



Topic 21: **THE PEA FLOWERS** (Family: Fabaceae, Subfamily: Faboideae)

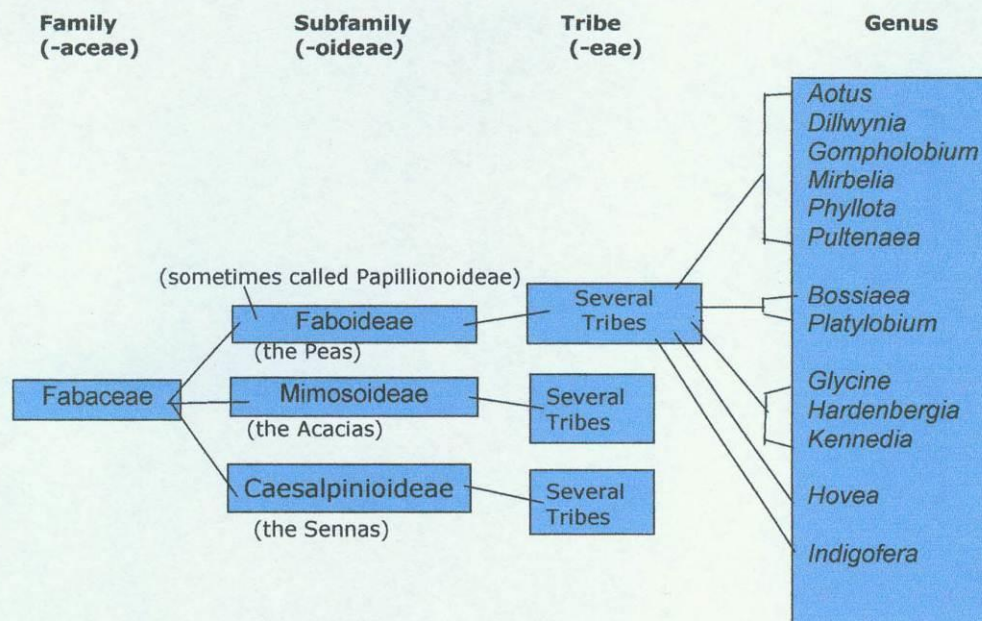
Did you know that,

- This is a very large group of plants occurring widely in the northern and southern hemispheres.
- Domesticated varieties are major foods eg green peas and beans, peanuts, soya beans and grain legumes.
- There are about 1200 species of Australian "pea plants" (9% of world total) representing about 140 genera.
- Some seeds of the native plants were eaten by Aborigines, but only after careful processing to remove the harmful toxins.

The pea flowers belong to the Family: Fabaceae, along with the acacias and sennas. Today we focus on the members of the Sub-Family: Faboideae (formerly Papilionaceae) a large, global and diverse group. Well known examples are soybean, peanuts, beans, peas and pulses or grain legumes (chickpeas, lentils, faba beans, mung beans etc). The plants within this family are generally characterised by the following features,

1. A "pea-like" flower
2. Fruit is a seed-containing pod
3. Roots contain nitrogen fixing (capture atmospheric nitrogen) bacteria.

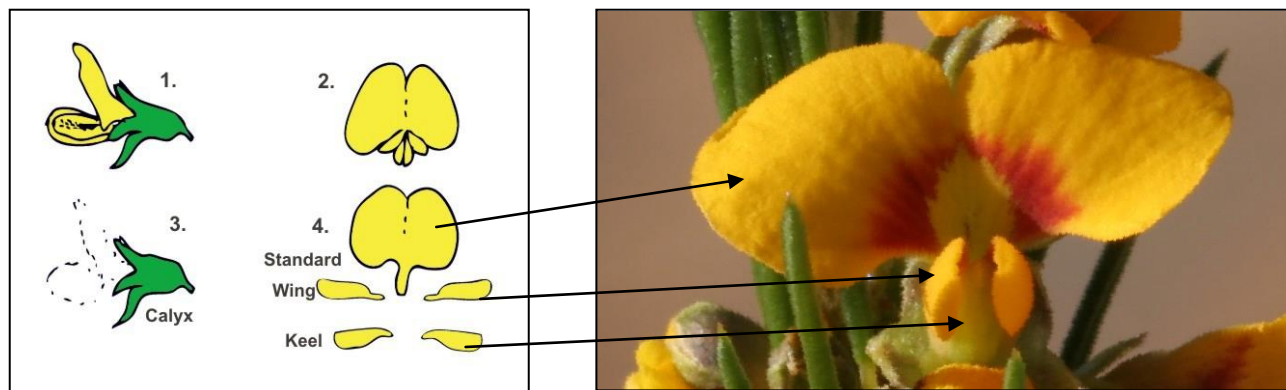
Present classification of plants with seedpods:



