

Research Article

Lauding the Linnaean Legacy: New Intrafamilial and Hybrid Names in Selected Families and Genera

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Abstract

Since the rise of the “Revolution of Molecular Cladistics” for plant taxonomy in 1990s, traditional plant classification systems based primarily on macromorphological characters have gradually been substituted with molecular plant classification systems. In the process of revising the classification system and world checklist of families and genera of angiosperms on the basis of the latest research in molecular phylogenetic systematics, a new batch of additional names of intrafamilial and hybrid taxa were found to require publication. In this paper, 78 names are newly published for the intrafamilial and hybrid taxa in 26 families. These taxa include nine subfamilies (Alyxioideae, Amsonioideae, Hunterioideae, Melodinoideae, Manihotoideae, Suregadoideae, Coptosapeltoideae, Amphorogynoideae, and Cervantesioideae), 14 tribes, 20 subtribes, 11 nothogenera, 17 nothospecies, and seven nothosubspecies. In addition, a replacement name, *Zidornia* (Asteraceae) and two new genera, *Sinammata*, and *Ukrainodoxa* (both Oleaceae), as well as new combinations for nine species and five subspecies accordingly, are also proposed. Lectotypes are designated for *Syringa* × *diversifolia*, *Syringa* × *henryi*, *Syringa* *josikaea*, and *Syringa yunnanensis*, and neotypes are designated for *Syringa* × *nanceiana* and *Syringa* × *prestoniae*. Moreover, the former lectotypification for *Syringa wolfii* is rejected. These updates help us present a renewed classification system of angiosperms (especially for the flora of China and East Asia) kept with the Linnaean paradigm.

Keywords

Duocet Wiki, Flowering Plants, Lectotypification, *Robertia*, *Syringa*

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1. Introduction

Since the 1990s, plant taxonomy has shifted from morphology-based systems to molecular phylogenetics, driven by the “Revolution of Molecular Cladistics”. For angiosperms, the APG system, first published in 1998 [1], updated to APG IV in 2016 [2], with APG V forthcoming [3], which mainly aims at the ranks of order and family. However, the establishment of a family-level classification system represents only the first step and foundational work toward a complete classification system for angiosperms. A major current task is to build intra-familial systems—especially for large families—that align with molecular cladistics, translating phylogenetic data into linear, ranked classifications that extend APG-style frameworks.

We have been developing a genus-level classification for all angiosperms via the Duocet Wiki website (<https://duocet.ibiodiversity.net/>) since 2016, guided by two formal requirements: (1) retain Linnaean hierarchy (subfamily, tribe, subtribe, supertribe); (2) determine the status and placement of every genus name recorded in ING, IPNI, and Tropicos. To meet these, we must address three issues: (a) untypified, unaccepted generic names whose nomenclatural status is unclear; (b) missing infrafamilial names for newly discovered monophyletic clades; (c) missing nothogeneric names for hybrids whose parental genera have been reclassified.

Recent work by Feng [4–6] has resolved some of the latter two issues. This paper continues that effort, proposing new names for monophyletic groups at generic and infrafamilial ranks, and updating nomenclature for hybrid taxa to reflect current taxonomy.

2. Material and Methods

Taxonomy. We adopt APG IV [2] for family-level delimitation. At the genus level, to avoid conflicts arising from differing generic concepts—the main source of name changes—we mostly follow POWO. Species delimitation often depends on subjective expert judgment, except when phylogenetic analyses confirm stability; we follow POWO and recent literature.

Nomenclature. Madrid Code [7] of ICN has been followed in making necessary nomenclatural decisions. Unless more recent information is available, author attributions of scientific plant names cited follows IPNI.

Typification. Data on type material were compiled from literature and by examining the collections online at the following herbaria (acronyms follow Thiers, <https://sweetgum.nybg.org/science/ih/>): A (<http://www.huh.harvard.edu>), B (<https://www.bgbm.org/en/herbarium>), E (<http://www.rbge.org.uk>), FI (<https://parlatore.msn.unifi.it/types/search.php>), HEID (<https://gartenbank.cos.uni-heidelberg.de/>), K (<https://data.kew.org/>), LE (<https://en.herbariumle.ru/>), P (<http://science.mnhn.fr/institu>

[tion/mnhn/collection/p/item/search/form](http://science.mnhn.fr/institution/mnhn/collection/p/item/search/form)), W (<http://herbarium.univie.ac.at/database/search.php>); and other herbaria at GBIF (<https://www.gbif.org/>) and JSTOR Global Plants (<https://plants.jstor.org/>). Lecto-typification and neotypification are designated under the guidance of Art. 9 of Madrid Code [7] of ICN.

3. Nomenclatural Treatment

Amaranthaceae [8, 9]

Pupaliinae Z. H. Feng, subtrib. nov. Type: *Pupalia* Adans.

Description: Leaves opposite or occasionally alternate, sometimes auriculate or subauriculate at base. Inflorescences terminal or axillary, often composed of bracteate partial units. Flowers pentamerous, hermaphrodite, usually solitary or paired in bracts, rarely in triads. Perianth consists of 5 free tepals, often hairy, tepals typically 3–5-nerved, persistent or accrescent in fruit. Pseudostaminodes alternate with the stamens when present. Ovary uniovulate, sometimes with a unilateral apical horn. Fruit a thin-walled, indehiscent capsule.

Included genera: *Centema* Hook. f., *Centemopsis* Schinz, *Dasysphaera* Volken ex Gilg, *Kyphocarpa* (Fenzl) Lopr., *Lo-priorea* Schinz, *Marcelliopsis* Schinz, *Mechowia* Schinz, *Poechia* Endl., *Polyrhabda* C. C. Towns., *Pupalia* Adans., *Rosifax* C. C. Towns., *Sericocoma* Fenzl ex Endl., *Sericorema* (Hook. f.) Lopr.

Anacardiaceae [10]

Pistaciinae Z. H. Feng, subtrib. nov. Type: *Pistacia* L.

Based on Pistacieae Marchand, R. év. Anacardiaceae: 184. 1869.

Included genera: *Cotinus* Mill., *Haplorhus* Engl., *Pistacia* L. Semecarpinae Z. H. Feng, subtrib. nov. Type: *Semecarpus* L. f.

Based on Semecarpeae Marchand, R. év. Anacardiaceae: 168. 1869.

Included genera: *Drimycarpus* Hook. f., *Faguetia* Marchand, *Melanochyla* Hook. f., *Nothopegia* Blume, *Parishia* Hook. f., *Semecarpus* L. f., *Trichoscypha* Hook. f.

Apiaceae [11]

Pleurospermopsidae Z. H. Feng, trib. nov. Type: *Pleurospermopsis* C. Norman.

Description: Herbs biennial or perennial. Stem ribbed, bases clothed with remnant sheaths. Basal and lower leaves petiolate; blade 1-pinnate or 2-pinnatifid. Umbels compound, terminal or lateral; bracts stiffly papery or purple-green with board white-membranous margin, apex coarsely toothed or pinnate; bracteoles prominent, similar to bracts, longer than and fringing the flowers, persistent and remaining spreading after fruiting. Petals white, deep red-purple or purple-black, broadly oblong-obovate, apex rounded or shortly incurved. Stylopodium flat-domed. Fruit narrowly oblong or obovoid, slightly compressed laterally, glabrous; ribs prominent, narrowly or sinuate winged; vittae (1–)2 in each furrow, 4 on

commissure.

Monotypic.

Apocynaceae [12, 13]

Alyxioideae Z. H. Feng, subfam. nov. Type: *Alyxia* Banks ex R. Br.

Based on Alyxiinae A. DC., Prodr. 8: 345. 1844.

Included tribes: Alyxieae G. Don.

Amsonioideae Z. H. Feng, subfam. nov. Type: *Amsonia* Walter.

Based on Amsonieae M. E. Endress, Phytotaxa 159(3): 179. 2014.

Included tribes: Amsonieae M. E. Endress.

Hunterioideae Z. H. Feng, subfam. nov. Type: *Hunteria* Roxb.

Based on Hunterieae Miers, Apocyn. S. Amer.: 6. 1878.

Included tribes: Hunterieae Miers.

Melodinoideae Z. H. Feng, subfam. nov. Type: *Melodinus* J. R. Forst. & G. Forst.

Based on Melodineae G. Don, Gen. Hist. 4: 71, 101. 1838.

Included tribes: Melodineae G. Don.

Asteraceae [14]

Zidornia Su Liu & Z. H. Feng, nom. nov.

Replaced synonym: *Robertia* A. Rich. ex DC., Fl. Franç ed. 3. 6: 453. 1815. nom. illeg. non *Robertia* Scop. [Ranunculaceae], Intr. Hist. Nat.: 154. 1777.

Type: *Zidornia taraxacoides* (Loisel.) Su Liu & Z. H. Feng.

