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AN ORDINAL  
CLASSIFICATION FOR THE  
FAMILIES OF FLOWERING  
PLANTS

*The Angiosperm Phylogeny Group*<sup>1</sup>

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ABSTRACT

Recent cladistic analyses are revealing the phylogeny of flowering plants in increasing detail, and there is support for the monophyly of many major groups above the family level. With many elements of the major branching sequence of phylogeny established, a revised suprafamilial classification of flowering plants becomes both feasible and desirable. Here we present a classification of 462 flowering plant families in 40 putatively monophyletic orders and a small number of monophyletic, informal higher groups. The latter are the monocots, commelinoids, eudicots, core eudicots, rosids including eurosids I and II, and asterids including euasterids I and II. Under these informal groups there are also listed a number of families without assignment to order. At the end of the system is an additional list of families of uncertain position for which no firm data exist regarding placement anywhere within the system.

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Why rearrange families, still less formalize orders? Higher-level classifications, the grouping of species into families, orders, etc., are needed as reference tools not only in systematics but also in many other branches of biology. Knowledge of phylogenetic relationships of major groups of organisms, that is, a phylogenetic perspective, is becoming increasingly important, and hence the need for a phylogenetic classification as a reference tool is also becoming imperative.

Our primary focus is on orders with a secondary emphasis on families of flowering plants. The family is central in flowering plant systematics. For example, in studying an unknown plant we usually first identify it to family. The orders, on the other hand, have until quite recently been of little importance, either being morphologically unrecognizable or in most cases lacking any evolutionary coherence (Heywood, 1977; Merxmüller, 1977). However, orders are useful in teaching, for studying

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family relationships, and in positioning genera of doubtful affinity. The didactic value of suprafamilial groupings has been emphasized by various authors (e.g., Dahlgren, 1975; Thorne, 1976; Davis, 1978; Takhtajan, 1997). This value is even more evident now that the phylogeny of flowering plants is being disclosed in increasing detail. Many of the orders recognized by earlier authors are not monophyletic, yet there is a pressing need for names to communicate the knowledge of monophyletic groupings of families that are becoming evident. With the major branching sequence of flowering plant phylogeny becoming clearer, a revised familial and ordinal classification is feasible.

Flowering plant classification systems from the late 1970s seemed to be stable and show substantial agreement, but this stability has been rudely shattered as new kinds of data and new methods of analyzing conventional data have become firmly established (Stevens, 1986). Classifications such as those by Cronquist (1981) and Takhtajan (1980), although still in frequent use, have become outdated. Of more recent classifications, that by Goldberg (1986) of the dicotyledons predates the advent of molecular studies at higher levels, as does that by Dahlgren et al. (1985) of the monocotyledons. However, the latter incorporated much new data and provided synapomorphy schemes for many groups. The recent system of Takhtajan (1997), although extremely elaborate, is made less useful because his propensity for splitting often results in well-known families being dismembered, then reassembled as orders. Furthermore, the findings of recent molecular studies, despite being cited, have hardly influenced his classification.

We conclude that there is a great need for a new, phylogenetic classification of flowering plants, providing names for major monophyletic groups of families. Obviously, it is not possible, nor is it desirable, to name all clades in the entire phylogeny. Any such complete classification would be so cumbersome that it would be useless for general communication. Systematists need to come to some kind of agreement concerning which clades to recognize and name, so that a reference tool of broad utility can be formulated and used to discuss diversity. An ordinal classification of flowering plant families is here proposed for that purpose (pp. 538–542). It recognizes a selected number of monophyletic suprafamilial groups, that is, clades in the phylogeny of flowering plants that are supported by at least one, and often several, lines of evidence. These are clades to which we find it useful to refer when we communicate information about higher-level interrelationships of the flowering plants.

We note that the selection of clades to be represented in a formal classification is different from the procedure of naming these clades. The latter issue of biological nomenclature in phylogenetics is currently much debated (e.g., Cantino et al., 1997; de Queiroz, 1997; Lidén et al., 1997), but we have not adopted any "phylogenetic naming" sensu de Queiroz and Gauthier (1994). We operate under the current *International Code of Botanical Nomenclature* (Greuter et al., 1994) and choose to emphasize the ranks of family and order. The Linnaean categories serve as a convenient mnemonic device for remembering hierarchical relationships, but it should of course be realized that groups of the same rank are evolutionarily non-comparable units unless they are sister groups.

There are noteworthy problems when establishing the names for taxa at ordinal and other higher taxonomic levels. Until recently, little attention has been paid to the nomenclature at these levels, and our knowledge of the early literature in which such names were used is imperfect. This situation has in considerable part been rectified by Reveal's (1998) Herculean labors. The principle of priority is not mandatory for taxa above the rank of family, although authors are exhorted "generally" to follow this principle (Greuter et al., 1994). We have tried to balance priority with general usage when assigning names to orders, but even if future bibliographic work discloses earlier ordinal names, changes are not mandated.

Which clades should be recognized in classification, or in our case, how should the orders be circumscribed? Given the primary principle of monophyly, that of recognizing clades and not grades in classification, there are nevertheless many considerations to be taken into account when circumscribing taxa at ordinal as well as all other hierarchical levels above that of species. Classification is not only a matter of grouping according to the principle of monophyly, but it is also a matter of communication (note that whatever philosophy of naming is adopted, there has to be some consensus as to the clades we are going to use in general botanical communication). For us, this raises the question of ranking, that is, after having selected clades in the phylogeny to be named, they have to be assigned an appropriate place in the hierarchy, in our case, family and order (e.g., Backlund & K. Bremer, 1998; Stevens, 1998). In choosing between alternative circumscriptions it is desirable to recognize groups that are well supported. It is also useful to select groups that have some kind of easily observed morphological synapomorphies, although this may be difficult at the ordinal level and

even sometimes at the family level. Synapomorphies also often include (sometimes exclusively) anatomical, biochemical, and developmental characters.

Many of our ordinal names are already well established and used in earlier classifications and systematic treatments. So far as they represent monophyletic groups, we retain well-known orders in the interest of preserving stability. In other cases, the size of the orders comes into consideration. However, what is reasonably broad circumscription? From the point of view of memorization of names, groups of 2–6 or a few more would seem to be ideal, and there is evidence that systematists in the past have commonly recognized groups of this size (Stevens, 1997). However, with the discoveries of new species, genera, and families, the sizes of genera, families, and orders have increased, and many orders now comprise 10–20 families, or even more. Other orders contain a few families only, and if there are only two or three families in an order, “one is not far from leaving the families unplaced” (Copeland, 1957). Concerns about the doubtful value of recognizing similarly small groups have also been expressed by others (e.g., Burt, 1977). Nevertheless, we have chosen to recognize a number of small orders because these represent clades for which monophyly and relationships are well supported, and this better conveys the interrelationships of the families included rather than leaving them unclassified to order.

In general, we adopt a broad circumscription of the orders. We recognize 462 families and 40 orders of flowering plants. Cronquist (1981) recognized 321 families and 64 orders, Thorne (1992) 440 families and 69 orders, and Takhtajan (1997) no less than 589 families in 232 orders. Our wider ordinal circumscription is not because finer details of the phylogeny within the orders are as yet unclear, but because we think the classification will be more useful with a limited number of larger orders. As we develop more firmly supported phylogenies within and among orders, groups at the infraordinal and supraordinal levels can be recognized. Hence we anticipate that there will be little need to change the circumscription of the orders recognized here, except for inclusion of yet unassigned families of unknown systematic position and the transfer of misplaced families. Additional orders may have to be recognized as the phylogenetic relationships of families that are not yet placed are clarified. Discussion as to whether a widely accepted monophyletic group should be a superorder, order, suborder, or family is largely vac-

uous because this will always be an arbitrary decision.

Takhtajan (1997) opted in favor of “smaller, more natural families and orders, which are more coherent and better-defined, where characters are easily grasped, and which are more suitable for information retrieval and phylogenetic studies, including cladistic analyses (e.g., because it reduces polymorphic codings).” However, the size of a group has nothing to do with its “naturalness.” For a smaller group, one will often be able to say more about all of its constituent members, and so the characters may be more easily grasped. However, segregates of well established monophyletic families like Rubiaceae (Gentianales) or Asteraceae (Asterales) would by Takhtajan’s generalization also be more natural; by this criterion, the smaller the group, the more natural it will necessarily be, so there is no ranking criterion to be derived from “naturalness.” If by “more natural” is meant “has more synapomorphies” then this, too, is incorrect; the number of synapomorphies is not connected to the size of the group or the hierarchical level at which it is recognized.

