



Taxonomic notes in *Calyptranthes* (Myrciinae; Myrtaceae) in the Brazilian Amazon

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Abstract

This study is a contribution to the taxonomy of *Calyptranthes* and to the list of Brazilian species of Myrtaceae. It presents morphological circumscriptions and new records of occurrences for the genus, and proposes a new synonym for *C. moaensis* Alain. Comments are made on the morphologies of the taxa and identifications of each species are provided, as well as discussions about their taxonomic affinities, geographical distributions, and preferred habitats in the Amazon region. New records include one for the Amazon region and five for Pará State.

Resumo

O presente estudo é uma contribuição à taxonomia de *Calyptranthes* e à lista de espécies de Myrtaceae da flora do Brasil. Apresenta-se uma circunscrição morfológica e novos registros de ocorrência para o gênero e se propõe um novo sinônimo para *C. moaensis* Alain. São feitos comentários sobre a morfologia dos táxons, proporcionando a identificação de cada espécie, bem como abordagens sobre afinidades taxonômicas e dos respectivos dados de distribuição geográfica e ambientes preferenciais de ocorrência na região amazônica. Destaca-se um novo registro para a Amazônia brasileira e cinco para o estado do Pará.

Key words: morphology, phytophysiognomy, synonymy, taxonomy

Introduction

The genus *Calyptranthes* Swartz (1788: 79) is widely distributed in South America (McVaugh 1958) and includes 68 species in Brazil, of which 26 occur in the Brazilian Amazon and 11 in Pará State (Sobral *et al.* 2012; Rosário 2012). This genus belongs to subtribe Myrciinae as defined by Lucas *et al.* (2007), dubbed “core Myrciinae” or “Myrcia group”, comprising the genera *Calyptranthes*, *Myrcia* De Candolle (1827: 401), *Marlierea* Cambessèdes (1832: 373) and *Gomidesia* O.Berg (1855: 5). These genera are characterized mainly by the dehiscent calyx and the exposure of the corolla in the floral bud (calyx dehiscent and corolla exposed, but not opened in *Myrcia* and *Gomidesia*, and calyx with sepals not individualized and corolla not exposed in *Calyptranthes* and *Marlierea* [Rosário 2012]). In the latter two taxa, a single floral component covers the androecium and gynoecium, and there is no distinction between the calyx and corolla at anthesis. Calyx dehiscence is a diagnostic character for these taxa: circumscissile, with calyptra persisting or deciduous after anthesis in *Calyptranthes*, versus partial or total irregular tearing, with sepals having irregular shapes and sizes in *Marlierea*.

Continuing efforts to develop new circumscriptions and classifications of Myrciinae based on molecular phylogenetic analyses have so far shown that the four genera of this subtribe are not monophyletic (Lucas *et al.* 2005, 2007, 2011, Wilson 2011), and these authors have suggested they should be a single genus: *Myrcia s.l.* Although the

name *Calyptranthes* has priority over *Myrcia* (as noted by McVaugh 1968), Lucas & Sobral (2011) have suggested that *Myrcia* is a more appropriate generic name for this group as it is the most common designation on the labels of herbarium specimens, requires a smaller number of new combinations, and has a clearer meaning (in that “*Calyptranthes*” suggests the formation of a calyptra). However, the acceptance, or not, of this proposal will only be decided at the next International Botanical Congress in 2017 in China.

In the present study, *Calyptranthes* is maintained as an independent taxonomic unit identifiable by unique and constant morphological characters (particularly floral characters, as indicated by Rosário [2012]: circumscissile, with deciduous or persistent calyptra on the hypanthium apex after anthesis). This procedure makes it possible to establish correlations among the species and between them and the informal groups (clades) recognized by Lucas *et al.* (2011)—as these clades are circumscribed primarily by morphological characters and geographical distributions.

Recent floristic and taxonomic studies of Amazonian Myrciinae have contributed with new information and revealed diagnostic morphological characters at both generic and specific levels (Rosário *et al.* 2005, 2014; Rosário & Secco 2006, 2013; Ferreira *et al.* 2013). This data can be informative to phylogenetic analyses, mainly for supporting proposals of new systematic arrangements in the family and assisting in the taxonomic reevaluation of *Calyptranthes* by providing current morphological data about the morphologies, diversity, geographical distributions, endemism and preferred habitats of its component species, and to complete (or correct) the checklist of Brazilian species (Sobral *et al.* 2012).

