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Classification of the Family Gesneriaceae

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ABSTRACT: An up-dated version of the classification of the large, pantropical Gesneriaceae is presented, divided into three geographically separated subfamilies.

KEY WORDS: Gesneriaceae, taxonomy.

Ever since their recognition as a family some 170 years ago (by Dumortier in 1822), the Gesneriaceae have been a plant group hard to classify. With some minor exceptions (alpines in the Himalayas, Pyrenees, southern Chile, etc.), they are a tropical family of herbs, vines, shrubs and a few trees. Methods used by temperate zone botanists to order them were unsuccessful and failed to reflect their natural groupings.

Soon after the gesneriad species and genera from the freshly explored new tropical countries arrived in Europe, in herbaria, botanical gardens and nurseries, the intriguing task of naming and classifying this wealth of new plant material began. The De Candolles (1839, 1845) did that in Paris; Hanstein (1854-65) worked in Berlin; Bentham (1876) classified in London; Clarke (1883) published in Paris; and Fritsch (1893-94) in Graz and Vienna. In these classification schemes, floral characters (ovary position, corolla shape) were highly valued. But superior ovaries placed also the New World tribes Beslerieae and Episcieae with the Old World Gesneriaceae.

Studies in gesneriad seedling morphology, begun at Graz (Fritsch, 1904) and completed in Edinburgh (Burtt, 1963), finally gave a boost to the taxonomy of the family. All members of the Old World subfamily Cyrtandroideae have cotyledons which become unequal in size (anisocotylous) soon after germination. The New World subfamily Gesnerioideae (including the tribes Beslerieae and Episcieae) and a southern Pacific group (*Coronanthera*, *Mitraria*, etc.) are all isocotylous. This seedling feature divided the family into neat and clear-cut geographical units, much better than ovary position.

Intergeneric hybridization work at Cornell University brought about a reduction of the tribes (of Fritsch's system of 1893-94) and realignment of the genera (Figure 1) of the neotropical Gesneriaceae (Wiehler, 1983). Foreign among the "worked over" Gesnerioideae appeared the southern Pacific group; they were segregated as a new subfamily, the Coronantheroideae. (Check Table 1.)

Years have past since these last classification attempts. They have weathered the influx of large amounts of new material from the now vanishing tropical rain forests. Hybridization studies will let several more genera disappear from the Gesnerioideae, *Lietzia* being one of them. Based on new field collections, several new genera will be added soon. Based on a team of researchers, the tree genus *Sanango* was placed in the Gesnerioideae (Wiehler, 1994).

Among the subfamily Cyrtandroideae, a new tribe, Titanotricheae, has been added (Wang, 1992), and the genera in the large tribe Didymocarpeae have been alphabetized for easier finding. New base chromosome numbers were added. Several genera are presently being remodelled.

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Table 1: Classification of the Family Gesneriaceae

The Gesneriaceae contain 3 subfamilies, 11 tribes, about 147 genera, and over 3700 species.
(Base chromosome number at left of each genus; number of species in each genus at right.)

I. Subfamily Gesnerioideae

5 tribes, 56 genera, over 1800 species.
Distribution: Neotropics.

1. Tribe Gloxinieae Fritsch

13	*Gloxinia* L'Heritier	15	13	*Sinningia* Nees	60+
13	*Monopyle* Bentham	27+		*Lembocarpus* Leeuwenberg	1
13	*Kohleria* Regel	20+		*Goyazia* Taubert	2
13	*Anodiscus* Bentham	1	13	*Bellonia* Linnaeus	2
13	*Koellikeria* Regel	1	13	*Phinaea* Bentham	16+
13	*Pearcea* Regel	1	11	*Niphaea* Lindley	5
13	*Parakohleria* Wiehler	20+	12	*Smithiantha* Kuntze	5
13	*Heppiella* Regel	10	12	*Eucodonia* Hanstein	2
13	*Diastema* Bentham	21+	11	*Achimenes* Persoon	24
13	*Capanea* Planchon	11	11	*Moussonia* Regel	11
13	*Paliavana* Vandelli	8	10	*Solenophora* Bentham	20+
13	*Vanhouttea* Lemaire	6			

