

3. COMESPERMA, Labill.

Sepals unequal, the 2 innermost, or wings, large and petal-like. Petals 3, the keel not crested, the two lateral ones separately attached to the staminal column, and either overlapped by the keel or outside it at the top. Stamens 8, united to above the middle in a sheath, open on the upper side and adnate to the petals at the base. Ovary 2-celled. Style incurved, obliquely stigmatic and more or less 2-lobed at the top. Capsule coriaceous or almost membranous, usually cuneate and much narrowed at the base, rarely nearly orbicular, opening loculicidally at the edges. Seeds ovate or oblong, pendulous, pubescent or hairy, the hairs lengthening into a coma whenever the capsule is narrowed at the base, without any caruncle at the hilum, but the raphe often expanded into a caruncular appendage at the opposite end.—Herbs undershrubs or shrubs, erect or twining. Leaves alternate, usually small. Racemes terminal.

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A strictly Australian genus, with which was formerly united the Brazilian *Bredemeyera* (Cavendish, Benth.); but, besides the difference in habit, the latter has a more or less fleshy capsule, and the seeds have a long coma proceeding from the hilum; whilst in *Comesperma*, the coma, when present, consists of the hairs of the testa, which always extend to the base of the capsule, although the seed is often not half so long. In 2 species the capsule is that of a *Polygala*, and the seeds have no coma; but in those the insertion of the lateral petals, very different from that of *Polygala* and approaching that of *Monnina*, is strongly marked. In *P. volubilis* (which was chiefly taken into account in verifying the characters for our 'Genera Plantarum'), the arrangement of the petals is nearer to that of *Polygala*, but there the carpological characters are very decided. Besides that, the genus *Comesperma* is so natural a one, that it is never liable to be confounded with any of those allied to it in structure. The precise arrangement of the petals in the smaller-flowered species, very difficult to ascertain in dried specimens, requires verification from the living plant.

- Capsule sessile. Seeds filling the cells, without a coma. Stems leafless. (Sect. **Prosthemosperra**, F. Muell.)
- Capsule orbiculate. Flowers in a short terminal raceme 1. *C. sphaerocarpum*.
 - Capsule obovate or cuneate. Flowers distant.
 - Branches erect, rigid, broom-like. Seed with a broad terminal membrane 2. *C. scoparium*.
 - Branches very slender, divaricate, intricately branched. Seed with a long terminal appendage 3. *C. aphyllum*.
 - Branches divaricate, thorny. Seeds without any appendage 4. *C. spinosum*.
 - Capsule narrowed into a stipes, containing the long coma of the seeds, which only occupy the broad part of the cells.
 - Outer sepals all free, much shorter than the wings.
 - Branches twining or very short and almost leafless.
 - Leaves few, mostly obtuse. Capsule not winged.
 - Flowers blue or white. Pedicels glabrous 5. *C. volubile*.
 - Flowers yellow. Pedicels pubescent 7. *C. integerrimum*.
 - Leaves very few and small, acute, ciliate. Bracts ciliate. Capsule winged. Flowers blue 6. *C. ciliatum*.
 - Stems erect, leafy.
 - Leaves flat, ovate or oblong.
 - Pubescent.
 - Leaves small, broadly ovate, mucronate, crowded. Flowers 1 to 1½ lines 8. *C. secundum*.
 - Leaves thick, oblong, obtuse 9. *C. Drummondii*.
 - Glabrous.
 - Leaves mucronate, very glaucous 11. *C. sylvestre*.
 - Leaves obtuse, green 10. *C. retusum*.
 - Leaves linear.
 - Leaves pungent, strongly keeled. Keel-petal horned 12. *C. acerosum*.
 - Leaves with revolute margins. Keel-petal not horned 13. *C. ericinum*.
 - Leaves very narrow, almost terete.
 - Raceme elongated. Bracts demose. Flowers blue 14. *C. confertum*.
 - Raceme corymbose or cuneate. Bracts very minute. Flowers yellow 15. *C. flavum*.
 - Outer sepals all free, nearly as long as the wings. (Sect. **Iso-calyx**, Steetz.)
 - Stems leafy.
 - Capsule narrowed into a long stipes 16. *C. calymega*.
 - Capsule elliptical or oblanceolate, shortly narrowed at the base 17. *C. lanceolatum*.
 - Stems very slender, almost leafless 18. *C. defoliatum*.
 - Two of the outer sepals connate. (Sect. **Disepalum**, Steetz.)
 - Flowers small, the wings not twice as long as the outer sepals.
 - Leaves few, small, distant 19. *C. nudiusculum*.
 - Wings 3 or 4 times as long as the outer sepals. Leaves linear.
 - Leaves strongly keeled. Keel-petal horned. Seeds with a membrane at the end furthest from the hilum 20. *C. virgatum*.
 - Leaves flat, not keeled. Keel-petal not horned. Seeds without any appendage 21. *C. polygaloides*.

