Two new genera of Sapindaceae (Cupanieae) from the southern Pacific: Lepidocupania and Neoarytera

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Abstract
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Phylogenetic analyses of the family Sapindaceae inferred from nuclear and plastid sequence data have revealed a high level of para- and polyphyly at the subfamilial, tribal, and generic levels. A phylogenetic study focusing on taxa in the southern Pacific belonging to tribe Cupanieae has shown that the two most species-rich genera, Arytera Blume and Cupaniopsis Radlk., are polyphyletic. This study aims to clarify generic limits among the taxa currently placed in these two genera by identifying morphological features that support monophyletic groups suitable for recognition at the generic level. Specimens deposited in major herbaria holding material of these taxa were examined to complement extensive field observations. Careful consideration of morphological features in light of previous taxonomic treatments and the results of phylogenetic analyses enabled us to propose a re-aligned generic framework for Cupanieae in which two new genera are described to accommodate species previously placed in Arytera and Cupaniopsis: viz., Lepidocupania Buerki, Callm., Munzinger & Lowry (21 species) and Neoarytera Callm., Buerki, Munzinger & Lowry (4 species). A total of 25 new combinations are made, lectotypes are designated for nine names (two first step and seven second-step), and one new synonym is established. A key to the newly circumscribed genera Arytera and Cupaniopsis, along with allied genera, is provided, accompanied by information on the distribution and ecology of each species.

Keywords
SAPINDACEAE – Cupanieae – Arytera – Cupaniopsis – Lepiderema – Lepidocupania – Neoarytera – Synima – Australia – New Caledonia – New genus – New combination – Typification
Introduction
Phylogenetic analyses of the family Sapindaceae inferred from nuclear and plastid sequence data have revealed a high level of para- and polyphyly at the subfamilial, tribal, and generic levels (Harrington et al., 2005; Buerki et al., 2009, 2010). A new informal infra-familial classification was proposed by Buerki et al. (2009), mainly based on molecular data, to accommodate these findings and to provide a framework for developing improved generic circumscriptions that meet the criterion of monophyly. Within Sapindaceae, the Cupania group, which occurs in Australasia, Asia, South America, and Madagascar, but is absent in continental Africa, corresponds to the largest radiation in terms of the number of genera and species (Buerki et al., 2009). A forthcoming genus-level phylogeny of the family based on 353 nuclear genes will provide the basis for a new, formal tribal delimitation, in which the Cupania group corresponds to tribe Cupanieae Radlk. (Buerki et al., unpubl. data). To date, the only study that has used a phylogenetic framework to test the monophyly of genera in the Cupania group is that of Buerki et al. (2012), which focused on taxa in the islands of the southern Pacific. This study demonstrated that the two most species-rich genera, Arytera Radlk. and Cupaniopsis Radlk., were both polyphyletic. Within the Cupania group, they were placed in clade B (see Buerki et al., 2012 for more details on the composition of this clade) and their members were distributed among two subclades (B-III and B-VI), within which species of both genera were intermixed (see Fig. 1). Lepiderema Radlk. was shown to be sister to species of Arytera and Cupaniopsis in clade B-III, whereas within clade B-IV, Synima Radlk. was inferred to be sister to other taxa currently placed in Arytera and Cupaniopsis.

Arytera was described by Blume (1849), who recognized two species, A. littoralis Blume (designated as the lectotype of the genus by Reynolds, 1985a) (Fig. 2A) and A. montana Blume (later transferred to Lepidopetalum Radlk. by Radlkofer, 1879a). The first comprehensive account of the genus included 21 species (Radlkofer, 1931–1934), and more recently Turner (1995) published a monograph in which he recognized 25 species (Fig. 2A–B). The monophyly of Arytera was questioned by Turner (1995), who established the genus Mischarytera (Radlk.) H. Turner to accommodate the species previously placed by Radlkofer (1879b) in Arytera sect. Mischarytera Radlk. Turner (1995) also divided Arytera sect. Azarytera Radlk. into two subsections, Arytera subsect. Pacifica H. Turner and Arytera subsect. Distylis H. Turner.

Cupaniopsis was described by Radlkofer (1879b) to accommodate species originally placed in various other genera, including taxa such as C. anacardioides (A. Rich.) Radlk. (= Cupania anacardioides A. Rich.), which was designated as lectotype of Cupaniopsis by Reynolds (1984). The first account of the genus included 44 species (Radlkofer, 1931–1934) (Fig. 2C–D), whereas Adema (1991) recognized 60 species in his monograph of Cupaniopsis, ranging from East Malesia to Australia and several South Pacific islands (Fiji, New Caledonia, and Vanuatu), with centers of diversity in Australia, New Guinea, and New Caledonia. Radlkofer (1879b) described two sections within Cupaniopsis, in addition to the nominal section, Cupaniopsis sect. Mizopetalum Radlk. and Cupaniopsis sect. Macropetalum Radlk. Neither of these two sections were recognized by Adema (1991), even though the 18 species of Cupaniopsis sect. Mizopetalum formed a clade in the cladistic analysis he performed based on morphological characters (see Adema, 1991: 50–51, fig. 20).

Among the allied genera belonging to the Cupania group, Lepiderema Radlk. was established by Radlkofer (1879b), with its type being L. papuana Radlk. As currently circumscribed, this genus includes eight species, six endemic to Australia and two to New Guinea (Reynolds, 1982; Schott, 1991) (Fig 2F). A second member of the Cupania group, Synima Radlk., has four species, three in Australia and one in New Guinea (Reynolds, 1985b; Forster, 2006; Callmander et al., 2020) (Fig. 2E).

Several authors have questioned the monophyly of Arytera. Radlkofer (1931–1934) commented on the morphological similarities between species of Arytera sect. Azarytera and Cupaniopsis sect. Mizopetalum as follows: “Among the Asian and Oceanic Cupanieae possessing the calyx of Matayba and only small un-crested petals with 2 scales or nearly lacking scales, the genus [Arytera] is remarkable by its capsule [that is...
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Fig. 2. – A. Arytera litoralis Blume (Halmahera, North Maluku, Indonesia); B. Arytera divaricata F. Muell. (Queensland, Australia); C. Cupaniopsis macrocarpa var. polyphylla Adema (New Caledonia); D. Cupaniopsis flagelliformis (F.M. Bailey) Radlk. (Queensland, Australia); E. Synima serrata (S.T. Reynolds) Callm. & Buerki (Queensland, Australia); F. Lepiderema punctulata (F. Muell.) Radlk. (Queensland, Australia).

[Photos: A: Bangun 440; B: Gray et al. 9741; C: Lowry et al. 7319; D: Gray et al. 9693; E: Gray et al. 9856]
more or less divaricately lobed with cocci not at all winged, or somewhat compressed-obovate [and] usually sessile […], its unappended aril usually completely enclosing the seed, the compact structure of its leaves and in the species of section IV [Arytera sect. Azarytera] by the lepidote leaflets, by which character this section agrees with the genus Cupaniopsis sector III Mizopetalum […].” (RADLKOFER, 1931–1934: 1270; translated from Latin by R. Gereau). TURNER (1995: 28) mentioned that Arytera, as he circumscribed it, is only recognizable based “on a polythetic set of [six] character states”, and excluded three species (A. bullata H. Turner, A. lautereriana (F.M. Bailey) Radlk., and A. macrobotrys (Merr. & L.M. Perry) R.W. Ham), which he transferred to his new genus Mischartera (see above).

