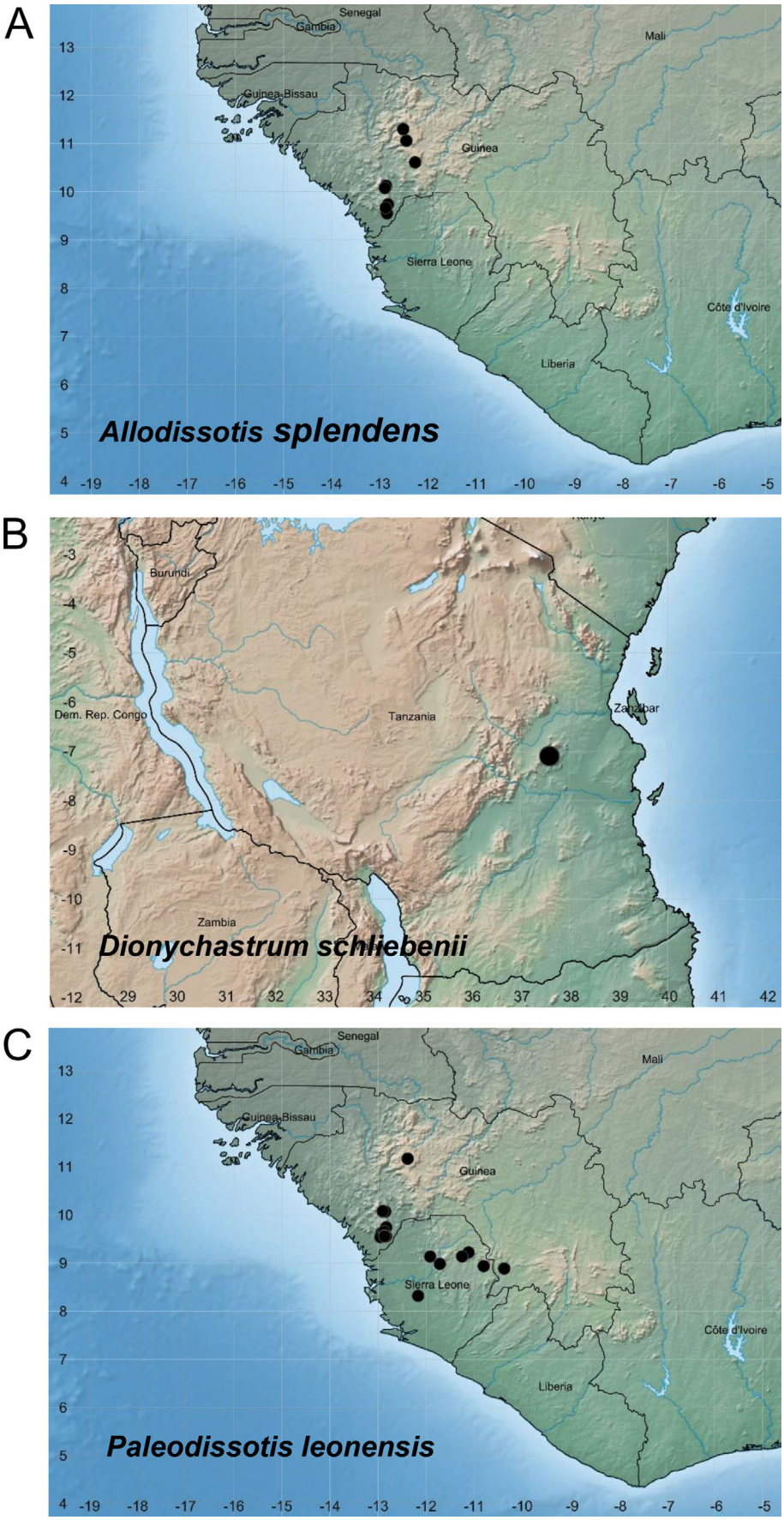


Fig. 5. Distribution of: **A**, *Allodissotis splendens*; **B**, *Dionychastrum schliebenii*; **C**, *Paleodissotis leonensis*.