11. **C. sylvestre**, Lindl. in *Mitch. Trop. Austr.* 342. A glabrous and erect shrub of several feet, resembling *C. retusum*, with which F. Mueller proposes to unite it, but much more glaucous. Leaves larger, often $\frac{3}{4}$ in. long and sometimes 3 lines broad, mucronate or pungent, often concave above. Flowers rather larger, with broader outer sepals. Capsule about $\frac{1}{2}$ in. long. —F. Muell. *Fragm.* i. 49.

Queensland. Open forest, near Mounts Paraday and Pluto, *Mitchell*; sandy forest table-land on the Suttor river, *F. Mueller*.

2. POLYGALA, Linn.

Sepals unequal, the 2 innermost, or wings, large and petal-like. Petals 3, united in a single corolla open on the upper side, the keel bearing a crest-like appendage on the back near the top, or rarely (in species not Australian) 3-lobed. Stamens 8, united to above the middle in a sheath open on the upper side, and adnate to the petals at the base. Ovary 2-celled. Style various. Capsule thin or rarely coriaceous, flattened, obovate, ovate, or orbicular, usually notched at the top, opening loculicidally at the edges. Seeds ovate or oblong, hairy or glabrous, but the hairs not lengthened into a coma, with or without a caruncle at the hilum.—Herbs, undershrubs, or shrubs. Leaves usually alternate or whorled. Racemes or spikes terminal or lateral, rarely axillary.

A very large genus, abundant in tropical countries, and generally also in temperate regions, except in Australia, where it is, with one exception, limited to the tropical districts, and in New Zealand, where it is entirely absent. Of the 7 Australian species, 3 are widely spread over tropical Asia, and the 4 others, although endemic, are nearly connected also with corresponding Asiatic ones.

- Perennial. Style with 2 stigmatic lobes one above the other. Seeds obovate, shortly villous 1. *P. japonica*.
- Annuals. Seeds oblong villous, the hairs much longer at the end furthest from the hilum.
- Racemes long, terminal. Inner sepals petaloid, obtuse. Crest fringed. Stigma simple, terminal, capitate 2. *P. leptoclea*.
- Racemes short, very dense and hirsute, terminal or lateral. Inner sepals herbaceous, acuminate. Crest 2-horned. Style with 1 erect lobe and a lower large glandular stigma 3. *P. eriocephala*.
- Racemes lateral. Inner sepals herbaceous, mucronate, usually falcate. Crest fringed. Style with 1 large hooked or reflexed stigmatic lobe.
- Racemes shorter than the leaves, or if longer, very dense.
- Leaves orbicular 5. *P. orbicularis*.
- Leaves from obovate to linear.
- Capsules broadly winged and ciliate 4. *P. rhinanthoides*.
- Capsules wingless and glabrous or nearly so 6. *P. arvensis*.
- Racemes slender, much longer than the leaves 7. *P. stenoclada*.

6. **P. arvensis**, Willd. Spec. Pl. iii. 876. A procumbent or rarely erect annual, branching at the base only, sometimes not exceeding a couple of inches when in full fruit, sometimes the prostrate or ascending branches extending to 6 or 8 in. or even more, and usually pubescent. Leaves from obovate to oblong or linear, $\frac{1}{2}$ to $\frac{3}{4}$ in. long or rarely more. Flowers few, in short sessile racemes, usually lateral, often shorter than the leaves, and rarely

lengthening to an inch. Outer sepals very small and narrow; inner sepals ovate-falcate, acute or mucronate, 2 to 3 lines long, herbaceous and glabrous or slightly pubescent. Corolla about as long, the lateral petals rather large, the crest of the keel fringed. Ovary glabrous. Style scarcely thickened, with an almost petaloid uncinat-decurved stigma, glabrous and glandular underneath. Capsule rather broad, glabrous or slightly pubescent, not winged. Seeds very hairy.—DC. Prod. i. 326.

N. Australia. Upper Victoria river, F. Mueller; Goulburn Island, A. Cunningham; N. coast, R. Brown.

Queensland. Endeavour river, R. Brown.