2. Tribe Episcieae Endlicher

9	*Episcia* Martius	24	9	*Rufodorsia* Wiehler	4
9	*Nautilocalyx* Hanstein	80+	9	*Oerstedina* Wiehler	3
9	*Chrysothemis* Decaisne	7	9	*Pentadenia* (Planchon) Hanstein	35+
9	*Corytoplectus* Oersted	15	9	*Dalbergaria* Tussac	120+
9	*Alloplectus* Martius	75+	9	*Trichantha* Hooker	70+
9	*Cobananthus* Wiehler	1	9	*Columnea* Linnaeus	75+
9	*Rhoogeton* Leeuwenberg	3	9	*Bucinellina* Wiehler	2
9	*Drymonia* Martius	140+	9	*Codonanthopsis* Mansfeld	5
9	*Paradrymonia* Hanstein	70+	8	*Codonanthe* (Martius) Hanstein	20+
9	*Alsobia* Hanstein	2	8	*Nematanthus* Schrader	30
9	*Neomortonia* Wiehler	3			

3. Tribe Beslerieae Bartling & Wendland

16	*Besleria* Linnaeus	200+		*Resia* H.E. Moore	2
	Gasteranthus Bentham	40+		*Tylopsacas* Leeuwenberg	1
	Cremosperma Bentham	25+		*Cubitanthus* Barringer	1
	Reldia Wiehler	5		*Anetanthus* Hiern ex Bentham	2

4. Tribe Napeantheae Wiehler

	Napeanthus Gardner	30+

5. Tribe Gesnerieae

14	*Gesneria* Linnaeus	90+
16	*Sanango* Bunting & Duke	1

II. Subfamily Coronantheroideae Wiehler

1 tribe, 9 genera, 20 species.
Distribution: southern Chile, South Pacific Islands, Australia.

6. Tribe Coronanthereae Fritsch

±37	*Mitraria* Cavanilles	1		*Coronanthera* Vieill. ex C.B. Clarke	11
±37	*Sarmienta* Ruiz & Pavon	1	±45	*Negria* F. Mueller	1
	Asteranthera Hanstein	1	±37	*Rhabdothamnus* Cunningham	1
±40	*Fieldia* Cunningham	1		*Depanthus* S. Moore	2
	Lenbrassia G.W. Gillett	1			

III. Subfamily Cyrtandroideae Endlicher

5 tribes, 82 genera, over 1900 species.
Distribution: Old World, chiefly in tropics, but 1 species in Neotropics.

7. Tribe Klugieae Fritsch

10, 21, 27	*Rhynchoglossum* Blume	12
	Epithema Blume	22
10	*Monophyllaea* R. Brown	32
	Whytockia W.W. Smith	3
	Loxonia W. Jack	3
	Gyrogyne W.T. Wang	1
	Stauranthera Bentham	8