The Australian pea-flowered legumes have been divided into 12 tribes, two of which, Mirbelieae and the closely related Bossiaeeae (the top two tribes in the above diagram), are endemic and contain a large proportion of the plants native to Australia.

The pea plants occur in all states from the arid interior to tropical rainforests. They are well adapted to fire, often being the first to recover either from seedbanks or by resprouting.

Examples of the Faboideae that occur in KWG are described and illustrated below. They are arranged in the order they occur in the Key on page 7. All these plants except *Indigofera australis* are indigenous to KWG.



The Flower

The typical pea flower has five petals, one standard (usually with conspicuous nectar guides), two wing and two keel petals (see schematic diagram above, 1. side view, 2. front view, 3. showing calyx, 4. petals separated). The calyx is formed from the fused sepals and is often used in identification. The keel petals surround the reproductive organs. Typically bees alighting on the wing petals, spring open the keel petals causing the stamens and pistil to spring upward making contact with the body of the bee. The very common yellow and red colour of these flowers has given rise to the name "Bacon and Egg" flower

Plants with large red or green coloured flowers are often pollinated by birds.

Some Characters used in identification

1. The flower, colour, shape, arrangement of the stamens (fused or free), calyx.
2. The leaf
3. Bracteoles, bracts, stipules.

Glossary of terms

Bract, usually a more or less modified leaf, especially a smaller one associated with a flower or part of a flowerhead.

Bracteole, bract-like structure borne singly or in pairs on the flower stem or calyx of a flower.

Calyx, the sepals of one flower collectively.

Stamen, one of the male organs of the flower, consisting of a pollen-bearing anther and a filament or stalk.

Stipule, one or a pair of appendages sometimes developed at the base of a leaf in many dicotyledons.

Purple Flowers

Hovea linearis Narrow-leaf Hovea
Sprawling or erect shrub to 50 cm high.

Leaves: Alternate and simple, mainly linear to lanceolate, mostly to 2.5–6 cm long and 2–4 mm wide, upper surface strongly reticulate.

Flowers: Purple with pale yellow centres. Flowers 1 to 3 together in axils. Calyx covered in fine hairs. Aug.–Sept.

Habitat: Widespread in eucalypt forest. NSW and Qld.

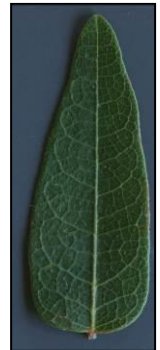


Hardenbergia violacea Purple Twining-pea
Climbing or prostrate shrub; stems often to 2 m long.

Leaves: Leaves single, lamina ovate to narrow-lanceolate, 3–10 cm long, 1–5 cm wide, leathery, venation prominently reticulate.

Flowers: Purple with yellowish spot, inflorescences racemose, upper often forming a terminal panicle, 20–30-flowered. Flowering mostly spring.

Habitat: Widespread in a variety of habitats. NSW, Qld Vic. W.A. S.A.



Glycine microphylla

Scrambler.

Leaves: Leaves consist of three leaflets. 1.5–5 cm long, 1–6 mm wide.

Flowers: Pinkish to purple racemes 5–13-flowered, 2–2.5 times as long as leaves. Flowering all year.

Habitat: Widespread in moist semi-shady areas especially on shales and metamorphics.
NSW, Qld Vic. Tas. S.A.



Red Flowers

Kennedia rubicunda Dusky Coral-pea

Twining or sometimes prostrate herb; stems to 4 m long.

Leaves: Leaves consist of three leaflets; leaflets ovate to lanceolate, 3–12 cm long, 2–8 cm wide.