In our classification, these considerations have had little impact. The principle of monophyly in combination with the desirability of maintaining already well established and familiar entities has largely formed the ordinal classification. Monofamilial orders (and monogeneric families) are avoided as much as possible, minimizing redundancy in classification. In a few cases we have, however, recognized some monofamilial orders (Ceratophyllales, Acorales, Arecales) because these are sister groups of more than one other order. Hence, the families of these monofamilial orders cannot be included in any other order without violating monophyly.

The principle of monophyly in combination with the mandatory usage of the family category (Greuter et al., 1994) may lead to the recognition of many small families. For example, in Dipsacales, if Dipsacaceae and Valerianaceae are to be retained as families separate from Caprifoliaceae, the principle of monophyly requires the recognition also of Dieraviaceae, Linnaeaceae, and Morinaceae (Backlund & K. Bremer, 1998; Backlund & Pyek, 1998). This is because each of these latter families is the sister group of more than one family so they cannot be merged with any other family without violating monophyly. Similar considerations apply at the ordinal level. Unfortunately, no absolute guidelines as to reasonable practice can be offered, but we simply observe that caution is always in order.

In other cases there are small families that may be reduced to synonymy of their sister group if the

latter consists of a single family. Examples are *Cambaceae*, which may be merged with *Nymphaeaceae*, and *Kingdoniaceae*, which may be merged with *Circaeasteraceae* (*Ranunculales*). Such commonly recognized families that nevertheless may be merged with their sister family are in our classification placed within square brackets below the family with which they may be merged (in *Ranunculales* either *Fumariaceae* or both *Fumariaceae* and *Pteridophyllaceae* may be merged with *Papaveraceae*; alternatively, either *Pteridophyllaceae* or both *Fumariaceae* and *Pteridophyllaceae* may be retained as distinct).

We do not attempt to thoroughly revise family circumscriptions. In general we follow recent authors and attempt to recognize as many monophyletic families as possible. It should be emphasized, however, that following additional investigation some families listed below may be shown to be non-monophyletic; revised circumscriptions, either by merging or splitting, into monophyletic taxa are not yet possible given our current knowledge. Examples are *Euphorbiaceae* and *Flacourtiaceae* of *Malpighiales* (Källersjö et al., 1998) and several families of *Myrtales* (Conti et al., 1996; Gadek et al., 1996) and core *Caryophyllales* (which comprise *Achatocarpaceae*, *Aizoaceae*, *Amaranthaceae*, *Basellaceae*, *Cactaceae*, *Caryophyllaceae*, *Didiereaceae*, *Molluginaceae*, *Nyctaginaceae*, *Phytolaccaceae*, *Portulacaceae*, *Sarcobataceae*, and *Stegnospermataceae*; Hershkovitz & Zimmer, 1997). Other probably non-monophyletic families that cannot yet be recircumscribed are *Boraginaceae* (euasterids I; Chase et al., 1993), *Scrophulariaceae* (*Lamiales*; Olmstead & Reeves, 1995), and *Santalaceae* (*Santalales*; Nickrent & Duff, 1996; Nickrent et al., 1998). *Brassicaceae* (*Brassicales*) include also the former, paraphyletic *Capparaceae* (*Brassicaceae sensu stricto* being nested inside *Capparaceae*; Judd et al., 1994; Rodman et al., 1996). A supposedly parallel case comprises *Apiaceae* and *Araliaceae* (*Apiales*), since the former have been assumed to be nested inside the latter (Plunkett et al., 1996). However, with a transfer of *Hydrocotyloideae* from *Apiaceae* to *Araliaceae*, it seems that two monophyletic families can be recognized, only a few genera remaining unplaced (Plunkett et al., 1997). Delimitation of *Bombacaceae*, *Malvaceae*, *Sterculiaceae*, and *Tiliaceae* (*Malvales*) is problematical, and only *Malvaceae* are monophyletic (Alverson et al., 1998; Bayer et al., 1999). Here all four are treated together as a single monophyletic family, *Malvaceae sensu lato* (Judd & Manchester, 1997).

Our proposed classification is a modification of

that conceived by Bremer et al. (1995, 1996, 1997) and since 1996 available on the Internet (Bremer et al., 1998). This classification is based on various recently published mostly molecular phylogenetic analyses (e.g., Chase et al., 1993; Chase et al., 1995; Bremer et al., 1994; Struwe et al., 1994; Nadot et al., 1995; Nickrent & Soltis, 1995; Soltis et al., 1995; Gadek et al., 1996; Gustafsson et al., 1996; Morton et al., 1996; Soltis & Soltis, 1997; Soltis et al., 1997; Anderberg et al., 1998; Backlund & B. Bremer, 1998; Bakker et al., 1998; Källersjö et al., 1998; Soltis et al., 1998; Thulin et al., 1998; further references above). The major differences are in the expansion of *Alismatales* (including also *Araceae*), *Caryophyllales* (including *Droseraceae*, *Nepenthaceae*, *Polygonaceae*, *Plumbaginaceae*, and several other families outside the traditional, core *Caryophyllales*), the recognition of a comparatively widely circumscribed *Rosales* (including *Rhamnaceae*, *Urticaceae*, *Moraceae*, and their allies), in the addition of a number of smaller orders (*Ceratophyllales*, *Acorales*, *Arecales*, *Proteales*, *Garryales*, *Aquifoliales*), and in the deletion of a few others (*Aristolochiales*, *Nymphaeales*, *Bromeliales*, *Trochodendrales*, *Zygophyllales*). *Monocots* and *eudicots* are not formally ranked and named because it is not yet clear at which level they should be recognized. The same problems occur with *commelinoids* (a phylogenetically derived subgroup of *monocots*) and with *rosids* and *asterids* (subgroups of *eudicots*), although these are commonly known as subclasses *Commelinidae*, *Rosidae*, and *Asteridae*, respectively.

Well supported ordinal interrelationships are shown in Figure 1. Interrelationships among the basal branches of the tree and the position of the root of the flowering plant phylogeny remain elusive. Within the *eudicots* there is increasing support for a large subgroup with predominantly pentamerous and isomerous flowers, the core *eudicots*, mainly comprising *Caryophyllales*, *Santalales*, *Saxifragales*, *rosids*, and *asterids*. *Rosids* and *asterids* each comprise two large subgroups, *eurosid*s I and II and *euasterid*s I and II, also receiving increasing support as monophyletic. These correspond to the similarly numbered *rosid* and *asterid* clades of Chase et al. (1993).

Under each of the supraordinal groups of *monocots*, *commelinoids*, *core eudicots*, *rosids*, etc., there are a number of families listed without assignment to order. These families are known to belong within the major group under which they are listed, but their ordinal position is still uncertain. Similarly, *Amborellaceae*, *Austrobaileyaceae*, *Cannellaceae*, etc., are listed at the beginning because

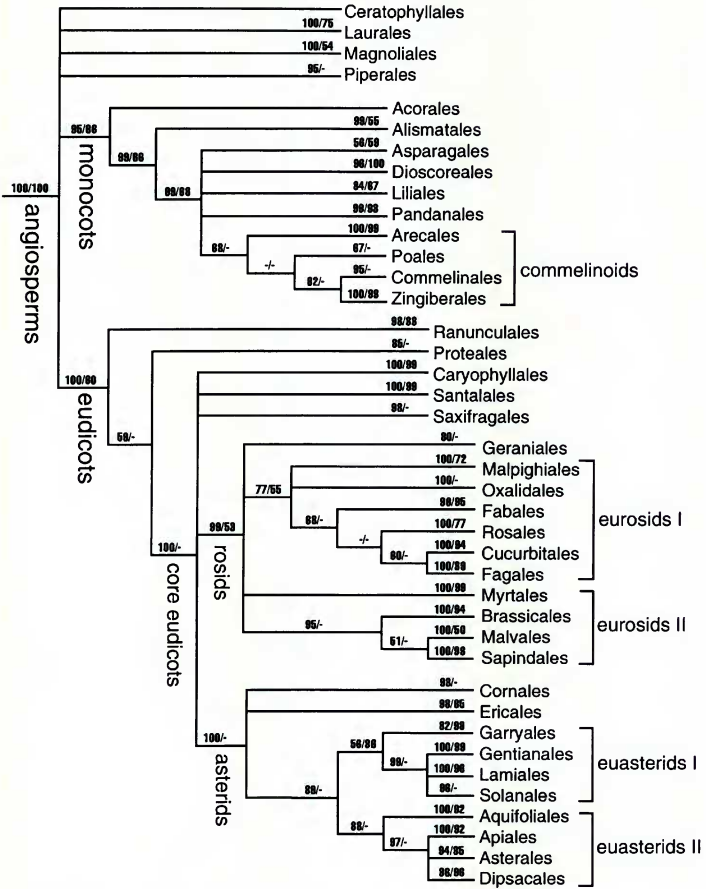


Figure 1. Phylogenetic interrelationships of the orders of flowering plants, compiled from recent cladistic analyses cited in the text. Jackknife support is given on the branches (a dash for values < 50%), first jackknife values from analysis of 545 sequences of the *rbcL*, *atpB*, and 18S rDNA genes (D. E. Soltis, M. W. Chase, P. S. Soltis, D. Albach, M. E. Mort, V. Savolainen, M. Zanis & J. S. Farris, unpublished, in prep.) and second jackknife values from analysis of 2538 *rbcL* sequences (Källersjö et al., 1998).