In light of the long-recognized issues regarding the delimitation of Arytera and Cupaniopsis, coupled with the recent molecular phylogenetic analyses that have clearly shown both of them to be polyphyletic, as currently circumscribed, a thorough review of both genera seems appropriate. In the present study, we aim to revise generic limits so that they correspond to monophyletic groups, and to place all of the taxa currently assigned to Arytera and Cupaniopsis within this new generic framework, supported by morphological features that characterize the clades defined by BUERKI et al. (2012). Taxa belonging to the phylogenetically closely related genera Lepiderema and Synima have also been included in an effort to clarify their relationships and taxonomic identities. Our goal is to resolve generic delimitations within this challenging group and thereby further Radlkofers quest, which started nearly 150 years ago.

Material & Methods

In order to identify potentially informative morphological characters that support monophyletic groups and to assess affinities among the taxa currently placed in Arytera, Cupaniopsis, Lepiderema, and Synima, we examined material from the following herbaria: BM, BRI, CNS, G, K, L, MO, MPU, NOU, P, SING, and SUVA. This was complemented by accessing digital images of type specimens at other herbaria through the Global Plants website [https://plants.jstor.org]. To encompass the full range of morphological variation within species across their distributional ranges, we also consulted the descriptions provided by A. brackenridgei Radlk., which has a wide distribution in the

Phylogenetic results and morphological characters

A key step toward resolving generic delimitations within the closely related Sapindaceae that were the focus of this study involved aligning our morphological findings with previous taxonomies and discussing the results in light of the phylogenetic framework presented in BUERKI et al. (2012). Biogeography was also taken into consideration as a criterion for delimiting genera. The presentation of our findings given below follows the sequence of clades presented in BUERKI et al. (2012). We also have sought to corroborate our taxonomic findings by expanding phylogenetic analyses to include DNA sequences from several key species, although the results of this work are not formally included in the present paper and will instead be the subject of a forthcoming publication focusing on the evolution and biogeography of the Cupania clade in the Pacific islands and neighboring regions. Our goal here is to provide the new generic classification required as a basis for conducting evolutionary and biogeographical analyses.

Clade B-III identified by BUERKI et al. (2012) (Fig. 1) contains all sampled taxa of Lepiderema, which form a subclade that is sister to another subclade comprising all sequenced species of Cupaniopsis sect. Mizopetalum (including 18 species, five of which were originally placed in this section by Radlkof and the rest were subsequently added by ADEMA (1991) in his treatment of the genus). In this treatment, we are only recognizing 17 of these species (see taxonomic treatment below), together with all four sampled species of Arytera sect. Azarytera. Although the sampling from these groups used by BUERKI et al. (2012) was limited, their phylogenetic results strongly suggested that species of Arytera sect. Azarytera were nested within Cupaniopsis sect. Mizopetalum, which precluded the possibility of recognizing either of these infrageneric taxa as a separate genus. The presence of lepidote scales on the vegetative and reproductive organs of these species represents a clear morphological synapomorphy for clade B-II. Three taxonomic interpretations are possible given this phylogenetic context: 1) recognize one large genus encompassing all the members of Lepiderema, Arytera sect. Azarytera, and Cupaniopsis sect. Mizopetalum; or 2) treat Lepiderema as one genus and place the remaining species in another genus. We prefer the second option because species of Lepiderema can easily be distinguished from the other members of clade B-III by their lack of petal and ovary scales (vs. petal and ovary scales present in the other taxa). Moreover, Lepiderema is restricted to Australia and New Guinea, whereas the other taxa occur in New Caledonia, Fiji and Samoa (with the exception of A. brackenridgei Radlk., which has a wide distribution in the

Material & Methods

In order to identify potentially informative morphological characters that support monophyletic groups and to assess affinities among the taxa currently placed in Arytera, Cupaniopsis, Lepiderema, and Synima, we examined material from the following herbaria: BM, BRI, CNS, G, K, L, MO, MPU, NOU, P, SING, and SUVA. This was complemented by accessing digital images of type specimens at other herbaria through the Global Plants website [https://plants.jstor.org]. To encompass the full range of morphological variation within species across their distributional ranges, we also consulted the descriptions provided in regional floras (i.e. Flora Malesiana, ADEMA et al., 1994; Flora of Australia, REYNOLDS, 1985b) and generic monographs (i.e. Cupaniopsis, ADEMA, 1991; Arytera, TURNER, 1995), as well as the seminal works of RADLKOFER (1879a, 1879b, 1931–1934). Data were compiled on key morphological characters for each taxon. Finally, between 2009 and 2017, we also conducted fieldwork throughout much of the range of the study group, including in Australia, Borneo, the Fijian archipelago, the Moluccas, New Caledonia, Peninsular Malaysia, Singapore, and Vanuatu, in order to observe and collect material of indigenous species, and to gain insights into their morphology and ecology, as well as their relationships with other members of the family.
Cupaniopsis ganophloea

Radlk.

nomenclatural clarification: Turner are not repeated here except for two names that require is not accepted here. The synonymies proposed by Adema and with the exception of Cupaniopsis rotundifolia Adema, which

A. containing the type of the genus (Fig. 3A – C).

Type: Lepidercupania lepidota (Radlk.) Buerki, Callm., Munzinger & Lowry (= Arytera lepidota Radlk.).

= Cupaniopsis sect. Mizopetalum Radlk. in Sitzungsber. Math.-Phys. Cl. Königl. Bayer. Akad. Wiss. München 9: 554. 1879. Type: Cupaniopsis fruticosa Radlk. (= Lepidercupania fruticosa (Radlk.) Buerki, Callm., Munzinger & Lowry) (lectotype designated by ADEMA, 1991: 60).

= Arytera sect. Neoarytera Radlk. in Sitzungsber. Math.-Phys. Cl. Königl. Bayer. Akad. Wiss. München 9: 554. 1879. Type: Arytera arcuata Radlk. (= Lepidercupania arcuata (Radlk.) Buerki, Callm., Munzinger & Lowry) (lectotype designated by TURNER, 1995: 151).

Trees or shrubs. Indument of short, straight, patent or appressed trichomes; glandular scales present on vegetative parts, inflorescence axes, pedicels, abaxial surface of calyx, pistil, and fruits; buds “varnished”. Leaves alternate, 1–12-jugate; leaflets opposite to alternate, subsessile to petiolulate, margin entire to coarsely dentate. Inflorescences axillary or pseudo-terminal. Flowers zygomorphic or actinomorphic (in L. arcuata, L. brackenridgei, L. gracilipes, and L. lepidota), functionally unisexual; sepals (4–)5–(6), free and imbricate or united (in L. arcuata, L. brackenridgei, L. gracilipes, and L. lepidota) to form a dentate calyx cup; petals 5 (4 in L. glemeriflora), with 2 distinct scales; disc lobed or not (in L. arcuata, L. brackenridgei, L. gracilipes, and L. lepidota), rim glabrous to pilose; stamens (6–)8–9, anthers basifixed; ovary 2–3-locular. Fruit a capsule, with 2–3 well developed lobes, rarely 1 (in L. concolor, L. guillauminitii, and L. samoensis),

The following key is adapted from REYNOLDS (1985b).