Etymology: In honor of Austrian botanist and phytochemist Christian Hermann Wilhelm Zidorn (1968–), together with Neela Enke and Birgit Gemeinholzer, who found that *Seriola taraxacoides* form an independent clade in Hypochaeridinae deserving a generic status.

Monotypic.

Zidornia taraxacoides (Loisel.) Su Liu & Z. H. Feng, comb. nov.

Basionym: *Seriola taraxacoides* Loisel., Fl. Gall. 2: 530. 1807.

Type: Not designated.

Boraginaceae [15]

Arnebiinae Z. H. Feng, subtrib. nov. Type: *Arnebia* Forssk.

Description: Annual to perennial. Stems single to many, branched or unbranched, arising from a tap root. Inflorescence usually terminal, simple or forked, of scorpioid cymes, bracteate. Flowers heterostylic. Calyx divided nearly to the base, lobes accrescent, usually shorter than the corolla tube. Corolla regular or nearly so, yellow, cream, blue, or purple, sometimes with conspicuously spotted limb, salverform or rarely tubular. lobes strongly imbricate in bud, usually spreading or widely ascending, entire to sometimes lacerate, throat usually glabrous within, faucal appendages lacking. Stigma simple or bifid. Ovary 4-lobed. Nutlets 4, variously ornamented.

Monotypic.

Brassicaceae [16, 17]

Sinapinae Z. H. Feng, subtrib. nov. Type: *Sinapis* L.

Based on Sinapeae Prantl in H. G. A. Engler & K. A. E. Prantl, Nat. Pflanzenfam. III, 2: 154. 1891.

Included genera: *Coincya* Rouy, *Kremeriella* Maire, *Sinapis* L.

Cactaceae [18]

× *Cerpraecereus* Z. H. Feng, nothogen. nov.

Parentage: *Cereus* Mill. × *Praecereus* Buxb.

× *Cleistopsis cintiae* (Halda, Malina & Panar.) Z. H. Feng, comb. nov.

Basionym: × *Chamaezicactus cintiae* Halda, Malina & Panar., Acta Mus. Richnov., Sect. Nat. 10(2): 151. 2003.

Parentage: *Cleistocactus samaipatanus* (Cárdenas) D. R. Hunt × *Echinopsis chamaecereus* H. Friedrich & Glaetzle.

Holotype: ex horticultural hybrid, 25 June 2003, *P. Panarotto* s.n. (PR, barcode PR11904).

× *Cleistoreocereus* Z. H. Feng, nothogen. nov.

Parentage: *Cleistocactus* Lem. × *Oreocereus* Riccob.

× *Disoreocereus* Z. H. Feng, nothogen. nov.

Parentage: *Disocactus* Lindl. × *Oreocereus* Riccob.

Echinopsis × *francescae* (Halda, Malina & Panar.) Z. H. Feng, comb. nov.

Basionym: × *Chamaebivia francescae* Halda, Malina & Panar., Acta Mus. Richnov., Sect. Nat. 10(2): 151. 2003.

Parentage: *Echinopsis chamaecereus* H. Friedrich & Glaetzle × *Echinopsis ferox* (Britton & Rose) Backeb.

Holotype: ex horticultural hybrid, 25 June 2003, *P. Panarotto* s.n. (PR, barcode PR11905).

Echinopsis × *mendocina* (Méndez) Z. H. Feng, comb. nov.

Basionym: *Trichocereus* × *mendocinus* Méndez, Hickenia 3(21): 73. 2000.

Parentage: *Echinopsis candicans* (Gillies ex Salm-Dyck) D. R. Hunt × *Echinopsis strigosa* (Salm-Dyck) H. Friedrich & G. D. Rowley.

Holotype: ARGENTINA. Mendoza. Dpto. Luján de Cuyo: cerros de la Puntilla, próximos al Aero Club Mendoza, 21 November 1999, Méndez 7959 (MERL, barcode MERL58660).

× *Epichinopsis* Z. H. Feng, nothogen. nov.

Parentage: *Echinopsis* Zucc. × *Epiphyllum* Haw.

× *Ferulocactus* Z. H. Feng, nothogen. nov.

Parentage: *Echinofossulocactus* Lawr. × *Ferocactus* Britton & Rose.

× *Haagespostoa climaxantha* nothosubsp. *comosa* (Rauh & Backeb.) Z. H. Feng, comb. et stat. nov.

Basionym: *Haageocereus comosus* Rauh & Backeb., Descr. Cact. Nov.: 21. 1957.

Parentage: *Espostoa melanostele* (Vaupel) Borg × *Haageocereus pseudomelanostele* subsp. *carminiflorus* (Rauh & Backeb.) Ostolaza.

Holotype: PERU. Lima, Santa Eulalia valley, 1000 m, 1956, Rauh K27 (HEID, barcode HEID702377, digital image!).

Notes: The combination × *Haagespostoa climaxantha* (Werderm.) G. D. Rowley is sometimes annotated as “without exact basionym page”, presumably because Rowley [19] (p. 76) cited the basionym as “*Binghamia climaxantha* Werderm. in Fedde Repert. 42: 4–6, 1937”. However, under Art. 41.5, Note 1 of ICN [7], that citation is actually correct: “For the purpose of Art. 41.5, a page reference (for publications with a

consecutive pagination) is a reference to the page or pages on which the basionym or replaced synonym was validly published or on which the protologue appears, but not to the pagination of the whole publication unless it is coextensive with that of the protologue". Since Rowley's full pagination reference covers consecutive pages that include the protologue and does not refer to the whole publication's pagination, the name was validly published.

Pachycereus × *apicicostatus* (S. Arias & Terrazas) Z. H. Feng, comb. nov.

Basionym: × *Pachebergia apicicostata* S. Arias & Terrazas, *Revista Mex. Biodivers.* 79(1): 26. 2008.

Parentage: *Pachycereus militaris* (Audot) D. R. Hunt × *Pachycereus pecten-aboriginum* (Engelm. ex S. Watson) Britton & Rose.

Holotype: MEXICO. Guerrero, Mun. Coyuca de Catalán, ca. 30 km southwest of Ciudad Altamirano, 300 m, 25 May 2003, T. Terrazas, S. Arias, M. Vázquez & J. Mauseth 673 (MEXU, barcode MEXU01372886, digital image!; isotypes CHAPA; MEXU, barcode MEXU01372885, digital image!).

× *Pygmopsis* Z. H. Feng, nothogen. nov.

Parentage: *Echinopsis* Zucc. × *Pygmaecereus* H. Johnson & Backeb.

× *Selchocactus* Z. H. Feng, nothogen. nov.

Parentage: *Disocactus* Lindl. × *Echinopsis* Zucc. × *Selenicereus* Britton & Rose.

Campanulaceae [20]

Colensoeae Z. H. Feng, trib. nov. Type: *Colensoa* Hook. f.

Description: Chamaephytes 0.3–1 m tall. Stems robust, suffrutescent toward base, herbaceous toward apex, sparingly branched, erect to ascending. Leaves long petiolate, prominently serrate. Inflorescence a nodding 5- to 20-flowered pedunculate pseudoaxillary corymbose raceme. Corolla bilabiate, purple or blue, sometimes very pale; tube suberect, dorsally cleft to base; lobes monomorphic, almost as long as the tube to longer than the tube, spreading, the dorsal pair nearly distinct, the ventral 3 forming a trifid lip. Staminal column exerted; anthers nude at apex. Fruit a dark blue, globose, fleshy or leathery berry. Seeds ovoid, terete; testa striate.

Monotypic.

Euphorbiaceae [21, 22]

Baliospermeae Z. H. Feng, trib. nov. Type: *Baliospermum* Blume.

Description: Monoecious or dioecious shrubs, sometimes scandent; indumentum simple. Leaves pellucid-punctate, biglandular at base or subbasal on margins; stipules minute, glandular, persistent. Inflorescences mostly axillary, long-pedunculate, thyrsoid-paniculate; bracts entire, eglandular. Staminate flowers pedicellate, petals 0; sepals 4–5(6), distinct, imbricate, orbicular; disk annular, lobed, or segmented; stamens 10–25, filaments distinct; anthers extrorse, muticous, connective narrow. Pistillate flowers pedicellate; sepals 5 or 6, distinct, imbricate, entire or denticulate, persistent in fruit and often accrescent; disk annular; ovary 3(4)-locular, glabrous or pubescent; stylodia bifid. Fruits capsular; columella persistent,

distally alate. Seeds carunculate, caruncle apical, discoidal; testa smooth.

Monotypic.

Manihotoideae Z. H. Feng, subfam. nov. Type: *Manihot* Mill.