they belong neither in any of the phylogenetically "basal" orders at the beginning nor in the monocots or eudicots. Furthermore, families listed directly under monocots without an order are monocots but not commelinoids, and families similarly listed directly under eudicots and core eudicots are eudicots or core eudicots, respectively, but neither rosids nor asterids. At the end of the system is an additional list of families of uncertain position. Most of these are probably eudicots (including core eudicots, rosids, and asterids), but so far there are no firm data supporting their placement anywhere within the eudicots.

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## CLASSIFICATION OF FLOWERING PLANTS

- Amborellaceae  
 Austrobaileyaceae  
 Canellaceae  
 Chloranthaceae  
 Hydnoraceae  
 Illiciaceae  
 Nymphaeaceae  
 [+ Cabombaceae]  
 Rafflesiaceae  
 Schisandraceae  
 Trimeniaceae  
 Winteraceae
- Ceratophyllales Bisch.  
 Ceratophyllaceae
- Laurales Perleb  
 Atherospermataceae  
 Calycanthaceae  
 Gomortegaceae  
 Hernandiaceae  
 Lauraceae  
 Monimiaceae  
 Siparunaceae
- Magnoliales Bromhead  
 Annonaceae  
 Degeneriaceae  
 Eupomatiaceae  
 Himantandraceae  
 Magnoliaceae  
 Myristicaceae
- Piperales Dumort.  
 Aristolochiaceae  
 Lactoridaceae  
 Piperaceae  
 Saururaceae
- MONOCOTS
- Corsiaceae  
 Japoniliriaceae  
 Nartheciaceae  
 Petrosaviaceae  
 Triuridaceae
- Acorales Reveal  
 Acoraceae
- Alismatales Dumort.  
 Alismataceae  
 Aponogetonaceae  
 Araceae  
 Butomaceae  
 Cymodoceaceae  
 Hydrocharitaceae  
 Juncaginaceae
- Limnocharitaceae  
 Posidoniaceae  
 Potamogetonaceae  
 Ruppiaceae  
 Scheuchzeriaceae  
 Tofieldiaceae  
 Zosteraceae
- Asparagales Bromhead  
 Agapanthaceae  
 Agavaceae  
 Alliaceae  
 Amaryllidaceae  
 Anemarrhenaceae  
 Anthericaceae  
 Aphyllanthaceae  
 Asparagaceae  
 Asphodelaceae  
 Asteliaceae  
 Behniaceae  
 Blandfordiaceae  
 Boryaceae  
 Convallariaceae  
 Doryanthaceae  
 Hemerocallidaceae  
 Herreriaceae  
 Hesperocallidaceae  
 Hyacinthaceae  
 Hypoxidaceae  
 Iridaceae  
 Ixioliriaceae  
 Lanariaceae  
 Laxmanniaceae  
 Orchidaceae  
 Tecophilaeaceae  
 Themidaceae  
 Xanthorrhoeaceae  
 Xeronemataceae
- Dioscoreales Hook. f.  
 Burmanniaceae  
 Dioscoreaceae  
 Taccaceae  
 Thismiaceae  
 Trichopodaceae
- Liliales Perleb  
 Alstroemeriaceae  
 Campynemataceae  
 Colchicaceae  
 Liliaceae  
 Luzuriagaceae  
 Melanthiaceae  
 Philesiaceae  
 Ripogonaceae  
 Smilacaceae



CLASSIFICATION OF FLOWERING PLANTS  
(cont'd.)

Pandanales Lindl.  
Cyclanthaceae  
Pandanaeae  
Stemonaceae  
Velloziaceae

COMMELINOIDS

Abolbodaceae  
Bromeliaceae  
Dasypogonaceae  
Hanguanaceae  
Mayacaceae  
Rapateaceae

Arecales Bromhead  
Arecaceae

Commelinales Dumort.

Commelinaceae  
Haemodoraceae  
Philydraceae  
Pontederiaceae

Poales Small

Anarthriaceae  
Centrolepidaceae  
Cyperaceae  
Ecteiocoleaceae  
Eriocaulaceae  
Flagellariaceae  
Hydatellaceae  
Joinvilleaceae  
Juncaceae  
Poaceae  
Prioniaceae  
Restionaceae  
Sparganiaceae  
Thurniaceae  
Typhaceae  
Xyridaceae

Zingiberales Griseb.

Cannaceae  
Costaceae  
Heliconiaceae  
Lowiaceae  
Marantaceae  
Musaceae  
Strelitziaceae  
Zingiberaceae

EUDICOTS

Buxaceae  
Didymelaceae  
Sabiaceae  
Trochodendraceae  
[+ Tetracentraceae]

Proteales Dumort.  
Nelumbonaceae  
Platanaceae  
Proteaceae

Ranunculales Dumort.

Berberidaceae  
Circaceasteraceae  
[+ Kingdoniaceae]  
Eupteleaceae  
Lardizabalaceae  
Menispermaceae  
Papaveraceae  
[+ Fumariaceae]  
[+ Pteridophyllaceae]  
Ranunculaceae

CORE EUDICOTS

Aextoxicaceae  
Berberidopsidaceae  
Dilleniaceae  
Gunneraceae  
Myrothamnaceae  
Vitaceae

Caryophyllales Perleb

Achatocarpaceae  
Aizoaceae  
Amaranthaceae  
Ancistrocladaceae  
Asteropeiaceae  
Basellaceae  
Cactaceae  
Caryophyllaceae  
Didiereaceae  
Dioncophyllaceae  
Droseraceae  
Drosophyllaceae  
Frankeniaceae  
Molluginaceae  
Nepenthaceae  
Nyctaginaceae  
Physenaceae  
Phytolaccaceae  
Plumbaginaceae  
Polygonaceae  
Portulacaceae  
Rhabdodendraceae  
Sarcobataceae  
Simmondsiaceae  
Stegnospermataceae  
Tamaricaceae

Santalales Dumort.

Olaceae  
Opiliaceae

## CLASSIFICATION OF FLOWERING PLANTS

(cont'd.)