1. Calyx lobes free (sometimes sepals basally united), orbicular, elliptic or obovate, concave ........................................ 2
1a. Calyx shortly cupular, the lobes toothed or partite, usually ovate ................................................................. 4
2. Scales absent from petals ........................................ Lepidercupania
2a. Scales present on petals ............................................. 3
3. Scales present on vegetative and fertile organs .......... .............................................................................. Lepidercupania
3a. Scales absent from vegetative and fertile organs .......... ............................................................................. Cupaniopsis
4. Petal scales crested .................................................. Synima
4a. Petal scales not crested ............................................. 5
5. Petal scales adnate to the petal margin or free from the petals; central axis of fruit not thickened .......... Arytera
5a. Petal scales comprising minute entations; central axis of fruit distinctly thickened ............ Neoarytera

Taxonomy

Description and synopsis of Lepidercupania

Lepidercupania Buerki, Callm., Munzinger & Lowry, gen. nov.

Type: Lepidercupania lepidota (Radlk.) Buerki, Callm., Munzinger & Lowry (= Arytera lepidota Radlk.).

= Cupaniopsis sect. Mizopetalum Radlk. in Sitzungsber. Math.-Phys. Cl. Königl. Bayer. Akad. Wiss. München 9: 588. 1879.

Arytera and Neoarytera subsect. Mizopetalum (see above). Since each of these three subclades is consistent with a currently recognized taxonomic entity and is also morphologically coherent, we have opted to recognize them as a separate, well-defined genus. Two of the subclades correspond to Arytera and Cupaniopsis because they contain their respective types, whereas the third subclade represents a new genus, which we formally describe here as Neoarytera Callm., Buerki, Munzinger & Lowry.

Below we provide a key to the genera, which includes the two new genera, and we also include an appendix that presents a synopsis of currently accepted species of Arytera, Cupaniopsis, Lepidercupania, and Neoarytera, with their respective distributions. The taxonomy of the two new genera follows the comprehensive monographs by ADEMA (1991) and TURNER (1995), with the exception of Cupaniopsis rotundifolia Adema, which is not accepted here. The synonymies proposed by Adema and Turner are not repeated here except for two names that require nomenclatural clarification: Arytera pachyphylla Radlk. and Cupaniopsis ganophloea Radlk.

A key to the newly circumscribed Arytera, Cupaniopsis and allied genera

The following key is adapted from REYNOLDS (1985b).

1. Calyx lobes free (sometimes sepals basally united), orbicular, elliptic or obovate, concave ........................................ 2
1a. Calyx shortly cupular, the lobes toothed or partite, usually ovate ................................................................. 4
dehiscence loculicidal, glabrous to puberulous and rugose to verrucose outside, glabrous to pilose inside; seed ellipsoid or ovoid to globose, sarcotesta covering half to all of the seed, flesh-membraneous.

**Distribution.** – Lepidocupania comprises 21 species occurring in the Caroline Islands, Fiji, New Caledonia, Samoa, the Solomon Islands, and Vanuatu (Fig. 4).

**Notes.** – Lepidocupania shares the presence of lepidote scales on its vegetative and reproductive organs with Lepiderema. However, Lepidocupania can easily be distinguished from Lepiderema by the presence (vs. absence) of petal and ovary scales, and it differs from Cupaniopsis by the presence (vs. absence) of glandular scales on its vegetative and fertile organs.

Lepidocupania arcuata (Radlk.) Buerki, Callm., Munzinger & Lowry, **comb. nov.**

= Arytera arcuata Radlk. in Sitzungsber. Math.-Phys. Cl. Konigl. Bayer. Akad. Wiss. Munich 9: 554. 1879.

**Lectotypus** (designated by Turner, 1995: 158): **New Caledonia. Prov. Sud:** Nouméa, X.1868, Balansa 150 (M [M0225363]!; isolecto-: FL [FI010518]!, NY [NY00038712, NY00038713], P [P00205443, P00205444]).

**Distribution and ecology.** – According to Turner's (1995) concept, Lepidocupania arcuata is endemic to the New Caledonian archipelago, where it occurs from sea level to 200 m, predominantly on calcareous soils (Loyalty Islands, Île des Pins), but also on sand, clay and schist. It is found in mesophyll and sclerophyll forest and scrub.

**Notes.** – Additional taxonomic analyses are required, especially with regard to material from the Loyalty Islands, which exhibits very peculiar indument compared to that from the main island of New Caledonia [Grand Terre]. Moreover, Turner (1995) tentatively identified a specimen from Tonga (Parki 16317: L 0468503) as L. arcuata, which, if confirmed, would significantly expand the geographic range of this species.

Lepidocupania brackenridgei (A. Gray) Buerki, Callm., Munzinger & Lowry, **comb. nov.** (Fig. 3B).

= Cupania brackenridgei A. Gray in Wilkes, U.S. Expl. Exped., Phan. 1: 255. 1854. = Arytera brackenridgei (A. Gray) Radlk. in Sitzungsber. Math.-Phys. Cl. Konigl. Bayer. Akad. Wiss. Munich 9: 555. 1879.

**Holotypus:** Fiji: Ovalau, 1838–1842, Wilkes s.n. (US [US 00095325] image seen; iso-: P [P00646032]).

**Distribution and ecology.** – Lepidocupania brackenridgei is widespread in the Solomon Islands, Vanuatu, Fiji, Wallis and Futuna (Horn Islands), Tonga and Samoa, where it occurs from sea level to 1050 m (Adema, 1991). This common species occurs in primary and secondary rainforest, but is also found in savannah; it grows on limestone and lava fields.

Lepidocupania concolor (Gillespie) Buerki, Callm., Munzinger & Lowry, **comb. nov.**

= Guioa concolor Gillespie in Bull. Bernice P. Bishop Mus. 83: 17. 1931. = Arytera concolor (Gillespie) A.C. Sm. in J. Arnold Arbor. 31: 298. 1950. = Cupaniopsis concolor (Gillespie) R.W. Ham in Blumea 23: 287. 1977.

**Holotypus:** Fiji: Taveuni, vicinity of Waiyaveo, 3.III.1928 Gillespie 4794 (BISH [BISH1004953] image seen; iso-: BISH [BISH1004954, BISH1004955] images seen, K [K000701623], NY [NY00337873], GH [GH00050772] image seen, US [US00095352] image seen).

**Distribution and ecology.** – Lepidocupania concolor is endemic to Fiji, where it is known from the three main islands of Viti Levu, Vanua Levu, and Taveuni (Smith, 1985).

Lepidocupania fruticosa (Radlk.) Buerki, Callm., Munzinger & Lowry, **comb. nov.**

= Cupaniopsis fruticosa Radlk. in Sitzungsber. Math.-Phys. Cl. Konigl. Bayer. Akad. Wiss. Munich 9: 588. 1879.

**Lectotypus** (designated by Adema, 1991: 111): **New Caledonia: sine loco, s.d., Pancner 142** (M [M0225246] image seen; iso-: MEL [MEL1539980] image seen, P [P05310069, P05310082, P05310086, P05310089]).