We present here a morphological circumscription of *Calyptranthes*, a new synonym for *C. moaensis*, and six new records of the occurrence of this genus in the Brazilian Amazon region. We comment on circumscriptions and taxonomic affinities, and provide data concerning the phenologies, geographic distributions, and vegetation types where the species are found in Brazil.

Materials and Methods

This study is based on the analysis of collections in herbaria in northern Brazil (EAFM, IAN, INPA, MG), as well as in BHCB, R, RB and UB. Photographs of nomenclatural types from BM, BR, F, K, MICH, M, MO, NY, P, US and U (acronyms in agreement with Thiers 2012) were also analyzed. The abbreviations of the names of the authors of the genera and species follow Brummitt & Powell (1992).

The taxonomic approach used here is based on a recent study of Rosário (2012) and the published literature (McVaugh 1958, 1969; Holst *et al.* 2003; Rosário & Secco 2006), as well as on samples identified by experts, type specimens, and photographs and/or scanned images.

The samples analyzed were collected in the Brazilian Amazon region (with emphasis in Pará State), although additional material was also consulted when appropriate. Morphological and morphometric analyses were performed with the aid of a Zeiss stereoscopic microscope. The principal diagnostic vegetative and reproductive characters of the species studied are illustrated.

Morphological terminology follows McVaugh (1956, 1968, 1969), Radford *et al.* (1974), and Barroso *et al.* (1999), and the characterizations of the phytophysiognomies were based on Pires & Prance (1985). Information regarding the flowering and fruiting periods of the species were obtained from the literature and from herbarium collections.

***Calyptranthes* Swartz (1788: 79), *nom. cons.* [emend. A. Rosário & Baumgratz]**

Trees or shrubs, with sympodial branching systems. Inflorescences a panicle, axillary and/or terminal or reduced and modified (shorter), fasciculiform, rachis very reduced or absent; bracts and bracteoles lanceolate to ovate or absent. Floral buds with sepals fully connate to each other, apiculate or not; calyx with *circumscissile* dehiscence, calyptra deciduous or persistent after anthesis. Flowers subsessile or distinctly pedicellate; petals usually absent, if present 1–4 juxtaposed to calyptra, usually early deciduous; hypanthium prolonged above the ovary, margin entire or irregularly toothed; ovary 2-celled, 2 ovules per locule. Fruit baccate, usually crowned by the tubular apex of the hypanthium and staminal disk, sometimes with persistent style and calyptra; embryo myrcioid (as considered by McVaugh 1958, Barroso *et al.* 1999 and Sobral 2003).

I. New synonym

1. *Calyptranthes moaensis* Alain (1953: 9). Type:—CUBA. Oriente: Moa, Río Yagrumajes, 29 June 1945, Bro. Clement 4442 (holotype LS, incorporated in HAC, not seen; photos of isotypes NY!, US!). Figure 1L–O.

Marlierea uniflora McVaugh (1969: 69). Type:—VENEZUELA. Amazonas: Rio Guainia, in savanna, left bank of Caño Caname, 120–140 m, 14 October 1957, *B. Maguire et al. 41888* (photo of holotype MICH!; photos of isotypes NY!, US!, VEN!), *Syn. nov.*

Alain (1953) described *C. moaensis* based on the specimen *Clement 4442* from Cuba; while McVaugh described *Marlierea uniflora* (1969: 69), based on the collection *Maguire 41888* from the Venezuelan Amazon. Sobral *et al.* (2012) mentioned the occurrence of *M. uniflora* in the Brazilian Amazon (Amazonas State) after studying the collections *C. Farney 1886* (MO, RB) and *G. Martinelli 14532* (RB). Analyses of these two collections and the types and original diagnoses of *C. moaensis* and *M. uniflora* allowed us to confirm that Alain (1953) and McVaugh (1969) used very similar sets of characters to circumscribe those species. These characters are very unusual, compared to other members of the Amazonian Myrciinae, with the short leaves (up to 2.5 cm long) and inflorescences of the monad type (unifloral) with long pedicels (up to 9 cm long) being the most prominent diagnostic characters to identify these species. Additionally, trichomes are only present in the proximal region of the pedicel; if the pedicel is articulated, trichomes occur from the base to the first pair of bracteoles, being absent more distally.

