

# Identification guide of Invasive Alien Species of Union concern

Support for customs and/or surveillance on the identification of IAS of Union concern

Project task 07.0202/2019/812535/SER/ENV.D.2  
Request number: TSSR-2020-01.10

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*IUCN. 2020. Identification guide of Invasive Alien Species of Union concern. Technical note prepared by IUCN for the European Commission.*

*Date of completion: 14/10/2020*

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# *Acridotheres tristis*

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Common myna, Common mynah, Indian myna, Indian mynah, Calcutta myna, House myna, Talking myna

## Synonyms

*Acridotheres tristis* (Linnaeus, 1766),

*Paradisea tristis* (Linnaeus, 1766),

*Sturnus tristis* (Linnaeus, 1766),

*Acridotheres griseus*

## Species ID

Kingdom: Metazoa

Phylum: Chordata

Class: Aves

Order: Passeriformes

Family: Sturnidae

Genus: *Acridotheres*

Species: *Acridotheres tristis*



## General description:

A passerine bird about the size of a Common starling. Body plumage in an adult is light chocolate-brown, with glossy black head, neck and upper breast. There are white patches on the wings which are clearly visible in flight. White feathers are also on the edges and tip of the tail and on undertail coverts. Legs, feet and bill are bright yellow. The most distinctive feature is bare bright yellow skin below and behind the eye. The iris is grey- brown, brown, brownish yellow to red. Males and females are very similar and impossible to identify on the basis of morphology. Colours on young birds are similar to those on adults but duller. Eggs are turquoise blue, 30.8 x 21.99 mm in size on average.

The species is very noisy and able to emit a wide variety of calls, from rough croaks to soft whistles.

**Size:** Body length 23-26 cm; tail length 7.9-9.6 cm; wing chord length 13.8-15.3 cm; average weight 110-138 g

### Distinctive characteristics

Bright yellow eye-band

Bright yellow bill

Chocolate-brown body

White edges of wing

White tip and edges of tail

Glossy black head, neck and upper breast

Bright yellow legs and feet



Colours on young birds are similar to those on adults but duller

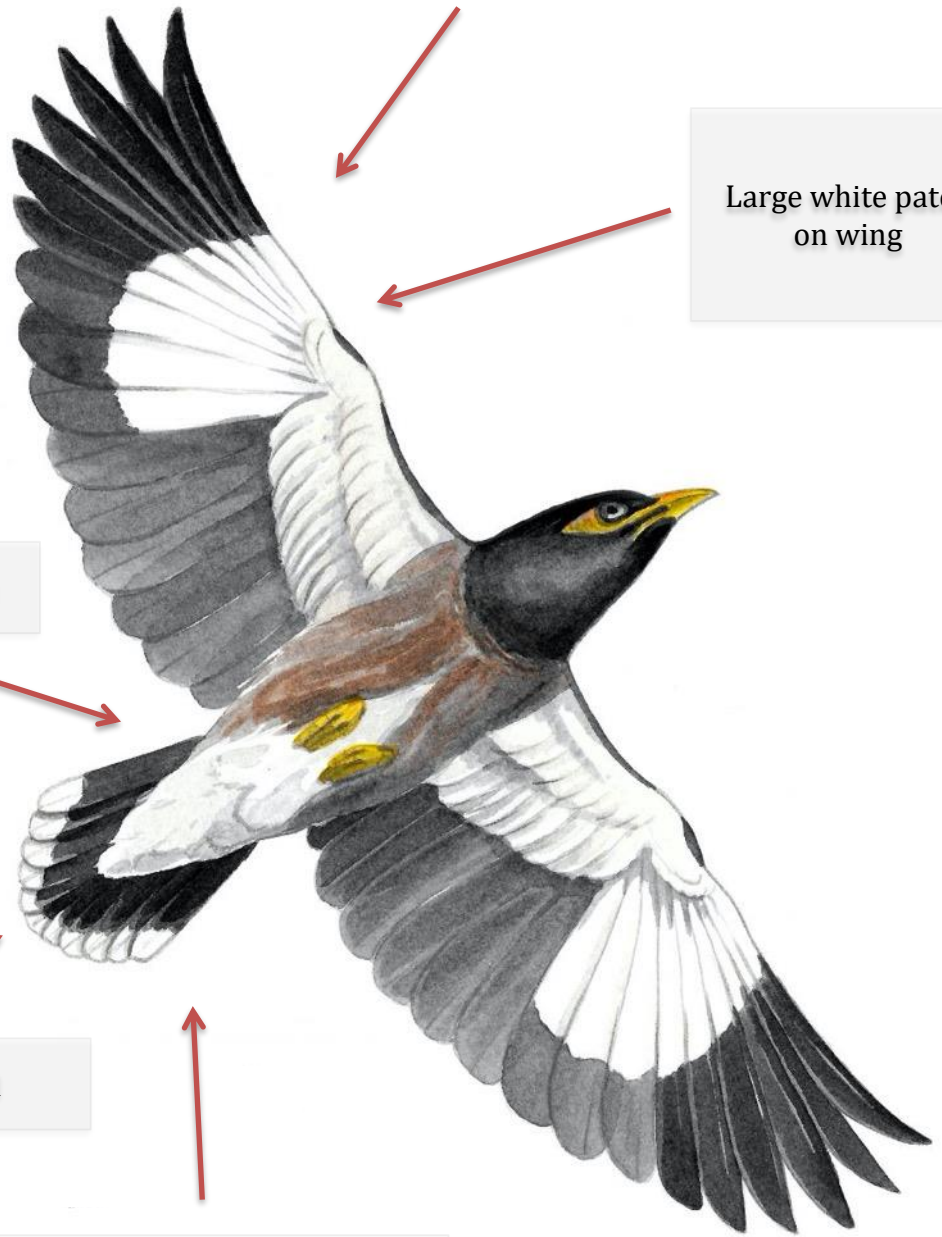
Average wing span 38 cm

Large white patch  
on wing

White undertail  
coverts

White tip and  
edges of tail

Tail length 7.9-9.6 cm



## Similar species

Distinctive characteristics, particularly the striking colouration of the head, make identification of the Common myna fairly easy even for an inexperienced observer.

### ***Identification in the field***

Correct identification in the field is facilitated by the fact that the Common myna is known for its extrovert behaviour and keeping close to humans. This is likely to extend the time of observation and to reduce its distance, allowing detailed examination of the bird perching or walking on the ground before it takes flight. When observed in such favourable conditions the adult Common myna it is very unlikely to be confused with any native European bird. Due to similar size, body proportions, yellow bill and generally dark plumage, the Common myna may remotely resemble the Common starling (*Sturnus vulgaris*) and the Spotless starling (*S. unicolor*). However, the three species could only potentially be misidentified in a long-distance encounter or one that occurs over a short time.







The time available for identification of a flying Common myna may be restricted, as its flight is fast and direct. The type of flight is not very characteristic, with bursts of wing flapping alternated with short gliding intervals, thus resembling many other European birds. If the head pattern cannot be clearly seen, the most distinctive characteristics in the Common myna flying are large white patches covering roughly half of the wings, both on the bottom and upper parts. Such conspicuous wing pattern is not found in any European bird of a similar size and could only be mistaken with species that are not native to Europe, where they are exceptionally recorded in the wild as escapees from captivity.

The Common myna nests in various types of hollows, including natural tree holes and artificial cavities in human-made structures. The nest is built of twigs, grass and a variety of rubbish. In general, the nest itself is not very characteristic and, combined with its inaccessibility, not very useful in identification of the species utilising it. However, the Common myna is known for fiercely defending its breeding sites, thus the presence of adult birds near the nest is unlikely to remain undetected.