Description: Monoecious or dioecious trees or shrubs with white (or yellowish) latex. Indumentum simple, rarely stellate or absent. Leaves alternate, simple or palmately compound, often glandular at the petiole apex or base; stipules usually deciduous. Inflorescences axillary or terminal, with unisexual flowers; bracts small, often deciduous. Flowers apetalous; calyx with (4–)5(–7) sepals, free or connate, imbricate or valvate. Staminate flowers with (4–)5–30 stamens, filaments distinct or connate, anthers introrse, occasionally with apiculate connective. Pistillate flowers with ovary (2–)3(–4)-locular; styles free or basally connate, branches simple, bifid, or multifid. Fruit a capsule (rarely drupaceous), often with a persistent or semipersistent columella. Seeds smooth-tested, with or without a caruncle; endosperm present or absent.

Included tribes: Elateriospermeae G. L. Webster, Manihoteae Pax, Micrandreae G. L. Webster.

Necepsieae Z. H. Feng, trib. nov. Type: *Necepsia* Prain.

Description: Monoecious or dioecious; leaves alternate; leaf blades with or without discoid glands, venation mostly eucamptodromous, with scattered laminar glands [except in *Paranecepsia*]; inflorescences mostly unisexual; bisexual inflorescences lacking terminal pistillate flower; stamens 10–120; connective sometimes enlarged or apiculate; pistillate disk annular or lobed; stylodia bifid, sometimes lacerate. Fruits capsular, 3-lobed, columella winged, persistent. Seeds subglobose, ecarunculate, testa smooth.

Included genera: *Necepsia* Prain, *Paranecepsia* Radcl.-Sm., *Pseudagrostistachys* Pax & K. Hoffm.

Rockinghamieae Z. H. Feng, trib. nov. Type: *Rockinghamia* Airy Shaw.

Description: Monoecious trees; indumentum simple, sparse. Leaves mostly opposite, often pseudo-verticillate at end of branches; petioles pulvinate; stipules deciduous. Inflorescences terminal (axillary), racemoid or paniculate, bisexual; bracts glandular, entire, persistent; petals 0. Staminate flowers pedicellate; calyx closed in bud, splitting into 4 valvate segments; disk segments numerous, interstaminal, pubescent; stamens 25–50, filaments distinct; anthers 4-celled, muticous. Pistillate flowers pedicellate; sepals 5, persistent in fruit; disk annular; ovary 3-locular, pubescent; ovules anatropous, inner integument thick, outer thin; stylodia distinct or basally connate, bifid or unlobed. Fruits capsular, 3-lobed, muricate; columella persistent, winged-dilated. Seeds roundish or oblong, hilum deltoid, testa smooth.

Monotypic.

Suregadoideae Z. H. Feng, subfam. nov. Type: *Suregada* Roxb. ex Rottler.

Diagnosis: Differing from Manihotoideae by inflorescences in glomerules, panicles, racemes, or dichasia, often with bracts.

Staminate flowers with (2–)3–30(–60) stamens; anthers basifixed or dorsifixed, introrse or extrorse. Stigmas simple, bifid, multifid, or stigmatiform. Fruit a capsule (rarely indehiscent or drupaceous), sometimes separating into cocci. Seeds ecarunculate (or with minute caruncle), testa smooth, foveolate, or rugose.

Included tribes: Adenoclineae G. L. Webster, Suregadeae Reveal.

Tritaxinae Z. H. Feng, subtrib. nov. Type: *Tritaxis* Baill.

Description: Dioecious trees or shrubs; latex not evident; indumentum simple, scanty or 0. Leaves entire or denticulate, without basal glands; stipules entire, persistent or deciduous. Inflorescences terminal or subterminal, sometimes axillary, pedunculate, cymose or racemoid, pistillate sometimes reduced to solitary flowers; bracts entire, persistent, eglandular. Staminate flowers pedicellate; sepals 5, connate into a dentate or lobed cup; petals 5, white, distinct, glabrous, equaling or longer than the calyx; disk segments 5, glabrous; stamens (5)8–20(100), the inner 3–10 filaments connate; anthers basifixed or dorsifixed, introrse. Pistillate flowers pedicellate; sepals 5, distinct, imbricate, entire, persistent and accrescent in fruit; petals 5, distinct, imbricate, shorter than sepals; disk annular or cupular; ovary pubescent, sometimes rugose; stylodia connate at base (distinct), bifid, branches slender. Fruits capsular; columella persistent. Seeds ellipsoidal, ecarunculate, testa smooth.

Monotypic.

Verniciinae Z. H. Feng, subtrib. nov. Type: *Vernicia* Lour.

Description: Monoecious or dioecious trees; leaves petiolate, bearing a pair of adaxial disciform glands at the junction of the blade and petiole; stipules deciduous. Inflorescences (sub) terminal, with bracts persistent or deciduous. Flowers unisexual, pedicellate; calyx connate, lobed; petals 5, free, adaxially pubescent or pilose; a disc (of distinct glands or annular) present. Staminate flowers with 7–15 stamens arranged in two whorls; the outer whorl distinct or basally connate, the inner whorl connate to varying degrees; anthers basifixed or cordulate/sagittate at base; pistillode absent or rudimentary. Pistillate flowers with similar perianth and disc; ovary 3-locular, pubescent or sericeous; stylodia 3, bifid or twice-bifid (appearing as 6 branches in some cases).

Included genera: *Deutzianthus* Gagnep. (incl. *Reutealis* Airy Shaw), *Vernicia* Lour.

Fabaceae [23]

Aganopeae K. W. Jiang & Z. H. Feng, trib. nov. Type: *Aganope* Miq.

Description: Lianas or scandent shrubs to small trees. Inflorescences a true panicle, flowers large, flower bracts larger than flower buds, petals winged, free (not adnate to keel petals). Standard petals longer than 10 mm, basal callosities on the standard petals, stamens diadelphous, anthers and connective tissue with hairs. Pods 2-winged.

Included genera: *Aganope* Miq., *Craibia* Dunn., *Ostryocarpus* Hook. f.

Apiosinae K. W. Jiang & Z. H. Feng, subtrib. nov. Type:

Apios Fabr.

Description: Herbs, twining, with root tubers. Leaves pinnately (3)5- or 7(9)-foliolate; stipels small. Inflorescence axillary or subterminal and grouped into terminal panicle, racemelike; nodes swollen. Bracts and bracteoles small, caducous. Calyx campanulate; lobes shorter than tube, upper 2 connate, lowest one linear and other two much shorter. Standard petal ovate or circular, reflexed; wings obliquely obovate, shorter than standard; keels longest and inflexed or coiled. Stamens diadelphous; vexillary stamen free; anthers uniform. Ovary subsessile; ovules many, upper part reflexed, usually thickened, glabrous; stigma terminal. Legume linear, almost falcate, dehiscent, compressed, 2-cleft. Seeds without strophiole.

Monotypic.

Buteinae K. W. Jiang, subtrib. nov. Type: *Butea* Roxb. ex Willd.

Description: Lianas, or less frequently trees or erect or scandent shrubs. Stipules present. Leaves pinnately 3-foliolate. Inflorescences axillary or terminal, racemose (*Butea*), paniculate or pseudopaniculate (*Spatholobus*). Stamens diadelphous; anthers uniform. Pods samaroid, 1-seeded at apex, sterile below.

Included genera: *Butea* Roxb. ex Willd., *Spatholobus* Hassk.

Craspedolobiinae K. W. Jiang & Z. H. Feng, subtrib. nov. Type: *Craspedolobium* Harms.

Description: Shrubs, scandent. Stipules present. Leaves pinnately 3-foliolate; stipels present. Pseudoracemes terminal or axillary near branchlet apex, elongated; flowering branchlet nodes with flowers in fascicles; bracts and bracteoles minute. Pedicel short. Calyx teeth 5, $\pm$ equal in length. Corolla red; petals equal in length; standard orbicular, shortly clawed, without basal calluses. Stamens diadelphous; vexillary stamen free from other 9. Ovary stipitate, with trichomes, with 5–8 ovules. Legumes flat, with a narrow wing on adaxial suture, dehiscent. Seeds with folded radicle.

Monotypic.

Mucuninae K. W. Jiang, subtrib. nov. Type: *Mucuna* Adans.

Description: Lianas or herbaceous vines, rarely creepers or erect shrubs. Vegetative parts and flowers usually $\pm$ blackening upon drying. Stipules persistent or caducous. Leaves usually pinnately 3-foliolate. Stipels present or absent. Inflorescences pseudoracemose, usually long-pedunculate and drooping, rarely erect, sometimes umbel-like; axillary or ramiflorous, rarely terminal; nodes 3-flowered. Keel $\pm$ hooked (*Mucuna*) or coiled (*Cochlianthus*). Stamens diadelphous, with the vexillary one free; anthers uniform (*Cochlianthus*) or alternately basifixed and dorsifixed (*Mucuna*). Style straight (*Mucuna*) or coiled (*Cochlianthus*). Pods dehiscent or indehiscent, usually bearing $\pm$ irritant bristles.