Calyx dehiscence was observed to be calyptriform (as could be observed from the floral buds and the only pair of flowers available), and this character contrasts with the other species in the genus *Marlierea*. Alain (1953) did not mention the type of calyx dehiscence in the original description of *C. moaensis* as the only material available for that analysis was in pre-anthesis. McVaugh (1969) placed *M. uniflora* as an intermediate species between *Calyptanthes* and *Marlierea*, and suggested that new specimens be analyzed in order to evaluate its correct position.

The specimens analyzed in the present study showed floral buds with circumcised dehiscence, forming an entire or partially irregular calyptra. When entire, the calyptra forms a single structure with the calyx (adnate to the hypanthium apex) after anthesis. When irregular, 2/3 of the calyptra forms an irregular hood with an entire apiculum, while the remaining 1/3 splits into irregular lobes (similar to the calycine lobes of *Marlierea*). These morphological features were not clearly explored by Alain (1953) or McVaugh (1969). Holst *et al.* (2003), in their inventory of Venezuelan Myrtaceae, likewise did not comment on this feature. Additionally, McVaugh (1969) and Holst *et al.* (2003) both mentioned seasonally flooded forests (*várzeas*) and savannas as the preferential habitats of *M. uniflora*. Although Alain (1953) did not mention the phytophysiognomy of the vegetation where *C. moaensis* was collected, the collection label of the type cites “Moa, Río Yagrumajes”, information indicative of a riparian habitat and suggestive of a flooded area. In light of the evident overlap of morphological characteristics, *M. uniflora* is proposed as a synonym of *C. moaensis*, which represents a new record for Brazil.

Representative specimens examined. BRAZIL. Amazonas: São Gabriel da Cachoeira, rio Cubate, afluyente do rio Içana, 4 November 1987, *C. Farney 1886* (RB); São Gabriel da Cachoeira, entre as ilhas Açai e Aparecida, rio Negro, 25 July 1991, *G. Martinelli 14532* (RB).

II. New geographical records

2. *Calyptanthes amshoffae* McVaugh (1958: 70). Type:—SURINAME. 28 February 1955, *B. Maguire 40713* (photo of holotype MICH!; photos of isotypes F!, G!, K!, NY!, S!, U!, US!). Figure 1A–B.

The species is reported for the first time for Pará State, Brazil. It is popularly known in the Amazon region as “goiabinha-folha-dourada” and “goiabinha-folha-vermelha”. It also occurs in the states of Amapá and Maranhão, as well as in Suriname. It can be found in *várzea* forests (seasonally flooded forests in the Brazilian Amazon), upland forests, and savannas, specifically in *canga* vegetation (on montane plateaus with iron-rich lateritic soils in the Brazilian Amazon).

Diagnostic characters for the taxon include: branches pubescent, leaves with abaxial surface brownish, inflorescence a terminal panicle, bracts and bracteoles lanceolate, floral bud pilose or glabrous only on the blackish calyptra, and style glabrous. The species is morphologically close to *C. fasciculata* (1855: 31–32), but can be distinguished from it by having terminal panicles, not fasciculate, 6–12 cm long (vs. panicles fasciculiform, axillary, rarely terminal, with rachis always very reduced or absent).

The specimen from the collection *Prance et al. 30436*, which was mentioned in the checklist of the flora of Brazil as a voucher of *Calyptanthes densiflora* O.Berg (Sobral *et al.* 2012), is actually a specimen of *C. amshoffae*. This determination is based on duplicate material belonging to the MG herbarium. Thus, the report of *C. densiflora* in Pará State is incorrect, and only five species of this genus are definitely known to occur in that state.