### ***Identification in trade***

The same consideration reported above for the identification of birds in the field may refer to caged individuals, both adult and juvenile, that may be traded. In contrast, eggs of the Common myna, that may potentially also be the object of trade in Europe, can be difficult to distinguish from eggs of a few native European species, including the Common and Spotless starling, and the Song thrush (*Turdus philomelos*).

As far as adult birds are concerned, misidentification, however unlikely, could potentially be taken into account only with species that are not native to Europe. In the example below the key distinguishing features of the Common myna are compared to those of species that are kept as pets and traded in Europe, but have usually not been recorded in the wild on the European continent, or there were only single records or small populations, like in the case of the Jungle myna (*Acridotheres fuscus*), the Bank myna (*Acridotheres ginginianus*) and the Crested myna (*Acridotheres cristatellus*).

<p>Common myna</p>	<p>Hill myna <i>Gracula religiosa</i> Sri Lanka hill myna <i>G. ptilogenys</i><sup>1</sup></p>
 <p>Restricted yellow parts on the head No wattles Bill yellow and slender Head rounded</p>	 <p>Extensive yellow parts on the head Fleshy yellow wattles Bill orange-and-yellow and massive Head flattened</p>
<p>Great myna (White-vented myna) <i>Acridotheres grandis</i></p>	<p>Jungle myna <i>Acridotheres fuscus</i></p>
 <p>No bare skin on the head Crest on the forehead</p>	 <p>No bare skin on the head Crest on the forehead Dark base of the bill</p>
<p>Bank myna <i>Acridotheres ginginianus</i></p>	<p>Crested myna <i>Acridotheres cristatellus</i></p>
 <p>Bare skin on the head red Bill red Eye red</p>	 <p>No bare skin on the head Crest on the forehead Bill pale Eye orange to red</p>

<sup>1</sup> The Hill myna and the Sri Lanka Hill myna look very similar (they were previously considered to belong to the same species); only the Hill myna is illustrated

## Common names

BG	Обикновена майна
HR	-
CS	Majna obecná
DA	Almindelig mynah
NL	Treurmaina
EN	Common myna
ET	Mainakuldnokk
FI	Pihamaina
FR	Martin triste
DE	Hirtenmaina
EL	Κοινή μάλια
HU	Pásztormejno

GA	Míona coiteann
IT	Maina comune
LV	Parastā maina
LT	Paprastoji maina
MT	Il-majna
PL	Majna brunatna
PT	Mainá-indiano
RO	Myna indiană
SK	Škorec hnedý
SL	Žalostna majna
ES	Miná común
SV	Brun majna

## Key references

CABI, 2009. *Acridotheres tristis*. In: Invasive Species Compendium. Wallingford, UK: CAB International. [www.cabi.org/isc](http://www.cabi.org/isc) [Accessed 24 August 2020]

Global Invasive Species Database (2020) Species profile: *Acridotheres tristis*. Downloaded from <http://www.iucngisd.org/gisd/speciesname/Acridotheres+tristis> on 24-08-2020.

# *Arthurdendyus triangulatus*

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New Zealand flatworm

## Synonyms

*Artioposthia triangulata*

*Geoplana triangulata*

## Species ID

Kingdom: Animalia

Phylum: Platyhelminthes

Class: Rhabditophora (previously Turbellaria)

Order: Tricladida

Family: Geoplanidae

Genus: *Arthurdendyus*

Species: *Arthurdendyus triangulatus*

Authority: (Dendy, 1894)



## General description:

Terrestrial flatworm (also known as a planarian) is most commonly found resting in a flat spiral on a bed of mucus on the soil surface under rocks, wood, plastic or other debris. The flatworm body shape is that of a dorso-ventrally flattened strap, smooth and non-segmented. Viewed from above, the flatworm is coloured liver brown, although the shade varies from light brown to purple brown, with a marginal edge coloured beige, flecked with grey-brown. The colour of the marginal edge extends to the whole ventral surface of the flatworm. The New Zealand flatworm is nocturnal, so when uncovered during the day, the flatworm typically uncurls and extends its body. The flatworm body can therefore lengthen and thin substantially. When extended, the anterior head is pointed and tinged with pink, with a row of minute black eyespots down each side. The flatworm is covered in mucus and is sticky to touch. Egg capsules are often found beside resting flatworms and are shiny black featureless ovoids.

**Size:** Adult *A. triangulatus* typically measure 50 – 200 mm in length and 10 – 20 mm width, depending on the state of body extension. The size of the flatworm can vary depending on food availability, with starved flatworms reabsorbing tissues and shrinking. Egg capsules can vary from 2.5 to 8.5 mm length.



## Distinctive characteristics

Typical resting position is a flat spiral. Body is flat, smooth and non-segmented. The flatworm is sticky to touch.

The colour of the dorsal surface is brown, varying from light brown to purple brown.

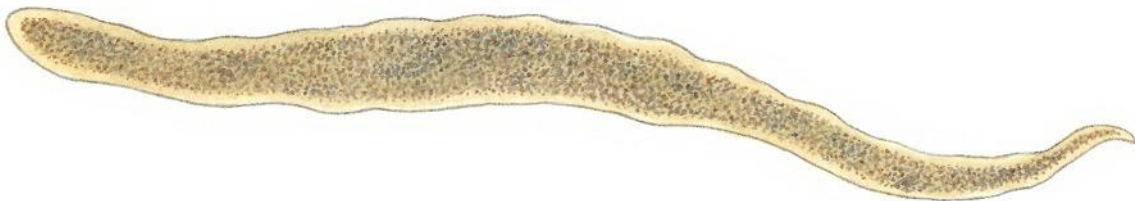


The body has a pale marginal fringe around the dorsal surface edge, coloured beige to light brown with grey-brown flecks.

The ventral surface of the flatworm is the same colour as the marginal fringe.



Egg capsules (also called cocoons) are glossy black ovoids. Their size can vary from 2.5 to 8.5 mm in length and 2.4 to 6.0 mm width. The egg capsules contain about 4-5 juveniles and milky white fluid. The chitinous casing is thin and plastic-looking. Empty and collapsed egg capsules are also commonly seen.



*Arthurdendyus triangulatus* moves by backward waves of muscular contraction. From the resting position, the flatworm first extends the anterior head, with the rest of the body following. The flatworm's body is highly flexible and when fully extended can be elongate and thin. Although it does not burrow, its flexible and extendable body can penetrate cracks and crevices in the soil allowing it to follow earthworm burrows.



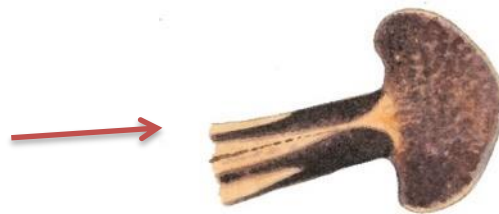
## Similar species (other terrestrial flatworms)

*Arthurdendyus triangulatus* may be confused with other terrestrial flatworm species, which may be native or also non-native/alien invasive. Native terrestrial flatworms in Europe mostly belong to the genera *Microplana* or *Rhynchodemus* and are usually smaller than adult *A. triangulatus*, at <30 mm length, with more cylindrical bodies.

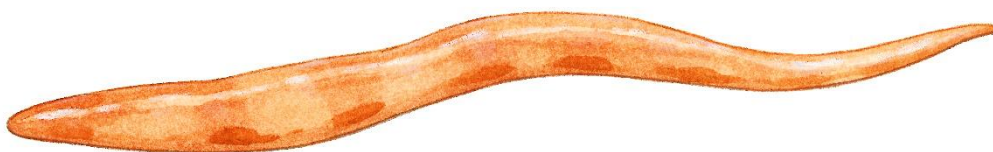
Larger flatworms, which are likely to be non-indigenous, can be distinguished from *A. triangulatus* by head shape, colouration and size.