- |                       |                    |
|-----------------------|--------------------|
| Loranthaceae          | Fabales Bromhead   |
| Misodendraceae        | Fabaceae           |
| Santalaceae           | Polygalaceae       |
|                       | Quillajaceae       |
|                       | Surianaceae        |
| Saxifragales Dumort.  |                    |
| Altingiaceae          | Fagales Engl.      |
| Cercidiphyllaceae     | Betulaceae         |
| Crassulaceae          | Casuarinaceae      |
| Daphniphyllaceae      | Fagaceae           |
| Grossulariaceae       | Juglandaceae       |
| Haloragaceae          | Myricaceae         |
| Hamamelidaceae        | Nothofagaceae      |
| Iteaceae              | Rhoipteleaceae     |
| Paeoniaceae           | Ticodendraceae     |
| Penthoraceae          |                    |
| Pterostemonaceae      | Malpighiales Mart. |
| Saxifragaceae         | Achariaceae        |
| Tetracarpaceae        | Balanopaceae       |
|                       | Caryocaraceae      |
| ROSIDS                | Chrysobalanaceae   |
| Aphloiaceae           | Clusiaceae         |
| Crossosomataceae      | Dichapetalaceae    |
| Ixerbaceae            | Erythroxylaceae    |
| Krameriaceae          | Euphorbiaceae      |
| Picrammiaceae         | Euphroniaceae      |
| Podostemaceae         | Flacourtiaceae     |
| Stachyuraceae         | Goupiaceae         |
| Staphyleaceae         | Hugoniaceae        |
| Tristichaceae         | Humiriaceae        |
| Zygophyllaceae        | Irvingiaceae       |
|                       | Ixonanthaceae      |
| Geraniales Dumort.    | Lacistemataceae    |
| Francoaceae           | Linaceae           |
| Geraniaceae           | Malesherbiaceae    |
| [+ Hypseocharitaceae] | Malpighiaceae      |
| Greyiaceae            | Medusagynaceae     |
| Ledocarpaceae         | Ochnaceae          |
| Melianthaceae         | Pandaceae          |
| Vivianiaceae          | Passifloraceae     |
|                       | Putranjivaceae     |
| EUROSIDS I            | Quiinaceae         |
| Celastraceae          | Rhizophoraceae     |
| Huaceae               | Salicaceae         |
| Parnassiaceae         | Scyphostegiaceae   |
| [+ Lepuropetalaceae]  | Trigoniaceae       |
| Stackhousiaceae       | Turneraceae        |
|                       | Violaceae          |
| Cucurbitales Dumort.  |                    |
| Anisophylleaceae      | Oxalidales Heintze |
| Begoniaceae           | Cephalotaceae      |
| Coriariaceae          | Connaraceae        |
| Corynocarpaceae       | Cunoniaceae        |
| Cucurbitaceae         | Elaeocarpaceae     |
| Datiscaceae           | Oxalidaceae        |
| Tetramelaceae         | Tremandraceae      |

CLASSIFICATION OF FLOWERING PLANTS  
(cont'd.)

- Rosales Perleb  
Barbeyaceae  
Cannabaceae  
Cecropiaceae  
Celtidaceae  
Dirachmaceae  
Elaeagnaceae  
Moraceae  
Rhamnaceae  
Rosaceae  
Ulmaceae  
Urticaceae
- EUROSIDS II  
Tapisciaceae
- Brassicales Bromhead  
Akaniaceae  
[+ Bretschneideraceae]  
Bataceae  
Brassicaceae  
Caricaceae  
Emblingiaceae  
Gyrostemonaceae  
Koeberliniaceae  
Limnanthaceae  
Moringaceae  
Pentadiplandraceae  
Resedaceae  
Salvadoraceae  
Setchellanthaceae  
Tovariaceae  
Tropaeolaceae
- Malvales Dumort.  
Bixaceae  
[+ Diegodendraceae]  
Cistaceae  
Cochlospermaceae  
Dipterocarpaceae  
Malvaceae  
Muntingiaceae  
Neuradaceae  
Sarcolaenaceae  
Sphaerosepalaceae  
Thymelaeaceae
- Myrtales Rchb.  
Alzateaceae  
Combretaceae  
Crypteroniaceae  
Heteropyxidaceae  
Lythraceae  
Melastomataceae  
Memecylaceae  
Myrtaceae  
Oliniaceae
- Onagraceae  
Penaeaceae  
Psiloxylaceae  
Rhynchocalycaceae  
Vochysiaceae
- Sapindales Dumort.  
Anacardiaceae  
Biebersteiniaceae  
Burseraceae  
Kirkiaceae  
Meliaceae  
Nitrariaceae  
[+ Peganaceae]  
Rutaceae  
Sapindaceae  
Simaroubaceae
- ASTERIDS
- Cornales Dumort.  
Cornaceae  
[+ Nyssaceae]  
Grubbiaceae  
Hydrangeaceae  
Hydrostachyaceae  
Loasaceae
- Ericales Dumort.  
Actinidiaceae  
Balsaminaceae  
Clethraceae  
Cyrillaceae  
Diapensiaceae  
Ebenaceae  
Ericaceae  
Fouquieriaceae  
Halesiaceae  
Lecythidaceae  
Marcgraviaceae  
Myrsinaceae  
Pellicieraceae  
Polemoniaceae  
Primulaceae  
Roridulaceae  
Sapotaceae  
Sarraceniaceae  
Styracaceae  
Symplocaceae  
Ternstroemiaceae  
Tetrameristaceae  
Theaceae  
Theophrastaceae
- EUASTERIDS I  
Boraginaceae  
Plocospermataceae  
Vahliaaceae

CLASSIFICATION OF FLOWERING PLANTS  
(cont'd.)

- Garryales Lindl.  
Aucubaceae  
Eucommiaceae  
Garryaceae  
Oncothecaceae
- Gentianales Lindl.  
Apocynaceae  
Gelsemiaceae  
Gentianaceae  
Loganiaceae  
Rubiaceae
- Lamiales Bromhead  
Acanthaceae  
Avicenniaceae  
Bignoniaceae  
Buddlejaceae  
Byblidaceae  
Cyclocheilaceae  
Gesneriaceae  
Lamiaceae  
Lentibulariaceae  
Myoporaceae  
Oleaceae  
Orobanchaceae  
Paulowniaceae  
Pedaliaceae  
[+Martyniaceae]  
Phrymaceae  
Plantaginaceae  
Schlegeliaceae  
Scrophulariaceae  
Stilbaceae  
Tetrachondraceae  
Verbenaceae
- Solanales Dumort.  
Convolvulaceae  
Hydroleaceae  
Montiniaceae  
Solanaaceae  
Sphenocleaceae
- EUASTERIDS II  
Adoxaceae  
Bruniaceae  
Carlemanniaceae  
Columelliaceae  
[+Desfontainiaceae]  
Eremosynaceae  
Escalloniaceae  
Icacinaceae  
Polyosmaceae  
Sphenostemonaceae  
Tribelaceae
- Apiales Nakai  
Apiaceae  
Araliaceae  
Aralidiaceae  
Griselinaceae  
Melanophyllaceae  
Pittosporaceae  
Torricelliaceae
- Aquifoliales Senft  
Aquifoliaceae  
Helwingiaceae  
Phyllonomaceae
- Asterales Lindl.  
Alseuosmiaceae  
Argophyllaceae  
Asteraceae  
Calyceraceae  
Campanulaceae  
[+Lobeliaceae]  
Carpodetaceae  
Donatiaceae  
Goodeniaceae  
Menyanthaceae  
Pentaphragmataceae  
Phellinaceae  
Rousseaceae  
Stylidiaceae
- Dipsacales Dumort.  
Caprifoliaceae  
Diervillaceae  
Dipsacaceae  
Linnaeaceae  
Morinaceae  
Valerianaceae
- FAMILIES OF UNCERTAIN POSITION  
Balanophoraceae  
Bonnetiaceae  
Cardiopteridaceae  
Ctenolophonaceae  
Cynomoriaceae  
Cytinaceae  
Dipentodontaceae  
Elatinaceae  
Geissolomataceae  
Hoplostigmataceae  
Kaliphoraceae  
Lepidobotryaceae  
Lissocarpaceae  
Lophopyxidaceae  
Medusandraceae  
Metteniusaceae  
Mitrastemonaceae  
Paracryphiaceae

CLASSIFICATION OF FLOWERING PLANTS  
(cont'd.)