Flowers: Racemes mostly 4–5 cm long, 2–12-flowered; Calyx densely rusty-hairy. Corolla 30–40 mm long, dark red or purple; standard turned backward with dark area. Late winter to spring

Habitat: Widespread in a variety of habitats, especially in coastal districts. NSW, Qld Vic. Tas.



Pink Flowers

Mirbelia rubiifolia

Spreading shrub to c. 50 cm high; stems angular.

Leaves: Leaves in whorls of 3, narrow-ovate to linear-oblong, mostly 10–25 mm long, 2–4 mm wide, apex acute, pungent-pointed, upper surface conspicuously reticulate.

Flowers: Pink to purple in axillary clusters and umbel-like terminal racemes. Spring to early summer.

Habitat: Widespread in heath and sclerophyll forest on sandy soils. NSW, Qld.



Indigofera australis Native Indigo

Spreading shrub up to 2.5 m tall.

Leaves: Pinnate 4–10 cm long; leaflets usually 11–25, oblong to elliptic, 10–40 mm long, 5–9 mm wide.

Flowers: Pink inflorescences, terminal racemes 9–15 cm long. Spring flowering.

Habitat: Widespread in woodland and eucalypt forest. NSW, Qld, Vic, Tas, W.A., S.A.



Yellow (and red) Flowers

Gompholobium grandiflorum Large Wedge Pea

Erect shrub to 1.2m.

Leaves: Leaflets 3 slender, very concave below, firm with hard point.

Flowers: large lemon yellow, solitary or few in short terminal heads, flowering in Spring.

Habitat: Dry sclerophyll forest and heath on sandstone on the coast and adjacent ranges chiefly in the Sydney region, from the Blue Mountains to Jervis Bay.



Gompholobium latifolium Broad-leaf Wedge-pea

Erect, shrub to 3 m high; stems smooth.

Leaves: Leaves consist of three leaflets; leaflets linear-lanceolate mostly 25–50 mm long, 2–6 mm wide, apex acute or obtuse, darker on upper surface.

Flowers: Large yellow flowers solitary or 2 or 3 together, terminal or axillary; keel incurved, occasionally greenish, densely ciliate on margins with white hairs to 1 mm long. Spring to early summer.

Habitat: Widespread on the coast and adjacent ranges, in dry sclerophyll forest on sandstone. NSW, Qld, Vic.



Dillwynia floribunda

Erect shrub 0.2–2.5 m high; stems hairy.

Leaves: Leaves usually crowded, linear, 5–20 mm long, glabrous or with some long hairs.

Flowers: Yellow with red markings. Inflorescences usually 2-flowered, in the upper axils and often extending well down the branches, usually sessile; bracts 1–2 mm long; Calyx mostly glabrous or bearing long, scattered fine hairs. Standard 7–12 mm long. Early spring.

Habitat: Chiefly in heath, NSW, Qld



Dillwynia retorta Heathy Parrot-pea

Erect shrub to 3 m high; stems pubescent to pilose.

Leaves: Leaves spirally twisted, linear to narrow-oblong, 4–12 mm long, apex shortly acuminate and often curved, smooth or minutely tuberculate, glabrous.

Flowers: Inflorescences capitate, umbellate or racemose, terminal and in the upper axils, sometimes tightly clustered, 1–9-flowered; bracts 1–2 mm long; Calyx glabrous externally, often shortly ciliate. Standard 5–12 mm long. July to November.

Habitat: In heath to dry sclerophyll forest on acidic, well-drained soils. NSW, Qld.



Platylobium formosum Handsome Flat-pea
 Erect, straggling or prostrate shrub to 2.5 m high.
Leaves: Leaves narrow- to broad-ovate, 1–6.5 cm long, 15–20 mm wide, apex pungent or mucronate, lower surface paler.
Flowers: Flowers 8–15 mm long; pedicels mostly 10–30 mm long, hairy; bracts \leq 4 mm long; bracteoles 3–5 mm long. Calyx pubescent. Corolla mostly orange-yellow and red but keel often purplish. Spring.
Habitat: Widespread, in various habitats from heath to rainforest margins. NSW, Qld Vic. Tas.