Included genera: *Cochlianthus* Benth., *Mucuna* Adans.

Loranthaceae [24]

Tupeieae Z. H. Feng, trib. nov. Type: *Tupeia* Cham. & Schltdl.

Based on subtrib. Tupeinae Nickrent & Vidal-Russ., Taxon

59(2): 546 (–547). 2010.

Monotypic.

Malvaceae [25, 26]

Alyogyneae Z. H. Feng, trib. nov. Type: *Alyogyne* Alef.

Description: Shrubs, usually much-branched, stellate pubescent. Leaves, simple or lobed. Flowers solitary; epicalyx bracts 4–10, linear or subulate, united towards the base; calyx deeply 5-lobed; petals large, white to violet with dark basal spot; anthers disposed in different levels. Carpels 5, unbranched; style clavate, stigmatic lobes decurrent. Capsule 5-celled, loculicidal; seeds woolly to suglabrous; endosperm copious.

Monotypic.

Firmianeae Z. H. Feng, trib. nov. Type: *Firmiana* Marsili.

Description: Trees, rarely shrubs. Leaves entire to lobed, sometimes bearing sacciform domatia. Inflorescences sometimes cauliflorous or ramiflorous, often subtended by persistent sterile bracts or an involucre. Calyx campanulate to cupuliform, (3–)4–8 lobed; stamens (5–)8–20, arranged in whorls. Carpels (2–)3–10(–60 or more), in one to several whorls, each bearing (1–)2–20 ovules. Fruit a follicle, dehiscent or rarely indehiscent, with 1 to several seeds. Seeds glabrous or pubescent, exalbuminous or albuminous, with a fleshy outer layer or mucilaginous when soaked; embryo straight or curved, with cotyledons thick and often bifid or deeply 2–3-partite; radicle next to the hilum.

Included genera: *Cola* Schott & Endl., *Firmiana* Marsili, *Hildegardia* Schott & Endl., *Octolobus* Welw., *Pterocymbium* R. Br., *Pterygota* Schott & Endl., *Scaphium* Schott & Endl.

Lagunarieae Z. H. Feng, trib. nov. Type: *Lagunaria* (DC.) Rchb.

Description: Trees or shrubs, occasionally mangroves with pneumatophores; vegetative parts often densely stellate-pubescent or covered with lepidote scales. Bracteoles usually present, sometimes forming a fused epicalyx, persistent, caducous (leaving an annular scar), or rarely absent. Calyx gamophyllous, tubular to campanulate, with (3–)4–5 lobes or teeth, persistent or caducous. Corolla dialypetalous or with petals basally adnate to the staminal tube. Stamens 5–60 or more, commonly fused at the base into a staminal tube, sometimes adnate to the corolla. Ovary superior, (2–)3–5-locular. Fruit a loculicidal ovoid to depressed-globose capsule, 2–5-valved. Seeds often winged, and may be reniform, cultriform, pubescent, woolly, or glabrous; radicle next to the hilum.

Included genera: *Camptostemon* Mast., *Howittia* F. Muell., *Lagunaria* (DC.) Rchb., *Marcanodendron* Doweld.

Myrtaceae [27]

Decaspermeae Z. H. Feng, trib. nov. Type: *Decaspermum* J. R. Forst. & G. Forst.

Based on Decasperminae E. Lucas & T. N. C. Vasconc., Syst. Bot. 44(3): 564. 2019.

Included genera: *Archirhodomyrtus* (Nied.) Burret, *Austromyrtus* (Nied.) Burret, *Decaspermum* J. R. Forst. & G. Forst., *Gossia* N. Snow & Guymer, *Kanakomyrtus* N. Snow, *Octamyrtus* Diels, *Pilidiostigma* Burret, *Rhodamnia* Jack,

Rhodomyrtus (DC.) Rchb., *Uromyrtus* Burret.

Oleaceae

The genus *Syringa* has long been divided into two sections, *S. sect. Syringa* and *S. sect. Ligustrina* [28], with the former further subdivided into four series: *S. ser. Syringa*, *S. ser. Pinnatifoliae*, *S. ser. Pubescentes*, and *S. ser. Villosae*. [29] Molecular evidence demonstrates that the traditionally circumscribed *Syringa* is not monophyletic, with the genus *Ligustrum* nested within it, and comprises four main clades that roughly correspond to *S. ser. Syringa*, *S. ser. Pinnatifoliae*, [*S. ser. Pubescentes* + *S. ser. Villosae*], and *S. sect. Ligustrina*, respectively. [30]

Lumping or splitting? That is the question. We prefer the latter approach due to their distinct fruit types (capsules in *Syringa* vs. berry-like drupes or drupe-like capsules in *Ligustrum*) and because they have never been merged since their establishment by Linnaeus in 1753. Given the long-standing use of fruit characters in Oleaceae taxonomy, we propose two new genera in addition to *Syringa* s.s. (= *S. ser. Syringa*) and *Ligustrina* (= *S. sect. Ligustrina*).

Sinammattia Su Liu & Z. H. Feng, gen. nov.

Based on *Syringa* sect. *Pinnatifoliae* Rehder, J. Arnold Arbor. 20: 427. 1939.

Type: *Sinammattia pinnatifolia* (Hemsl.) Su Liu & Z. H. Feng.

Etymology: from Latin prefix sino-, meaning China, and Greek word ἀμμάτιον (ammátion), “little knot”, alluding that the genus is segregated from *Syringa*, the flower buds of whose species are called “lilac knots” in ancient Chinese poems, and the type species *S. pinnatifolia* is endemic to China.

Sinammattia pinnatifolia (Hemsl.) Su Liu & Z. H. Feng, comb. nov.

Basionym: *Syringa pinnatifolia* Hemsl., Gard. Chron., ser. 3, 39: 68. 1906.

Holotype: CHINA. Sichuan, Muping [Baoxing], June 1908, E. H. Wilson 2585 (K, barcode K005884847, digital image!).

× *Syratia* Z. H. Feng, nothogen. nov.

Parentage: *Sinammattia* Su Liu & Z. H. Feng × *Syringa* L.

× *Syratia diversifolia* (Rehder) Z. H. Feng, comb. nov.

Basionym: *Syringa* × *diversifolia* Rehder, J. Arnold Arbor. 16: 362. 1935.

Parentage: *Sinammattia pinnatifolia* (Hemsl.) Su Liu & Z. H. Feng × *Syringa oblata* Lindl.

Lectotype (designated here by Feng): U.S.A. Massachusetts, cultivated at the Arnold Arboretum, Jamaica Plain, 21 May 1935, Rehder s.n. (A, barcode A00106277, digital image!; islectotypes A, barcodes A00106278, A00106279, digital images!).

Ukrainodoxa Su Liu & Z. H. Feng., gen. nov.

Type: *U. josikaea* (J. Jacq. ex Rchb.) Su Liu, Z. H. Feng & Run Hua Jiang.

Description: Shrubs to small trees. Leaves usually more or less pubescent abaxially. Panicles developed from terminal buds or lateral buds, rachis generally pubescent (except for *U. pubescens* subsp. *pubescens*, then anthers dark purple). Fruit

smooth or warty (lenticellate).

Etymology: from Ukraine (Ukrainian: Україна) and Greek word δόξα (dóxa), “glory”, alluding that the type species *U. josikaea* has a restricted geographic range in the Carpathian Mountains in Romania and western Ukraine and has long been cultivated as ornamentals for its beautiful flowers.

Sepecies number: seven species, in two sections: *U.* sect. *Ukrainodoxa* (= *Syringa* ser. *Villosae* (C. K. Schneid.) Rehder, sensu Rehder [29]) and *U.* sect. *Pubescentes*, see below.

Ukrainodoxa sect. *Pubescentes* (C. K. Schneid.) Su Liu, Z. H. Feng & Run Hua Jiang, comb. et. stat. nov.

Basionym: *Syringa* subsect. *Pubescentes* C. K. Schneid., Feddes Repert. Spec. Nov.: 9: 80. 1910.

Ukrainodoxa pinetorum (W. W. Sm.) Su Liu, Z. H. Feng & Run Hua Jiang, comb. nov.

Basionym: *Syringa pinetorum* W. W. Sm., Notes Roy. Bot. Gard. Edinburgh 9: 132. 1916.

Lectotype (designated by Pringle [31], p. 62, corrected from the use of type specimen under Art. 9.10 of ICN [7]): CHINA. Yunnan, Lichiang [Lijiang], alt. 3050–3350 m, 1 June 1914, George 12472 (E, barcode E00284922, digital image!; isolecotype E, barcode E00284923, digital image!).

Ukrainodoxa pubescens (Turcz.) Su Liu, Z. H. Feng & Run Hua Jiang, comb. nov.