**Other non-native/alien invasive flatworms also pose a risk to the environment and should be reported to the authorities for specialist species identification.**

Often found in hothouses, *Bipalium* spp. (non-native to Europe) have distinctive shovel-shaped heads.



The 'Australian flatworm' (*Australoplana sanguinea*), also non-native to Europe, is a similar shape to *A. triangulatus* but is orange.



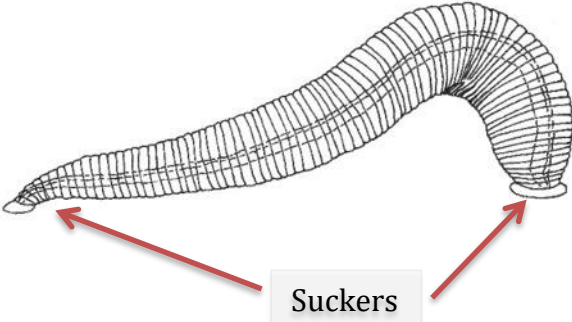
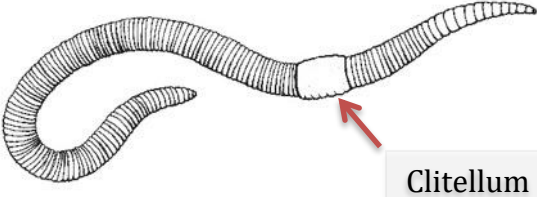
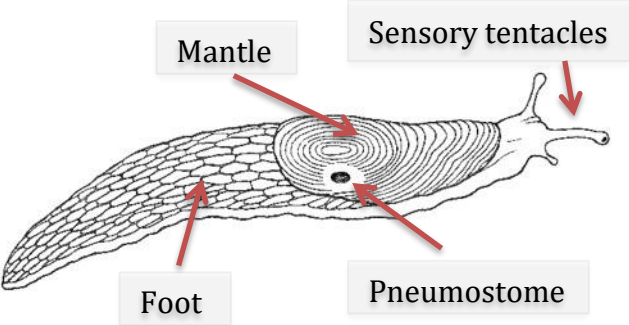
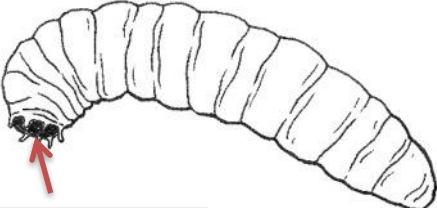
Some other species have longitudinal stripes: for example, *Obama nungara*, a non-native/alien invasive species from South America.



### Similar species (other soil fauna)

Terrestrial flatworms may be confused with earthworms, insect larvae, leeches and slugs. The flatworm may be distinguished from these other soil fauna by its flattened body and absence of external features. Egg capsules could be confused with some seeds (e.g. daffodil seeds) but are crushable.

The key characteristic distinguishing *A. triangulatus* from earthworms, insect larvae and leeches is the lack of segmentation. The flatworm's body is smooth and whilst the skin may occasionally appear wrinkled (especially if dehydrated), there is no transverse segmentation. The absence of sensory tentacles, mantle and pneumostome would distinguish slugs from flatworms.

<p>Leech (e.g. <i>Trocheta subviridis</i>)</p>  <p>Suckers</p> <p>Body segmented and rounded, with anterior and posterior suckers.</p>	<p>Earthworm (e.g. <i>Lumbricus terrestris</i>)</p>  <p>Clitellum</p> <p>Body segmented, long and cylindrical. Usual colour is red to pink. In mature earthworms, the saddle (or clitellum) is noticeable in the anterior third of the body.</p>
<p>Slug (e.g. <i>Deroceras reticulatum</i>)</p>  <p>Mantle</p> <p>Sensory tentacles</p> <p>Foot</p> <p>Pneumostome</p> <p>Body rounded and divided into foot and mantle. Sensory tentacles on the head. Breathing hole (or pneumostome) visible on the right side of the mantle.</p>	<p>Insect larvae (e.g. <i>Tipula paludosa</i>)</p>  <p>Spiracular lobes</p> <p>Body segmented and cylindrical. Mouthparts, legs and other appendages (in this case spiracular lobes and anal papillae) often apparent.</p>

## Common names

BG	Новозеландски плосък червей
HR	Novozelandski pljosnati crv
CS	Ploštěnka Novozélandská
DA	Newzealandsk fladorm
NL	Nieuw-Zeelandse platworm
EN	New Zealand flatworm
ET	Uus-meremaa lameuss
FI	Uudenseelannin lattana
FR	Ver plat de Nouvelle-Zélande
DE	Neuseelandplattwurm
EL	Πλατυέλμινθος της Νέας Ζηλανδίας
HU	-

GA	leithphéist Nua-Shéalannach
IT	verme piatto della Nuova Zelanda
LV	-
LT	-
MT	il-planarja ta' New Zealand
PL	-
PT	platelminto-da-Nova-Zelândia
RO	-
SK	-
SL	-
ES	planaria terrestre de Nueva Zelanda
SV	Nyzeeländsk plattmask

## Key references

CABI, 2019. *Arthurdendyus triangulatus* (New Zealand flatworm). In: Invasive Species Compendium. Wallingford, UK: CAB International. [www.cabi.org/isc](http://www.cabi.org/isc).

Cannon, RJC, Baker, RHA, Taylor, MC, Moore, JP, 1999. A review of the status of the New Zealand flatworm in the UK. *Annals of Applied Biology*, 135: 597-614.

Jones, HD, 1998. The African and European land planarian faunas, with an identification guide for field workers in Europe. *Pedobiologia*, 42: 477-489.

Jones, HD, 2005. Identification of British land flatworms. *British Wildlife*, February 2005: 189-194.

Willis, RJ, Edwards, AR, 1977. The occurrence of the land planarian *Artioposthia triangulata* (Dendy) in Northern Ireland. *Irish Naturalists' Journal*, 19: 112-116.

# *Gymnocoronis spilanthoides*

Senegal tea plant

## Synonyms

*Alomia spilanthoides* D.Don ex Hook.,  
*Gymnocoronis attenuata* DC.,  
*Gymnocoronis subcordata* DC.,  
*Piqueria attenuata* (DC.) Gardner,  
*Piqueria subcordata* (DC.) Gardner

## Species ID

Kingdom: Plantae  
Phylum: Tracheophyta  
Class: Liliopsida  
Order: Asterales  
Family: Asteraceae  
Genus: *Gymnocoronis*  
Species: *Gymnocoronis spilanthoides* (D.Don ex Hook. & Arn.) DC



## General description:

Emergent amphibious aquatic perennial herb, either forming upright bushes up to 1.5 m tall, tangled sprawling floating mats or occasionally fully submerged in shallow water. Plants reproduce by seed (flowers are pollinated by insects) and vegetative fragmentation, with detached stems rooting at the nodes and thus forming new colonies. Stems are pale green (rarely reddish), either round or six- to eight-angled in cross section, erect or scrambling with hollow internodes, inflated and buoyant. Leaves lanceolate or ovate, opposite, serrate with wavy margins, veins pinnate. Submerged foliage usually entire but wavy margins, petiolate. Inflorescence glandular hairy, terminal, a cyme of capitula (flowerheads).

**Size:** Stems up to 150 cm tall and 1-2 cm thick. Emergent leaves 50 -200 mm long, 25 -75 mm wide, submerged leaves 10 – 70 mm long.