**Distribution and ecology.** – Lepidocupania fruticosa is endemic to the southwestern part of Grande Terre, where it grows in dense humid forest, usually on serpentinite, but sometimes also on schist or laterite, from 5 to 300(–900) m (Adema, 1991).

**Notes.** – Based on our current knowledge on this species, additional taxonomic studies appear to be needed to clarify its circumscription. This should also include material currently assigned to L. subfalcata and L. tontoutensis (see below for additional details).

Lepidocupania glabra (Adema) Buerki, Callm., Munzinger & Lowry, **comb. nov.**

= Cupaniopsis glabra Adema in Leiden Bot. Ser. 15: 113. 1991.

**Holotypus:** New Caledonia. Prov. Sud: Basse Tontouta, rive gauche, terrain serpentineux, 50 m, 10.II.1962,
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Fig. 3. – A. *Lepidocupania glomeriflora* (Radlk.) Buerki, Callm., Munzinger & Lowry (New Caledonia); B. *Lepidocupania brackenridgei* (A. Gray) Buerki, Callm., Munzinger & Lowry (Vanua Levu, Fiji); C. *Lepidocupania lepidota* (Radlk.) Buerki, Callm., Munzinger & Lowry (New Caledonia); D. *Neoarytera collina* (Pancher & Sebert) Callm., Buerki, Munzinger & Lowry (New Caledonia); E. *Neoarytera neoebudensis* (Guillaumin) Callm., Buerki, Munzinger & Lowry (New Caledonia); F. *Neoarytera chartacea* (Radlk.) Callm., Buerki, Munzinger & Lowry (New Caledonia).

[A: Callmander et 788; B: Munzinger 379; C: Munzinger 7700; D: Munzinger 7395; E: Munzinger 7404; F: Hequet 3525]

[Photos: A–B, D–E: P. Lowry; C: J. Munzinger; F: V. Hequet]
MacKee 40234 (L [L0013372]); iso-: NOU [NOU006523], P [P05213382]).

Distribution and ecology. – Lepidocupania glabra is endemic to the Tontouta River valley (Grande Terre). It is found in maquis and continuous tall maquis (“maquis paraforestier”, see McCoy et al., 1999 for details) dominated by Gymnostoma chamaecyparis (J. Poiss.) L.A.S. Johnson (Casuarinaceae) on ultramafic substrate, primarily alluvium, between 20 and 400 m (Adema, 1991; D’Angelo, 2017).

Notes. – This species has been assigned an IUCN risk of extinction status of “Critically Endangered” [CR] based on its narrow distribution and reduction in population size (IUCN, 2020).

Lepidocupania globosa (Adema) Buerki, Callm., Munzinger & Lowry, comb. nov.

= Cupaniopsis globosa Adema in Leiden Bot. Ser. 15: 114. 1991.

Holotypus: New Caledonia. Prov. Sud: Bourail, les Montagnes Blanches, 12.X.1982, Suprin 2080 (P not found; iso-: L [L0013373], NOU [NOU006522]).

Distribution and ecology. – Lepidocupania globosa is endemic to the west coast of Grande Terre, where it is restricted to sclerophyll forest (Bouchet et al., 1995).

Notes. – This species has been assigned an IUCN risk of extinction status of “Vulnerable” (IUCN, 2020). See note under L. pennelli.

Lepidocupania glomeriflora (Radlk.) Buerki, Callm., Munzinger & Lowry, comb. nov. (Fig. 3A).

= Cupaniopsis glomeriflora Radlk. in Sitzungsber. Math.-Phys. Cl. Konigl. Bayer. Akad. Wiss. Munich 9: 589. 1879.

Lectotypus (first step designated by Adema, 1991: 116; second step designated here): New Caledonia. Prov. Sud: Bourail, dans les bois, III.1869, Balansa 1447 (P [P00639131]); isolecto-: P [P00639133, P00639134]).

Distribution and ecology. – Lepidocupania glomeriflora is endemic to New Caledonia, where it occurs on Grande Terre, the Ile des Pins, and the three larger Loyalty Islands (Adema, 1991; Butaud, 2014). It is found in maquis vegetation, dry to mesic forests, or forest remnants, along the coast, on hills or mountainsides, often along rivers, and occurs on calcareous substrates, serpentine and schist, but appears not to favor peridotitic substrates and is completely absent from Grande Terre’s large southern ultramafic massif. Lepidocupania glomeriflora has been recorded from 10 to 500 m.

Notes. – Nine syntype collections were cited in the protologue of Cupaniopsis glomeriflora: Balansa 153 p.p., 1447, Baudouin 354 p.p., “Culta in hort. Parti”, Deplanche 83, Labillardière 169, Pancher 782, Vieillard 228, and 233. Adema (1991: 116) designated Balansa 1447 as the lectotype. Original material at P is, however, mounted on three sheets, necessitating the second step lectotypification designated here, for which we have selected the most complete and best-preserved sheet [P00639131].

Lepidocupania gracilipes (Radlk.) Buerki, Callm., Munzinger & Lowry, comb. nov.

= Arytera gracilipes Radlk. in Repert. Spec. Nov. Regni Veg. 20: 38. 1924.

Lectotypus (designated by Turner, 1995: 181): New Caledonia. Prov. Nord: “montagnes de Panloïtch, près Gatop”, s.d., Vieillard 2403 (K [K000701494]); isolecto-: FT [FT010518]; NY [NY00038712, NY00038713]), M [M0225444] image seen, P [P00639134, P00639135, P00639136, P00639137, P00639138, P05310259, P05310260]).

Distribution and ecology. – Lepidocupania gracilipes is endemic to Grande Terre, where it grows in gallery forest, continuous tall maquis (“maquis paraforestier”, see McCoy et al., 1999 for details), and thickets on (rocky) serpentine terrain, and sometimes along streams on alluvium (Turner, 1995). It seems to be restricted to serpentine, hyper-magnesium brown soils. The species has been recorded from sea level to 600 m.

Lepidocupania grandiflora (Adema) Buerki, Callm., Munzinger & Lowry, comb. nov.

= Cupaniopsis grandiflora Adema in Bull. Mus. Natl. Hist. Nat., B, Adansonia, 10: 263. 1989.

Holotypus: New Caledonia. Prov. Sud: Mont Do, 950 m, s.d., McPherson 3805 (MO [MO260722]); iso-: NOU [NOU006521]).

Distribution and ecology. – Lepidocupania grandiflora is endemic to Grande Terre, where is has a peculiar distribution and edaphic range; most collections are from the central region (Mont Do and around the Col d’Amieu), but others have been made in the Pouébo area, some 175 km to the northwest. Lepidocupania grandiflora grows in wet forest and maquis vegetation, on ultramafic and non-ultramafic substrates, from 400 to 1000 m.

Notes. – Adema (1991: 119) suggested a close affinity between this species and L. oedipoda based on vegetative
characters. Their morphological similarity points toward the need for further analyses, especially focusing on collections from the Pouébo area.

**Lepidocupania guillauminii** (Kaneh.) Buerki, Callm., Munzinger & Lowry, **comb. nov.**

= Miscocarpus guillauminii Kaneh. in Bot. Mag. (Tokyo) 46: 672. 1932. = Cupaniopsis guillauminii (Kaneh.) Adema in Leiden Bot. Ser. 15: 121. 1991.

