

Cambridge University Press

978-0-521-00411-4 - Handbook of North European Garden Plants: With Keys to Families and Genera

Edited by James Cullen

Excerpt

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INTRODUCTION and ACKNOWLEDGEMENTS

This book provides a means for the accurate identification of the families and genera of flowering plants cultivated out-of-doors in gardens in north-western Europe -- north-western and northern France, the British Isles, Ireland, Holland, Belgium, northern Germany, Denmark, Norway, Sweden, Finland and Iceland. The selection of families and genera has been inclusive rather than restrictive, so that those genera which can be grown only in places with an unusually mild climate within the overall area (e.g. parts of western France, western Ireland, the Scilly Isles, etc.) are not excluded. This selection also covers most of the families and genera widely cultivated in eastern North America.

The keys and descriptions are, with minor modifications, taken from the much more comprehensive *The European Garden Flora* volumes I--VI (Cambridge University Press, 1984--2000), which, of course, includes plants cultivated in southern Europe and in glasshouses elsewhere. The book is thus a one-volume digest of the much larger Flora, and provides an up-to-date equivalent of J.W.C. Kirk's extremely useful *A British Garden Flora* (Edward Arnold, London, 1927). In order to keep the text as short as possible, notes on the various families and genera have been reduced to a minimum, and, for each genus, the number of species it is thought to contain, and the number of these in cultivation are given as a fraction immediately following the generic name. Thus '27. *Hemerocallis* Linnaeus. 15/8 (and many hybrids and cultivars)' indicates that the genus *Hemerocallis* is generally accepted as containing 15 species, of which 8, represented by the species themselves, and by many hybrids and cultivars, are likely to be found in cultivation.

In order to make the task of identification more precise and accurate, black and white line illustrations (essentially diagrammatic and not to scale) are provided showing diagnostic features of various genera from the major families, or (for those in the glossary), illustrating the usage of terms. Some of these illustrations are modified from those already published in *The European Garden Flora*, but most of them are taken, with the author's and artist's permission from Hickey & King, *100 Families of Flowering Plants*, Cambridge University Press, edn 1, 1981, edn 2, 2000. The re-use of these excellent illustrations is a particular pleasure for the editor, and thanks are due to Michael Hickey and Clive King for allowing it. The editor's thanks are also due to Professor John Parker and the staff of Cambridge University Botanic Garden for encouragement and facilities, and especially to Dr Mark Winfield for help with the computer-reorganisation of some of the illustrations. Finally, an acknowledgement is due to the authors of accounts of various groups in the original Flora; they are too numerous to list here (there are 175 of them), but this book would not have been possible without their work.

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[More information](#)**Key to Subclasses**

- 1a. Cotyledon 1, terminal; leaves usually with parallel veins, sometimes these connected by cross-veinlets; leaves without stipules, opposite only in some aquatic plants; flowers generally with parts in 3s; mature root-system wholly adventitious *MONOCOTYLEDONS*
- b. Cotyledons usually 2, lateral; leaves usually net-veined, with or without stipules, alternate, opposite or whorled; flowers with parts in 2s, 4s or 5s, or parts numerous; primary root-system (taproot) usually persistent, branched *DICOTYLEDONS* (see p. 106)

MONOCOTYLEDONS

Plants herbaceous or woody, frequently with bulbs, corms or rhizomes. Primary root usually quickly lost, the mature root system wholly adventitious, fibrous. Seedling leaf (cotyledon) 1. Leaves usually alternate or all basal, usually with several parallel veins, more rarely with a distinct midrib giving off parallel lateral veins, very rarely the veins forming a network. Parts of the flower usually in 3s or multiples of 3.