## Distinctive characteristics

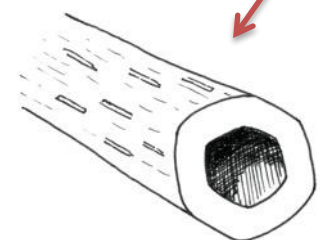


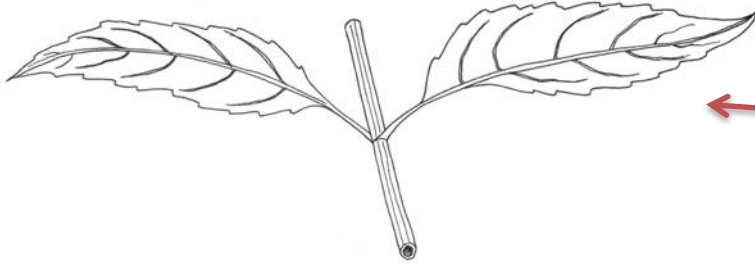
Inflorescence glandular hairy, terminal, a cyme of capitula (flowerheads). Capitula discoid, with white (or pinkish) florets, 3.5 to 4 mm long with conspicuous white to pinkish styles, subtended by a single row of green involucral bracts, 15 to 20 mm across, highly scented and very attractive to butterflies.

Leaves lanceolate or ovate, opposite, 50 to 200 mm long 25 to 75 mm wide, serrate with wavy margins, veins pinnate. Submerged foliage usually entire but wavy margins, petiolate, 10 to 70 mm long.

Stem: round or six- to eight-angled in cross section, erect or scrambling with hollow internodes, inflated and buoyant.

Submerged stem rooting at the nodes, producing shoots that result in new plants when fragmented





Leaves: lanceolate or ovate, opposite, 50 to 200 mm long 25 to 75 mm wide, serrate with wavy margins, veins pinnate but almost invisible.

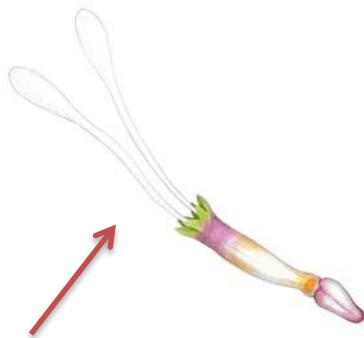


Inflorescence: a terminal cyme of flowerheads.

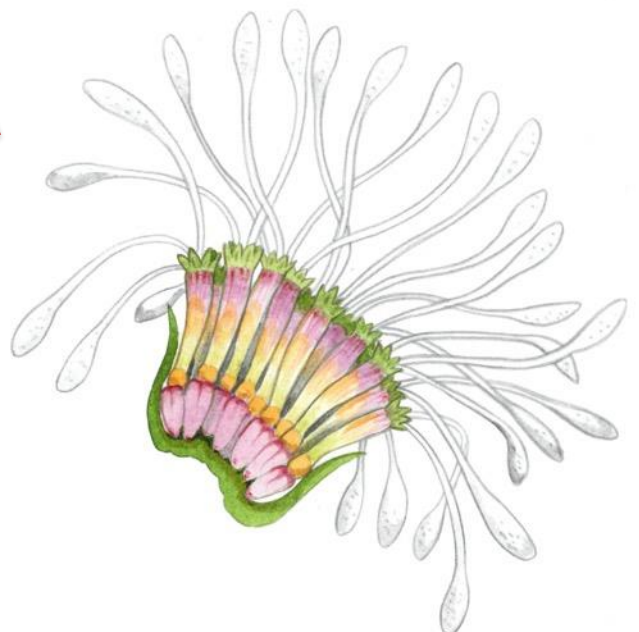


Plants in trade.

Flowerheads discoid, with white (or pinkish) florets, 3.5 to 4 mm long with conspicuous white to pinkish styles, subtended by a single row of green involucre bracts, 15 to 20 mm across, highly scented and very attractive to butterflies.



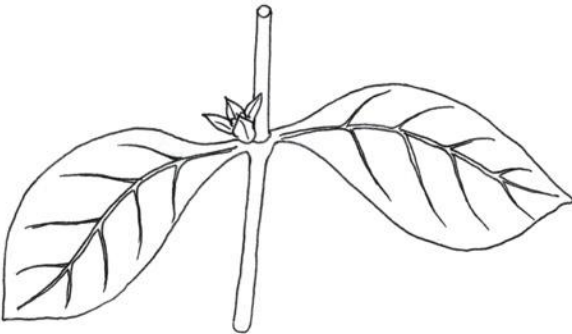
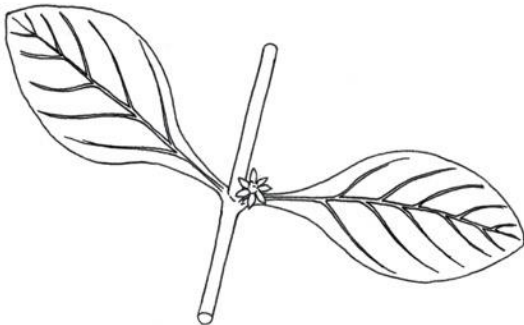
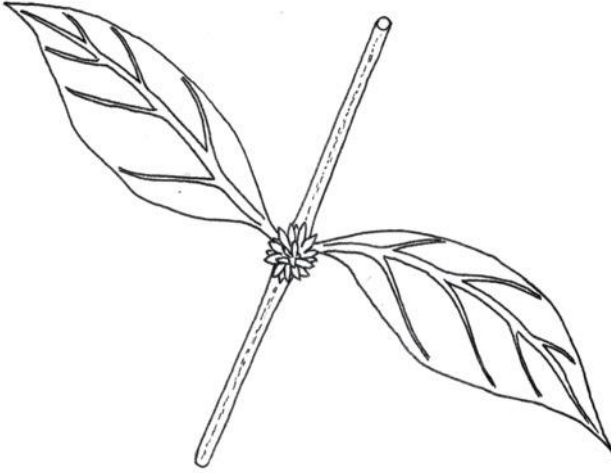

Individual floret showing conspicuous style.



### Similar species in trade

In *Gymnocoronis spilanthoides* the vernation of the leaves is almost invisible. This feature sets it aside from similar looking plants within the aquarium trade. The leaves of both *Ludwigia palustris* (L.) Elliott and *L. repens* Forster are of much smaller dimensions. *Alternanthera reineckii* Briq. is easily distinguished by the colour of its leaves. *Hygrophila corymbosa* (Bl.) Lindau (syn. *Nomaphila stricta* (Vahl) Lindau) has a much more pronounced venation and a rectangular stem.

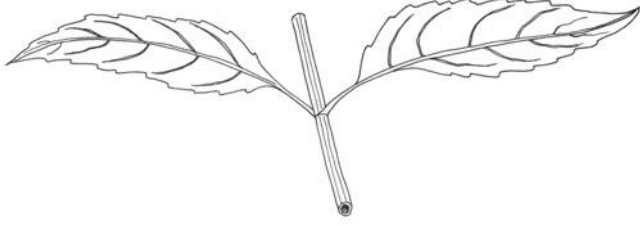
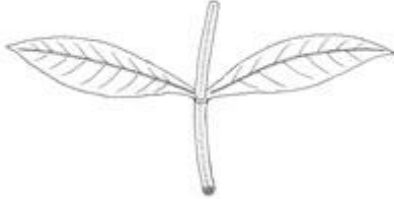



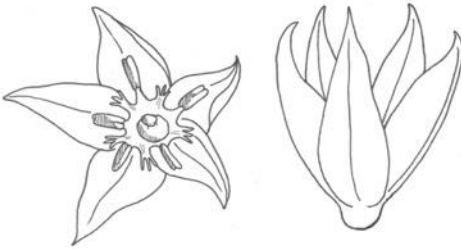
Details of some similar looking species with opposite leaves that are common in the aquarium trade are provided below.