Bossiaea heterophylla Variable Bossiaea
 Variable, mostly glabrous shrub, mostly < 1 m high, stems flat, often glaucous.
Leaves: Leaves alternate, often variable in shape on the same plant; lamina ovate to almost linear, 10–30 mm long, margins flat or incurved.
Flowers: Flowers 7–15 mm long; bracts few, \leq 1.5 mm long; bracteoles similar. Calyx 4–6 mm long. Standard usually longer than keel, both distinctly longer than wings; standard and wings orange-yellow; keel dark reddish. Apr.-May
Habitat: Common in coastal districts on sandy soils in a variety of habitats. NSW, Qld.



Bossiaea obcordata Spiny Bossiaea
 Rigid shrub to 2 m high, branches spinescent, \pm flat, pubescent, at least when young.
Leaves: Leaves alternate; lamina obovate to obcordate, mostly 3–6 mm long, \pm glabrous, venation conspicuous; stipules 1–2 mm long, \pm triangular.
Flowers: Flowers mostly 8–10 mm long; bracts few, \leq 1 mm long; bracteoles \leq 2 mm long, inserted on lower half of pedicel. Calyx 3–5 mm long. Petals \pm equal, all yellow or keel and base of other petals purplish brown. Mostly Sept.–Oct.
Habitat: Widespread in dry sclerophyll forest and heath, often on sandstone. NSW, Qld Vic. Tas.



Bossiaea scolopendria
 Erect, sparsely branched shrub to 1.5 m or more high; branches flat, winged, 6–15 mm wide.
Leaves: Leaves develop only on juvenile growth or regrowth, mostly reduced to scales 1–2 mm long.
Flowers: Flowers 10–14 mm long; bracts few, uppermost 2–2.5 mm long; bracteoles 2–2.5 mm long, inserted at or above middle of pedicel. Calyx 4–6 mm long. Petals coloured as in yellow and red with dark red keel. Flowering spring.
Habitat: In heath and woodland sandstone, Sydney.



Pultenaea tuberculata

Erect to spreading shrub; stems curly-pubescent, obscured by appressed stipules.

Leaves: Leaves alternate, (narrow-) elliptic to (narrow-) obovate to spatulate or narrowly so, flat to concave, usually 3.2–15 mm long and 1.5–5 mm wide, lower surface darker than upper; stipules 3–6.5 mm long.

Flowers: Inflorescences subterminal, often dense, leafy, the leaves often wider and/or longer and with enlarged stipules; bracts absent. Flowers 10–16 mm long; bracteoles 4–7 mm long, fused to stipules to just below tip, about as long as stipules, mostly hairy, attached at base of calyx tube; bracteolar stipules oblong. Calyx tube glabrous to sparsely hairy; teeth moderately to densely hairy. March to April.

Habitat: Grows in dry sclerophyll forest to heath on sandstone. NSW



Pultenaea flexilis Graceful Bush-pea

Erect shrub; stems sparsely spreading-hairy.

Leaves: Leaves alternate, linear-obovate to narrow-obovate, 8–20 mm long, 2–4 mm wide, margins flat or incurved, lower surface darker than upper; stipules 2–4 mm long.

Flowers: Inflorescences terminal or subterminal, lax, leafy; bracts absent. Flowers 8–10 mm long; bracteoles 1–3 mm long. Calyx 3–5 mm long, glabrous to sparsely hairy; lobes acuminate to acute. Spring

Habitat: Grows in dry sclerophyll forest on acid, well-drained soils. NSW, Qld.



Pultenaea stipularis Fine-leaf Bush-pea

Erect shrub; stems glabrous.

Leaves: Leaves alternate, linear to narrow-elliptic, flat or slightly concave, 15–25 mm long, 1–2 mm wide, margins flat to slightly incurved; stipules to 10 mm long.

Flowers: Inflorescences terminal, dense; bracts imbricate, persistent, each composed of a leafless pair of enlarged stipules. Flowers 10–15 mm long; bracteoles 6–7 mm long. Spring

Habitat: Grows in dry sclerophyll forest on sandstone.



Pultenaea polifolia Dusky Bush-pea erect to prostrate shrub. Leaves alternate, linear or elliptic, convex with central groove 2–35mm long, 2–7mm wide, margins recurved to revolute, sparsely hairy underneath.