Key to Families

- 1a. Ovary superior or flowers completely without perianth (including all aquatics with totally submerged flowers) 2
- b. Ovary inferior or partly so (if aquatic, flowers borne at or above water-level) 23
- 2a. Trees, shrubs or prickly scramblers with large, pleated, usually palmately or pinnately divided leaves; flowers more or less stalkless in fleshy spikes or panicles with large basal bracts (spathes) 17. **PALMAE**
- b. Plants without the above combination of characters 3
- 3a. Perianth entirely translucent (sometimes brown) or reduced to bristles, hairs, narrow scales, or absent 4
- b. Perianth well-developed, though sometimes small, never entirely translucent or shiny 9
- 4a. Flowers in small, 2-sided or cylindric spikelets provided with overlapping bracts (spikelets sometimes 1-flowered) 5
- b. Flowers arranged in heads, superposed spikes, racemes, panicles or cymes, never in spikelets as above 6
- 5a. Leaves alternate, in 2 ranks, on a stem which is usually hollow and with cylindric internodes; leaf-sheath usually with free margins, at least in the upper part; flowers arranged in 2-sided spikelets (sometimes 1-flowered) each usually subtended at the base by 2 sterile bracts (glumes); each flower usually enclosed between a lower lemma and an upper palea (sometimes absent); perianth of 2 or 3 concealed scales (lodicules), more rarely 6 or absent; styles generally 2, feathery 16. **GRAMINEAE**
- b. Leaves usually spirally arranged on 3 sides of the cylindric or more usually 3-angled stems which usually have solid internodes; young leaf-sheaths closed, though sometimes opening later; flowers arranged in 2-sided or cylindric spikelets often with a 2-keeled or 2-lobed glume at the base; each flower subtended only by a glume; perianth of several bristles, hairs or scales, or absent; style 1 with 2 or 3 papillose stigmas 21. **CYPERACEAE**
- 6a. Inflorescence a simple fleshy spike (spadix) of inconspicuous flowers subtended by or rarely joined to a large bract (spathe); leaves often net-

- veined or lobed (plant rarely a small, evergreen, floating aquatic)
- 18. ARACEAE**
- b. Plant without the above combination of characters 7
- 7a. Flowers bisexual; perianth-segments 6, translucent or shiny; ovary with 3--many ovules **13. JUNCACEAE**
- b. Flowers unisexual; perianth-segments a few threads or scales; ovary with 1 ovule 8
- 8a. Flowers in 2 superposed, elongate, brownish or silvery spikes; ovary borne on a stalk with hair-like branches **20. TYPHACEAE**
- b. Flowers in spherical heads; ovary not stalked **19. SPARGANIACEAE**
- 9a. Carpels free or slightly united at base 10
- b. Carpels united for most of their length, though the styles may be free, or carpel solitary 12
- 10a. Inflorescence a spike, sometimes bifid; perianth-segments 1--4 **4. POTAMOGETONACEAE**
- b. Inflorescence not a spike; perianth-segments 6 11
- 11a. Placentation parietal or marginal **2. BUTOMACEAE**
- b. Placentation basal **1. ALISMATACEAE**
- 12a. All perianth-segments similar 13
- b. Perianth-segments of the outer and inner whorls conspicuously different, the former usually sepal-like, the latter petal-like 21
- 13a. Inflorescence subtended by an entire, spathe-like sheath; plants aquatic **11. PONTEDERIACEAE**
- b. Inflorescence not as above; plants terrestrial 14
- 14a. Plant woody, or not woody but bearing rosettes of long-lived, fleshy or leathery leaves at or near ground-level 15
- b. Plant herbaceous, leaves usually not long-lived and in rosettes, if so, then deciduous and not fleshy 19
- 15a. Leaf-stalk bearing 2 tendrils; leaves net-veined **5. LILIACEAE**
- b. Leaf-stalk without tendrils; leaves parallel-veined 16
- 16a. Leaves very small, scale-like or spiny, their function taken over by flattened stems (cladodes) on which the inflorescences are usually borne **5. LILIACEAE**
- b. Plant with true leaves; cladodes absent 17
- 17a. Shrubs or woody climbers with scattered stem-leaves; flowers solitary, usually large and hanging; placentation mostly parietal **5. LILIACEAE**
- b. Plant without the above combination of characters 18
- 18a. Leaves leathery and more or less thin, if succulent, then with a spine-like or cylindrical tip; flowers usually green or whitish, bell- or cup-shaped or with a narrow tube and spreading lobes, often more than 1 to each bract **6. AGAVACEAE**
- b. Leaves succulent, usually without a spine-like or cylindrical tip; flower usually red, yellow or orange, tubular, the lobes not spreading, always 1 per bract **5. LILIACEAE**
- 19a. Leaves very small, scale-like or spiny, their function taken over by flattened or needle-like stems (cladodes) on which the inflorescences are usually borne **5. LILIACEAE**
- b. Plant with true leaves, cladodes absent 20
- 20a. Leaves evergreen, clearly stalked; flowers more than 1 to each bract, with a