Pentaphragaceae  
Peridiscaceae  
Plagiopteraceae  
Pottingeriaceae  
Sladeniaceae  
Strasburgeriaceae  
Tepuianthaceae

ORDINAL SYNONYMS

Acanthales Lindl.  
= Lamiales  
Acerales Lindl.  
= Sapindales  
Actinidiales Takht. ex Reveal  
= Ericales  
Adoxales Nakai  
- not accepted, family under  
euasterids II  
Aesculales Bromhead  
= Sapindales  
Agavales Hutch.  
= Asparagales  
Alliales Traub  
= Asparagales  
Alstroemeriales Hutch.  
= Liliales  
Altingiales Doweld  
= Saxifragales  
Amaranthales Dumort.  
= Caryophyllales  
Amaryllidales Bromhead  
= Asparagales  
Ambrosiales Dumort.  
= Asterales  
Ammiales Small  
= Apiales  
Amomales Lindl.  
= Zingiberales  
Ancistrocladales Takht.  
= Caryophyllales  
Annonales Lindl.  
= Magnoliales  
Anthobolales Dumort.  
= Santalales  
Apocynales Bromhead  
= Gentianales  
Aponogetonales Hutch.  
= Alismatales  
Arales Dumort.  
= Alismatales  
Araliales Reveal  
= Apiales  
Aralidiales Takht. ex Reveal  
= Apiales  
Aristolochiales Dumort.  
= Piperales  
Asarales Horan.  
= Piperales  
Asclepiadales Dumort.  
= Gentianales  
Asteliales Dumort.  
= Asparagales  
Atriplicales Horan.  
= Caryophyllales  
Aucubales Takht.  
= Garryales  
Austrobaileyales Takht. ex Reveal  
- not accepted, family at beginning  
of system  
Avenales Bromhead  
= Poales  
Balanopales Engl.  
= Malpighiales  
Balanophorales Dumort.  
- not accepted, family unplaced  
Balsaminales Lindl.  
= Ericales  
Barbeyales Takht. & Reveal  
= Rosales  
Batales Engl.  
= Brassicales  
Begoniales Dumort.  
= Cucurbitales  
Berberidales Dumort.  
= Ranunculales  
Betulales Bromhead  
= Fagales  
Biebersteimiales Takht.  
= Sapindales  
Bignoniales Lindl.  
= Lamiales  
Bixales Lindl.  
= Malvales  
Boraginales Dumort.  
- not accepted, family under  
euasterids I  
Brexiales Lindl.  
- not accepted, family under  
eurosids I  
Bromeliales Dumort.  
- not accepted, family under  
commelinoids  
Bruniales Dumort.  
- not accepted, family under  
euasterids II  
Brunoniales Lindl.  
= Asterales  
Burmannaiales Heintze  
= Dioscoreales  
Burserales Baskerville  
= Sapindales  
Butomales Hutch.  
= Alismatales

CLASSIFICATION OF FLOWERING PLANTS  
(cont'd.)

- Buxales Takht. ex Reveal  
 - not accepted, family under eudicots  
 Byblidales Nakai ex Reveal  
 = Lamiales  
 Cactales Dumort.  
 = Caryophyllales  
 Callitrichales Dumort.  
 = Lamiales  
 Calycanthales Mart.  
 = Laurales  
 Calycerales Takht. ex Reveal  
 = Asterales  
 Campanulales Rchb.  
 = Asterales  
 Canellales Cronquist  
 - not accepted, family at beginning of system  
 Cannales Dumort.  
 = Zingiberales  
 Capparales Hutch.  
 = Brassicales  
 Caprifoliales Lindl.  
 = Dipsacales  
 Cardiopteridales Takht.  
 - not accepted, family under euasterids II  
 Carduales Small  
 = Asterales  
 Caricales L. D. Benson  
 = Brassicales  
 Cassiales Horan.  
 = Fabales  
 Casuarinales Lindl.  
 = Fagales  
 Celastrales Baskerville  
 - not accepted, family under euosids I  
 Centrolepidales Takht.  
 = Poales  
 Cephalotales Nakai  
 = Oxalidales  
 Cercidiphyllales Hu ex Reveal  
 = Saxifragales  
 Chenopodiales Dumort.  
 = Caryophyllales  
 Chironiales Griseb.  
 = Gentianales  
 Chloranthales A. C. Sm. ex J. -F. Leroy  
 - not accepted, family at beginning of system  
 Cinchonales Lindl.  
 = Gentianales  
 Circaeasterales Takht.  
 = Ranunculales  
 Cistales Rchb.  
 = Malvales  
 Citrales Dumort.  
 = Sapindales  
 Cocosales Nakai  
 = Arecales  
 Colchicales Dumort.  
 = Liliales  
 Combretales Baskerville  
 = Myrtales  
 Connarales Takht. ex Reveal  
 = Cunoniales  
 Convolvulales Dumort.  
 = Solanales  
 Coriariales Lindl.  
 = Cucurbitales  
 Corylales Dumort.  
 = Fagales  
 Corynocarpales Takht.  
 = Cucurbitales  
 Crassulales Lindl.  
 = Saxifragales  
 Crossosomatales Takht. ex Reveal  
 - not accepted, family under rosids  
 Cunoniales Hutch.  
 = Oxalidales  
 Cyclanthales J. H. Schaffn.  
 = Pandanales  
 Cymodoceales Nakai  
 = Alismatales  
 Cynomoriales Burnett  
 - not accepted, family unplaced  
 Cyperales Hutch.  
 = Poales  
 Cytinales Dumort.  
 - not accepted, family unplaced  
 Daphnales Lindl.  
 = Malvales  
 Daphniphyllales Pulle ex Cronquist  
 = Saxifragales  
 Datiscales Dumort.  
 = Cucurbitales  
 Desfontainiales Takht.  
 - not accepted, family under euasterids II  
 Diapensiales Engl. & Gilg  
 = Ericales  
 Didymelales Takht.  
 - not accepted, family under eudicots  
 Dilleniales Hutch.  
 - not accepted, family under core eudicots  
 Dioncophyllales Takht. ex Reveal  
 = Caryophyllales  
 Diospyrales Prantl  
 = Ericales  
 Droserales Griseb.  
 = Caryophyllales

CLASSIFICATION OF FLOWERING PLANTS  
(cont'd.)

- Ebenales Engl.
  - = Ericales
- Elaeagnales Bromhead
  - = Rosales
- Elaeocarpaceae Takht.
  - = Oxalidales
- Elatiniales Nakai
  - not accepted, family unplaced
- Elodeales Nakai
  - = Alismatales
- Empetrales Raf.
  - = Ericales
- Eriocaulales Nakai
  - = Poales
- Eucommiales Nemejc ex Cronquist
  - = Garryales
- Euphorbiales Lindl.
  - = Malpighiales
- Eupomatiales Takht. ex Reveal
  - = Magnoliales
- Eupteleales Hu ex Reveal
  - = Ranunculales
- Euryalales H.L.Li
  - not accepted, family at beginning of system
- Ficales Dumort.
  - = Rosales
- Flacourtiiales Heintze
  - = Malpighiales
- Fouquieriales Takht. ex Reveal
  - = Ericales
- Francoales Takht.
  - = Geraniales
- Frangulales Wirtg.
  - = Rosales
- Galiales Bromhead
  - = Gentianales
- Geissolomatales Takht. ex Reveal
  - not accepted, family unplaced
- Gesneriales Dumort.
  - = Lamiales
- Glaucidiales Takht. ex Reveal
  - = Ranunculales
- Globulariales Dumort.
  - = Lamiales
- Goodeniales Lindl.
  - = Asterales
- Greyiales Takht.
  - = Geraniales
- Grossulariales Lindl.
  - = Saxifragales
- Gunnerales Takht. ex Reveal
  - not accepted, family under core eudicots
- Gyrocarpaceae Dumort.
  - = Laurales
- Gyrostemonales Takht.
  - = Brassicales
- Haemodiales Hutch.
  - = Commelinales
- Haloragales Bromhead
  - = Saxifragales
- Hamamelidiales Griseb.
  - = Saxifragales
- Hanguanales R. Dahlgren ex Reveal
  - = not accepted, family under commelinoids
- Helleborales Nakai
  - = Ranunculales
- Helwingiales Takht.
  - = Aquifoliales
- Himantandrales Doweld & Shevryyova
  - = Magnoliales
- Hippuridiales Pulle ex Reveal
  - = Lamiales
- Homaliales Bromhead
  - = Malpighiales
- Hortensiales Griseb.
  - = Cornales
- Hydatellales Cronquist
  - = Poales
- Hydnorales Takht. ex Reveal
  - not accepted, family at beginning of system
- Hydrangeales Nakai
  - = Cornales
- Hydrastidiales Takht.
  - = Ranunculales
- Hydrophylloideales (Bartl.) Spenn.
  - not accepted, family Nymphaeaceae at beginning of system
- Hydrostachyales Diels ex Reveal
  - = Cornales
- Hypericales Dumort.
  - = Malpighiales
- Hypoxidiales Takht.
  - = Asparagales
- Icacinales Tiegh. ex Reveal
  - not accepted, family under euasterids II
- Illiciales Hu ex Cronquist
  - not accepted, family at beginning of system
- Iridales Raf.
  - = Asparagales
- Ixiales Lindl.
  - = Asparagales
- Jasminales Dumort.
  - = Lamiales
- Juglandales Dumort.
  - = Fagales

CLASSIFICATION OF FLOWERING PLANTS  
(cont'd.)