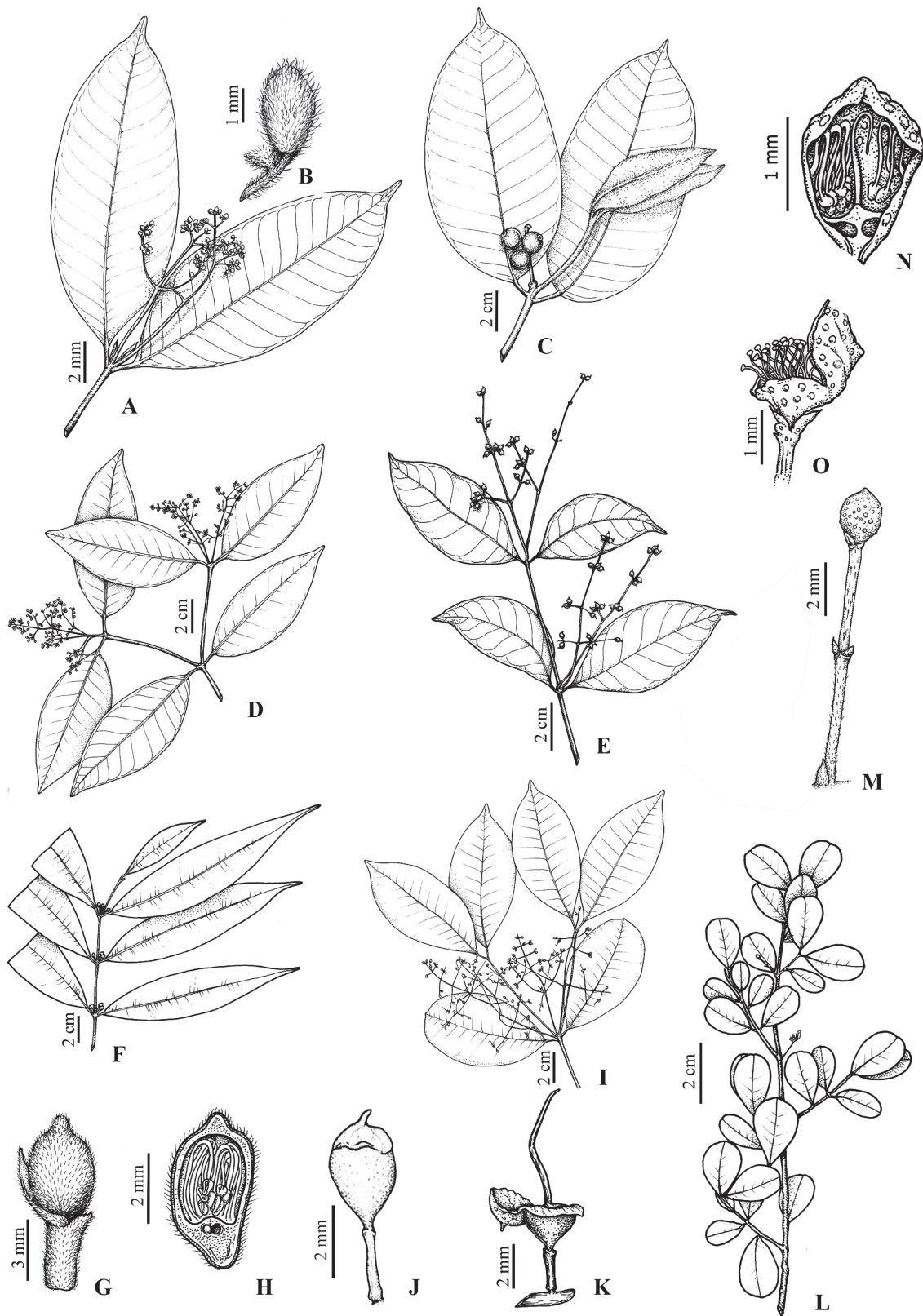


FIGURE 1. *Calyptranthes amshoffae* McVaugh. A. Branch with panicle inflorescences, terminal. B. Floral bud pilose. *Calyptranthes blanchetiana* O.Berg. C. Branch with fruits. *Calyptranthes crebra* McVaugh. D. Branch with panicle inflorescences, terminal. *Calyptranthes cuspidata* Mart. ex DC. E. Branch with panicle inflorescences, axial and terminal. *Calyptranthes fasciculata* O.Berg. F. Branch with fasciculiform inflorescences, axial. G. Floral bud pilose. H. Floral bud in longitudinal section. *Calyptranthes lucida* Mart. ex DC. I. Branch with panicle inflorescences. J. Floral bud glabrous. K. Flower after anthesis. *Calyptranthes moaensis* Alain. L. Branch with inflorescences of the monad type (unifloral). M. Floral buds with long, articulated pedicels. N. Floral bud in longitudinal section. O. Flower after anthesis. A-B from B. Maguire 40719 (IAN); C from C.A. Cid Ferreira et al. 2259 (MG); D from G.T. Prance et al. 14272 (MG); E from A. Vicentini et al. 800 (MG); F-H from C.C. Berg et al. 727 (MG); I-K from N.A. Rosa et al. 4615 (MG); L-O from C. Farney et al. 1886 (RB).

