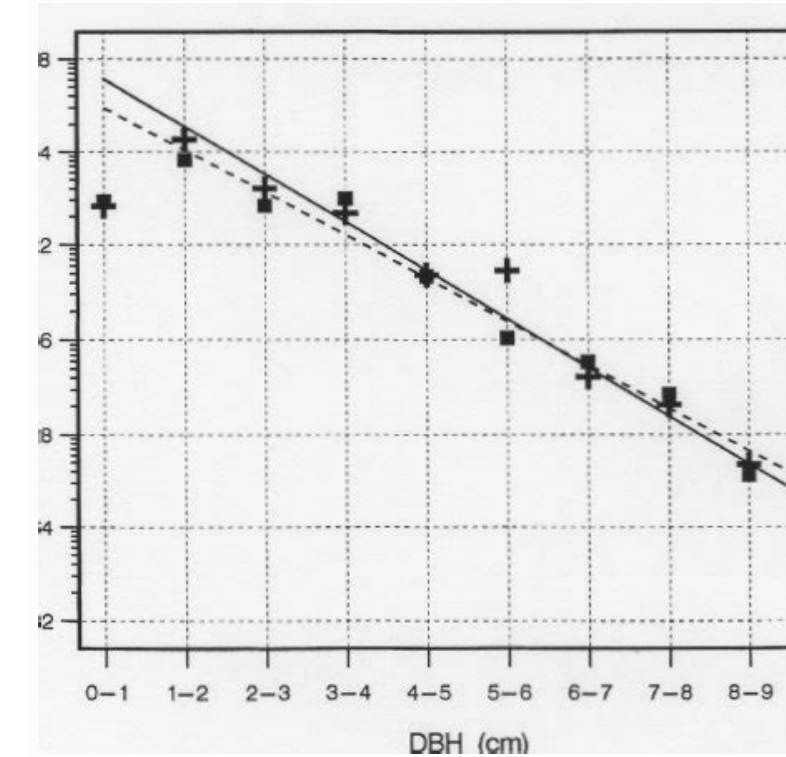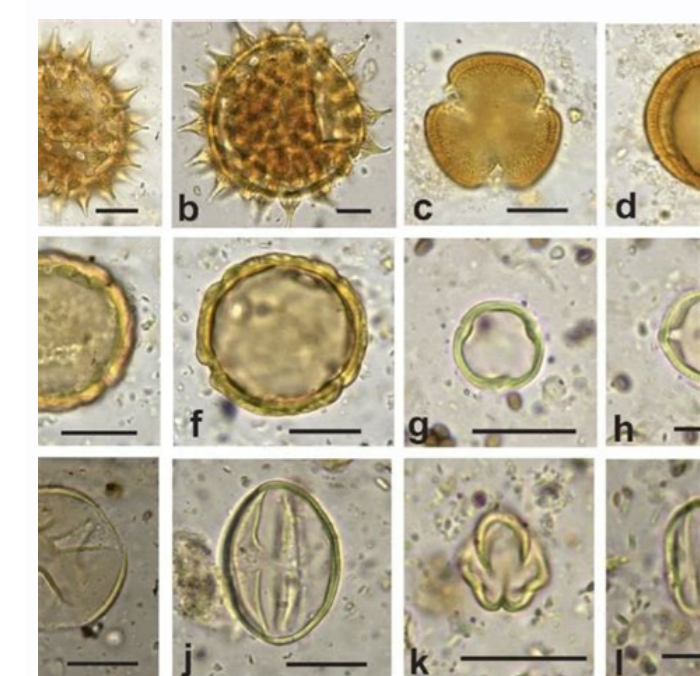# Melastomataceae lower classifications

Continue

Melastomataceae species. Melastomataceae. Melastomataceae family characteristics.