- narrow tube as long as or longer than the spreading lobes **6. AGAVACEAE**
- b. Leaves deciduous, usually without distinct stalks; flowers of various shapes, rarely as above, always 1 to each bract **5. LILIACEAE**
- 21a. Flowers solitary or in umbels; leaves broad, opposite or in a single whorl near the top of the stem **5. LILIACEAE**
- b. Flowers in spikes, heads, cymes or panicles; leaves not as above 22
- 22a. Stamens 6, or 5--3 with 1--3 staminodes; anthers basifixed; leaves usually borne on the stems, often with closed sheaths, never grey with scales; bracts neither overlapping nor conspicuously coloured **15. COMMELINACEAE**
- b. Stamens 6, staminodes 0; anthers dorsifixed; leaves mostly in basal rosettes, often rigid and spiny-margined, when on the stem usually grey with scales; bracts usually overlapping and conspicuously coloured **14. BROMELIACEAE**
- 23a. Flowers radially symmetric or weakly bilaterally symmetric; stamens 6, 4, 3 or rarely many 24
- b. Flowers strongly bilaterally symmetric or asymmetric; stamens usually 5, 2 or 1 (very rarely 6) 33
- 24a. Unisexual climbers with heart-shaped or very divided leaves; rootstock tuberos or woody **10. DIOSCOREACEAE**
- b. Plants without the above combination of characters 25
- 25a. Rooted or floating aquatics; stamens 2--12; ovules distributed all over the carpel-walls (diffuse-parietal placentation) **3. HYDROCHARITACEAE**
- b. Terrestrial or marsh plants, or epiphytes; stamens 3 or 6, rarely many; placentation axile or parietal (ovules restricted to a few rows on the carpel-walls) 26
- 26a. Stamens 3, staminodes absent; leaves often sharply folded, their bases overlapping; style-branches often divided **12. IRIDACEAE**
- b. Stamens 6, or 3 plus 3 staminodes; leaves not usually as above; style-branches not divided 27
- 27a. Perianth consisting of an outer, calyx-like whorl and an inner, corolla-like whorl; bracts usually overlapping and conspicuously coloured **14. BROMELIACEAE**
- b. Segments of the perianth not in 2 dissimilar whorls; bracts not as above 28
- 28a. Ovary half-inferior 29
- b. Ovary fully inferior 30
- 29a. Anthers opening by pores **8. TECOPHILAEACEAE**
- b. Anthers opening by slits **5. LILIACEAE**
- 30a. Leaves long-persistent, evergreen **6. AGAVACEAE**
- b. Leaves dying down annually 31
- 31a. Flowers in a spike; leaves fleshy, often spotted with brown, the margins more or less rolled around each other in bud **6. AGAVACEAE**
- b. Flowers in umbels or solitary; leaves not usually fleshy or spotted with brown, but flat, pleated or with the margins folded outwards in bud 32
- 32a. Leaves mostly basal, densely hairy, pleated or with prominent veins **9. HYPOXIDACEAE**
- b. Leaves various, not usually densely hairy, pleated or with prominent veins, basal or not **7. AMARYLLIDACEAE**

- 33a. Fertile stamens 6; perianth-segments all similar, tube curved and unevenly swollen; stems below ground, fleshy **6. AGAVACEAE**
- b. Fertile stamens 5, 2 or 1, very rarely 6; staminodes, which may be petal-like, often present; perianth-segments usually differing among themselves; fleshy underground stems rare 34
- 34a. Fertile stamens 2 or 1, united with the style to form a column; pollen usually borne in masses (pollinia); leaf-veins, when visible, all parallel to margins **25. ORCHIDACEAE**
- b. Fertile stamens 5 or 1, rarely 6, not united to the style; pollen granular; leaves with distinct midrib more or less parallel to margins, the secondary veins parallel, running from midrib to margins 35
- 35a. Fertile stamen with normal structure, not petal-like **22. ZINGIBERACEAE**
- b. Fertile stamen in part petal-like, and with only 1 pollen-bearing anther-lobe 36
- 36a. Leaf-stalk with a swollen band (pulvinus) at the junction with the blade; ovary smooth, with 1–3 ovules **24. MARANTACEAE**
- b. Leaf-stalk without a pulvinus at the junction with the blade; ovary usually warty, with numerous ovules **23. CANNACEAE**

1. ALISMATACEAE

Aquatic or marsh herbs, usually perennial. Leaves entire, alternate or basal. Flowers bisexual or unisexual, radially symmetric, borne in umbels, racemes or panicles. Sepals 3, free. Petals 3, free, often falling early. Stamens 3–many; anthers opening by slits. Ovary superior; carpels 3–many, free or united at the base; ovules usually 1 per carpel, with basal placentation. Fruit a group of achenes. See Figure 1, p. 8.