<i>Ludwigia palustris</i>	<i>Ludwigia repens</i>
 <p data-bbox="172 1178 778 1285">Perennial plant with opposite leaves 3-5 cm long, and solitary sessile flowers lacking petals in the leaf axils.</p>	 <p data-bbox="826 1160 1401 1303">Perennial polymorphic species with opposite oval leaves 4-5 cm long, and solitary sessile flowers with tiny petals in the leaf axils.</p>
<i>Alternanthera reineckii</i>	<i>Hygrophila corymbosa</i>
 <p data-bbox="169 1899 785 2042">Perennial amphibious species, several forms are known, the most common in trade being characterised by pink or purple leaves about 10 cm long.</p>	 <p data-bbox="820 1899 1407 2042">Perennial amphibious species, several forms are known, varying in shape and dimensions of leaves 10-20 cm long and 3-7 cm wide with a distinctive venation.</p>



### Similar species in the field

Senegal tea may be confused with alligator weed (*Alternanthera philoxeroides*) due to its general appearance as an aquatic plant rooted along the water line with entire, elliptic opposite leaves and white, globose inflorescences, though for alligator weed the inflorescences are more compact and the leaves are shorter.

<i>Gymnocoronis spilanthoides</i>	<i>Alternanthera philoxeroides</i>
 <p data-bbox="233 936 766 972">Leaf blade and petiole clearly separate</p>	 <p data-bbox="906 936 1359 972">Leaf blade descending on petiole</p>
 <p data-bbox="405 1559 593 1592">Inflorescence</p>	 <p data-bbox="1040 1559 1228 1592">Inflorescence</p>
 <p data-bbox="379 1951 619 1980">Individual flower</p>	 <p data-bbox="1018 1951 1257 1980">Individual flower</p>

## Common names

BG	-
HR	Senegalski čaj
CS	-
DA	Senegal teplante
NL	Smalle theeplant
EN	Senegal tea plant
ET	Rändav vesipäsma
FI	Brasilianvesiasteri
FR	Faux hygrophile
DE	Falscher Wasserfreund
EL	-
HU	Mexikói vízibajt

GA	Planda tae Seineagálach
IT	Palla di neve
LV	Senegāla Tēja
LT	-
MT	It-te tas-Senegal
PL	Gymnokoronis dębolistny
PT	Tuna
RO	-
SK	-
SL	Ozkolistni gimnokoronis
ES	Jazmín de bañado
SV	Vattenflockel

## Key references

EPPO (2020) *Gymnocoronis spilanthoides*. EPPO datasheets on pests recommended for regulation. Available online. <https://gd.eppo.int> (<https://gd.eppo.int/taxon/GYNISP/datasheet>)

van Valkenburg, J. (2017) Information on measures and related costs in relation to species considered for inclusion on the Union list: *Gymnocoronis spilanthoides*. Technical note prepared by IUCN for the European Commission.

[https://keys.lucidcentral.org/keys/v3/aquatic\\_plants/](https://keys.lucidcentral.org/keys/v3/aquatic_plants/)

# *Salvinia molesta*

Giant Salvinia, Kariba weed

## Synonyms

*Salvinia adnata* Desv., *Salvinia auriculata* auct. non Aubl. (often traded under this name)

## Species ID

Kingdom: Plantae

Phylum: Pteridophyta

Class: Polypodiopsida

Order: Salviniiales

Family: Salviniaceae

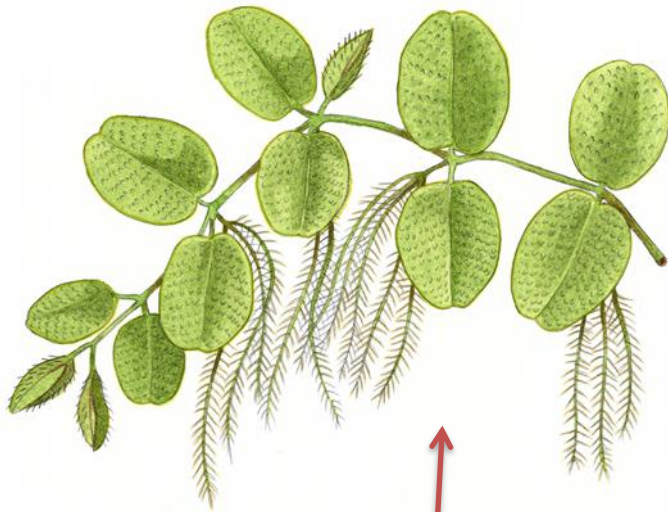
Genus: *Salvinia*

Species: *Salvinia molesta* Mitch.

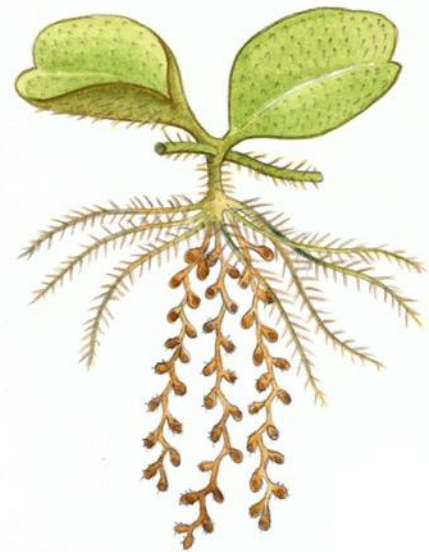


## General description:

Perennial floating aquatic fern, in general it is considered easily recognizable by botanists. The three growth stages (primary, secondary and tertiary), may make identification of the species difficult. Species in the *S. auriculata* complex progress through 3 phenotypes or grow stages, controlled by age, degree of crowding, water turbulence, and other abiotic factors. The small-leaved primary stage is typical of plants invading open water. The secondary form is slightly larger with leaves slightly folded, and the tertiary stage is typical of mature stands with larger deeply folded and densely packed leaves. Each node bears 3 leaves, the 2 upper leaves are floating, photosynthetic, entire, elliptic-ovate to rounded, with a distinct midvein, covered with papillae, apices rounded or emarginate and the submerged leaf is finely divided into linear segments (feathery), segments appearing as and functioning as roots. Leaves are mat-forming, mat to 2.5 cm thick (or much thicker, depending on local conditions such as water current, waves, etc.) Papillae either fairly uniform in size throughout, or inner longer than outer. Lower leaves submerged, subsessile or petiolate, with or without sporocarps (tissue where spores are produced).



Primary Juvenile Phase: leaves small ( $\pm 10$  mm in diameter) and lie flat on the water surface (survival stage, where nutrient conditions are low).