PDF Split View Article contents Figures & tables Video Audio Supplementary Data The Marcetia alliance of Melastomataceae is an exclusively Neotropical group that includes at least 12 genera of mostly herbs and subshrubs, occurring in the cerrado of central Brazil and savannas of the Amazon region and Guayana highlands. This study aimed to test the monophyly of genera in the Marcetia alliance, evaluate their phylogenetic relationships and generic boundaries, and investigate morphological characters as potential synapomorphies for delimiting clades or genera. We used nuclear (ITS, ETS) and plastid (accD-psaI, atpH-atpF, trnS-trnG) DNA sequences of 107 terminals in 12 genera from the alliance. Aciotis, Fritzschia, Marcetia and Siphanthera were shown to be monophyletic and supported by molecular and morphological characters. Other genera with variable morphology and wider distributions, such as Acisanthera, Comolia, Ernestia and Macairea, were recovered as paraphyletic or polyphyletic. Most morphological characters analysed were found to be homoplastic, but when combined they are potentially useful for the diagnosis of genera and infrageneric groups. This study represents a major step in understanding internal relationships and provides the basis for a revision of the generic classification in the Marcetia alliance. cerrado, character reconstruction, molecular markers, Neotropics, taxonomy Melastomataceae comprise 150–166 genera and c. 4570 species (Renner, 1993) and although they have a worldwide distribution, most species are concentrated in the Neotropics. They are usually recognized by their leaves with acrodomous venation, bisexual, diplostemonous flowers and poricidal anthers (Clausing & Renner, 2001).Previous studies have shown that Melastomataceae are monophyletic, as supported by morphological and molecular data (Clausing & Renner, 2001). However, many questions remain regarding the limits and relationships of tribes and genera (Fritsch et al., 2004; Penneys et al., 2010; Penneys & Judd, 2011; Goldenberg et al., 2012; Michelangeli et al., 2013), due to the high degree of morphological variability and the lack of evolutionary studies in some tribes. The most recent worldwide classification of the family is that of Renner (1993), based on morphological data; this replaced the tribal classification proposed by Triana (1871), Cogniaux (1891) and van Vliet, Koek-Noorman & Ter Welle (1981). However, morphological (Almeda & Martins, 2001; Stone, 2006; Ionta et al., 2007; Bécquer-Granados, 2008,Goldenberg et al., 2008, 2012; Kriebel, 2008, 2008; Martin et al., 2008; Amorim, Goldenberg & Michelangeli, 2009; Reginato, Michelangeli & Goldenberg, 2010; Almeda & Robinson, 2011; Penneys & Judd, 2011; Mendoza-Cifuentes & Fernández-Alonso, 2012) and molecular phylogenetic studies have shown that even this revised classification is inadequate (Clausing & Renner, 2001; Michelangeli et al., 2004, 2011, 2013; Penneys et al., 2010; Goldenberg et al., 2013).Melastomeae are one of largest tribes in Melastomataceae in generic, and hence morphological, diversity (Michelangeli et al., 2013). They have a pantropical distribution with about 870 species in 47 genera (Michelangeli et al., 2013). The majority of species occur in South America (c. 570 species, 30 genera) (Renner, 1993), mainly in the Brazilian cerrado. This tribe is characterized by the presence of a pedoconnective at the base of the