Basionym: *Syringa pubescens* Turcz., Bull. Soc. Imp. Naturalistes Moscou 13: 73. 1840.

Holotype: CHINA. Hebei Province, 1831, *P. Kirilov s.n.* (LE, n.v.; isotypes LE, barcodes LE01031117, LE01031118, digital images!).

Ukrainodoxa pubescens subsp. *microphylla* (Diels) Su Liu, Z. H. Feng & Run Hua Jiang, comb. et stat. nov.

Basionym: *Syringa microphylla* Diels, Bot. Jahrb. Syst. 29: 531. 1900.

Lectotype (designated by Chen et al. [32], p. 247): CHINA. Shaanxi: Tui kio shan, Lao yu he, October 1896, *G. Giraldu 1644* (FI, barcode FI015476, digital image!; isolecotypes A, barcodes A00075159, A00075160, digital images!).

Ukrainodoxa pubescens subsp. *patula* (Palib.) Su Liu, Z. H. Feng & Run Hua Jiang, comb. et stat. nov.

Basionym: *Ligustrum patulum* Palib., Trudy Imp. S.-Peterburgsk. Bot. Sada 18: 156. 1901.

Lectotype (designated by Grabovskaya-Borodina [33], p. 78): KOREA. Seoul, prope Tap-Tong, 20 May 1895, *A. Son-tag s.n.* (LE, LE01008056, digital image!; isotype LE, barcode LE01008039, digital image!).

Ukrainodoxa sect. *Ukrainodoxa*

Ukrainodoxa emodi (Wall. ex Royle) Su Liu, Z. H. Feng & Run Hua Jiang, comb. nov.

Basionym: *Syringa emodi* Wall. ex Royle, Ill. Bot. Himal. Mts.: 267, t. 65, f. 2. 1835.

Lectotype (designated by Pringle [34], p. 93): [icon] t. 65, f. 2 in Royle, Ill. Bot. Himal. Mts.: [s.n.]. 1835.

Ukrainodoxa × *henryi* (C. K. Schneid.) Z. H. Feng, comb. nov.

Basionym: *Syringa* × *henryi* C. K. Schneid., Repert. Spec. Nov. Regni Veg. 9: 81. 1910.

Parentage: *Ucrainodoxa josikaea* (J. Jacq. ex Rchb.) Su Liu, Z. H. Feng & Run Hua Jiang × *Ucrainodoxa villosa* (Vahl) Su Liu, Z. H. Feng & Run Hua Jiang.

Lectotype (designated here by Feng): [icon.] “*Syringa Bretschneideri* Hybrida” in L. Henry, Rev. Hort. [Paris]. 1902.

Ukrainodoxa × *josiflexa* (Preston ex J. S. Pringle) Z. H. Feng, comb. nov.

Basionym: *Syringa* × *josiflexa* Preston ex J. S. Pringle, Baileya 20(3): 96. 1978.

Parentage: *Ucrainodoxa josikaea* (J. Jacq. ex Rchb.) Su Liu, Z. H. Feng & Run Hua Jiang × *Ucrainodoxa komarowii* (C. K. Schneid.) Su Liu, Z. H. Feng & Run Hua Jiang.

Holotype: CANADA. Ontario, Regional Municipality of Ottawa-Carleton: Central Experimental Farm, Ottawa, 15 June 1939, *Preston s.n.* (A, barcode A00826518, digital image!).

Ukrainodoxa josikaea (J. Jacq. ex Rchb.) Su Liu, Z. H. Feng & Run Hua Jiang, comb. nov.

Basionym: *Syringa josikaea* J. Jacq. ex Rchb., Iconogr. Bot. Pl. Crit. 8: 32. 1830.

Lectotype (designated here by Feng): [icon.] “*Syringa josikaea* Jacq. fil.” in Reichenbach, Iconogr. Bot. Pl. Crit. 8: Pl. 1049. 1830.

Notes: According to Anonymous [35] in *Flora* (p. 400), Reichenbach may have based the name on Jacquin’s sheets, but extant specimens at W do not match the 1830 illustration. Since part of Reichenbach’s herbarium was destroyed in the 1849 Zwinger fire (Stafleu and Cowan [36], p. 666), the material may have been destroyed or lost (Andreas Berger, pers. comm.); we therefore designated the illustration as lectotype.

Ukrainodoxa komarowii (C. K. Schneid.) Su Liu, Z. H. Feng & Run Hua Jiang, comb. nov.

Basionym: *Syringa komarowii* C. K. Schneid., Repert. Spec. Nov. Regni Veg. 9: 82. 1910.



Figure 1. Type material of *Syringa* species. A. Lectotype of *Syringa* × *diversifolia*. B. Lectotype of *Syringa emodi*. C. Lectotype of *Syringa* × *henryi*. D. Holotype of *Syringa* × *josiflexa*. E. Lectotype of *Syringa josikaea*. F. Neotype of *Syringa* × *nanceiana*. G. Neotype of *Syringa* × *prestoniae*. H. Holotype of *Syringa* × *swegiflexa*. I. Lectotype of *Syringa yunnanensis*.

Holotype: CHINA. Sichuan, 18 July 1893, *G. N. Potanin* s.n. (LE, barcode LE01009305, digital image!; isotype LE, barcode LE01009304, digital image!).

Ukrainodoxa × *nanceiana* (McKelvey) Z. H. Feng, comb. nov.

Basionym: *Syringa* × *nanceiana* McKelvey, *The Lilac*: 107. 1928.

Parentage: [*Ukrainodoxa* × *henryi* (C. K. Schneid.) Z. H. Feng] × *Ukrainodoxa tomentella* subsp. *sweginzowii* (Koehne & Lingelsh.) Su Liu, Z. H. Feng & Run Hua Jiang.

Neotype (designated here by Feng): U.S.A. Massachusetts, ex Plants of the Arnold Arboretum, No. 19274, Harvard University, 16 May 1928, *S. D. McKelvey* s.n. (A, barcode A00176887, digital image!).

Ukrainodoxa × *prestoniae* (McKelvey) Z. H. Feng, comb. nov.

Basionym: *Syringa* × *prestoniae* McKelvey, *Horticulture* (Boston) n. s. 5(15): 302. 1927.

Parentage: *Ucrainodoxa komarowii* (C. K. Schneid.) Su Liu, Z. H. Feng & Run Hua Jiang × *Ucrainodoxa villosa* (Vahl) Su Liu, Z. H. Feng & Run Hua Jiang.

Neotype (designated here by Feng): CANADA. Ottawa, Dominion Agric. Exp., 20 June 1927, *Rheder* s.n. (K, barcode K006190029, digital image!).

Notes: McKelvey did not mention any specimen in the protologue which published in August 1927. In her 1928 monograph, she gave more detailed information as follows: “On June 20 and 21, 1927, with Mr. Alfred Rehder, I went to see these plants when they were in full flower. The parents were examined and were found true to name. Specimens of each are now in the herbarium of the Arnold Arboretum.” We traced a sheet now deposited at K with an original label of Arnold Arboretum Herbarium and it bears handwriting by Alfred Rehder, we herein formally designated it as neotype.

Ucrainodoxa × *swegiflexa* (Hesse ex J. S. Pringle) Z. H. Feng, comb. nov.

Basionym: *Syringa* × *swegiflexa* Hesse ex J. S. Pringle, *Bailleya* 20 (3): 98. 1978.

Parentage: *Ucrainodoxa komarowii* (C. K. Schneid.) Su Liu, Z. H. Feng & Run Hua Jiang × *Ucrainodoxa tomentella* subsp. *sweginzowii* (Koehne & Lingelsh.) Su Liu, Z. H. Feng & Run Hua Jiang.

Holotype: U.S.A. Massachusetts: Suffolk Co.: Arnold Arboretum, Jamaica Plain, Arnold Arboretum no. 701-36. received from the Herm. A. Hesse nursery, Weener (Ems), Germany, 12 June 1939, *E. J. P. [almer]* s.n. (A, barcode A00176663, digital image!).

Ukrainodoxa tomentella (Bureau & Franch.) Su Liu, Z. H. Feng & Run Hua Jiang, comb. nov.

Basionym: *Syringa tomentella* Bureau & Franch., *J. Bot.* (Morot) 5: 103. 1891.

Holotype: CHINA. Sichuan: Kangding, July 1890, *M. Bonvalot* & *H. Orleans* s.n. (P, barcode P00387365).

Ukrainodoxa tomentella subsp. *sweginzowii* (Koehne & Lingelsh.) Su Liu, Z. H. Feng & Run Hua Jiang, comb. et stat.

nov.

Basionym: *Syringa sweginzowii* Koehne & Lingelsh., *Repert. Spec. Nov. Regni Veg.* 8: 9. 1910.