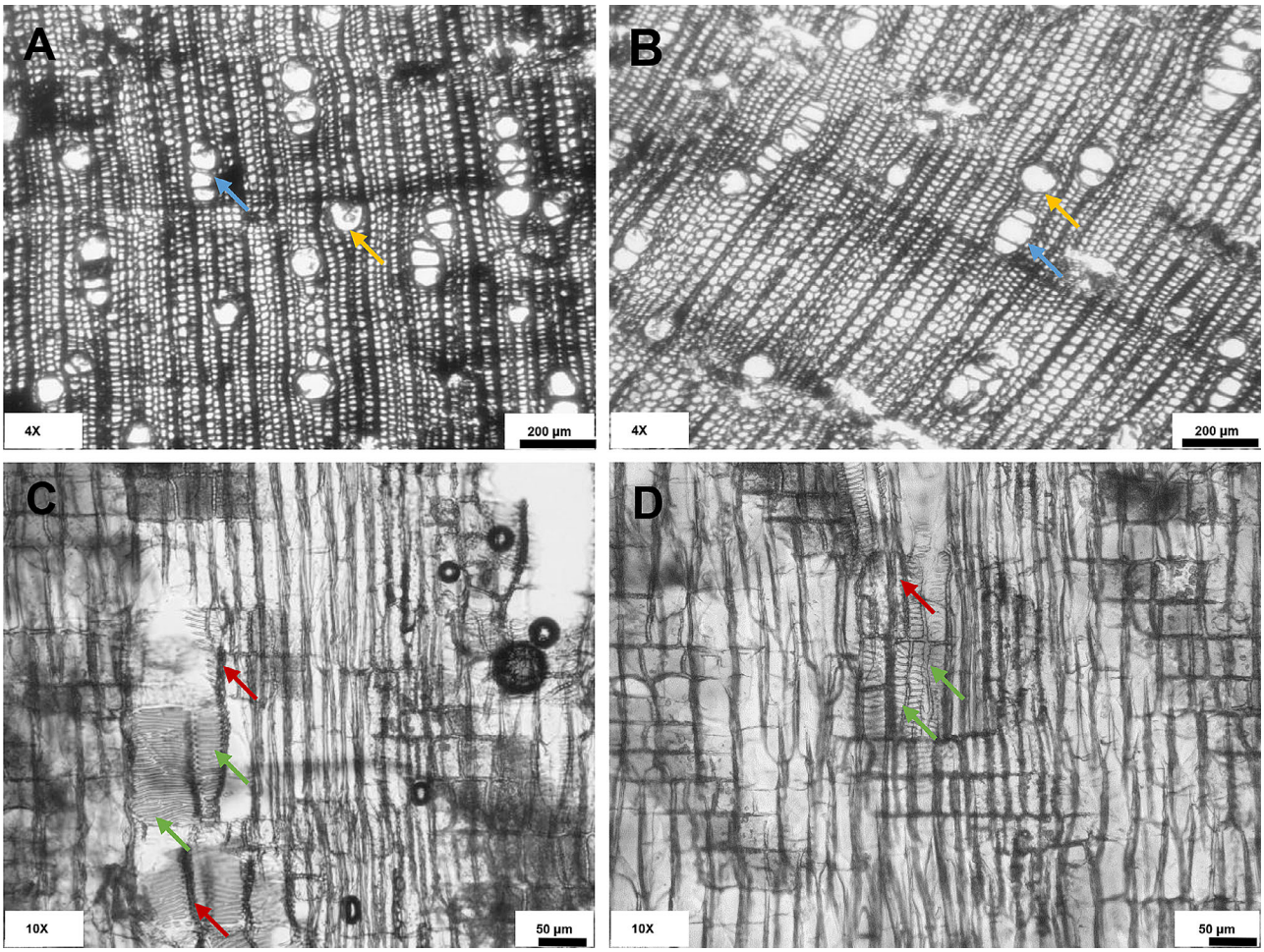


Fig. 6. Wood anatomical sections of *Paleodissotis leonensis*. **A** & **B**, Radial sections; **C** & **D**, Tangential sections. Orange arrows indicate solitary vessels, light blue arrows indicate multiple vessels, green arrows show alternate inter-vessel pits, and red arrows show rays.

been sampled. Also, *Antherotoma densiflora* (Gilg) Jacq.-Fél., which was once treated under *Dissotis*, remains unplaced, and *A. irvingiana* (Hook.) Jacq.-Fél., which was suggested to be excluded from *Antherotoma*, has not been sampled in this study. Therefore, it would be beneficial to include them in future research.