- Julianiales Engl.  
   = Sapindales  
 Juncaginales Hutch.  
   = Alismatales  
 Juncuales Dumort.  
   = Poales  
 Lacistematales Baskerville  
   = Malpighiales  
 Lactoridales Takht. ex Reveal  
   = Piperales  
 Lardizabalales Loconte  
   = Ranunculales  
 Lecythidales Cronquist  
   = Ericales  
 Leitneriales Engl.  
   = Sapindales  
 Lentibulariales Lindl.  
   = Lamiales  
 Ligustrales Bartl. ex Bisch.  
   = Lamiales  
 Limnanthales Nakai  
   = Brassicales  
 Linales Baskerville  
   = Malpighiales  
 Loasales Bessey  
   = Cornales  
 Loganiales Lindl.  
   = Gentianales  
 Lonicerales T. Liebe  
   = Dipsacales  
 Loranthales Dumort.  
   = Santalales  
 Lythrales Caruel  
   = Myrtales  
 Marathrales Dumort.  
   - not accepted, family  
     Podostemaceae under rosids  
 Mayacales Nakai  
   - not accepted, family under  
     commelinoids  
 Medusagynales Takht.  
   = Malpighiales  
 Medusandrales Brenan  
   - not accepted, family unplaced  
 Melanthiales R. Dahlgren ex Reveal  
   = Liliales  
 Melastomatales Oliv.  
   = Myrtales  
 Meliales Lindl.  
   = Sapindales  
 Menispermatales Bromhead  
   = Ranunculales  
 Menyanthales T. Yamaz. ex Takht.  
   = Asterales  
 Metteniusales Takht.  
   - not accepted, family unplaced  
 Mitrastemonales Makino  
   - not accepted, family unplaced  
 Monimiales Dumort.  
   = Laurales  
 Moringales Nakai  
   = Brassicales  
 Myricales Engl.  
   = Fagales  
 Myristicales Thomé  
   = Magnoliales  
 Myrothamnales Nakai ex Reveal  
   - not accepted, family under core  
     eudicots  
 Myrsinales Spenn.  
   = Ericales  
 Najadales Dumort.  
   = Alismatales  
 Narcissales Dumort.  
   = Asparagales  
 Nartheciales Reveal & Zomlefer  
   - not accepted, family under  
     monocots  
 Nelumbonales Reveal  
   = Proteales  
 Nepenthales Dumort.  
   = Caryophyllales  
 Nolanales Lindl.  
   = Solanales  
 Nyctaginales Dumort.  
   = Caryophyllales  
 Nymphaeales Dumort.  
   - not accepted, family at beginning  
     of system  
 Ochnales Hutch. ex Reveal  
   = Malpighiales  
 Oenotherales Bromhead  
   = Myrtales  
 Olacales Benth.  
   = Santalales  
 Oleales Lindl.  
   = Lamiales  
 Onagrales Rchb.  
   = Myrtales  
 Opuntiales Willk.  
   = Caryophyllales  
 Orchidales Raf.  
   = Asparagales  
 Paeoniales Heintze  
   = Saxifragales  
 Pandales Engl. & Gilg  
   = Malpighiales  
 Papaverales Dumort.  
   = Ranunculales  
 Paracryphiales Takht.  
   - not accepted, family unplaced  
 Paridales Dumort.  
   = Liliales



CLASSIFICATION OF FLOWERING PLANTS  
(cont'd.)

- Parnassiales Nakai  
- not accepted, family under  
eurosid1  
Passiflorales Dumort.  
= Malpighiales  
Penaeales Lindl.  
= Myrtales  
Petiveriales Lindl.  
= Caryophyllales  
Petrosaviales Takht.  
- not accepted, family under  
monocots  
Philydrales Dumort.  
= Commelinales  
Physenales Takht.  
= Caryophyllales  
Pinguiculales Dumort.  
= Lamiales  
Pittosporales Lindl.  
= Apiales  
Plantaginales Lindl.  
= Lamiales  
Platanales J. H. Schaffn.  
= Proteales  
Plumbaginales Lindl.  
= Caryophyllales  
Podophyllales Dumort.  
= Ranunculales  
Podostemales Lindl.  
= not accepted, family under rosids  
Polemoniales Bromhead  
= Ericales  
Polygalales Dumort.  
= Fabales  
Polygonales Dumort.  
= Caryophyllales  
Pontederiales Hook. f.  
= Commelinales  
Portulacales Dumort.  
= Caryophyllales  
Posidoniales Nakai  
= Alismatales  
Potamogetonales Dumort.  
= Alismatales  
Primulales Dumort.  
= Ericales  
Quercales Burnett  
= Fagales  
Rafflesiales Oliv.  
- not accepted, family at beginning  
of system  
Resedales Dumort.  
= Brassicales  
Restionales J. H. Schaffn.  
= Poales  
Rhamnales Dumort.  
= Rosales  
Rhinanthales Dumort.  
= Lamiales  
Rhizophorales Tiegh. ex Reveal  
= Malpighiales  
Rhodorales Horan.  
= Ericales  
Rhoipteleales Novák ex Reveal  
= Fagales  
Roriduales Nakai  
= Ericales  
Rubiales Dumort.  
= Gentianales  
Ruppiales Nakai  
= Alismatales  
Rutales Perleb  
= Sapindales  
Sabiales Takht.  
= not accepted, family under  
eudicots  
Salicales Lindl.  
= Malpighiales  
Salvadorales R. Dahlgren ex Reveal  
= Brassicales  
Samolales Dumort.  
= Ericales  
Samydales Dumort.  
= Malpighiales  
Sanguisorbales Dumort.  
= Rosales  
Sapotales Hook. f.  
= Ericales  
Sarraceniales Bromhead  
= Ericales  
Scheuchzeriales B. Boivin  
= Alismatales  
Scleranthales Dumort.  
= Caryophyllales  
Scrophulariales Lindl.  
= Lamiales  
Scyphostegiales Croizat  
= Malpighiales  
Sedales Rechb.  
= Saxifragales  
Silenales Lindl.  
= Caryophyllales  
Simmondsiales Reveal  
= Caryophyllales  
Smilacales Lindl.  
= Liliales  
Stellariales Dumort.  
= Caryophyllales  
Stylidiales Takht. ex Reveal  
= Asterales  
Styracales Bisch.  
= Ericales  
Taccales Dumort.  
= Dioscoreales

CLASSIFICATION OF FLOWERING PLANTS  
(cont'd.)

Tamales Dumort.  
= Dioscoreales  
Tamaricales Hutch.  
= Caryophyllales  
Tecophilaeales Traub ex Reveal  
= Asparagales  
Theales Lindl.  
= Ericales  
Theligonales Nakai  
= Gentianales  
Thymelaeales Willk.  
= Malvales  
Tiliales Caruel  
= Malvales  
Tofieldiales Reveal & Zomlefer  
= Alismatales  
Toricelliales Takht. ex Reveal  
= Apiales  
Tovariales Nakai  
= Brassicales  
Trilliales Takht.  
= Liliales  
Triuridales Hook. f.  
- not accepted, family under monocots  
Trochodendrales Takht. ex Cronquist  
- not accepted, family under  
eudicots  
Tropaeolales Takht. ex Reveal  
= Brassicales  
Turnerales Dumort.  
= Malpighiales  
Typhales Dumort.  
= Poales  
Ulmales Lindl.  
= Rosales  
Urticales Dumort.  
= Rosales  
Vacciniales Dumort.  
= Ericales  
Vallisneriales Nakai  
= Alismatales  
Velloziales R. Dahlgren ex Reveal  
= Pandanales  
Veratrales Dumort.  
= Liliales  
Verbenales Horan.  
= Lamiales  
Viburnales Dumort.  
- not accepted, family under  
euasterids II  
Vincales Horan.  
= Gentianales  
Violales Perleb  
= Malpighiales  
Vitales Reveal  
- not accepted, family under core  
eudicots

Vochysiales Dumort.  
= Myrtales  
Winterales A. C. Sm. ex Reveal  
- not accepted, family at beginning  
of system  
Xyridales Lindl.  
= Poales  
Zosterales Nakai  
= Alismatales  
Zygophyllales Takht.  
- not accepted, family under rosids

## SELECTED FAMILIAL SYNONYMS

Abrophyllaceae  
= Carpodetaceae  
Acanthochlamydeaceae  
= Velloziaceae  
Aceraceae  
= Sapindaceae  
Achradaeaceae  
= Sapotaceae  
Aegicerataceae  
= Myrsinaceae  
Agdestidaceae  
= Phytolaccaceae  
Aitoniaceae  
= Meliaceae  
Alangiaceae  
= Cornaceae  
Aloaceae  
= Asphodelaceae  
Alsinaeaceae  
= Caryophyllaceae  
Ambrosiaceae  
= Asteraceae  
Amygdalaceae  
= Rosaceae  
Androstachyaceae  
= Euphorbiaceae  
Antoniaceae  
= Loganiaceae  
Apodanthaceae  
= Rafflesiaceae  
Apostasiaceae  
= Orchidaceae  
Aptandraceae  
= Olacaceae  
Aristoteliaceae  
= Elaeocarpaceae  
Aselepiadaceae  
= Apocynaceae  
Asteranthaceae  
= Lecythidaceae  
Averrhoaceae  
= Oxalidaceae  
Avetraceae  
= Dioscoreaceae

CLASSIFICATION OF FLOWERING PLANTS

(cont'd.)