Lectotype (designated by Chen et al. [37], p. 317): [icon.] Figure 8A in Koehne, *Mitt. Deutsch. Dendrol. Ges.* 19: 112. 1910.

Ukrainodoxa tomentella subsp. *yunnanensis* (Franch.) Su Liu, Z. H. Feng & Run Hua Jiang, comb. et stat. nov.

Basionym: *Syringa yunnanensis* Franch., *Rev. Hort.* (Paris) 63: 308. 1891.

Lectotype (designated here by Feng): CHINA. Yunnan: Dali, 3000 m, 17 June 1887, *J. M. Delavay* 2619 (P, barcode P00387335, digital image!; isolectotypes K, K005884653; P, barcodes P00387334, P00387393, P04255004, digital images!).

Ukrainodoxa villosa (Vahl) Su Liu, Z. H. Feng & Run Hua Jiang, comb. nov.

Basionym: *Syringa villosa* Vahl, *Enum. Pl. Obs.* 1: 38. 1804.

Holotype: CHINA. Beijing, *d’Incarville* s.n. (P, barcode P00411405, digital image!).

Ukrainodoxa villosa subsp. *wolfii* (C. K. Schneid.) Su Liu, Z. H. Feng & Run Hua Jiang, comb. et stat. nov.

Basionym: *Syringa wolfii* C. K. Schneid., *Repert. Spec. Nov. Regni Veg.* 9: 81. 1910.

Syntypes: See Byalt et al. [38] (p. 270), lectotype to be re-designated.

Notes: Chen et al.’s [39] (p. 860) lectotypification is here rejected because (1) Schneider clearly stated in the protologue that he examined specimens collected by Egbert Wolf at the garden of the Imperial Forestry Institute in St. Petersburg (now KFTA), and four extant syntypes records are found; (2) their selection of two figures “to be considered a single illustration for typification purposes” is questionable because there is no explicit evidence that multiple figures represent parts of a single gathering. [40]

Orchidaceae

× *Anacamptorchis bonnieriana* (E. G. Camus) B. Bock ex Z. H. Feng, comb. nov.

Basionym: *Orchis* × *bonnieriana* E. G. Camus, *Vademec. Herb. Paris*, ed. 6 [Addenda]: 324. 1891.

Parentage: *Anacamptis palustris* (Jacq.) R. M. Bateman, Pridgeon & M. W. Chase × *Orchis militaris* L.

Type: Not designated.

Notes: Bock [41] (p. 269) first proposed the combination, citing an incomplete 1891 reference without pagination. Feng [6] (p. 6), when attempting to validate the name, citing a later publication of 1892, which in return cited 1891 works. This name is here validated by providing correct and full direction of protologue.

× *Anacamptorchis paschae* (Hautz.) Z. H. Feng, comb. nov.

Basionym: *Orchis* × *paschae* Hautz., *Ann. Naturhist. Mus. Wien* 81: 69. 1978.

Parentage: *Anacamptis collina* (Banks & Sol. ex Russell) R. M. Bateman, Pridgeon & M. W. Chase × *Orchis spitzelii* subsp. *nitidifolia* (Teschner) Soó

Holotype: Griechenland, Kreta, Nomos Lassithiou, ESS Thript í am W-Hang des Thriptis-Hauptgipfels, 850 N. N., 5 May 1975, *L. Hautzinger s.n.* (W).

Notes: One of its parentage is now treated as a subspecies of *Orchis spitzelii* [subsp. *nitidifolia*] (Calevo et al. [42]). Shaw and Feng (in Feng [6], p. 10), proposed coining a new nothosubspecies “[nothosubsp.] *cretensis*” as a replacement name based on the same type. However, such subspecific name is invalidly published under Art. H.10.1. Moreover, *Anacamptorchis paschae* itself is at a rank inappropriate to a parentage with taxa at unequal ranks. It is, however, the correct name applicable to all hybrids between *Anacamptis col-lina* and *Orchis spitzelii* (Art. H.5.2, Ex. 1 of ICN [7]).

Ophrys × *arachnitiformis* nothosubsp. *benignii* (Angradi, Simonc., Bocchini & Barch.) Z. H. Feng, comb. et stat. nov.

Basionym: *Ophrys* × *benignii* Angradi, Simonc., Bocchini & Barch., GIROS Orch. Spont. Eur. 68 (1): 183. 2025.

Parentage: *Ophrys holosericea* subsp. *gracilis* (Büel, O. Danesch & E. Danesch) O. Danesch & E. Danesch × *Ophrys sphegodes* subsp. *passionis* (Sennen) Sanz & Nuet.

Holotype: ITALY. Cagli, NE of Mount Nerone, near Fosto, 709 m, 28 May 2024, *G. Angradi s.n.* (ANC, barcode ANC27825).

Ophrys × *brigitiae* nothosubsp. *pelaezii* (Robles, D. Quintana & M. Becerra) Z. H. Feng, comb. et stat. nov.

Basionym: *Ophrys* × *pelaezii* Robles, D. Quintana & M. Becerra, Anales Biol., Fac. Biol., Univ. Murcia 44: 99. 2022.

Parentage: *Ophrys fusca* subsp. *bilunulata* (Risso) Kreutz × *Ophrys omegaifera* subsp. *dyris* (Maire) Del Prete.

Holotype: SPAIN. Málaga, Archidona, cerro de la Palomera, 30SUG7405, 570 msnm, tomillar en olivar abandonado, arcillas y carniolas tri áficas, 23 April 2022, *E. Robles, D. Quintana & M. Becerra s.n.* (PAMP, barcode PAMP60514).

Ophrys × *chobautii* nothosubsp. *laureanoi* (Robles, D. Quintana & M. Becerra) Z. H. Feng, comb. et stat. nov.

Basionym: *Ophrys* × *laureanoi* Robles, D. Quintana & M. Becerra, Anales Biol., Fac. Biol., Univ. Murcia 44: 98. 2022.

Parentage: *Ophrys lutea* Cav. × *Ophrys speculum* subsp. *lusitanica* O. Danesch & E. Danesch.

Holotype: SPAIN. Málaga, Archidona, cerro de la Palomera, 30SUG7405, 570 msnm, tomillar en olivar abandonado, arcillas y carniolas tri áficas, 23 April 2022, *E. Robles, D. Quintana & M. Becerra s.n.* (PAMP, barcode PAMP60513).

Ophrys × *epidavrensis* nothosubsp. *breuerorum* (P. Delforge) Z. H. Feng, comb. et stat. nov.

Basionym: *Ophrys* × *breuerorum* P. Delforge, Naturalistes Belges 83 (Orchid. 15): 41. 2002.

Parentage: *Ophrys argolica* subsp. *crabronifera* (Mauri) Faurh. × *Ophrys sphegodes* Mill.

Holotype: ITALY. Campania, provincia Salernum, Cilento, circa Pisciotta, 280 m, 1 April 2002, *Pierre Delforge 0203* (Herb. Pierre Delforge No. 10203, digital image!).

Ophrys × *nouletii* nothosubsp. *disabatoii* (D’Alonzo & Perilli) Z. H. Feng, comb. et stat. nov.

Basionym: *Ophrys* × *disabatoii* D’Alonzo & Perilli, GIROS Orch. Spont. Eur. 60 (1): 15. 2017.

Parentage: *Ophrys scolopax* subsp. *cornuta* (Steven) E. G. Camus × *Ophrys sphegodes* subsp. *passionis* (Sennen) Sanz & Nuet.

Holotype: ITALY. Apulia, cultivated from a specimen collected by F. D’Alonzo & M. Perilli on 17 Apr 2016 in Apulia, 23 January 2017, *F. D’Alonzo & M. Perilli 37023* (BI).

Notes: Feng [6] (p. 17) cited a later publication of the basionym when the new combination first proposed. This name is here validated by providing correct and full direction of protologue.

Ophrys × *rainei* nothosubsp. *selinensis* (H. Blatt & Hertel) Z. H. Feng, comb. et stat. nov.

Basionym: *Ophrys* × *selinensis* H. Blatt & Hertel, Mitteilungsbl. Arbeitskreis Heimische Orchid. Hessen 4(1–2): 8. 1982.

Parentage: *Ophrys bombyliflora* Link × *Ophrys sphegodes* subsp. *spruneri* (Nyman) E. Nelson.

Holotype: GREECE. Kreta, SE Asojires; 380 m s. m.; GE 3737. 4 April 1980, *H. Blatt s.n.* (FR).

× *Orchidactylorhiza viridimaculata* (Rolfe) Z. H. Feng, comb. nov.

Basionym: × *Habenariorchis viridimaculata* Rolfe, Ann. Bot. (Oxford) 6: 325. 1892.

Parentage: *Dactylorhiza viridis* (L.) R. M. Bateman, Pridgeon & M. W. Chase × *Orchis maculata* (L.) So á

Type: Not designated.