■ DATA AVAILABILITY

All sequence alignments, gene trees, species trees generated, and scripts used in this study are available at Zenodo (https://doi.org/10.5281/zenodo.14857876).

■ AUTHOR CONTRIBUTIONS

MCVL designed the study and drafted the manuscript; LC performed the data analyses, wrote parts of the methods and results, and prepared some figures; XvdB also prepared some figures. PH & XvdB collected the plants from Guinea used for the molecular work and provided additional information on the morphology and habit. GK and all authors contributed to the manuscript.

■ ACKNOWLEDGEMENTS

The authors would like to thank the curators and personnel of CSH and K for providing us with leaf, wood, and seed samples, Dr. Martina Silber for helping with DNA extraction, and Dr. Eva Facher for helping with wood anatomy and seed morphology examination. *Paleodissotis leonensis* and *Allodissotis splendens* were collected and studied during seed-collecting fieldtrips to Guinea for the Global Tree Seed Bank Project of Kew's Millennium Seed Bank Partnership, funded by the Garfield Weston Foundation. This project is funded by the German Science Foundation (DFG), project number KA1816/12-1 (GK) and VE 1291/1-1 (MCVL). Open Access funding enabled and organized by Projekt DEAL.

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Appendix 1. Voucher information.

Taxon name, synonym, country, collector, collection number, year collected, herbarium and SRA accession number.