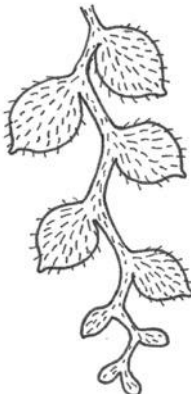

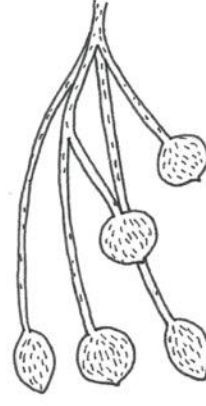
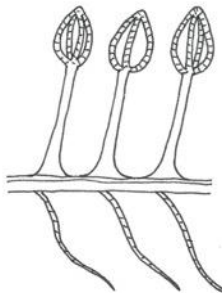
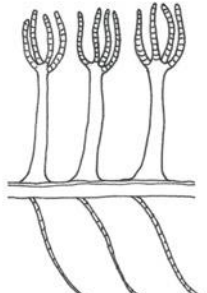
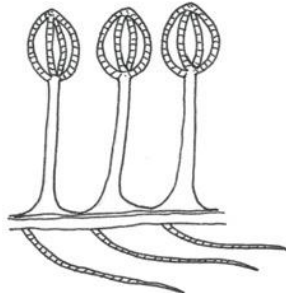
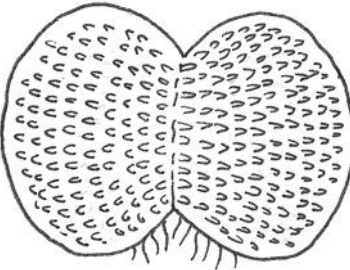
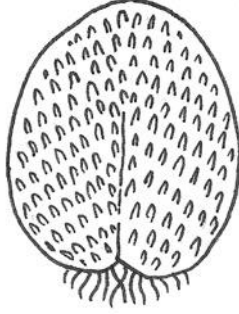
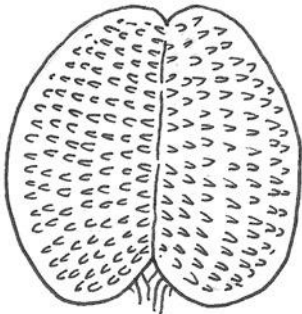
Detail of a fertile node, with sori organised in a spike (also called sorophore). Sori (spore producing organs) sessile or subsessile and non-functional.



Tertiary Growth Phase: leaves  $\pm 38$  mm wide and 25 long. The terminal bud now forms leaves which are compact, almost vertical, and acute folded. (mat stage)

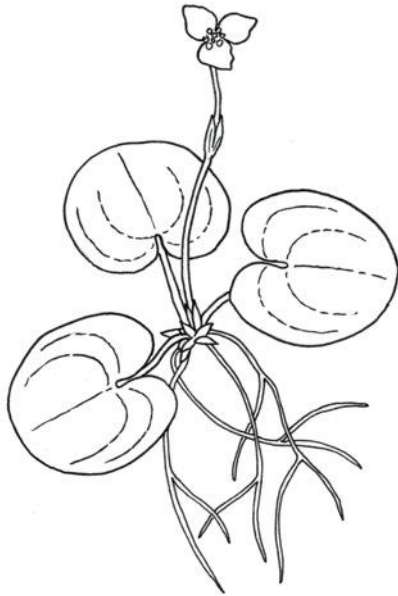
### Similar species (in trade)

Giant Salvinia is often traded as *S. auriculata* or even *S. natans*. So far in Europe all so-called *S. auriculata* in trade turned out to be *S. molesta*. Another non-European species in trade is *Salvinia minima*. This can be easily identified by its in general more modest dimensions, rounded floating leaves and its hairs not being fused at the top. *Salvinia cucullata* that is sometime advertised via internet trade should be easily distinguishable by the presence of simple hairs. Diminutive plants of *Pistia stratiotes*, can be easily distinguished by its leaves being arranged in a rosette, parallel veins and silvery hairs below. Although there are reported morphological differences in the floating fronds of *S. molesta* and *S. auriculata* Aubl., they are best distinguished based on the sorophore and fertility of the sori. In *S. molesta* the sori are sessile with sporangia not producing spores whereas in *S. auriculata* the sori are long-pedicellate and functional.

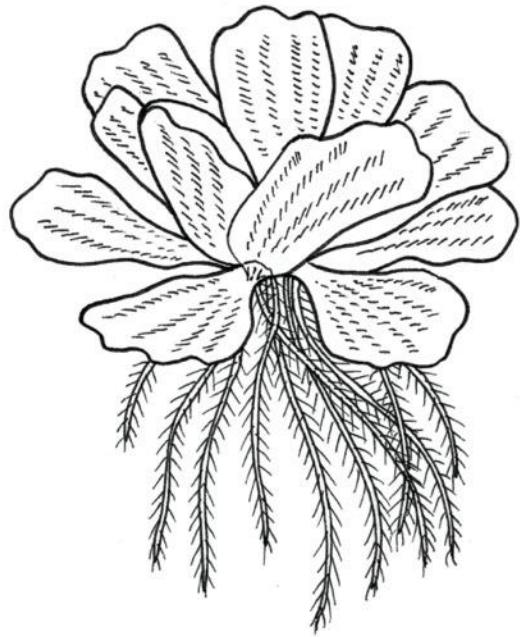
<i>Salvinia molesta</i>	<i>Salvinia minima</i>	<i>Salvinia auriculata</i>
 <p>sorophore</p>	 <p>sorophore</p>	 <p>sorophore</p>
 <p>Cross section leaf</p>	 <p>Cross section leaf</p>	 <p>Cross section leaf</p>
 <p>Leaf view from above</p>	 <p>Leaf view from above</p>	 <p>Leaf view from above</p>

## Other floating plants

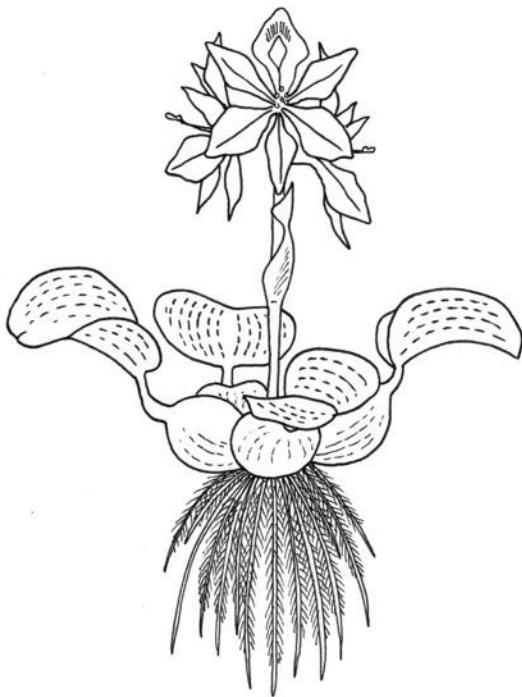
In comparison to other native or non-native floating aquatic plants the difference is in their leaves being arranged in a rosette and the individual plants being interconnected by stolons.



*Hydrocharis morsus-ranae*



*Pistia stratiotes*







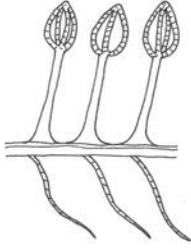
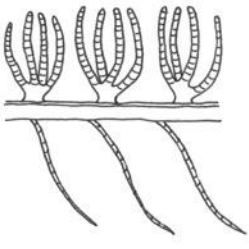
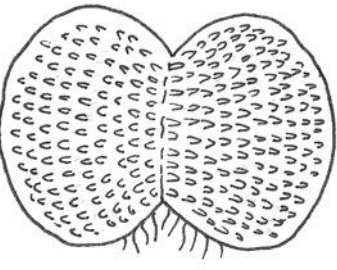
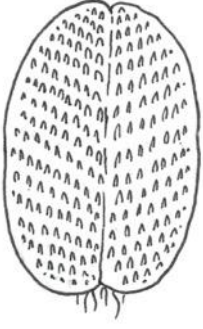
*Eichhornia crassipes*



*Limnobium laevigatum*

### Similar species (in the field)

Giant Salvinia may be mistaken for the European species, Floating Water-moss (*Salvinia natans*). Giant Salvinia has folded leaves when the plant is fully developed with the hairs fused at the ends. In contrast, the leaves of Floating Water-moss are never folded and the hairs are all bent in the same direction, never fused. Giant Salvinia is often incorrectly traded as *S. natans*.