**Holotypus**: CAROLINE ISLANDS: Truk [Chuuk] atoll, VI.1931, KANEHIRA 1268 (FU; iso-: A [A00050841] image seen, BISH [BISH1004940] image seen, P [P05301428]).

**Note**. – While Adema (1991: 122) noted that the available material of this species is rather incomplete and that it resembles both L. concolor and L. samoensis, he recognized it as distinct based on several differences in the amount of indument and in features of the fruits.

**Lepidocupania inoplaea** (Radlk.) Buerki, Callm., Munzinger & Lowry, **comb. nov.**

= Cupaniopsis inoplaea Radlk. in Sitzungsber. Math.-Phys. Cl. Konigl. Bayer. Akad. Wiss. Munich 9: 555. 1879.

**Lectotypus** (designated here): **NEW CALEDONIA. Prov. Nord**: Mt. Poum, V.1871, Balansa 3307 (P [P00639140]; iso-: P [P00639141], P00639142]).

**Distribution and ecology**. – Lepidocupania inoplaea is endemic to Chuuk atoll in the Caroline Islands, where it grows in lowland evergreen forests on volcanic soil and humus (Adema, 1991).

**Lepidocupania inoplea** (Radlk.) Buerki, Callm., Munzinger & Lowry, **comb. nov.**

= Cupaniopsis inoplea Radlk. in Sitzungsber. Math.-Phys. Cl. Konigl. Bayer. Akad. Wiss. Munich 9: 589. 1879.

**Lectotypus** (designated here): **NEW CALEDONIA. Prov. Sud**: Mont Dore, s.d., Baudouin [leg. Vieillard] 205, Balansa 1445, Baudouin 134A, Pancher [Mus. Néocal.] 2841; P [P00639140]; isolec-: P [P00639141], P00639142]).

**Distribution and ecology**. – Lepidocupania inoplea, as circumscribed by Adema (1991), is endemic to the archipelago of New Caledonia, where it occurs in the northwestern part of Grande Terre and two of the Loyalty Islands (Lifou and Mare). It is found in maquis vegetation and gallery forest on serpentinite and schist, from sea level to 700 m.

**Notes**. – Cupaniopsis inoplea was described based on Balansa 3307. Original material at P is mounted on three sheets, two of which [P00639140, P00639141] bear the following note in Radlkofer’s hand: “Cupaniopsis inoplea m. Radlkofer.” Here we designate the most complete and best-preserved of these two sheets [P00639140] as the lectotype.

It has come to our attention that the original spelling of the epithet, ‘inoplea’, was changed to ‘inoplaea’ by Guillaumin (1948) and Adema (1991), but the rules of nomenclature do not justify this change, and we therefore retain the original spelling, as proposed by Radlkofer (1879b).

Adema (1991) did not indicate that this species grows on calcareous substrate, although two collections cited in his monograph from the Loyalty Islands (Schmid 677 and MacKee (Leg. Suprin) 43447) were gathered without doubt from calcareous sites. Further study will be needed to determine whether these collections belong to Lepidocupania inoplaea or another species.

**Lepidocupania lepidota** (Radlk.) Buerki, Callm., Munzinger & Lowry, **comb. nov.** (Fig. 3C).

= Arytera lepidota Radlk. in Sitzungsber. Math.-Phys. Cl. Konigl. Bayer. Akad. Wiss. Munich 9: 555. 1879.

**Lectotypus** (first step designated by Turner, 1995: 182; second step designated here): **NEW CALEDONIA. Prov. Sud**: Mont Dore, s.d., Pancher [Mus. Néocal.] 222 (P [P00639113]); isolec-: C [C10018554] image seen, K [K000701492]!, MEL [MEL1586135] image seen; NY [NY00038710] image seen, P [P05310135]).

**Distribution and ecology**. – Lepidocupania lepidota is endemic to Grande Terre, where it is restricted to dense humid forest on ultramafic substrates, from 10 to 915 m. Most collections are from the main ultramafic massif of the south, although it is also recorded from a few isolated localities in the north, including Mont Do and Cap Bocage (Turner, 1995), and more recently from Kantalupaik (Munzinger et al., 2018).

**Notes**. – Seven syntype collections were cited in the protologue of Arytera lepidota: Balansa 1445, 2841, Baudouin 134A, Pancher [Mus. Néocal.] 222, Vieillard 205, and 206. Turner (1995: 182) designated Pancher [Mus. Néocal.] 222 as the lectotype. The original material deposited at P is, however, mounted on two sheets, necessitating the second step lectotypification designated here, for which we have selected the most complete and best-preserved sheet [P00639113].

**Lepidocupania mouana** (Guillaumin) Buerki, Callm., Munzinger & Lowry, **comb. nov.**

= Cupaniopsis mouana Guillaumin in Mém. Mus. Natl. Hist. Nat., Sér. B, Bot. 15: 109. 1967.

**Holotypus**: **NEW CALEDONIA. Prov. Nord**: Mt. Mou, 8.II.1950, BAUMANN-BODENHEIM [leg. Baas Becking] 6036 (P [P05256547]); iso-: L [L0484153]!, Z [Z-000028070] image seen).

**Distribution and ecology**. – Lepidocupania mouana is endemic to Grande Terre, where it is restricted to Mont Mou in the southwest. Adema (1991) cited a single specimen, the holotype, collected in 1951, while an additional collection was made in 2009 (Grignon & Munzinger 256). This species grows in continuous tall maquis (‘maquis paraforestier’, see McCoy...
et al., 1999 for details) dominated by species of Gymnostoma L.A.S. Johnson, on peridotitic substrate.

**Note.** – *Lepidocupania meouana* was assigned an IUCN risk of extinction status of “Endangered” [EN] by Jaffré et al. (1998).

**Lepidocupania myrmoctona** (Radlk.) Buerki, Callm., Munzinger & Lowry, **comb. nov.**

= *Cupaniopsis myrmoctona* Radlk. in Sitzungsber. Math.-Phys. Cl. Konigl. Bayer. Akad. Wiss. Munich 9: 588. 1879.

**Lectotypus** (designated by Adema, 1991: 140; second step designated here): **New Caledonia**: *sine loco*, s.d., Labillardière s.n. (G [G00019027]!; isolecto-: FI [FI006799 FI006840]!, G [G00341584, G00341590]!, K).

**Distribution and ecology.** – *Lepidocupania myrmoctona* is endemic to Grande Terre, where it is abundant along the east coast and grows in dense humid forest, mostly on non-ultramafic substrate (schist), but it has also been recorded in montane ecosystems in the main southern ultramafic massif (Adema, 1991).

**Notes.** – *Cupaniopsis myrmoctona* was described based on “Labillardière (Hb. Webb, Hook., Deless.)” (Radlkofer, 1879b: 588). Adema (1991: 140) designated material from G as the lectotype. A second step lectotypification is, however, mounted on four sheets, necessitating a second step lectotypification. Here we designate the fruiting material with a note in Radlkofer’s hand: “Cupaniopsis oedipoda m. Radlk.” as the lectotype.