Newly generated sequences: ***Allodissotis splendens*** (A.Chev. & Jacq.-Fél.) Ver.-Lib. & Burgt (*Dissotis splendens* A.Chev. & Jacq.-Fél.), Guinea, *Haba 1364* (K), SRR31831290; ***Allodissotis splendens*** (A.Chev. & Jacq.-Fél.) Ver.-Lib. & Burgt (*Dissotis splendens* A.Chev. & Jacq.-Fél.), Guinea, *Burgt 2163* (K), SRR31831287; ***Allodissotis splendens*** (A.Chev. & Jacq.-Fél.) Ver.-Lib. & Burgt (*Dissotis splendens* A.Chev. & Jacq.-Fél.), Guinea, *Balde 99* (K), SRR31831286; ***Almedanthus pachytrichus*** (Gilg ex R.E.Fr.) Ver.-Lib. & R.D.Stone, Tanzania, *SHCP 30*, 2005 (MO, MO-2721890), SRR31831260; ***Anaheterotis pobeguinii*** (Hutch. & Dalziel) Ver.Lib. & G.Kadereit, Guinea, *Couch 561* (K), SRR31831280; ***Antherotoma debilis*** var. ***debilis*** (Sond.) Jacq.-Fél., Mozambique, *Burrows 14526* (BNRH), SRR31831288; ***Antherotoma gracilis*** (Cogn.) Jacq.-Fél., Zambia, *Alford 5201* (M), SRR31831264; ***Antherotoma naudinii*** Hook.f., Cameroon, *M.C. Veranso 195*, 2014 (MJG), SRR31831245; ***Antherotoma naudinii*** Hook.f., Zambia, *Alford 5051* (M), SRR31831275; ***Argyrella bamburoum*** (Gilg & Ledermann ex Engl.) Ver.-Lib. & G.Kadereit, Cameroon, *M.C. Veranso 189*, 2014 (MJG), SRR31831301; ***Argyrella canescens*** (E.Mey. ex Graham) Harv., Mozambique, *Burrows B14053* (BNRH), SRR31831300; ***Cailliella praerupticola*** Jacq.-Fél., Guinea, *Haba 428* (BR, BR0000026775272V), SRR31831259; ***Derosiphia tubulosa*** (Sm.) Raf., Cameroon, *M.C. Veranso 115*, 2014 (MJG), SRR31831254; ***Dichaetanthera africana*** (Hook.f.) Jacq.-Fél., Cameroon, *M.C. Veranso 143*, 2014 (MJG), SRR31831258; ***Dichaetanthera erici-rosenii*** (R.E.Fr.) A.Fern. & R.Fern., Guinea, *Bidault 2551*, 2016 (BRLU), SRR31831294; ***Dichaetanthera bifida*** Jum. & H.Perrier, Madagascar, *Martial 278* (MO), SRR31831297; ***Dichaetanthera corymbosa*** (Cogn.) Jacq.-Fél., Zambia, *Alford 5048* (M), SRR31831293; ***Dichaetanthera oblongifolia*** Baker, Madagascar, *Almeda & al. 7926A* (CAS), SRR31831257; ***Dionychastrum schliebenii*** A.Fern. & R.Fern., Guinea, *Schlieben 3601* (K), SRR31831292; ***Dissotidendron caloneurum*** (Gilg ex Engl.) Ver.-Lib. & G.Kadereit, Tanzania, *S. Bidgood & al. 4484* (C), SRR31831296; ***Dissotidendron cordatum*** (Gilg) Ver.-Lib. & G.Kadereit, D.R. Congo, *I. Parmentier, Kisimba & Sahato 4433*, 2007 (BR, BR000000972923), SRR31831295; ***Dissotidendron melleri*** (Hook.f.) Ver.-Lib. & G.Kadereit, Tanzania, *O.A. Kibure 745*, 2002 (MO, MO-2721895), SRR31831282; ***Dissotidendron polyanthum*** (Gilg) Ver.-Lib. & G.Kadereit, Tanzania, *L. Festo, M.A. Mwangoka & R. Mbalo 1901*, 2005 (C), SRR31831256; ***Dissotis grandiflora*** (Sm.) Benth., Guinea, *Phillipson 6387*, 2012 (MO, MO-2721314), SRR31831291; ***Dissotis longisetosa*** Gilg & Ledermann ex Engl., Cameroon, *M.C. Veranso 205*, 2014 (MJG), SRR31831283; ***Dupineta brazzae*** (Cogn.) Ver.-Lib. & G.Kadereit, Cameroon, *M.C. Veranso 226*, 2014 (MJG), SRR31831299; ***Dupineta brazzae*** (Cogn.) Ver.-Lib. & G.Kadereit, Angola, *Goyder 8466* (K), SRR31831298; ***Dupineta multiflora*** Raf., Cameroon, *M.C. Veranso 104*, 2014 (MJG), SRR31831279; ***Eleotis welwitschii*** (Cogn.) Ver.-Lib. & R.D.Stone, Angola, *Goyder 8240* (K), SRR31831253; ***Feliciotis speciosa*** (Taub.) Ver.-Lib. & G.Kadereit, Tanzania, *Festo 107*, 1999 (MO, MO-2721878), SRR31831252; ***Guyonia antennina*** (Sm.) Ver.-Lib. & R.D.Stone, Guinea, *Bidault 2358*, 2016 (BRLU), SRR31831249; ***Guyonia ciliata*** Hook.f., Liberia, *Jongkind 11859*, 2013 (BR, BR0000016915534), SRR31831248; ***Guyonia jacquesii*** (A.Chev.) Ver.