<i>Salvinia molesta</i>	<i>Salvinia natans</i>
	
 <p data-bbox="240 1350 703 1384">Node with leaves and sorophores</p>	 <p data-bbox="874 1350 1337 1384">Node with leaves and sorophores</p>
 <p data-bbox="347 1659 592 1693">Cross section leaf</p>	 <p data-bbox="986 1659 1230 1693">Cross section leaf</p>
 <p data-bbox="320 2063 619 2096">Leaf view from above</p>	 <p data-bbox="959 2063 1257 2096">Leaf view from above</p>

## Common names

BG	-
HR	Divovska salvinija
CS	Nepukalka obtížná
DA	Kæmpe salvinia
NL	Grote vlotvaren
EN	Salvinia moss
ET	Suur salviinia
FI	Poimukellussaniainen
FR	Salvinie géante
DE	Schwimmfarn
EL	-
HU	Átellenes rucaöröm

GA	Sailvín mhór
IT	Erba pesce gigante
LV	-
LT	Didžioji plūstis
MT	Is-salvinja ta' barra
PL	Salwinia uciążliwa
PT	Salvina-molesta
RO	Feriga-de-apă-gigantică
SK	Salvinia burinná
SL	Veliki plavček
ES	Oreja de ratón
SV	Jättesimbräken

## Key references

EPPO (2020) *Salvinia molesta*. EPPO datasheets on pests recommended for regulation. Available online. <https://gd.eppo.int> (<https://gd.eppo.int/taxon/SAVMO/datasheet>)

Hill, M.P. and Coetzee, J.A. (2017) Information on measures and related costs in relation to species considered for inclusion on the Union list: *Salvinia molesta*. Technical note prepared by IUCN for the European Commission.

Miranda CV & Schwartsburd PB, 2019. *Salvinia* (Salviniaceae) in southern and southeastern Brazil—including new taxa, new distribution records, and new morphological characters. *Braz. J. Bot* 42, 171–188. <https://doi.org/10.1007/s40415-019-00522-5>

[http://www.q-bankplants.eu/lookalikes/Floating\\_aquatics/Floating\\_aquatics.HTML](http://www.q-bankplants.eu/lookalikes/Floating_aquatics/Floating_aquatics.HTML)

<http://www.q-bankplants.eu/lookalikes/Salvinia/Salvinia.HTML>



# Acacia saligna

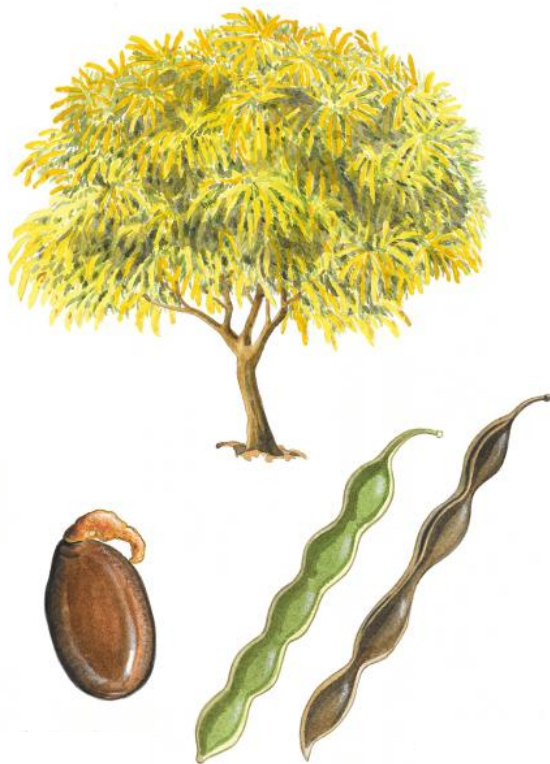
Golden Wreath Wattle, Orange Wattle, Blue-leaved Wattle, Western Australian Golden Wattle

## Synonyms

*Acacia cyanophylla*  
*Acacia lindleyi*  
*Acacia bracteata*

## Species ID

Kingdom: Plantae  
Phylum: Tracheophyta  
Class: Spermatopsida  
Order: Fabales  
Family: Leguminosae (Fabaceae)  
Genus: *Acacia*  
Species: *Acacia saligna*