**Cupaniopsis oedipoda** was described based on four syntypes: *Labillardière s.n.*, *Pancher 777, Vieillard 223, 230 and 231*. The most complete and best-preserved material bearing, in Radlkofer’s hand, “Cupaniopsis oedipoda m. Radlk.” is [P05309776]. This collection has no label data and could represent material of either *Vieillard 230* or *231*. *Vieillard 230* in P [P00639147] only has a few fruits with the note “Cupaniopsis oedipoda m. Radlk.” in Radlkofer’s hand. We prefer to designate the later sheet as lectotype and consider [P05309776] as a probable isolectotype.

**Lepidocupania pennellii** (Guillaumin) Buerki, Callm., Munzinger & Lowry, **comb. nov.**

= *Cupaniopsis pennellii* Guillaumin in Bull. Soc. Bot. Fr. 79: 338. 1932.

**Holotypus**: **New Caledonia. Prov. Sud**: env. de Bourail, 8.II.1950, Pennel 403 (P [P00639152]!; isolecto-: P [P00639153, P00639154]!).

**Distribution and ecology.** – *Lepidocupania oedipoda* is endemic to Grande Terre, where it is restricted to the west-central coastal area between Bourail and Moindou, and one site along the east coast at the same latitude, around Saint Pol. It grows in forests on limestone, from 20 to 100 m in elevation (Adema, 1991).

**Notes.** – *Cupaniopsis pennellii* was described based on Pennel 403. Material of the collection at P is mounted on three sheets, but only one of them [P00639152] bears the name of Guillaumin’s new species in his own hand, and we therefore regard it as the holotype.

**Lepidocupania pennellii** is morphologically similar to *L. globosa* and *L. rosea* (the latter known only from the type specimen), whose ecological preferences and distributions are nearly the same. They likely form a complex species and will require further taxonomic work.
**Lepidocupania rosea** (Adema) Buerki, Callm., Munzinger & Lowry, **comb. nov.**  
\[Cupaniopsis rosea\] Adema in Leiden Bot. Ser. 15: 159. 1991.  
**Holotypus:** New Caledonia. Prov. Nord: 5 km E of Col de Crève-Coeur on road between Canala and Thio, c. 350 m, 27.IX.1979, McPherson 1905 (L [L0013386]; iso-: MO [MO260721], NOU [NOU006557], P [P05213006]).

**Distribution and ecology.** – *Lepidocupania rosea* is only known from the type specimen, collected on Grande Terre, near Nakety, in a forest around 350 m.

**Notes.** – See note under *Lepidocupania pennelii*.

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**Lepidocupania samoensis** (Christoph.) Buerki, Callm., Munzinger & Lowry, **comb. nov.**  
\[Cupaniopsis samoensis\] Christoph. in Bernice P. Bishop Mus. Bull. 14: 154. 1938.  
**Holotypus:** Samoa: Savai’i, above Matavanu, 14.VIII.1931, Christophersen & Hume 2045 (BISH [BISH1004933] image seen; iso-: A [A0005071] image seen, BISH [BISH1004931, BISH1004932] images seen, K [K000701626], P [P00639282], UC [UC1352449] image seen, US [US00094201] image seen).

**Distribution and ecology.** – *Lepidocupania samoensis* is endemic to the two main islands of Samoa, Savai’i and Upolu, where it grows in primary evergreen forests between 650 to 1350 m (Adema, 1991).

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**Lepidocupania squamosa** (Adema) Buerki, Callm., Munzinger & Lowry, **comb. nov.**  
\[Cupaniopsis squamosa\] Adema in Bull. Mus. Natl. Hist. Nat., B, Adansonia, 10: 264. 1989.  
**Holotypus:** New Caledonia. Prov. Nord: massif de la Tiébaghi, c. 550 m, 21.XII.1983, McPherson 6176 (MO [MO 260720]; iso-: L [L0013387], NOU [NOU006557], P [P00639157]).

**Distribution and ecology.** – *Lepidocupania squamosa* is endemic to Grande Terre, where it grows in dense maquis-like scrub vegetation on serpentine, from 200 to 600 m (Adema, 1991, and recent collections) and on isolated ultramafic mountains of the northeast (Boulinda, Kopéto, Tiébaghi, and Poum).  
**Notes.** – *Lepidocupania squamosa* was assigned an IUCN risk of extinction status of “Endangered” by Jaffré et al. (1998). Since this assessment was conducted, a large portion of the vegetation on the Tiébaghi massif has been cleared for mining, which has surely led to further population decline (especially concerning since this area contained the largest subpopulation of *L. squamosa*).

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**Lepidocupania subfalcata** (Adema) Buerki, Callm., Munzinger & Lowry, **comb. nov.**  
\[Cupaniopsis subfalcata\] Adema in Leiden Bot. Ser. 15: 172. 1991.  
**Holotypus:** New Caledonia. Prov. Nord: summit plateau Mt. Koniambo, 800 – 900 m, 31.III.1956, MacKee 4297 (L [L0013389]; iso-: A [A00050713], K [K000701621], P [P05310065]).

**Distribution and ecology.** – When Adema (1991) published his monograph of *Cupaniopsis*, this species was thought to be endemic to Grande Terre and was known only from the type collection from Mt. Koniambo, between 800 – 900 m. However, one year later, Adema identified a second specimen (Jaffré 2944) in L [L.2296660] from the Mé Adéo road, about 100 km southeast of Koniambo.

**Notes.** – The holotype of this species was initially identified by Guillaumin as *C. sebertii* Guillaumin, a name considered a synonym of *C. fruticosa* (= *Lepidocupania fruticosa*) by Adema (1991). Our examination of the available herbarium material suggests that further taxonomic analysis is needed to clarify...
species delimitations within this group, which probably represents a species complex.

**Lepidocupania tontoutensis** (Guillaumin) Buerki, Callm., Munzinger & Lowry, **comb. nov.**

\[= \text{Cupaniopsis tontoutensis} \]

**Holotypus**: New Caledonia. **Prov. Sud**: cours moyen de la Tontouta, rive droite, c. 50 m, 14.I.1945, **Virot 1448** (P [P00639164]; iso-: P [P00639165]).

\[= \text{Cupaniopsis rotundifolia} \]

**Holotypus**: New Caledonia. **Prov. Sud**: colline surplombant la Tontouta, 25.VIII.1984, **Jaffré 2531** (NOU [NOU006556]!; iso-: P [P00639156, P00639158]), **syn. nov.**

**Distribution and ecology.** – **Lepidocupania tontoutensis** is endemic to Grande Terre, where it is restricted to the Tontouta River valley. It is found in maquis vegetation on serpentine substrates, mostly alluvium, between 20 and 100 m (Adema, 1991).

**Notes.** – **Cupaniopsis tontoutensis** was described based on **Virot 1448**. Original material at P is, however, mounted on two sheets, only one of which [P00639164] bears the name of Guillaumin’s new species in his own hand, along with the word “type”. We regard this specimen as the holotype.

**Cupaniopsis rotundifolia** Adema in Leiden Bot. Ser. 15: 160. 1991. **Holotypus**: New Caledonia. **Prov. Sud**: colline surplombant la Tontouta, 25.VIII.1984, **Jaffré 2531** (NOU [NOU006556]!; iso-: P [P00639156, P00639158]).