- |                    |                            |
|--------------------|----------------------------|
| Balanitaceae       | Capparaceae                |
| = Zygophyllaceae   | = Brassicaceae             |
| Barbeuiaceae       | Carduaceae                 |
| = Phytolaccaceae   | = Asteraceae               |
| Barclayaceae       | Cassythaceae               |
| = Nymphaeaceae     | = Lauraceae                |
| Barringtoniaceae   | Chaillotiaceae             |
| = Lecythidaceae    | = Dichapetalaceae          |
| Baueraceae         | Chenopodiaceae             |
| = Cunoniaceae      | = Amaranthaceae            |
| Baxteriaceae       | Chionographidaceae         |
| = Dasypogonaceae   | = Melanthiaceae            |
| Bembiciaceae       | Chloanthaceae              |
| = Flacourtiaceae   | = Lamiaceae                |
| Berzeliaceae       | Cichoriaceae               |
| = Bruniaceae       | = Asteraceae               |
| Bischofiaceae      | Cleomaceae                 |
| = Euphorbiaceae    | = Brassicaceae             |
| Blepharocaryaceae  | Cneoraceae                 |
| = Anacardiaceae    | = Rutaceae                 |
| Boerlagellaceae    | Cobaeaceae                 |
| = Sapotaceae       | = Polemoniaceae            |
| Bombacaceae        | Compositae                 |
| = Malvaceae        | = Asteraceae               |
| Boopidaceae        | Conostylidaceae            |
| = Calyceraceae     | = Haemodoraceae            |
| Bretschneideraceae | Cordiaceae                 |
| = Akaniaceae       | = Boraginaceae             |
| Brexiaceae         | Coridaceae                 |
| = Celastraceae     | = Primulaceae              |
| Brunelliaceae      | Corokiaceae                |
| = Cunoniaceae      | = Argophyllaceae           |
| Brunoniaceae       | Corylaceae                 |
| = Goodeniaceae     | = Betulaceae               |
| Bumeliaceae        | Croomiaceae                |
| = Sapotaceae       | = Stemonaceae              |
| Burchardiaceae     | Cruciferae                 |
| = Colchicaceae     | = Brassicaceae             |
| Byttneriaceae      | Curtisiaceae               |
| = Malvaceae        | = Cornaceae                |
| Cabombaceae        | Cuscutaceae                |
| = Nymphaeaceae     | = Convolvulaceae           |
| Caesalpinjiaceae   | Cyananthaceae              |
| = Fabaceae         | = Campanulaceae            |
| Calectasiaceae     | Cyanastraceae              |
| = Dasypogonaceae   | = Tecophilaeaceae          |
| Callitrichaceae    | Cynocrambaceae nom. illeg. |
| = Plantaginaceae   | = Rubiaceae                |
| Calochortaceae     | Cyphiaceae                 |
| = Liliaceae        | = Campanulaceae            |
| Camelliaceae       | Cyphocarpaceae             |
| = Theaceae         | = Campanulaceae            |
| Canotiaceae        | Cypripediaceae             |
| = Celastraceae     | = Orchidaceae              |
| Cansjeraceae       | Dactylanthaceae            |
| = Opiliaceae       | = Balanophoraceae          |

CLASSIFICATION OF FLOWERING PLANTS  
(cont'd.)

- Davidiaceae  
   = Cornaceae  
 Davidsoniaceae  
   = Cunoniaceae  
 Decaisneaceae  
   = Lardizabalaceae  
 Desfontainiaceae  
   = Columelliaceae  
 Dialypetalanthaceae  
   = Rubiaceae  
 Dianellaceae  
   = Hemerocallidaceae  
 Dichondraceae  
   = Convolvulaceae  
 Diclidantheraceae  
   = Polygalaceae  
 Diegodendraceae  
   = Bixaceae  
 Dionaeaceae  
   = Droseraceae  
 Dracaenaceae  
   = Convallariaceae  
 Duabangaceae  
   = Lythraceae  
 Duckeodendraceae  
   = Solanaceae  
 Dulongiaceae nom. illeg.  
   = Phyllonomaceae  
 Dysphaniaceae  
   = Amaranthaceae  
 Ehretiaceae  
   = Boraginaceae  
 Ellisiophyllaceae  
   = Scrophulariaceae  
 Empetraceae  
   = Ericaceae  
 Epacridaceae  
   = Ericaceae  
 Eremolepidaceae  
   = Santalaceae  
 Eriosperraceae  
   = Convallariaceae  
 Erycibaceae  
   = Convolvulaceae  
 Erythralaceae  
   = Olacaceae  
 Eucryphiaceae  
   = Cunoniaceae  
 Euryalaceae  
   = Nymphaeaceae  
 Exocarpaceae  
   = Santalaceae  
 Flindersiaceae  
   = Rutaceae  
 Foetidaceae  
   = Lecythidaceae  
 Frangulaceae  
   = Rhamnaceae  
 Fumariaceae  
   = Papaveraceae  
 Funkiaceae  
   = Agavaceae  
 Galaceae  
   = Diapensiaceae  
 Geitonoplesiaceae  
   = Hemerocallidaceae  
 Geniostomaceae  
   = Loganiaceae  
 Geosiridaceae  
   = Iridaceae  
 Gisekiaceae  
   = Phytolaccaceae  
 Glaucidiaceae  
   = Ranunculaceae  
 Globulariaceae  
   = Plantaginaceae  
 Goetzeaceae  
   = Solanaceae  
 Gonystylaceae  
   = Thymelaeaceae  
 Gouaniaceae  
   = Rhamnaceae  
 Gramineae  
   = Poaceae  
 Gronoviaceae  
   = Loasaceae  
 Gustaviaceae  
   = Lecythidaceae  
 Guttiferae  
   = Clusiaceae  
 Gyrocarpaceae  
   = Hernandiaceae  
 Halophilaceae  
   = Hydrocharitaceae  
 Halophytaceae  
   = Amaranthaceae  
 Hectorellaceae  
   = Portulacaceae  
 Heliotropiaceae  
   = Boraginaceae  
 Heloniadaceae  
   = Melanthiaceae  
 Helosidaceae  
   = Balanophoraceae  
 Henriqueziaceae  
   = Rubiaceae  
 Hippocastanaceae  
   = Sapindaceae  
 Hippocrateaceae  
   = Celastraceae  
 Hippuridaceae  
   = Plantaginaceae

CLASSIFICATION OF FLOWERING PLANTS  
(cont'd.)