8. Tribe Didymocarpeae Endlicher

	Acanthonema Hooker	1
	Allocheilos W.T. Wang	2
	Allostigma W.T. Wang	1
17	*Ancylostemon* Craib	11
	Anna Pellegrin	3
10	*Beccarinda* Kuntze	7
8, 16, 18	*Boea* Lamarck	17
	Boeica C.B. Clarke	9
	Bournea Oliver	2
17	*Briggsia* Craib	21
	Briggsiopsis K.Y. Pan	1
	Calcareoboea H.W. Li	1
	Cathayanthe Chun	1
	Championia Gardner	1
4, 7, 9, 10, 14, 17, 18	*Chirita* D. Don	130+
	Chiritopsis W.T. Wang	8
	Colpogyne B.L. Burtt	1
17	*Conandron* Sieb.& Zucc.	1
10	*Corallodiscus* Batalin	17
	Dayaoshania W.T. Wang	1
	Deinocheilos W.T. Wang	2
	Deinostigma W.T. Wang ex Z.Y. Li	1
10	*Didissandra* C.B. Clarke	53
9, 11, 12, 14, 16, 18, 19	*Didymocarpus* Wallich	180+
	Didymostigma W.T. Wang	1
	Dolicholoma D. Fang & W.T. Wang	1
	Gyrocheilos W.T. Wang	4
22	*Haberlea* Frivaldszky	2
18	*Hemiboea* C.B. Clarke	21
	Hemiboeopsis W.T. Wang	1
17	*Hexatheca* C.B. Clarke	2
	Isometrum Craib	13
28	*Jancaea* Boissier	1
	Lagarosolen W.T. Wang	2
	Leptoboea Bentham	4
	Linnaeopsis Engler	4
9	*Loxocarpus* R. Brown	15
	Metabriggsia W.T. Wang	2
	Metapetrocosmea W.T. Wang	1
	Nodonema B.L. Burtt	1
17	*Opithandra* B.L. Burtt	9
	Orchadocarpa Ridley	1
	Oreocharis Bentham	26
ca.16	*Ornithoboea* C.B. Clarke	10
9, 16, 17, 18	*Paraboea* (C.B. Clarke) Ridley	90+
17	*Petrocodon* Hance	1
17	*Petrocosmea* Oliver	27
	Phylloboea Bentham	1
	Platyadenia B.L. Burtt	1
20	*Platystemma* Wallich	1
	Primulina Hance	1
	Pseudochirita W.T. Wang	1
24, 36	*Ramonda* L.C. Richard	3
	Raphiocarpus Chun	1
	Rhabdothamnopsis Hemsley	1
15	*Saintpaulia* H. Wendland	20
	Schizoboea (Fritsch) B.L. Burtt	1
15, 16, 48	*Streptocarpus* Lindley	132
	Tengia Chun	1
	Tetraphyllum C.B. Clarke	2
	Thamnocharis W.T. Wang	1
	Trachystigma C.B. Clarke	1
	Tremacron Craib	7
18	*Trisepalum* C. B. Clarke	14

9. Tribe Trichosporeae Nees

15, 16	*Aeschynanthus* W. Jack	140+
	Micraeschynanthus Ridley	1
	Oxychlamys Schlechter	1
16	*Agalmyla* Blume	50+
16	*Lysionotus* G. Don	30
	Loxostigma C.B. Clarke	4

10. Tribe Cyrtandreae G. Don

17	*Cyrtandra* J.R. & G. Forster	500+
10	*Rhynchotechum* Blume	12
	Sepikaea Schlechter	1