There are 13 genera from all parts of the world, and 90 species, some of which are cultivated in and around ornamental pools or in aquaria.

- 1a. Leaves sagittate **1. Sagittaria**
- b. Leaves not sagittate 2
- 2a. Some flowers unisexual; achenes winged **1. Sagittaria**
- b. Flowers all bisexual; achenes ribbed or furrowed but not winged 3
- 3a. Achenes with 3 ribs on the back and a double inner rib, spirally arranged in a spherical head **2. Baldellia**
- b. Achenes otherwise ribbed, in a single, sometimes irregular whorl 4
- 4a. Achenes 6–15, oblong-ovoid, in a hemispherical head; style apical **3. Luronium**
- b. Achenes 11–28, laterally compressed, in a more or less flat head; style lateral **4. Alisma**

1. *Sagittaria* Linnaeus. 20/few. Rootstock often with stolons and tubers. Leaves aerial, floating or submerged. Some flowers unisexual, usually in whorls of 3, forming racemes or panicles with female or bisexual flowers at the base and male flowers above, or occasionally with the flowers all male or female. Petals white. Stamens usually numerous. Carpels numerous, each with 1 ovule, spirally arranged on the receptacle, developing into a head of laterally compressed, winged, beaked achenes. *Mostly America.*

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2. Baldellia Parlato. 2/1. Sometimes with stolons. Leaves elliptic to lanceolate or linear-lanceolate. Flowers bisexual in 1--3 whorls in umbels or racemes. Stamens 6. Carpels numerous, free, spirally arranged in a spherical head. Achenes ovoid, longitudinally 5-ribbed (3 ribs on the back and an inner double rib), each with a short apical beak. *Europe, North Africa.*

3. Luronium Rafinesque. 1/1. Stems to 50 cm or more, floating or creeping and rooting at the nodes. Floating leaves long-stalked, blades to 4 × 1.5 cm, elliptic to ovate; submerged leaves linear. Flowers bisexual, 1.2--1.5 cm in diameter, long-stalked. Petals white, each with a yellow blotch at the base. Stamens 6. Carpels 6--15 in an irregular whorl. Achenes oblong-ovoid, 2.5 mm, each with 12--15 longitudinal ribs and a short, apical beak. *Europe.*

Formerly placed in the genus *Elisma* Buchenau.

4. Alisma Linnaeus. 9/2--3. Leaves aerial, floating or submerged. Flowers bisexual, in panicles or occasionally in racemes or umbels. Stamens 6. Carpels 11--28 in a single whorl, free. Achenes laterally compressed, each with a short beak. *Almost cosmopolitan, mostly northern hemisphere.* Figure 1, p. 8.

2. BUTOMACEAE

Annual or perennial aquatic herbs with rhizomes. Leaves basal or alternate, not submerged. Flowers bisexual, in axillary clusters or umbels which are long-stalked; more rarely flowers solitary. Sepals 3, sometimes petaloid. Petals 3, larger than the sepals. Stamens 6--many, anthers opening by longitudinal slits. Carpels 6--many, free or united at the base, with many ovules with marginal or parietal placentation. Fruit a whorl of follicles.

4 genera and 13 species with a scattered distribution..

1. Butomus Linnaeus. 1/1. Perennial herbs with thick, creeping rhizomes. Leaves linear, triangular in cross-section in the lower part. Umbels many-flowered; flower-stalks 5--10 cm. Sepals petaloid, pink. Stamens 6--9. *Eurasia.*

Species of **Hydrocleis** Richard, which have leaves with distinct blades and flowers with yellow petals, may be grown in very sheltered areas.

3. HYDROCHARITACEAE

Submerged or floating, annual or perennial herbs. Leaves alternate, opposite or whorled, sometimes with minute scales at the nodes. Flowers bisexual or unisexual, 1 or more together subtended by spathes formed from 1 or 2 united or free bracts. Sepals 3. Petals 3 or absent. Stamens 2--20, anthers usually opening by longitudinal slits. Ovary inferior, of 3--6 united carpels; ovules numerous on intrusive parietal placentas; styles 3--15. Fruit berry-like.