- |                     |                     |
|---------------------|---------------------|
| Hortoniaceae        | Lepuropetalaceae    |
| = Monimiaceae       | = Parnassiaceae     |
| Hostaceae           | Lilaeaceae          |
| = Agavaceae         | = Juncaginaceae     |
| Humbertiaceae       | Limoniaceae         |
| = Convolvulaceae    | = Plumbaginaceae    |
| Hydrastidaceae      | Liriodendraceae     |
| = Ranunculaceae     | = Magnoliaceae      |
| Hydrocotylaceae     | Lobeliaceae         |
| = Araliaceae        | = Campanulaceae     |
| Hydropeltidaceae    | Lomandraceae        |
| = Nymphaeaceae      | = Laxmanniaceae     |
| Hydrophyllaceae     | Lophiraceae         |
| = Boraginaceae      | = Ochnaceae         |
| Hymenocardiaceae    | Lophophytaceae      |
| = Euphorbiaceae     | = Balanophoraceae   |
| Hypecoaceae         | Luxemburgiaceae     |
| = Papaveraceae      | = Ochnaceae         |
| Hypericaceae        | Malaceae            |
| = Clusiaceae        | = Rosaceae          |
| Hypseocharitaceae   | Martyniaceae        |
| = Geraniaceae       | = Pedaliaceae       |
| Idiospermaceae      | Mastixiaceae        |
| = Calycanthaceae    | = Cornaceae         |
| Illecebraceae       | Medeolaceae         |
| = Caryophyllaceae   | = Liliaceae         |
| Jasionaceae         | Meliosmaceae        |
| = Campanulaceae     | = Sabiaceae         |
| Jasminiaceae        | Mendonciaceae       |
| = Oleaceae          | = Acanthaceae       |
| Johnsoniaceae       | Mesembryanthemaceae |
| = Hemerocallidaceae | = Aizoaceae         |
| Julianiaceae        | Mimosaceae          |
| = Anacardiaceae     | = Fabaceae          |
| Kiggelariaceae      | Monotaceae          |
| = Flacourtiaceae    | = Dipterocarpaceae  |
| Kingdoniaceae       | Monotropaceae       |
| = Circaeasteraceae  | = Ericaceae         |
| Kirengeshomaceae    | Mouririaceae        |
| = Hydrangeaceae     | = Memecylaceae      |
| Labiatae            | Moutabeaceae        |
| = Lamiaceae         | = Polygalaceae      |
| Langsdorffiaceae    | Myriophyllaceae     |
| = Balanophoraceae   | = Haloragaceae      |
| Lecaceae            | Mystropetalaceae    |
| = Vitaceae          | = Balanophoraceae   |
| Leguminosae         | Najadaceae          |
| = Fabaceae          | = Hydrocharitaceae  |
| Leitneriaceae       | Nandinaceae         |
| = Simaroubaceae     | = Berberidaceae     |
| Lemnaceae           | Napoleonaceae       |
| = Araceae           | = Lecythidaceae     |
| Lennoaceae          | Naucleaceae         |
| = Boraginaceae      | = Rubiaceae         |
| Leoniaceae          | Nectaropetalaceae   |
| = Violaceae         | = Erythroxylaceae   |

## CLASSIFICATION OF FLOWERING PLANTS

(cont'd.)

- Nelsoniaceae  
   = Acanthaceae  
 Nemacladaceae  
   = Campanulaceae  
 Nesogenaceae  
   = Cyclocheilaceae  
 Nolanaceae  
   = Solanaceae  
 Nolinaceae  
   = Convallariaceae  
 Nupharaceae  
   = Nymphaeaceae  
 Nyctanthaceae  
   = Oleaceae  
 Nyssaceae  
   = Cornaceae  
 Octoknemaceae  
   = Olacaceae  
 Oftiaceae  
   = Scrophulariaceae  
 Ophiopogonaceae  
   = Convallariaceae  
 Osyridaceae  
   = Santalaceae  
 Pachysandraceae  
   = Buxaceae  
 Palmae  
   = Arecaceae  
 Papilionaceae  
   = Fabaceae  
 Peganaceae  
   = Nitrariaceae  
 Pentastemonaceae  
   = Stemonaceae  
 Peperomiaceae  
   = Piperaceae  
 Periplocaceae  
   = Apocynaceae  
 Peripterygiaceae  
   = Cardipteridaceae  
 Petermanniaceae  
   = Colchicaceae  
 Petiveriaceae  
   = Phytolaccaceae  
 Philadelphaceae  
   = Hydrangeaceae  
 Phormiaceae  
   = Hemerocallidaceae  
 Phyllicaceae  
   = Rhamnaceae  
 Picrodendraceae  
   = Euphorbiaceae  
 Pinguiculaceae  
   = Lentibulariaceae  
 Pistaciaceae  
   = Anacardiaceae  
 Pistiaceae  
   = Araceae  
 Platystemonaceae  
   = Papaveraceae  
 Plumeriaceae  
   = Apocynaceae  
 Podoaceae  
   = Anacardiaceae  
 Podophyllaceae  
   = Berberidaceae  
 Polygonanthaceae  
   = Anisophylleaceae  
 Potaliaceae  
   = Gentianaceae  
 Ptaeroxylaceae  
   = Rutaceae  
 Pteridophyllaceae  
   = Papaveraceae  
 Punicaceae  
   = Lythraceae  
 Pyrolaceae  
   = Ericaceae  
 Ranzaniaceae  
   = Berberidaceae  
 Reaumuriaceae  
   = Tamaricaceae  
 Retziaceae  
   = Stilbaceae  
 Rhinanthaceae  
   = Orobanchaceae  
 Rhodoleiaceae  
   = Hamamelidaceae  
 Rhopalocarpaceae  
   = Sphaerosepalaceae  
 Rhynchothecaceae  
   = Ledocarpaceae  
 Roxburghiaceae  
   = Stemonaceae  
 Ruscaceae  
   = Convallariaceae  
 Saccifoliaceae  
   = Gentianaceae  
 Salaciaceae  
   = Celastraceae  
 Salicorniaceae  
   = Amaranthaceae  
 Salpiglossidaceae  
   = Solanaceae  
 Sambucaceae  
   = Adoxaceae  
 Samolaceae  
   = Primulaceae  
 Saniculaceae  
   = Apiaceae  
 Sarcophytaceae  
   = Balanophoraceae

CLASSIFICATION OF FLOWERING PLANTS  
(cont'd.)

- Sarcospermataceae
  - = Sapotaceae
- Sargentodoxaceae
  - = Lardizabalaceae
- Saurauiaceae
  - = Actinidiaceae
- Sauvagesiaceae
  - = Ochnaceae
- Scaevolaceae
  - = Goodeniaceae
- Scepaceae
  - = Euphorbiaceae
- Schoepfiaceae
  - = Olacaceae
- Sclerophyllaceae
  - = Solanaceae
- Scoliopaceae
  - = Liliaceae
- Scybaliaceae
  - = Balanophoraceae
- Scytopetalaceae
  - = Lecythidaceae
- Selaginaceae
  - = Scrophulariaceae
- Sesamaceae
  - = Pedaliaceae
- Sesuviaceae
  - = Aizoaceae
- Simethidaceae
  - = Hemerocallidaceae
- Siphonodontaceae
  - = Celastraceae
- Sonneratiaceae
  - = Lythraceae
- Spigeliaceae
  - = Loganiaceae
- Stenomeridaceae
  - = Dioscoreaceae
- Sterculiaceae
  - = Malvaceae
- Stilaginaceae
  - = Euphorbiaceae
- Strychnaceae
  - = Loganiaceae
- Stylobasiaceae
  - = Surianaceae
- Stylocerataceae
  - = Buxaceae
- Symphoremataceae
  - = Lamiaceae
- Syringaceae
  - = Oleaceae
- Tetracentraceae
  - = Trochodendraceae
- Tetradiclidaceae
  - = Peganaceae
- Tetragoniaceae
  - = Aizoaceae
- Tetrastylidiaceae
  - = Olacaceae
- Thalassiaceae
  - = Hydrocharitaceae
- Theligonaceae
  - = Rubiaceae
- Thunbergiaceae
  - = Acanthaceae
- Tiliaceae
  - = Malvaceae
- Trapaceae
  - = Lythraceae
- Trapellaceae
  - = Pedaliaceae
- Tribulaceae
  - = Zygophyllaceae
- Tricyrtidaceae
  - = Liliaceae
- Trilliaceae
  - = Melanthiaceae
- Triplostegiaceae
  - = Valerianaceae
- Uapacaceae
  - = Euphorbiaceae
- Ullucaceae
  - = Basellaceae
- Umbelliferae
  - = Apiaceae
- Utriculariaceae
  - = Lentibulariaceae
- Uvulariaceae
  - = Colchicaceae
- Vacciniaceae
  - = Ericaceae
- Viburnaceae
  - = Adoxaceae
- Viscaceae
  - = Santalaceae
- Viticaceae
  - = Lamiaceae
- Walleriaceae
  - = Tecophilaeaceae
- Wellstediaceae
  - = Boraginaceae
- Xanthophyllaceae
  - = Polygalaceae
- Xerophyllaceae
  - = Melanthiaceae
- Zannichelliaceae
  - = Potamogetonaceae