**Neoarytera chartacea** (Radlk.) Callm., Buerki, Munzinger & Lowry, **comb. nov.** (Fig. 3D–F).

\[= \text{Arytera chartacea} \]

**Notes.** – **Neoarytera chartacea** is characterized by the distinctly thickened central axis of its fruit (vs. not thickened in **Arytera** and **Cupaniopsis**), petal scales comprising minute enations (vs. scales adnate to the margins of the petals or free from the petals in the other two genera), and its 3-, rarely 2-locular ovary and fruit (vs. ovary and fruit 2- or 3-locular in the two other genera). **Arytera**, as re-circumscribed here, can easily be distinguished by its 2-layered sarcotesta (vs. single-layer in **Cupaniopsis** and **Neoarytera**) (Turner, 1995: 72). Finally, **Cupaniopsis** differs from **Arytera** and **Neoarytera** by having free or nearly free calyx lobes, which are usually 2-seriate, orbicular, elliptic or obovate, and concave (vs. calyx shortly cupular, the lobes toothed or divided, and usually ovate in the other two genera) (Reynolds, 1985a).

### Material examined
- **Holotypus**: New Caledonia. **Prov. Sud**: **C. tontoutensis** type specimen from the Tontouta River valley, with ecological “type”. We regard this specimen as the holotype.
- **Remarks**: Guillaumin’s new species in his own hand, along with the word “type”. We regard this specimen as the holotype.

**Description and synopsis of Neoarytera**

**Neoarytera** Callm., Buerki, Munzinger & Lowry, **gen. nov.** (Fig. 3D–F).

**Type**: **Neoarytera chartacea** (Radlk.) Callm., Buerki, Munzinger & Lowry (\[= \text{Arytera chartacea} \] Radlk.).

**Notes.** – **Neoarytera** comprises four species, three endemic to New Caledonia and one occurring on both New Caledonia and Vanuatu (Fig. 4).

**Distribution.** – **Neoarytera** comprises four species, three endemic to New Caledonia and one occurring on both New Caledonia and Vanuatu (Fig. 4).
**Distribution and ecology.** – *Neoarytera chartacea* is endemic to the west coast of Grande Terre, where it grows in sclerophyll forest or various types of substrate, in particular limestone and serpentine (Turner, 1995).

**Notes.** – Three syntypes were cited in the protologue of *Arytera chartacea*: *Balansa* 147, 1442 and *Pancher* 610. Turner (1995: 167) designated *Balansa* 147 as the lectotype. Original material at P is, however, mounted on three sheets, necessitating a second step lectotypification. Here we designate the most complete and best-preserved sheet [P00639108] as the lectotype.

*Neoarytera collina* (Pancher & Sebert) Callm., Buerki, Munzinger & Lowry, **comb. nov.** (Fig. 3D).

 = *Cupania collina* Pancher & Sebert in Rev. Marit. Colon. 41: 205. 1874. = *Arytera collina* (Pancher & Sebert) Radlk. in Not. Syst. (Paris) 2: 10. 1911.

**Lectotypus** (first step designated by Turner, 1995: 169; second step designated here): **New Caledonia**: sine loco, s.d., *Pancher* [Bois] 79 (P [P00639111]!; isolecto-: P [P00639112, P05310137, P05310138]!).

 = *Arytera pachyphylla* Radlk. in Sitzungsber. Math.-Phys. Cl. Königl. Bayer. Akad. Wiss. München 9: 554. 1879. **Lectotypus** (designated here): **New Caledonia**: Prov. Sud: “environs de Nouméa, Pont des Français”, 1861–1867, *Deplanche* 280 [Vieillard 2391] (P [P06598871]!; isolecto-: K [K000701502]!, G [G00341933, G00341934]!, P [P05310258, P05310262, P06598866, P06598867, P06598869, P06598870, P06599102]).

**Distribution and ecology.** – *Neoarytera collina* is endemic to New Caledonia, where it occurs on the southwestern coast of Grande Terre, Ile des Pins, and Maré Island in the Loyalties. It grows in sclerophyll forest on various types of substrate, in particular limestone and serpentine (Turner, 1995).

**Notes.** – Turner (1995: 169) designated *Pancher* [Bois] 79 as the lectotype, since it was cited by Pancher & Sebert (1874: 270) as material associated to *Cupania collina* when they described it in their *Notice sur les bois de la Nouvelle Calédonie*. Original material at P is mounted on four sheets, necessitating a second step lectotypification, for which we have here chosen the most complete and best-preserved sheet [P00639111].

Six syntypes were cited in the protologue of *Arytera pachyphylla*: *Balansa* 148, Baudouin 690, *Deplanche* 280, 447, *Pancher* [Mus. Néocal.] 215, 778 and *Vieillard* 247. Turner (1995: 169) cited only two of these syntypes, Baudouin 690 and *Deplanche* 280. Original material of these two collections at P is, however, mounted on three sheets, from among which we designate the most complete and best-preserved collection of *Deplanche* 280 as the lectotype [P06598871].

*Neoarytera nekorensis* (H. Turner) Callm., Buerki, Munzinger & Lowry, **comb. nov.**

 = *Arytera nekorensis* H. Turner in Blumea, Suppl. 9: 199. 1995.

**Holotypus:** **New Caledonia. Prov. Nord:** Poya, forêt de Nekoro, 16.VIII.1984, *MacKee* 42137 (L [L0013337]!; iso-: P [P00078650, P00078651]!).

**Distribution and ecology.** – *Neoarytera nekorensis* is endemic to the Nekoro forest in the centre-west region of Grande Terre, where it grows in sclerophyll forest on black clay soil (Turner, 1995).

**Notes.** – This species has been assigned an IUCN risk of extinction status of “Vulnerable” (IUCN, 2020).

*Neoarytera neoebudensis* (Guillaumin) Callm., Buerki, Munzinger & Lowry, **comb. nov.** (Fig. 3E).

 = *Cupaniopsis neoebudensis* Guillaumin in J. Arnold Arbor. 12: 241. 1931. = *Arytera neoebudensis* (Guillaumin) H. Turner in Blumea 9: 200. 1995.

**Holotypus:** **Vanuatu. Prov. Taféa:** Erromango Isl., Dillon Bay, 8.VI.1928, *Kajewski* 381 (A; iso-: BISH, BRI [BRI-AQ0031093]!, K [K000701498]!, NY, P [P00639281]!).

**Distribution and ecology.** – *Neoarytera neoebudensis*, as currently circumscribed, occurs in New Caledonia (Grande Terre and the Loyalty islands), Walpole Island, and Vanuatu. It grows on rocky slopes near lagoons and in lowland evergreen forests on volcanic soils (Turner, 1995).