A cosmopolitan but mainly tropical family. Species of some 9 genera are cultivated.

- | | |
|--|-----------------------|
| 1a. Leaves with distinct stalks, in basal rosettes | 4. Hydrocharis |
| b. Leaves arranged along the stems, or, if in basal rosettes, then stalkless | 2 |
| 2a. Leaves in a basal rosette | 3 |
| b. Leaves distributed along the stems | 4 |
| 3a. Leaves rigid, margins with prominent spiny teeth; plant Aloe-like | |

6. Stratiotes

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- b. Leaves not rigid but ribbon-like, margins without prominent, spiny teeth
7. **Vallisneria**
- 4a. All leaves spirally arranged
5. **Lagarosiphon**
- b. Leaves opposite or whorled, at least in the upper part of the stem 5
- 5a. Flowers conspicuous, held above the water-surface, with nectaries
1. **Egeria**
- b. Flowers minute, submerged or borne at the water-surface, without nectaries 7
- 6a. Leaves in whorls of 3--8, with fringed nodal scales
3. **Hydrilla**
- b. Leaves in whorls of 3--4, with inconspicuous, unfringed nodal scales
2. **Elodea**

1. Egeria Planchon. 2/2. Dioecious or monoecious aquatic perennial herbs. Leaves submerged, whorled, stalkless, linear. Flowers conspicuous, with nectaries, held above the water-surface. Male spathes 2--4-flowered; petals of male flowers much longer than sepals; stamens 9. Ovary stalkless, styles 3, free, bifid or occasionally 3-fid. *Warm temperate South America; naturalised in Europe.*

Sometimes listed under *Elodea*.

2. Elodea Michaux. 15/3. Dioecious or monoecious, aquatic perennial herbs, often with stolons. Leaves submerged, whorled or sometimes opposite, stalkless, usually linear, with 2 minute scales at each node. Flowers inconspicuous, without nectaries, borne and pollinated at the water-surface. Spathes axillary, stalkless, with 1 or rarely 3 male flowers, or 1 female flower, or rarely 1 bisexual flower. Sepals 3. Petals 3. Stamens 3--9. Ovary stalkless; styles 3, free, bifid or occasionally entire. *America; now widely naturalised elsewhere.*

3. Hydrilla Richard. 1/1. Dioecious, submerged, branched herb with stolons, overwintering as turions. Leaves in whorls of 3--8 or the lowest opposite, lanceolate, each with a single mid-vein, stalkless, minutely toothed, with 2 brown, fringed scales in each axil. Flowers borne and pollinated at the water-surface, solitary, emerging from a tubular spathe. Sepals 3. Petals 3. Male flowers breaking free and floating on the water-surface at maturity; stamens 3. Female flowers stalkless, with an elongate perianth-tube; sepals smaller than petals; staminodes 3, styles not apparent, stigmas 3 (rarely to 5), ovary red. Fruit cylindrical. *Europe, east Asia, east Africa, Australia.*

4. Hydrocharis Linnaeus. 2/1. Aquatic perennial herbs. Leaves stalked, all basal. Flowers unisexual, held above the water. Male spathes stalked, with 1--4 flowers; female spathes stalkless, 1-flowered. Petals much longer than sepals. Stamens 9--12, the outer sometimes sterile and reduced to staminodes. Styles 6, bifid, free. *Europe, western Asia, North Africa.*

One species of **Ottelia** Persoon, from the warmer areas of the world, may be cultivated in very mild areas; it is rooted in the substrate, without stolons and the spathes are tubular, ribbed or winged.

5. Lagarosiphon Harvey. 15/1. Dioecious, submerged plants. Leaves stalkless, each with 2 minute scales at the node. Flowers submerged until open, pollinated at the water-surface. Male spathe with many flowers: stamens 3, staminodes 3. Female