anthers, capsular fruits and cochleate seeds with curved embryos (Michelangeli et al., 2013). However, the pedoconnective can be highly reduced or secondarily lost and many taxa have ventral connective appendages. One clade of Melastomeae, Monochaetum (DC.) Naudin, also seems to have gained dorsal appendages independently (Michelangeli et al., 2013).Changes in the taxonomic circumscription of Melastomeae have been common over time. De Candolle (1828) was the first to establish tribes, and he included some current genera of Melastomeae in Lavoisiereae, Rhexieae and Osbeckieae. Naudin (1849) recognized four tribes, with the current Melastomeae corresponding more or less to Lasiandrae (Triana, 1865).Triana (1865) placed most genera of Lasiandreae in Pleromeae and, contrary to previous authors, included continental location as a criterion for organizing genera in tribes. Cogniaux (1891), with an almost identical delimitation, named the tribe Tibouchineae. Just over a century later, Renner (1993) proposed Melastomeae based on morphological and anatomical data. In her concept (Renner, 1993), Melastomeae included tribes Tibouchineae (Cogniaux, 1891) and Osbeckieae (Triana, 1871), disregarding geographical criteria. Renner (1993) also included the genera Acanthella Hook.f., Poteranthera Bong., Siphanthera Pohl. ex DC. and Monochaetum in her expanded Melastomeae.Given the issues surrounding the circumscription of Melastomeae, Michelangeli et al. (2013) expanded sampling and investigated the limits of the tribe. The results of this analysis showed that Melastomeae as currently defined are biphyletic, consisting of two non-sister clades, the 'Marcetia alliance' and 'core Melastomeae', supported by molecular characters and differentiated mainly by seed coat, floral merosity, ovary apical appendages and habit (Michelangeli et al., 2013). Core Melastomeae were characterized by cochleate seeds with a tuberculate surface (Renner, 1993), ovary apex with a crown of hairs or appendages and staminal pedoconnectives with bifurcated dorsal

KU500949 Ernestia tenella (Bonpl.) DC. Michelangeli, F. A., 386 (BH) Venezuela JQ730082 KU501027 JQ730295 – KU500957 Fritzschia erecta Cham. Guimarães, P., 406 (RB) Brazil JQ730083 KF462849 JQ730296 – – Fritzschia anisostemon Cham. Mota, N., 2694 (BHCB) Brazil KU501070 KU501012 KU501179 – KU500942 Heterotis decumbens (P.Beauv.) Triana Smith, S., 1705 (US) Brazil JQ730088 KF462853 JQ730302 – KU500985 Lavoisiera bicolor Naudin Guimaraes, P. J., 345 (RB) Brazil KF463033 KF462855 KF407958 KU501157 KU500981 Macairea lasiophylla (Benth.) Wurdack Rocha, M. J. R., 873 (BHCB) Brazil KU501081 KU501024 – KU501134 KU500955 Macairea multinervia Benth. Rocha, M. J. R., 876 (BHCB) Brazil KU501082 KU501025 KU501185 KU501135 KU500956 Macairea pachyphylla Benth. Redden, K. M., 3869 (NY) Guyana JQ730094 KF462858 – – – Macairea radula (Bonpl.) DC. Lima, J., 715 (UPCB) Brazil JQ730095 KF462859 JQ730307 KU501133 KU500954 Macairea thyrsiflora DC. Wurdack, J. J., 4153 (NY) Guyana JQ730096 KF462860 KU501184 KU501132 KU500953 Marcetia acerosa DC. Santos, A. K. A., 681 (UFB) Brazil JQ730097 – – – – Marcetia alba Ule. Goldenberg, R. 2085 (UPCB) Brazil KU501095 KU501040 KU501200 – – Marcetia bahiensis (Brade & Markgr.) Wurdack Rocha, M. J. R., 308 (BHCB) Brazil KU501086 – KU501190 KU501140 KU500961 Marcetia candolleana A.K.A.Santos & A.B.Martins Bunger, M. O., 615 (BHCB) Brazil KU501085 KU501031 KU501189 