A very common East Indian weed, variable in foliage and stature; the following forms appearing sometimes constant enough to be considered as distinct species:—

Var. *obovata*. Leaves all obovate, giving the plant the aspect of a young *Euphorbia helioscopia*. Cavern Island, Carpentaria, R. Brown.

Var. *squarrosa*. Leaves narrow. Flowers small and numerous, in oblong racemes, mostly terminal, the inner sepals narrow and falcate. *P. squarrosa*, Soland. ms. Endeavour river, R. Brown; Upper Victoria river, F. Mueller.

Var. *stenosepala*. Leaves narrow-linear. Racemes short and few-flowered, or flowers almost solitary. Inner sepals narrow and less falcate. Capsule not above half as broad as long. Victoria river, F. Mueller; and nearly the same form, but with more flowers, Arnhem Bays, R. Brown.

POLYGALACEAE

Polygala chinensis L.

2. **P. leptalea**, DC. *Prod.* i. 325. An erect, glabrous, slender annual, simple or slightly branched, usually 1 to 1½ ft. high. Leaves few, linear, the longer ones about 1 in., the uppermost much smaller, and the lower ones sometimes shortly oblong. Flowers small, numerous, pendulous, in a 1-sided terminal raceme, on pedicels which rarely attain 1 line. Outer sepals narrow-oblong, obtuse, the lowest rather larger and concave; inner sepals nearly twice as large, petal-like, broadly oblong, obtuse, 2 to 2½ lines long. Keel-petal crested. Style scarcely thickened, much curved, inflexed at the summit with an entire capitate stigma. Capsule broadly oblong, rather shorter than the inner sepals, with a narrow transparent wing. Seeds hirsute with reflexed hairs, the caruncle very small.—*P. oligophylla*, DC. *Prod.* i. 325.

N. Australia. Upper Victoria river, *F. Mueller*; Port Essington, *Armstrong*.
Queensland. Endeavour river, *R. Brown*.
Frequent in northern and eastern India.

4. **P. rhinanthoides**, Soland. in Herb. R. Br. An erect branching slightly pubescent annual, from an inch or two to above a foot high. Leaves oblong-linear, or rarely obovate-oblong, obtuse or rarely acute, $\frac{3}{4}$ to $1\frac{1}{2}$ in. long, glabrous or ciliate, narrowed into a short petiole. Racemes lateral, short, rather dense, 6- to 10-flowered. Outer sepals lanceolate, with a fine point; inner sepals broadly ovate, oblique, mucronate, ciliate, 2 to 3 lines long. Keel-petal crested. Ovary broad, ciliate. Style slightly thickened, much curved, entire, with a broad almost petaloid decurved stigma, bearded underneath. Capsule 4 lines long and broad, including a broad wing, pubescent and ciliate. Seeds oblong, hirsute with reflexed hairs, the caruncle deeply 3-lobed.

N. Australia. Upper Victoria river, F. Mueller.

Queensland. Endeavour river, R. Brown.

Var. *minor*. A smaller and more glabrous plant, with narrower leaves, looser racemes, and more glabrous; capsules with narrower wings, almost connecting the species with some forms of *P. arvensis*. Upper Victoria river, F. Mueller.

7. *P. stenoclada*, Benth. A slender, glabrous, erect annual, simple or little branched. Leaves distant, very narrow-linear, almost terete, obtuse or minutely pointed, $\frac{1}{2}$ to 1 in. long. Peduncles lateral, slender, elongated, bearing towards the top a slender raceme of small blue flowers on very short pedicels. Outer sepals lanceolate, very acute with scarious margins; inner sepals about 2 lines long, broadly ovate-lanceolate and falcate with a dark-coloured point. Keel-petal crested. Ovary glabrous. Style slender, much curved, with an almost petaloid deflexed blue stigma, bearded on the under side.

N. Australia. Upper Victoria river, F. Mueller.

The inflorescence is that of some specimens of the East Indian *P. Wightiana*, but besides the difference in foliage, the flowers are much smaller and narrower, and approach much more in structure the *P. arvensis*, from which *P. stenoclada* differs chiefly in inflorescence, and, in the above described specimens, in its very narrow leaves.

Var. (?) *stenosepalu*. Rather taller and more branched. Leaves oblong or linear, flat, $\frac{1}{2}$ to 1 in. long. Flowers in a loose pedunculate raceme, much longer than the leaves, as in *P. stenoclada*; but the inner sepals are narrow, pointed, and much falcate, as in the var. *stenosepala* of *P. arvensis*.—Carpentaria Point and Arnhem Bays, R. Brown (Hb. R. Br.).

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POLYGALACEAE

Polygala tepperi

F. Muell.