Serapias × *feboi* Z. H. Feng, nom. nov.

Replaced synonym: *Serapias* × *ruggieroi* Lumare & Medagli, GIROS Orch. Spont. Eur. 68 (1): 152. 2025, nom. illeg., non *Serapias* × *ruggieroi* Medagli & Turco, Thalassia Salentina 33: 77. 2011.

Parentage: *Serapias orientalis* (Greuter) H. Baumann & Künkele × *Serapias parviflora* Parl.

Holotype: ITALY. Southern Apulia, Salento, Lecce, hamlet of Frigole, 0.5 m, 18 May 2024, *Febo Lumare s.n.* (LEC, barcode LEC ORCH 2024051801).

Spathoglottidinae Z. H. Feng, subtrib. nov. Type: *Spathoglottis* Blume.

Description: Terrestrial or epiphytic herbs with clustered, fleshy, globose persistent pseudobulbs, pseudostem present. Inflorescences arise basally, axillary, or laterally from the pseudobulb, with a leafless axis bearing persistent bracts. Flowers showy, often subnutant, petals are frequently narrower or smaller than sepals. Labellum fleshy, distinctly trilobed, lacking a true spur, lateral lobes erect or upcurved and a midlobe variable in shape. Callus prominent, with entire or bilobulate ridges, papillose lines, or longitudinal crests. Column clavate, curved or incurved, often winged or pubescent; pollinia 8, clavate or laterally flattened; stigma transversely reniform-elliptic to dumbbell-shaped, rostellum obtuse or well-developed. Ovary generally pubescent, capsule oblong to

fusiform, ridged or rostrate.

Included genera: *Ipsa* Lindl., *Spathoglottis* Blume (incl. *Ancistrochilus* Rolfe, *Pachystoma* Blume).

Notes: *Ipsa* is tentatively assigned to the subtribe on morphological accounts. [43]

× *Zygopabstia leopardina* (H. J. Veitch ex Rchb. f.) Z. H. Feng, comb. nov.

Basionym: *Zygopetalum* × *leopardinum* Veitch ex Rchb. f., Gard. Chron., n. s., 26: 199. 1886.

Parentage: *Pabstia jugosa* (Lindl.) Garay × *Zygopetalum maxillare* G. Lodd.

Possible holotype: ex Baron Schroeder, through M. J. Veitch & sons, 4 July 1888, s.coll. (K, barcode K000880372, digital image!).

Poaceae [44-46]

× *Bambrocalamus* Z. H. Feng, nothogen. nov.

Parentage: *Bambusa* Schreb. × *Dendrocalamus* Nees.

× *Bambrocalamus changningensis* (T. P. Yi & Ben X. Li) Z. H. Feng, comb. nov.

Basionym: *Bambusa* × *changningensis* T. P. Yi & Ben X. Li, J. Sichuan Forest. Sci. Technol. 33 (3): 7. 2012, pro sp.

Parentage: *Bambusa rigida* Keng & Keng f. × *Dendrocalamus farinosus* (Keng & Keng f.) L. C. Chia & H. L. Fung.

Holotype: CHINA. Sichuan, Changning, Zhuhai Town, Xinjia Village, Er'she, alt. 320 m, 20 September 2011, Yi Tongpei 11006 (SISF).

Cleistogeninae Janch. ex Z. H. Feng, subtrib. nov. Type: *Cleistogenes* Keng.

Description: Caespitose perennials. Upper leaf sheaths enclosing cleistogamous flowers. Leaf blades stiff. Leaf epidermal papillae one per cell. Ligule a fringe of hairs or a fringed membrane. Inflorescences unbranched or branched, the branches branched or not. Spikelets laterally compressed, with 2 to 8 fertile flowers plus additional reduced flowers distally. Callus of flower pubescent. Glumes shorter than the spikelet, their apices muticous. Lemma with 5 veins, the apex entire or with two teeth, muticous or awned.

Monotypic.

Dinebrinae Z. H. Feng, subtrib. nov. Type: *Dinebra* Jacq.

Description: Annuals or perennials, caespitose, stoloniferous or not. Leaf blades sometimes with multicellular glands abaxially. Leaf epidermal papillae present, one per cell. Ligule membranous or a fringed membrane. Inflorescence branches unbranched, sub-digitate or borne along a central axis, often deciduous. Spikelets overlapping on the branches, laterally compressed, with 1 to 18 flowers, the distal ones reduced. Glumes shorter or longer than flowers, the apex acute, acuminate or extended into a long tail. Lemma pubescent on veins, veins sometimes 5 or 7, the apex mucronate or not. Pericarp free from or fused to seed coat. Glandular microhairs present.

Monotypic.

× *Stenhosachne* Z. H. Feng, nothogen. nov.

Parentage: *Anthosachne* Steud. × *Stenostachys* Turcz.

× *Stenhosachne wallii* (Conner) Z. H. Feng, comb. nov.

Basionym: *Agropyron* × *wallii* Connor, Trans. Roy. Soc.

New Zealand 84: 747. 1957.

Parentage: *Anthosachne scabra* (R. Br.) Nevski × *Stenostachys enysii* (Kirk) Barkworth & S. W. L. Jacobs.

Holotype: Porters Pass, Canterbury, 3000ft, 5 January 1956, H. E. Connor s.n. (CHR, barcode CHR91921, digital image!). Polygalaceae [47]

Polygalinae Z. H. Feng, subtrib. nov. Type: *Polygala* L.

Description: Herbs, lianas or woody plants, phyllotaxis alternate, opposite, or whorled, and blades sometimes scale-like or reduced. Sepals 5, lateral ones petaloid, and often colored. Petals 3, occasionally with two additional rudimentary ones, stamens 8 (rarely 4–7), filaments fused into a U-shaped sheath. Fruit a dehiscent capsule (often compressed, winged, or with fringed margins), an indehiscent samara (1- or 2-winged), or a fleshy drupe; when a capsule, it may be horned, toothed, or with a thin pericarp. Seeds usually with a caruncle or elaiosome.

Included genera: *Ancylotropis* B. Eriksen, *Asemeia* Raf., *Caamembeca* J. F. B. Pastore, *Chamaebuxus* Tourn., *Comesperma* Labill., *Epirixanthes* Blume, *Heterosamara* Kuntze, *Hualania* Phil., *Macropolygala* J. F. B. Pastore, *Monnina* Ruiz & Pav., *Monrosia* Grondona, *Muraltia* DC., *Pai-vanthus* J. F. B. Pastore, *Phlebotaenia* Griseb., *Polygala* L., *Rhinotropis* (S. F. Blake) J. R. Abbott, *Salomonina* Lour., *Securidaca* L., *Senega* (DC.) Spach.

Primulaceae [48]

Aegiceratinae Z. H. Feng, subtrib. nov. Type: *Aegiceras* Gaertn.

Description: Shrubs or trees; leaves petiolate, with entire margins, sometimes clustered at branch tips; inflorescences axillary, usually paniculate, occasionally umbellate or terminal; flowers pentamerous, with a gamopetalous corolla, tube short to campanulate, lobes spreading or reflexed, imbricate or contorted in bud; anthers sagittate, dehiscing by pores or longitudinal slits; stigma punctate. Ovary with numerous ovules, uni- or pluriserial. Fruit globose to elongate, sometimes viviparous.

Included genera: *Aegiceras* Gaertn., *Monoporus* A. DC.

Rubiaceae [49-52]

Coptosapeltoideae Z. H. Feng, subfam. nov. Type: *Coptosapelta* Korth.

Based on Coptosapelteae Bremek. ex S. P. Darwin, Taxon 25(5–6): 600. 1976.

Included tribes: Acranthereae Bremek. ex S. P. Darwin, Coptosapelteae Bremek. ex S. P. Darwin.

Kaduinae Z. H. Feng, subtrib. nov. Type: *Kadua* Cham. & Schltdl.

Description: Annual or perennial herbs, rarely shrubby or suffrutescent. Leaves with margins often recurved; lamina usually 1-nerved. Stipules adnate to leaf bases, forming a membranous sheath around the node. Calyx persistent, with a short to distinct hypanthium. Corolla tube sometimes with a distinct ring or line of hairs at the throat or at the geniculate knee of the lobes. Fruit a crustaceous capsule, with a beak often furrowed along the septum. Seeds often with a prominent

central hilar ridge or ventral ridge; testa reticulate, areolate, foveolate, or scrobiculate.

Included genera: *Debia* Neupane & N. Wikstr., *Dimetia* Meisn., *Dolichocarpa* K. L. Gibbons, *Exallage* Bremek., *Involucrella* (Benth. & Hook. f.) Neupane & N. Wikstr., *Kadua* Cham. & Schltdl., *Leptopetalum* Hook. & Arn., *Parainvolucrella* R. J. Wang, *Paranotis* Pedley ex K. L. Gibbons, *Scleromitron* (Wight & Arn.) Meisn., *Synaptantha* Hook. f.