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Appendix – Synopsis of accepted species of *Arytera* Blume, *Cupaniopsis* Radlk., *Lepidocupania* Buerki, Callm., Munzinger & Lowry, and *Neoarytera* Callm., Buerki, Munzinger & Lowry, with their respective distributions.

| Genus      | Species                        | Distribution                                                                 |
|------------|--------------------------------|------------------------------------------------------------------------------|
| *Arytera*  | Blume                          |                                                                              |
|            | *A. bifoliolata* S.T. Reynolds | Indonesia (Western New Guinea), Australia                                    |
|            | *A. brachyphylla* Radlk.       | Papua New Guinea                                                             |
|            | *A. densiflora* Radlk.         | Papua New Guinea                                                             |
|            | *A. dictyoneura* S.T. Reynolds| Australia                                                                     |
|            | *A. distylis* (Benth.) Radlk.  | Australia                                                                     |
|            | *A. divaricata* F. Muell.      | Australia                                                                     |
|            | *A. foveoleata* F. Muell.      | Australia                                                                     |
|            | *A. lineosquamulata* H.Turner  | Papua New Guinea, Australia                                                  |
|            | *A. litoralis* Blume           | From India across SE Asia throughout Malesia up to the Solomon Islands       |
|            | *A. microphylla* (Benth.) Radlk.| Australia                                                                    |
|            | *A. miniata* H.Turner          | Papua New Guinea                                                             |
|            | *A. morobeana* H.Turner        | Papua New Guinea                                                             |
|            | *A. multijuga* H.Turner        | Papua New Guinea                                                             |
|            | *A. musca* H.Turner            | Papua New Guinea                                                             |
|            | *A. novaebritanniae* H.Turner  | Papua New Guinea, Solomon Islands                                            |
|            | *A. pauciflora* S.T. Reynolds  | Australia                                                                     |
|            | *A. pseudofoveolata* H.Turner  | Papua New Guinea, Australia                                                  |

| Genus      | Species                        | Distribution                                                                 |
|------------|--------------------------------|------------------------------------------------------------------------------|
| *Cupaniopsis* | Radlk.                  |                                                                              |
|            | *C. acuticarpa* Adema        | Papua New Guinea                                                            |
|            | *C. amoena* A.C. Sm.         | Fiji                                                                         |
|            | *C. anacardioides* (A.Rich.) | Indonesia (Western New Guinea), Papua New Guinea, Australia                 |
|            | *C. apiocarpa* Radlk.        | New Caledonia                                                                |
|            | *C. azantha* Radlk.          | New Caledonia                                                                |
|            | *C. baileyana* Radlk.        | Australia                                                                    |
|            | *C. bilocularis* Adema       | Papua New Guinea                                                             |
|            | *C. bullata* Adema           | Papua New Guinea                                                             |
|            | *C. celebico* Adema          | Indonesia (Sulawesi)                                                         |
|            | *C. chytradenya* Radlk.      | New Caledonia                                                                |
|            | *C. cooperorum* P.I. Forst.  | Australia                                                                    |
|            | *C. crassivalvis* Radlk.     | New Caledonia                                                                |
|            | *C. curvidens* Radlk.        | Indonesia (Western New Guinea), Papua New Guinea                             |
|            | *C. dallachyi* S.T. Reynolds| Australia                                                                    |
|            | *C. diplaglottoides* Adema   | Australia                                                                    |
|            | *C. euneura* Adema           | Papua New Guinea                                                             |
|            | *C. flageliformis* Radlk.    | Australia                                                                    |
|            | *C. fleckeri* S.T. Reynolds  | Australia                                                                    |
|            | *C. foveolata* Radlk.        | Australia                                                                    |
|            | *C. grisea* Adema            | New Caledonia                                                                |
|            | *C. hypodermatica* Radlk.    | New Caledonia                                                                |
|            | *C. kajewskii* Merr. & L.M. Perry | Papua New Guinea, Solomon Islands                                           |
|            | *C. leptobotrys* Radlk.      | Vanuatu, Fiji                                                                |
|            | *C. mackeeana* Adema         | New Caledonia                                                                |
|            | *C. macrocarpa* Radlk.       | New Caledonia                                                                |
| Genus          | Species                          | Distribution                                      |
|---------------|----------------------------------|---------------------------------------------------|
|              | C. macropetala Radlk.            | Indonesia (Western New Guinea), Papua New Guinea  |
|              | C. megalocarpa Adema             | New Caledonia                                     |
|              | C. napaensis Adema               | Papua New Guinea                                  |
|              | C. newmanii S.T. Reynolds        | Australia                                         |
|              | C. petiolulata Radlk.            | New Caledonia                                     |
|              | C. phalacocarpa Adema            | New Caledonia                                     |
|              | C. phanerophlebia Merr. & L.M. Perry | Papua New Guinea                               |
|              | C. platycarpa Radlk.             | Indonesia (Western New Guinea), Papua New Guinea  |
|              | C. rhytodocarpa Adema            | Papua New Guinea                                  |
|              | C. serrata Radlk.                | Australia                                         |
|              | C. shirleyana Radlk.             | Australia                                         |
|              | C. stenopetala Radlk.            | Indonesia (Moluccas), Papua New Guinea            |
|              | C. strigosa Adema                | Indonesia (Sulawesi)                              |
|              | C. sylvatica Guillaumin          | New Caledonia                                     |
|              | C. tomentelisa (F.Muell. ex Benth.) S.T. Reynolds | Australia                                     |
|              | C. trigonocarpa Radlk.           | New Caledonia                                     |
|              | C. vitiensis Radlk.              | Fiji                                             |
|              | C. wadsworthii Radlk.            | Australia                                         |
| Lepidocupania| Buerki et al.                    |                                                  |
|              | L. arcuata (Radlk.) Buerki et al.| New Caledonia                                   |
|              | L. brackenridgei (A. Gray) Buerki et al. | Vanuatu, Fiji, Wallis et Futuna, Samoa, Solomon Islands |
|              | L. concolor (Gillespie) Buerki et al. | Fiji                                             |
|              | L. fruticosa (Radlk.) Buerki et al. | New Caledonia                                   |
|              | L. glabra (Adema) Buerki et al.  | New Caledonia                                     |
|              | L. globosa (Adema) Buerki et al.  | New Caledonia                                     |
|              | L. glomeriflora (Radlk.) Buerki et al. | New Caledonia                                   |
|              | L. gracilipes (Radlk.) Buerki et al. | New Caledonia                                   |
|              | L. grandiflora (Adema) Buerki et al. | New Caledonia                                   |
|              | L. guillauminii (Kaneh.) Buerki et al. | Caroline Islands                                |
|              | L. inoplea (Radlk.) Buerki et al. | New Caledonia                                     |
|              | L. lepidota (Radlk.) Buerki et al. | New Caledonia                                     |
|              | L. mouana (Guillaumin) Buerki et al. | New Caledonia                                   |
|              | L. myrmoctona (Radlk.) Buerki et al. | New Caledonia                                   |
|              | L. oedipoda (Radlk.) Buerki et al. | New Caledonia                                     |
|              | L. penneli (Guillaumin) Buerki et al. | New Caledonia                                   |
|              | L. rosea (Adema) Buerki et al.    | New Caledonia                                     |
|              | L. samoensis (Christoph.) Buerki et al. | Samoa                                          |
|              | L. squamosa (Adema) Buerki et al. | New Caledonia                                     |
|              | L. subfuscata (Adema) Buerki et al. | New Caledonia                                   |
|              | L. tontoutensis (Guillaumin) Buerki et al. | New Caledonia                                   |
| Neoarytera    | Callm. et al.                    |                                                  |
|              | N. chartacea (Radlk.) Callm. et al. | New Caledonia                                   |
|              | N. collina (Pancher & Sebert) Callm. et al. | New Caledonia                                   |
|              | N. nekoresinis (H. Turner) Callm. et al. | New Caledonia                                   |
|              | N. neoebudensis (Guillaumin) Callm. et al. | New Caledonia, Vanuatu                           |