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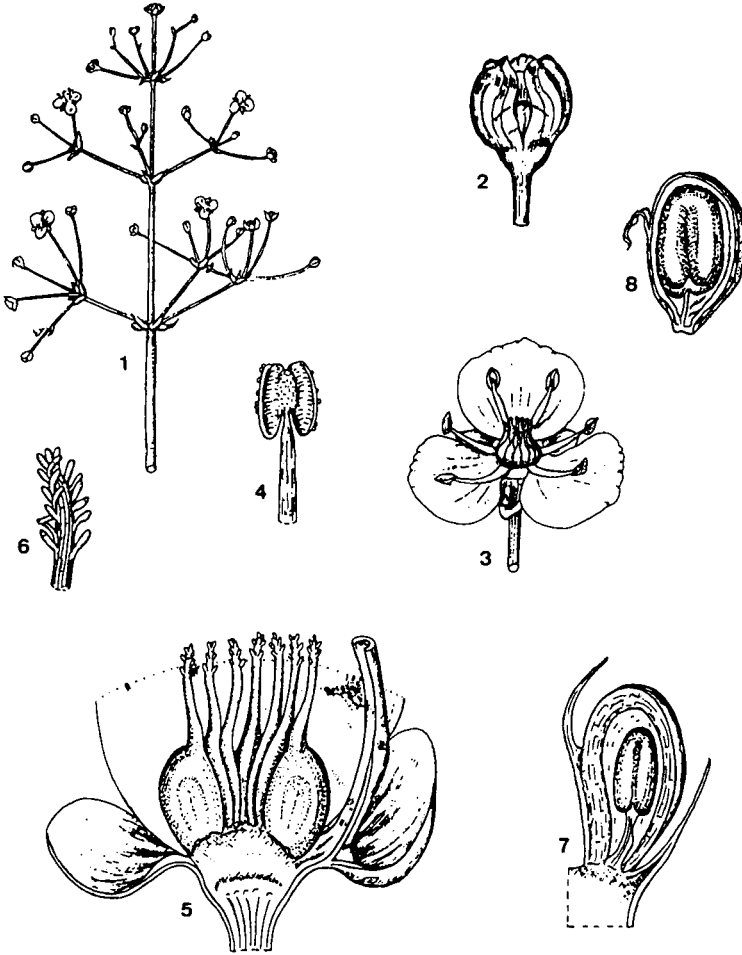
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Figure 1. Alismataceae. *Alisma plantago-aquatica*. 1. Inflorescence. 2. Flower bud. 3. Flower. 4. Stamen. 5. Longitudinal section of flower. 6. Style-apex. 7. Longitudinal section of a carpel still attached to the receptacle. 8. Longitudinal section of mature fruit.

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spathes usually each with 1 flower; ovary stalkless; styles 3, free, bifid. Sepals and petals 3 each. *Africa, Madagascar, India.*

6. *Stratiotes* Linnaeus. 1/1. Dioecious, submerged, Aloe-like perennial herb with stolons. Leaves all basal, stalkless. Flowers held above the water-surface. Male spathes with several flowers, female spathes each with a single flower. Petals larger than sepals. Stamens 12, surrounded by numerous staminodes. Ovary stalkless, styles 6, bifid, free. *Eurasia.*

Plants are mostly submerged, but rise to the surface at flowering time.

7. *Vallisneria* Linnaeus. 10/3. Dioecious, submerged plants with stolons. Leaves all basal, alternate, stalkless. Flowers pollinated at the water-surface. Male spathes almost stalkless or stalked, many-flowered, female spathes each long-stalked and 1-flowered; ovary linear; styles 3, free, bifid. Sepals and petals 3 each. *Cosmopolitan.*

4. POTAMOGETONACEAE

Submerged or floating, annual or perennial aquatic herbs. Stems elongate, flexible, erect. Rhizomes floating or creeping, slender, elongate, often producing specialised winter-buds (turions). Leaves opposite or alternate, rarely in whorls of 3, sheathing at their bases. Flowers bisexual, in axillary or terminal bractless spikes, inconspicuous, radially symmetric. Perianth-segments 4. Stamens 4. Ovary superior; carpels usually 4 (rarely 1--3), free or shortly joined at the base; ovules 1 per carpel. Style short. Fruit a small green or brown achene or drupe.

A family of 2 genera, distributed throughout the world. Only *Potamogeton* is cultivated.