-Lib. & R.D.Stone, Guinea, *Jongkind 7437* (WAG, WAG0237101), SRR31831251; ***Heterotis decumbens*** (P.Beauv.) Jacq.-Fél., Cameroon, *Veranso 170*, 2014 (MJG), SRR31831247; ***Melastomastrum*** **sp.**, Guinea, *Bidault 2377* (BRLU), SRR31831246; ***Melastomastrum theifolium*** (G.Don) A.Fern. & R.Fern., Guinea, *Bidault 2414* (BRLU), SRR31831239; ***Melastomastrum porteresii*** (Jacq.-Fél.) Ver.-Lib. & G.Kadereit, Guinea, *G. Traore 48*, 2013 (BR, BR0000016974258), SRR31831242; ***Melastomastrum segregatum*** (Benth.) A.Fern. & R.Fern., Gabon, *Dauby 2719* (BRLU), SRR31831241; ***Melastomastrum segregatum*** (Benth.) A.Fern. & R.Fern., D.R. Congo, *Kambale 298* (BR), SRR31831240; ***Melastomastrum theifolium*** (G.Don) A.Fern. & R.Fern., Cameroon, *M.C. Veranso 197*, 2014 (MJG), SRR31831244; ***Melastomastrum theifolium*** var. ***controversum*** (G.Don) A.Fern. & R.Fern., Guinea, *P.M. Haba 1357* (K), SRR31831243; ***Nothodissotis alenensis*** Ver.-Lib. & O.Lachenaud, Equatorial Guinea, *Parmentier & Esono 2721*, 2004 (BRLU), SRR31831238. ***Nerophila clandestina*** (Jacq.-Fél.) Ver.-Lib. & R.D.Stone: Cameroon, *M.C. Veranso 230*, 2014 (MJG), SRR31831281; ***Nerophila congolensis*** (Cogn. ex Büttner) Ver.-Lib. & R.D.Stone, Gabon, *Gretchen & al. 1004*, 2001 (MO), SRR31831278. ***Nerophila gentianoides*** Naudin, Gabon, *Dauby 2289* (BRLU), SRR31831276; ***Nerophila togoensis*** (Leuenb.) Ver.-Lib. & R.D.Stone, Benin, *Akoeginou & al. 4268* (BR, BR0000016974401), SRR31831274; ***Osbeckia chinensis*** L., China, *Su Xiang-Xiu 22082*, 2017 (CSH), SRR31831273; ***Osbeckia stellata*** var. ***crinita*** Buch.-Ham. ex D.Don, Vietnam, *WKM 3481* (SING), SRR31831272; ***Paleodissotis leonensis*** (Hutch. & Dalziel) Ver.-Lib. & Burgt (*Dissotis leonensis* Hutch. & Dalziel), Guinea, *X.M. van der Burgt 2199* (K), SRR31831285; ***Paleodissotis leonensis*** (Hutch. & Dalziel) Ver.-Lib. & Burgt (*Dissotis leonensis* Hutch. & Dalziel), Guinea, *Burgt 2103* (K), SRR31831284; ***Paleodissotis leonensis*** (Hutch. & Dalziel) Ver.-Lib. & Burgt (*Dissotis leonensis* Hutch. & Dalziel), Guinea, *Burgt 2126* (K), SRR31831289; ***Paleodissotis leonensis*** (Hutch. & Dalziel) Ver.-Lib. & Burgt (*Dissotis leonensis* Hutch. & Dalziel), Guinea, *Burgt 2276* (K), SRR31831255; ***Pseudosbeckia swynnertonii*** (Baker f.) A.Fern & R.Fern., Mozambique, *Wursten PB2235* (BR, BR-SIL-SP-8403), SRR31831271; ***Pyrotis gilgiana*** (De Wild.) Ver.-Lib. & R.D.Stone, D.R. Congo, *M. Schaijes 2005*, 1983 (BR, BR0000017295055), SRR31831277; ***Rosettea crenulata*** (Cogn.) Ver.-Lib. & G.Kadereit, Angola, *Goyder 7476* (K), SRR31831269; ***Rosettea elliotii*** (Gilg) Ver.-Lib. & G.Kadereit, Cameroon, *M.C. Veranso 192*, 2014 (MJG), SRR31831270; ***Rosettea princeps*** (Kunth) Ver.-Lib. & G.Kadereit, Mozambique, *Maurin OM3993* (BR), SRR31831267; ***Rosettea riparia*** (Gilg & Ledermann ex Engl.) Ver.-Lib. & G.Kadereit, Cameroon, *M.C. Veranso 156*, 2014 (MJG), SRR31831265; ***Rousseauxia marojejensis*** Jacq.-Fél., Madagascar, *Martial 655* (MO), SRR31831268; ***Tristemma littorale*** subsp. ***biafranum*** Benth., Sao Tome & Principe, *Figueiredo 212* (M), SRR31831263; ***Tristemma mauritianum*** var. ***thomense*** J.F.Gmel., Sao Tome & Principe, *Figueiredo 211* (M), SRR31831266; ***Tristemma mauritianum*** J.F.Gmel., Cameroon, *M.C. Veranso 109*, 2014 (MJG), SRR31831250; ***Tristemma mauritianum*** J.F.Gmel., Cameroon, *M.C. Veranso 224*, 2014 (MJG), SRR31831262; ***Tristemma rubens*** A.Fern. & R.Fern., Gabon, *Bidault 1446*, 2013 (BRLU), SRR31831261.

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