Representative specimens examined. BRAZIL. Amapá: Contagem, entre Porto Platon e Serra do Navio, F-13, S-10, 10 October–15 December 1976, *N.A. Rosa 1196* (MG); Rio Araguari, 1°55'–2°05'N, 51°56'–51°59'W, 30 August 1961, *J.M. Pires et al. 50601* (IAN, MG, MICH). Maranhão: Turiaçu, café da mata, margem direita da Rod. BR-316, Km 153, Floresta Terra Firme, 10 December 1978, *N. A. Rosa & H. Vilar 3159* (INPA, MG). Pará: Barcarena, 24 September 1983, *M.R. Cordeiro 1855* (IAN); E. F. B. Peixe-Boi, 23 Oct. 1907, *R.S. Rodrigues s.n.* (MG 8785); Rio Mocoões, 2 km acima de Anajás, 0°57'S, 49°56'W, 13 November 1987, *G. T. Prance et al. 30436* (INPA, MG, MO, NY); BR 230, 53 km de Itaituba, 28 November 1977, *G. T. Prance et al. 25837* (IAN, INPA, MG, NY). SURINAME. Montanhas Nassau, 11 March 1949, *J. Lanjouw & J.C. Lindeman 2585* (paratypes IAN, U); 28 February 1955, *B. Maguire 40719* (paratypes IAN, MICH).

3. *Calyptanthes blanchetiana* O.Berg (1857: 40). Type:—BRAZIL. Bahia: 1840, *J.S. Blanchet 3114* (holotype B, probably destroyed; photos of isotypes A!, MICH!). Figure 1C.

Calyptanthes blanchetiana is reported for the first time for Pará State, Brazil. This is also a new record of the species for the Brazilian Amazon. Although flowering material was not analyzed, the collection *Cid Ferreira et al. 2259*, from Pará, shows a series of diagnostic vegetative characters for this species, i.e., petiole ca. 1 cm long, blackish, leaves strongly coriaceous, with abaxial surface densely velutinous when young but only sparsely when mature, and fruits ferruginous-pubescent with tenuous glands, and disk zone pilose. It was also observed that while the edge of the hypanthium is entire in most fruits (which supports the assignment of the taxon to *Calyptanthes*), some of them also show ruptures in the circumscribed region of the calyx (probably originating during the dehiscence of the floral bud). Analyses of the original diagnosis and images of types were therefore important in verifying the identifications of the specimens analyzed.

Berg (1857–1859) did not give precise information about the habitat of the type specimen of *C. blanchetiana*. *Calyptanthes blanchetiana* has no affinity with any species from the Brazilian Amazon and is so far only known from the type-collection from Bahia State. Based on the data and collections available, this species shows a disjunct distribution between the Atlantic Forest and the Amazon region, occurring in seasonally flooded *várzea* forests in the latter.

Representative specimens examined. BRAZIL. Pará: Oriximiná, Rio Paru do Oeste, cachoeira Chuvisco, 7 September 1980, *C.A. Cid Ferreira et al. 2259* (INPA, MG).

4. *Calyptanthes crebra* McVaugh (1956: 181). Type:—PERU. Mishuyacu, near Iquitos, October–November 1929, *G. Klug 77/78* (photo of holotype F!; photos of isotypes NY!, US!). Figure 1D.

This species is reported for the first time for Pará State, Brazil. It is distributed through Venezuela, Brazil (the states of Amazonas, Pará, Rondônia, and Mato Grosso), and Peru. In Brazil, it occurs in dryland (*caatinga*), pluvial ombrophilous, seasonally flooded (*várzea*), upland (*terra firme*), and savanna (*canga* vegetation) forest formations. *Calyptanthes crebra* is characterized by having branches, leaves, and inflorescences glabrous, leaves with numerous and conspicuous translucent glands on both surfaces, and venation with tenuous marginal arches, these being 1.5–3 mm distant from the leaf edge, or absent, inflorescence many-branched, terminal, rachis 3–10 cm long, floral bud rounded at the apex, sometimes slightly apiculate, with evident glands, and petals absent. It is close to *C. lucida*, differing by its thickened petiole, leaves glabrous on the abaxial surface, and fruits with sparse trichomes (vs. petiole slender, leaves pubescent on the abaxial surface, and fruits glabrous).