Neanotidinae Z. H. Feng, subtrib. nov. Type: *Neanotis* W. H. Lewis.

Description: Annual or perennial herbs. Stipules usually fused to the petioles or forming a sheath, apically deeply fimbriate, lacinate, or setose. Inflorescences terminal and/or axillary, cymose, often corymbose or capitate. Flowers bisexual, distylous. Calyx deeply 4-lobed, lobes connate at the base and persistent in fruit. Stamens inserted at the corolla throat or in the sinuses between lobes. Style with 2 (or 4) linear stigmatic branches, distinctly heterostylous. Capsule loculicidally dehiscent at the apex (and sometimes secondarily septicidal), rarely indehiscent.

Monotypic.

Rutaceae [53]

Choisyae Z. H. Feng, trib. nov. Type: *Choisya* Kunth.

Description: Trees or shrubs. Leaves alternate; flowers actinomorphic, 4–5-merous, diplostemonous (*Peltostigma* with inconsistent merosity); petals distinct; gynoecium syncarpous or apocarpous, stylodia usually joined into a common style (distinct in *Plethadenia*); ovules 2 per carpel (1 in *Plethadenia*); fruit follicular with seeds forcibly expelled.

Included genera: *Choisya* Kunth, *Decazyx* Pittier & S. F. Blake, *Megastigma* Hook. f., *Peltostigma* Walp., *Plethadenia* Urb., *Polyaster* Hook. f.

Santalaceae [54]

Amphorogynoideae Z. H. Feng, subfam. nov. Type: *Amphorogyne* Stauffer & Hül.

Based on Amphorogynaceae Nickrent & Der., Taxon 59(2): 552. 2010.

Included genera: *Amphorogyne* Stauffer & Hül., *Choretrum* R. Br., *Daenikera* Hül. & Stauffer, *Dendromyza* Danser, *Dendrotrophe* Miq., *Dufrenoya* Chatin, *Leptomeria* R. Br., *Phacellaria* Benth., *Spirogardnera* Stauffer.

Cervantesioideae Z. H. Feng, subfam. nov. Type: *Cervantesia* Ruiz & Pav.

Based on Cervantesiaceae Nickrent & Der., Taxon 59(2): 551. 2010.

Included genera: *Acanthosyris* (Eichler) Griseb., *Cervantesia* Ruiz & Pav., *Jodina* Hook. & Arn. ex Meisn., *Okoubaka* Pellegr. & Normand, *Pilgerina* Z. S. Rogers, Nickrent & Mal écot, *Pyrularia* Michx., *Scleropyrum* Arn., *Staufferia* Z. S. Rogers, Nickrent & Mal écot.

Sapindaceae

Litchi (*Litchi chinensis*) and longan (*Dimocarpus longan*) are two very important tropical fruits which possess similar phenology and taste. McConchie et al. [55] conducted exper-

imental hybridization between these two species in 20th century; Zhao et al. [56] repeated the cross using another two cultivars, i.e., *Litchi* ‘Ziniangxi’ and *Dimocarpus* ‘Shixia’ and analyzed the fruit quality traits, confirming their probability of distant hybridization. The hybrid individual Zhao et al. produced was formerly registered in 2022 as ‘Cuimi’, which boasts yellowish brown and distinct verruculose exocarp and soft fleshy aril.

× *Litchicarpus* Z. H. Feng, nothogen. nov.

Parentage: *Dimocarpus* Lour. × *Litchi* Sonn.

Sapotaceae [57–59]

Sarcaulinae Z. H. Feng, subtrib. nov. Type: *Sarcaulus* Radlk.

Description: Trees or occasionally shrubs, young shoots initially pubescent, soon glabrous, bark becoming greyish, rough or scaly, frequently lenticellate. Leaves alternate, spirally arranged (rarely opposite or subopposite); venation eucamptodromous to brochidodromous, with a prominent marginal vein. Flowers small, corolla margin non-papillate, unisexual or bisexual (in unisexual flowers, staminodes absent in male flowers but present in female flowers). Pollen usually with entire and striate surface. Fruit a berry or drupaceous, fleshy or thin-walled, smooth, often glabrous at maturity. Seeds 1–2 (–several), with plano-convex cotyledons; endosperm absent.

Included genera: *Caramuri* Aubr. é. & Pellegr., *Eremoluma* Baill., *Myrtiluma* Baill., *Neoxythece* Aubr. é. & Pellegr., *Paralabatia* Pierre, *Podoluma* Baill., *Pseudocladia* Pierre, *Pseudoxythece* Aubr. é., *Sandwithiodoxa* Aubr. é. & Pellegr., *Sarcaulus* Radlk., *Urbanella* Pierre.

Synsepaleae Z. H. Feng, trib. nov. Type: *Synsepalum* (A. DC.) Daniell.

Description: Shrubs or trees, leaves spirally arranged. Stipules often conspicuous, large, and persistent, occasionally absent. Inflorescences axillary, ramiflorous, or rarely cauliflorous; flowers borne in fascicles, bisexual (or occasionally unisexual). Sepals free or partly united. Corolla with a short tube or cyathiform, the tube shorter than to slightly exceeding the lobes; lobes 5 (–6 or up to 10), usually widely spreading. Stamens 5 (–6 or up to 10), filaments well-developed. Disk consistently absent. Ovary (4–)5(–7 or –10)-locular, with axile placentation. Fruit a 1-seeded berry. Seeds ellipsoid, not or only slightly laterally compressed, with a smooth testa.

Included genera: *Englerophytum* K. Krause, *Neoboivinella* Aubr. é. & Pellegr., *Pachystela* Pierre ex Radlk., *Synsepalum* (A. DC.) Daniell.

Solanaceae [60]

Salpichroeae Z. H. Feng, trib. nov. Type: *Salpichroa* Miers.

Description: Herbs having aerial parts that darken upon drying. Leaf blades ovate, cordate at the base, flowers solitary, axillary, calyces deeply divided, corolla with a prominent ring-like crown in the mouth, anthers dorsifixed, filaments inserted in the upper part of the corolla tube, connectives thickened, colored nectary conspicuous around the ovary. Berries ovoid, juicy, with persistent accrescent calices.

Included genera: *Nectouxia* Kunth, *Salpichroa* Miers.

Urticaceae [61]

Elatostematinae Z. H. Feng, subtrib. nov. Type: *Elatostema* J. R. Forst. & G. Forst.

Description: Plants with stems often juicy. Leaves often somewhat fleshy, pinnately nerved or with 3 basal nerves; cystoliths linear. Inflorescences axillary with flowers borne on various receptacles. Male flowers perianth appendageless (or occasionally tuberculate or shortly appendaged below the apex). Female flowers perianth very small, cyathiform, or 3–5-partite, often reduced; staminodes 3–5, small, scale-like, sometimes absent, style absent. Achene ovoid to compressed, often keeled on the margin, verruculose or slightly compressed, usually enclosed by the fleshy perianth and often crowned by the persistent stigma.

Included genera: *Elatostema* J. R. Forst. & G. Forst., *Elatostematoidea* C. B. Rob., *Petelotiella* Gagnep., *Procris* Comm. ex Juss.

4. Conclusion

This study addresses critical nomenclatural gaps revealed by molecular phylogenetics for monophyletic groups in various angiosperm families. The establishment of *Sinammata* and *Ukrainodoxa* in Oleaceae resolves the paraphyly of *Syringa* while preserving traditional fruit-based generic distinctions, and the replacement name *Zidornia* for the illegitimate *Robertia* in Asteraceae reflects recent molecular evidence for generic recognition. Typification work provides essential nomenclatural stability, especially for *Syringa* and its allies. These actions clarify name applications critical for horticultural, ecological, and evolutionary studies. Collectively, these contributions represent a significant step toward a comprehensive, phylogenetically informed angiosperm classification, particularly for the flora of China and East Asia, while adhering to the Madrid Code of ICN and supporting the ongoing Duocet Wiki-based revision project. This work exemplifies the continued relevance of the Linnaean paradigm in modern plant taxonomy and lays a foundation for future systematic refinements.

Abbreviations

APG	Angiosperm Phylogeny Group
GBIF	Global Biodiversity Information Facility
ICN	International Code of Nomenclature for Algae, Fungi, and Plants
ING	Index Nominum Genericorum
IPNI	International Plant Name Index
POWO	Plants of the World Online

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Author Contributions

Run-Hua Jiang: Data curation, Writing – original draft, Writing – review & editing

Su Liu: Conceptualization, Data curation, Investigation, Resources, Writing – original draft, Writing – review & editing

Zhen-Hao Feng: Data curation, Investigation, Methodology, Resources, Writing – original draft, Writing – review & editing

Conflicts of Interest

The authors declare no conflicts of interest.

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