KU501139 KU500960 Marcetia canescens Naudin Rocha, M. J. R., 295 (BHCB) Brazil KU501089 KU501034 KU501193 KU501143 KU500964 Marcetia eimeariana A.B.Martins & Woodgyer Santos, A. K. A., 832 (UFB) Brazil JQ730098 – KU501194 – – Marcetia ericoides (Spreng.) O.Berg ex Cogn. Santos, A. K. A., 532 (UFB) Brazil JQ730099 – – – – Marcetia formosa Wurdack Rocha, M. J. R., 345 (BHCB) Brazil KU501090 KU501035 KU501195 KU501144 KU500965 Marcetia grandiflora Markgr. Rocha, M. J. R., 319 (BHCB) Brazil KU501091 KU501036 KU501196 KU501145 KU500966 Marcetia harleyi Wurdack Santos, A. K. A., 558 (UFB) Brazil JQ730100 – – – – Marcetia latifolia Naudin Santos, A.K.A., 336 (UFB) Brazil JQ730101 – – – – Marcetia macrophylla Wurdack Rocha, M. J. R., 297 (BHCB) Brazil KU501084 KU501030 KU501188 KU501138 KU500959 Marcetia mucugensis Wurdack Rocha, M. J. R., 285 (BHCB) Brazil KU501088 KU501033 KU501192 KU501142 KU500963 Marcetia sp1 Rocha, M. J. R., 318 (BHCB) Brazil KU501093 KU501038 KU501198 KU501146 KU500967 Marcetia sp2 Rocha, M. J. R., 335 (BHCB) Brazil KU501092 KU501037 KU501197 – KU500968 Marcetia taxifolia (A.St.Hil.) DC. Michelangeli, F. A., 680 (BH) Venezuela JQ730102 KU501041 JQ730311 KU501148 KU500970 Marcetia viscida Wurdack Rocha, M. J. R., 334 (BHCB) Brazil KU501094 KU501039 KU501199 KU501147 KU500969 Marcetia velutina Markgr. Rocha, M. J. R., 293 (BHCB) Brazil KU501087 KU501032 KU501191 KU501141 KU500962 Microlicia fulva (Spreng.) Cham. Michelangeli, F. A., 1576 (UPCB) Brazil KU501105 KU501051 KU501205 KU501156 KU500980 Nepsera aquatica (Aubl.) Naudin Struwe, L., 1158 (NY) Porto Rico JQ730115 – JQ730327 KU501131 KU500952 Pterogastra divaricata (Bonpl.) Naudin Michelangeli, F. A., 540 (BH) Venezuela JQ730126 KF462875 JQ730337 KU501159 – Pterolepis glomerata (Rottb.) Miq. Martin, C. V., 419 (NY) French Guyana JQ730129 KF462876 JQ730340 KU501158 KU500982 Rhexia aristosa Britton Naczi, R. F. C., 12065 (NY) USA JQ730134 KF462878 – – KU500986 Sandemania hoehnei (Cogn.) Wurdack Goldenberg, R., 1007 (NY) Brazil JQ730141 KF462882 JQ730352 KU501150 KU500972 Siphanthera arenaria (DC.) Cogn. Mota, N., 2656 (BHCB) Brazil KU501099 KU501045 KU501203 – KU500974 Siphanthera cordata Pohl ex DC. Rocha, M. J. R., 964 (BHCB) Brazil KU501102 KU501048 KU501208KU501212 – KU500977 Siphanthera cordifolia (Benth.) Gleason Rocha, M. J. R., 882 (BHCB) Brazil KU501096 KU501042 KU501201 KU501151 KU500973 Siphanthera dawsonii Wurdack Versiane, A. F., 641 (HUFU) Brazil KU501103 KU501049 KU501207KU501211 – – Siphanthera fasciculata (Gleason) Almeda & O.R.Rob. Wurdack, J. J., 1959 (NY) Venezuela KU501097 KU501043 – – Siphanthera foliosa (Naudin) Wurdack Rocha, M. J. R., 728 (BHCB) Brazil KU501098 KU501044 KU501202 KU501152 – Siphanthera gracillima (Naudin) Wurdack Rocha, M. J. R., 941 (BHCB) Brazil KU501101 KU501047 KU501206KU501210 KU501154 KU500976 Siphanthera hostmannii Cogn. Wurdack, K. J., 4142 (NY) Guyana JQ730142 KF462883 JQ730353 KU501155 KU500978 Siphanthera paludosa Cogn. Rocha, M. J. R., 621 (BHCB) Brazil KU501100 KU501046 KU501204 KU501153 KU500975 Siphanthera subtilis Pohl ex DC. Moreira, S. N., 878 (BHCB) Brazil KU501104 KU501050 KU501209KU501213 – KU500979 Tibouchina heteromalla (D.Don) Cogn. Guimarães, P., 339 (RB) Brazil JQ730193 KF462936 JQ730401 – KU500983 Trembleya parviflora Cogn. Goldenberg, R., 824 (NY) Brazil JQ730242 KF462987 JQ730451 – – Review Article

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