1. *Potamogeton* Linnaeus. 100/2. Rhizomes branching, sometimes producing turions. Leaves alternate, submerged or partially floating; submerged leaves thin, translucent, linear; floating leaves leathery, opaque; stipule-like organs present, free or attached to the leaf-bases. Flowers wind- or water-pollinated. Fruit a drupe. *Cosmopolitan.*

5. LILIACEAE

Perennial herbs or shrubs, sometimes climbing or scrambling, with rhizomes, fleshy or fibrous roots, bulbs or corms. Leaves very variable, borne on the stems or all basal, usually alternate, more rarely opposite or whorled, very rarely very reduced, their functions taken over by needle-like, thread-like or flattened cladodes; veins usually parallel, more rarely net-like. Flowers usually with bracts, solitary or in racemes, spikes, panicles, clusters or umbels which are sometimes subtended by spathes. Perianth usually of 6 free or united segments, more rarely the segments 4 or more than 6. Stamens usually 6, more rarely 3 or 4 or more than 6, filaments free or united, borne on the perianth or not; anthers basifixed or dorsifixed and often versatile, usually opening by slits. Ovary usually superior, usually 3-celled with 2--many ovules per cell with axile placentation, more rarely 1-celled with numerous ovules with parietal placentation. Fruit a berry or capsule. Seeds 1--many. See Figures 2, p. 26, 3, p. 28 & 4, p. 36.

As treated here in the traditional sense, a family of 220 genera and 3500 species from all over the world. Many of the genera are cultivated.

There are varying views as to how the family should be defined and classified; the book *Monocotyledons: a comparative survey*, by R. Dahlgren and H.T. Clifford

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(1982) should be consulted for further details. In summary, genera **1--11** & **93** are now often placed in *Melanthiaceae*; **12, 13, 74--84** & **92** in *Convallariaceae*; **20--22** & **29** in *Anthericaceae*; **14**, together with *Phormium*, here included in the *Agavaceae*, in *Phormiaceae*; **15--19** & **30** in *Asphodelaceae*; **23, 24** & **45--60** in *Hyacinthaceae*; **25** in *Aphyllanthaceae*; **26** in *Hostaceae*; **27** in *Hemerocallidaceae*; **28** in *Blandfordiaceae*; **31--33** in *Colchicaceae*; **34--43** in the *Liliaceae* in the restricted sense; **44** in *Alstroemeriaceae*; **61--73** in *Alliaceae*; **85--88** in *Trilliaceae*; **89** in *Asparagaceae*; **90** & **91** in *Ruscaceae*; **94--97** in *Philesiaceae*, and **98** in *Smilacaceae*.

Key to groups

- 1a. Stem woody, persistent through the winter Group 7 (p. 16)
- b. Stem not woody and persistent through the winter, though leaves sometimes evergreen 2
- 2a. Ovaries below ground, hidden in the bulbs or corms Group 5 (p. 15)
- b. Ovaries exposed, above ground 3
- 3a. Ovary partly or fully inferior Group 6 (p. 16)
- b. Ovary completely superior 4
- 4a. Flowers in umbels which are subtended by spathes (rarely flower solitary and subtended by 2 united spathes) Group 4 (p. 15)
- b. Flowers in inflorescences of various kinds, or solitary, not subtended by spathes 5
- 5a. Styles 3 (rarely 4), separate and distinct, or stigmas 3, separate, borne directly on the ovary Group 1
- b. Style 1, sometimes 3-branched at the apex, or style absent, stigmas united, borne directly on the ovary 6
- 6a. Perianth-segments free at the base, or united for less than one-tenth of their total length Group 2 (p. 11)
- b. Perianth united at the base for more than one-tenth of its length Group 3 (p. 13)

Group 1

- 1a. Plant a climber **98. Smilax**
- b. Plant not a climber 2
- 2a. Leaves 2, opposite or in 1 or 2 whorls on the flowering stem, never long and grass-like 3
- b. Leaves several to many, all basal or borne on the flowering stem, if 2 and opposite then grass-like, at least 8 times longer than broad 6
- 3a. Flower solitary, terminal 4
- b. Flowers in umbels 5
- 4a. Leaves 4 or more in a whorl; parts of the flowers in 4s **87. Paris**
- b. Leaves in whorls of 3; parts of the flowers in 3s **88. Trillium**
- 5a. Leaves 2 at the base of each flowering stem; stamens 3 **85. Scoliopus**
- b. Leaves in 2 whorls on each flowering stem; stamens 6 **86. Medeola**
- 6a. Some part of the plant obviously hairy or covered with scales 7
- b. No part of the plant obviously hairy or covered in scales 9
- 7a. Perianth-segments conspicuously clawed **10. Melanthium**
- b. Perianth-segments not clawed 8
- 8a. Leaves broadly ovate to elliptic with many conspicuous veins, narrowed towards the stalk-like, sheathing bases **11. Veratrum**