Flowers 5–10mm long, yellow with red markings and keel, in terminal heads surrounded by bracts. Flowers in spring.

Habitat grows in heath to wet sclerophyll forest or swampy to well drained soil south from New England NP. Also occurs in Vic.



Phyllota phyllicoides Common Phyllota

Erect shrub to c. 1 m high; young growth pubescent.

Leaves: Leaves narrow-linear, 6–15 mm long, to 1.25 mm wide, apex obtuse to acute, margins revolute.

Flowers: Flowers crowded in leafy spikes towards the ends of the branches; bracteoles leafy, lanceolate or linear, 4–15 mm long. Calyx glabrous to pubescent. Corolla 5–11.5 mm long, yellow to orange with or without reddish markings. Spring.

Habitat: Widespread on coast and tablelands in dry sclerophyll forest or heath on sandstone. NSW, Qld.



Aotus ericoides Common Aotus

Variable shrub to 2 m high; stems with a close, often rusty tomentum.

Leaves: Leaves in irregular whorls of 3 or more, opposite or alternate, ovate, lanceolate, elliptic or linear, 6–20 mm long, 1–5 mm wide, margins recurved or revolute, glabrous or with a few, long hairs.

Flowers: Flowers 1-several in upper leaf axils; bracts c. 2 mm long; pedicels to 2 mm long. Calyx villous; teeth acute. Corolla 5–10 mm long; standard yellow with a reddish or orange blotch in the centre; wings and keel usually bright yellow. : Late winter–spring.

Habitat: Grows in a wide range of habitats, mainly heath and dry sclerophyll forests. Occurs in Qld, Vic, Tas.

Viminaria juncea Golden Spray, Native Broom

Shrub 1-5m high, branches erect or pendulous, terete, striate, glabrous.

Leaves - juvenile 1-3 foliolate, leaflets oblong to linear-lanceolate, 1-4cm; when mature reduced to slender petioles 3-25 cm long.

Flowers in racemes >20cm long, pedicels 5mm long, bracts 2-3cm long, lanceolate. Calyx 4mm long, teeth triangular, shorter than tube. Corolla yellow to orange often with red blotches, keel usually darker. Flowers in spring.

Habitat widespread in swampy situations on the coast of NSW, also occurs in Qld, Vic, SA, WA.



Sphaerolobium minus Rush-like shrub usually <50 cm high; stems terete.

Leaves – juvenile leaves 1-3 foliolate, when mature mostly leafless.

Flowers usually 2 or 3 clustered together forming long, terminal racemes; pedicels 1–3 mm long; uniformly lead-grey. Calyx 2–3 mm long. Flowers c. 5 mm long; standard broadly obovate, c. 4.5 mm wide, pure yellow with faint red markings (not distinctive as in *S. vimineum*); wings obovate; keel c. 5 mm long; style sharply flexed down then up near base, ± vertical and nearly straight for most of its length, not twisted sideways. Flowers in spring.

Habitat Widespread in wet heath or sometimes forest on sandy or peaty soils on the coast of NSW, also occurs in Qld, Vic, Tas, SA.

A Key to Some Common Sydney Peas

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|----|--|--|
| 1. | Flower purple
a. upright
b. twining | <i>Hovea</i>
<i>Hardenbergia</i> |
| 2. | Flower red, twiner or prostrate | <i>Kennedia</i> |
| 3. | Flower pink
a. low herb
b. shrub, pinnate leaves | <i>Mirbelia</i>
<i>Indigofera</i> |
| 4. | Flower yellow, or yellow and red
a. leaves 3 or 5 foliate, or pinnate
b. standard with dip in centre
i. stamens free, bracteoles distant from calyx
ii. stamens united,
-leaves strongly veined on both sides
-leaves not strongly veined, Stems often flat
c. standard rounded or pointed, and stamens free
i. prominent stipules and brown bracteoles close to calyx, usually terminal heads
ii. large herbaceous bracteoles, stipules minute, and usually terminal heads
iii. no stipules, flowers axillary | <i>Gompholobium</i>

<i>Dillwynia</i>

<i>Platylobium</i>

<i>Bossiaea</i>

<i>Pultenaea</i>

<i>Phyllota</i>
<i>Aotus</i> |

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References.

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