Representative specimens examined. BRAZIL. Amazonas: Reserva Florestal Ducke, oeste da reserva, 21 September 1995, *M.A.D. Souza & C.F. Silva 174* (INPA, R); estrada Manaus-Igarapé Leão, Km 5, com estrada Manaus-Caracarái, 21 January 1971, *G.T. Prance 11407* (INPA, MG); Rio Curuquetê, Cachoeira Santo Antônio, 16 July 1971, *G.T. Prance et al. 14272* (INPA, MG, R). Mato Grosso: Aripuanã, 13 August 1976, *M. Gomes & S. Miranda 192* (INPA). Pará: Marabá, Serra Norte, Carajás, Rio Itacaiunas (abaixo do caldeirão), 16 August 1984, *N.A. Rosa 4615* (MG). Rondônia: Rio Jaciparaná, 9–12 Km, acima de Jaciparaná, 30 June 1968, *G.T. Prance et al. 5374* (INPA, MG, R); Rio Bananeiras nas proximidades da estrada Guajará-Mirim com Abunã, 5 August 1968, *G.T. Prance et al. 6773* (INPA, MG, R). PERU. Loreto: Mayanas, Iquitos, rio Momon, 1 September 1975, *Y.M. Rimachi 1916* (RB). VENEZUELA. Amazonas: Piedra de Tubari, 00°15'N, 66°51'W, 30 October 1987, *D.C. Daly et al. 5525* (INPA, MG, RB).

5. *Calyptanthes cuspidata* Martius ex De Candolle (1828: 258). Type:—BRAZIL. Amazonas: Enganos river, flumen Japurá, Black river, February 1827, *C.F.P. Martius s.n.* (photo of holotype M!; photos of isotypes: K!, M!). Figure 1E.

Although this species only occurs in the Brazilian Amazon, this report represents the first record for Pará State. It also grows on the slopes of upland forests in the states of Amapá and Amazonas.

Calyptranthes cuspidata is characterized principally by having leaves with the midrib slightly impressed to flat on the adaxial surface, secondary veins thickened and evident on the abaxial surface, marginal veins forming conspicuous arcs 2–6 mm distant from the leaf edge, two deciduous bracteoles, floral buds pilose, with apex conspicuously apiculate, calyptra ovate and deciduous, and four pubescent petals. By the well-defined inflorescence in panicles and the deciduous calyptra, *C. cuspidata* is close to *C. crebra* and *C. lucida*, but easily distinguished from them by its ferruginous-pubescent panicles and flowers with petals (vs. panicles glabrous and petals absent).

Representative specimens examined. BRAZIL. Amazonas: Reserva Florestal Ducke, 17 December 1996, *M.A.D. Souza et al.* 294 (INPA, R); Reserva Florestal Ducke, Igarapé do Tinga, 8 December 1994, *A. Vicentini* 800 (INPA, MG, RB); Floresta de vertente, 6 May 1997, *P.A.C.L. Assunção* 501 (INPA, MG, RB); Manaus, rio Negro, Jan. 1901, *E.H.G. Ule* 5345 (MG). Pará: Monte Dourado, Bandeira, 13 January 1969, *N.T. Silva* 1621 (RB).

6. *Calyptranthes fasciculata* O.Berg (1855: 31–32). Type:—GUYANA. 1841, *R.H. Schomburgk* 979 (photo of lectotype G!; photo of isolectotype F!). Lectotype designed for McVaugh (1989: 475). Figure 1F–H.

This species is distributed only in the Amazon region, occurring in Guyana and Brazil (in the states of Roraima, Pará, Amazonas, Rondônia, and Maranhão), where it grows in upland forests. This is the first record of the species for Pará State.

Calyptranthes fasciculata is characterized by having leaves with petiole slightly canaliculate and blade elliptic to ovate, with apex acuminate to cuspidate, abaxial surface ferruginous, and conspicuous translucent glands, inflorescences in fasciculiform panicles, with rachis absent or rarely present (less than 3 cm long) and flowers shortly pedicellate. The specific epithet refers to the fasciculiform inflorescence; this character is unique in the group and distinguishes this species from others of the same genus in the Amazon region.