11. Tribe Titanotricheae W.T. Wang

20	*Titanotrichum* Solereder	1

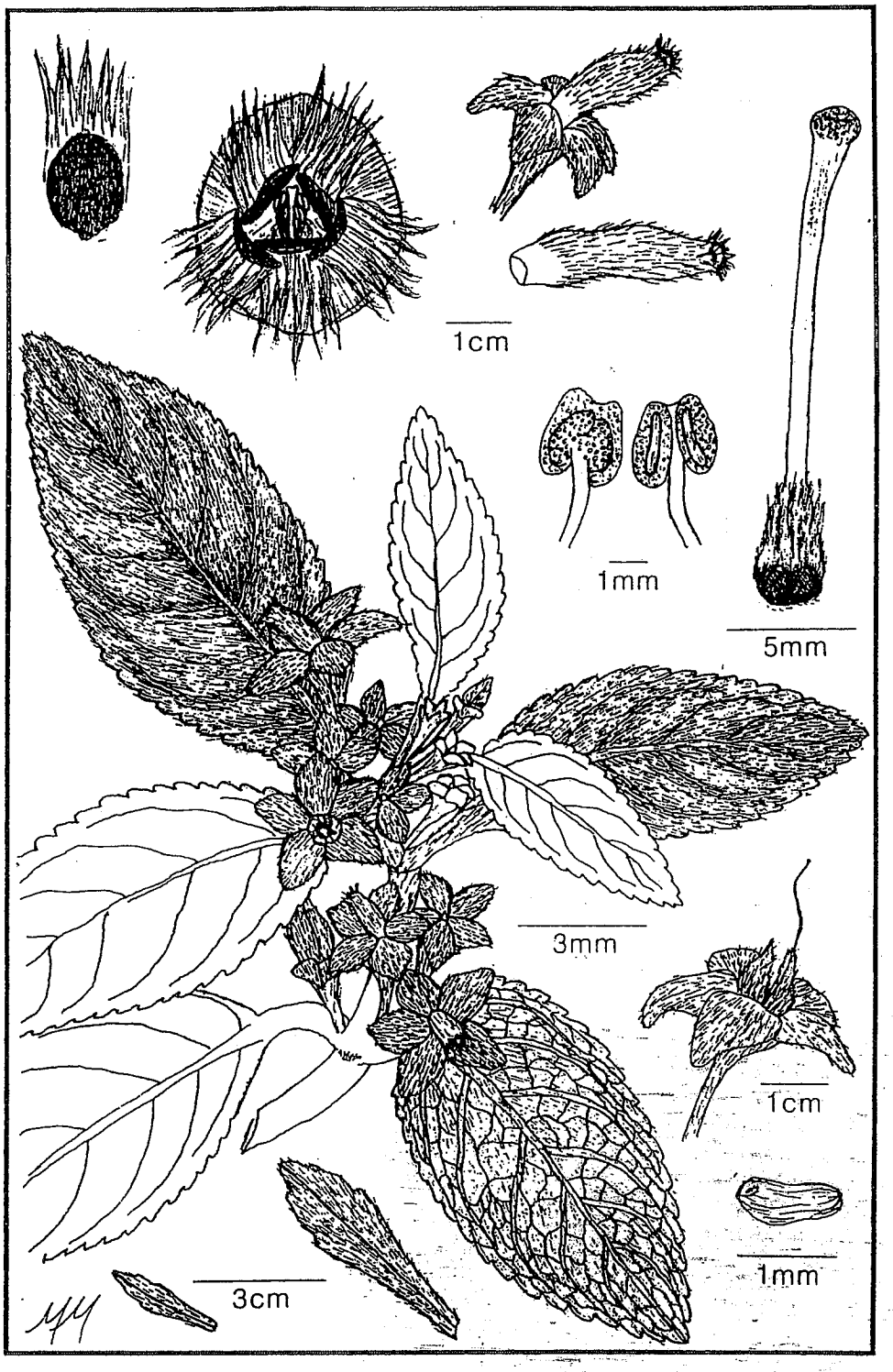

Figure 1: **Cobananthus calochlamys** (Donnell-Smith) Wiehler
Voucher specimen: *Wiehler & Kunkel 7559* (GES). Cobán area, Guatemala, 1975.
Illustrator: *Merrillee Malwitz*, 1994.
Sponsor of illustration: *Delaware Gesneriad Society, Wilmington, Delaware*

The epiphyte illustrated above serves as an example of the necessity for a modern classification of the neotropical Gesneriaceae. This orange- and yellow-flowered species from Cobán, Guatemala, was first described in 1899 by Donnell-Smith as *Alloplectus calochlamys*, then transferred by C. V. Morton to *Columnea* Linnaeus in 1962. The discovery of the nature of the fruit (a capsule, as in *Episcia* Martius) in 1975 excludes this taxon from both *Alloplectus* Martius and *Columnea*. A new genus was established, honoring the town of Cobán. *Cobananthus calochlamys* is rare and almost extinct, known only from that region of Guatemala.