Representative specimens examined. VENEZUELA. Amazonas: Siapa river, just above Raudal Gallineta (about 110 km from mouth), 20 July 1959, *J.J. Wurdack & L.S. Adderley* 43528 (IAN). GUIANA. Essequibo, 03°01'N, 59°21'W, 16 Oct. 1991, *E.M. Harris et al.* 1064 (INPA). SURINAME. 5 July 1918, *B. Boschwezen* 388 (RB). BRAZIL. Tefé, cabeceira do lago, 14 March 1973, *Pd.L. Krieger & Marilene* 12606/05 (RB). Maranhão: Nova Esperança, rio Alto Turiaçu, 02°55'S, 45°45'W, 4 December 1978, *J. Jangoux* 213 (INPA, MG). Pará: rio Guamá, acima de Ourém, próximo ao Posto Indígena Tembê, July 1953, *J.M. Pires & N.T. Silva* 4632 (IAN); Estação Embrapa, estrada Altamira–Itaituba, km 23, 29 October 1977, *C.C. Berg* 727 (INPA, MG, RB). Rondônia: Espigão do Oeste, BR 364, Rod. Cuiabá–Porto Velho, estrada da FUNAI, Km 05, 20 June 1984, *C.A. Cid Ferreira* 4668 (INPA, MG). Roraima: rio Uraricoera, Canal Maracá, 20 February 1979, *J.M. Pires* 16755 (INPA, MG); Serra da Lua, 02°25'–02°29'N, 60°11'–60°14'W, 1200–1300 m, 25 January 1969, *G.T. Prance* 9473 (INPA, MG).

7. *Calyptranthes lucida* Martius ex De Candolle (1828: 258). Type:—BRAZIL. Bahia: *C.F.P. Martius* s.n. (holotype M, not seen; photos of isotypes BR!, F!, M!). Figure 1I–K.

This species is endemic to Brazil, and is recorded here for the first time for Pará State. It also occurs in the states of Amapá, Amazonas, Rondônia, Maranhão, Mato Grosso, and Bahia, growing in both seasonally flooded and upland forests.

Calyptranthes lucida is characterized by having branches with discrete wings (although sometimes absent), petiole filiform and canaliculate, leaves glabrous on the adaxial surface and pubescent abaxially, midrib flat to slightly impressed on the adaxial surface and flat to prominent abaxially, floral bud apiculate, glabrous, with glands scarcely evident, calyptra ca. 1 mm wide, usually deciduous, and disk zone and style glabrous.

As previously mentioned, *C. lucida* is close to *C. crebra*. However, in addition to the characters already provided to distinguish these species, *C. lucida* has branches with discrete wings.

Representative specimens examined. BRAZIL. Amapá: 1956, *M. Bastos* 97 (RB); Contagem, entre Porto Platon e Serra do Navio, F-12, S-10, I-141, 10 October–5 December 1976, *N.A. Rosa* 1071 (INPA, MG). Amazonas: Carauari, Rio Juruá, poço Jaraqui-1 da Petrobrás, a 55 Km do Porto Gavião ES-50, 15–16 October 1980, *P. Lisboa* 1960 (INPA, MG). Maranhão: Carolina, localidade Lage, 9 August 1955, *A. Macedo* s.n. (RB-95623). Mato Grosso: margem do rio Casca, confluência com rio Manso, 19 September 1988, *M. Pereira* 391 (RB). Pará: Santarém, 25 June 1954, *R.L. Fróes* 30950 (IAN, RB, R); Oriximiná, rio Erepecuru, entre Serrinha e Varre-Vento, 22 May 2002, *H.C. Lima* 6029 (RB); Marajó, Rio Cururu, 14 November 1987, *G.T. Prance et al.* 30468 (INPA, MG, NY); Marabá, Carajás, Serra

Norte, 16 August 1984, *N.A. Rosa et al. 4615* (MG). Rondônia: à 13,5 Km de Alvorada D'Oeste, Linha 64, estrada para N. Brasilândia, lado esquerdo, 25 September–31 October 1986, *L.C.B. Lobato 413* (MG). SURINAME. Plants of Tafelberg (table mountain), 11 August 1944, *B. Maguire 24300* (RB).

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