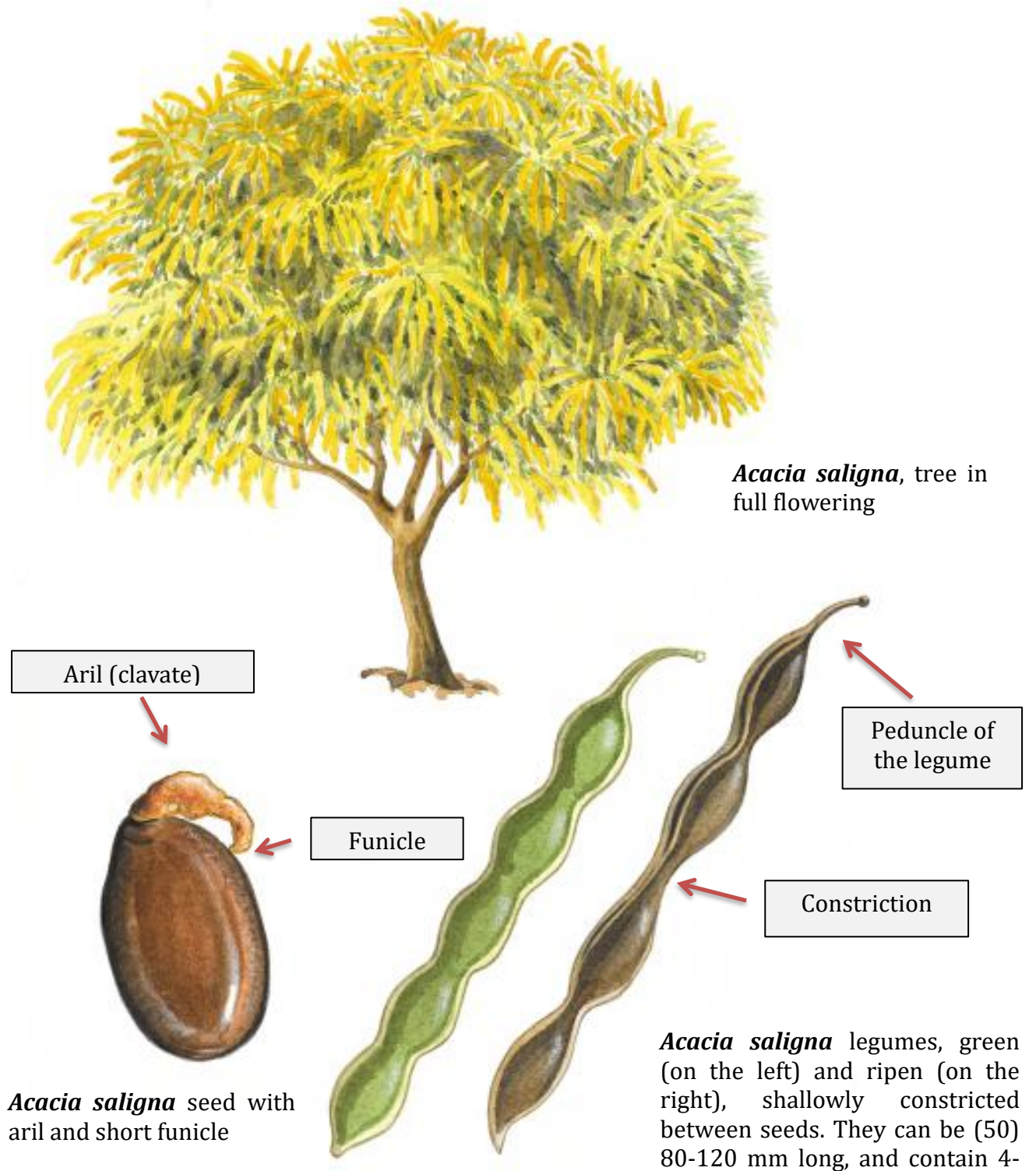


## General description:

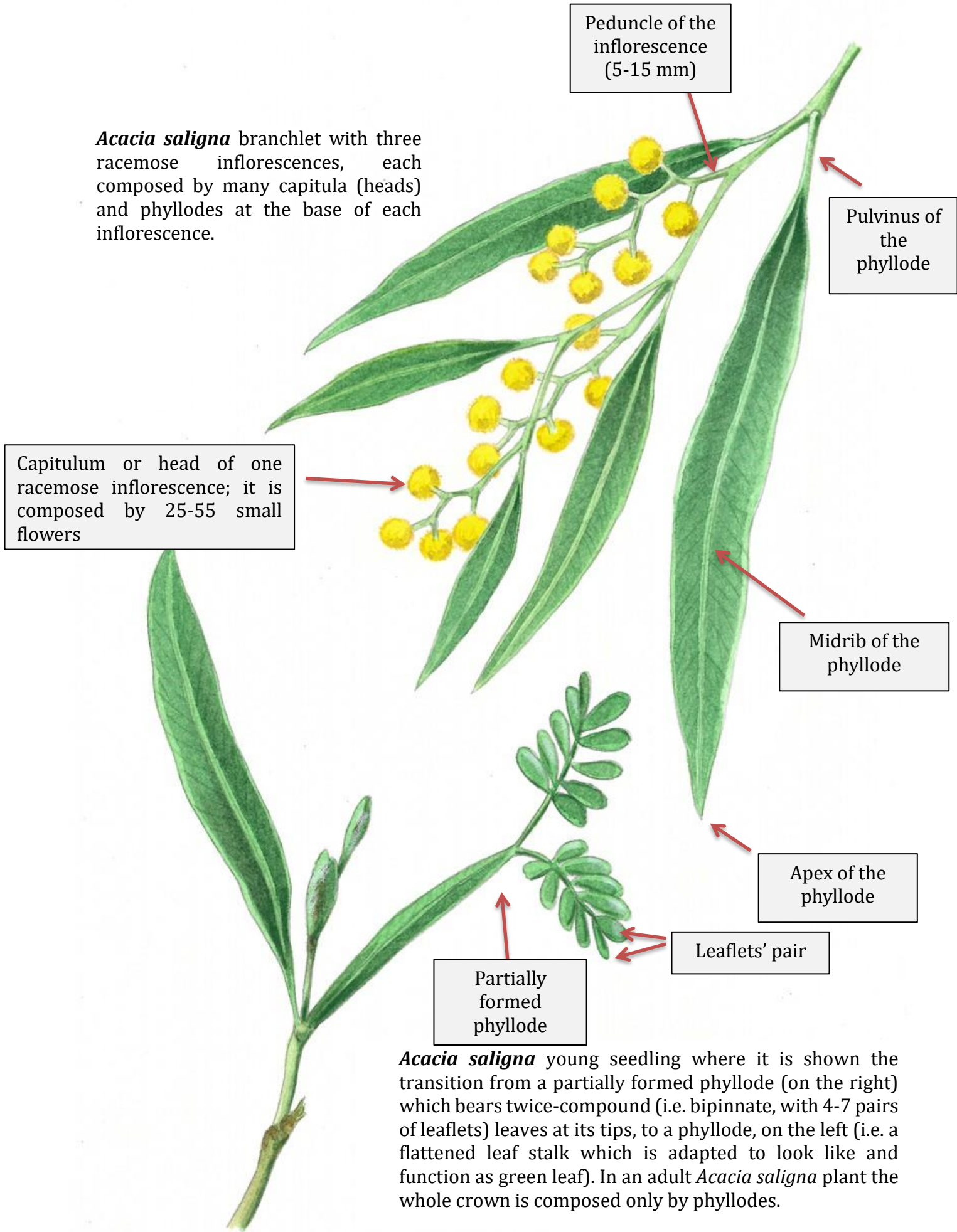
**Shrub or small tree** mostly 2–6 m high. Trunk solitary or diving near base into a few main branches. **Bark** grey to red-brown on branchlets (young branches). Branchlets often pendulous, normally slightly flexuose, often pruinose (especially when young), glabrous. **Phyllodes** (phyllodes are not really leaves but are flattened leaf stalks – petioles – which have adapted to look like and function as green leaves; they are present in *Acacia saligna* and in other *Acacia* species) often pendulous, variable in shape and size, linear to lanceolate, straight to falcate, 70–250 mm long, (2) 4–20 mm wide, often larger towards base of plant, green to glaucous, glabrous, with prominent midrib, finely penninerved (absent on very narrow phyllodes), bluish-green top green, pruinose or not pruinose; **gland** ±disciform, 1–2 mm wide, 0–3 mm above pulvinus (the narrow part at the base of the phyllode, connecting the phyllode to the branch), on upper margin of phyllode; pulvinus mostly 1–2 mm long, coarsely wrinkled. **Flowers** 5-merous; sepals c. 4/5-united. **Inflorescences** mostly 2–10-headed racemes, enclosed when young by imbricate bracts, with bract scars evident at anthesis; raceme axes mostly 3–30 mm long, glabrous; peduncles 5–15 mm long, glabrous; heads globular, mostly 7–10 mm diam. at anthesis and 25–55 flowered, golden. **Legumes** linear, flat, shallowly constricted between seeds, 80–120 mm long, 4–6 mm wide, thinly coriaceous, glabrous. **Seeds** longitudinal, oblong to slightly elliptic, 5–6 mm long, shiny, dark brown to black; **aril** clavate, **funicle** short.

**Size:** *Acacia saligna* is a shrub or small tree mostly 2–6 m high, phyllodes are 70–250 mm long, pods (legumes) 80–120 mm long, 4–6 mm wide, and seeds 5–6 mm long, and 3–3.5 mm wide.

## Distinctive characteristics



*Acacia saligna* branchlet with three racemose inflorescences, each composed by many capitula (heads) and phyllodes at the base of each inflorescence.



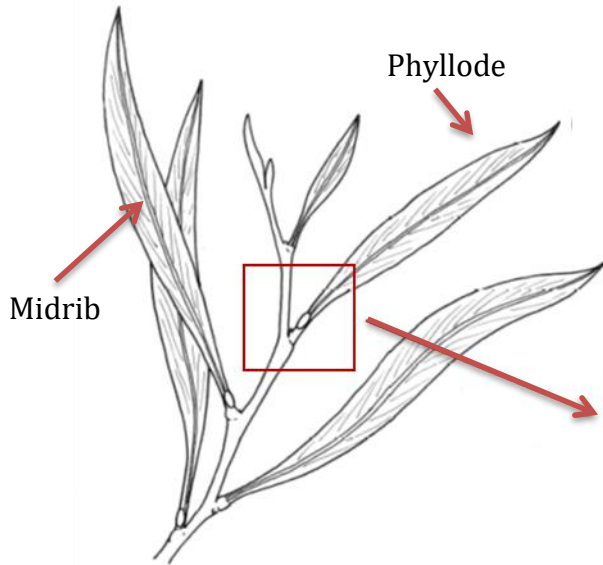
*Acacia saligna* young seedling where it is shown the transition from a partially formed phyllode (on the right) which bears twice-compound (i.e. bipinnate, with 4-7 pairs of leaflets) leaves at its tips, to a phyllode, on the left (i.e. a flattened leaf stalk which is adapted to look like and function as green leaf). In an adult *Acacia saligna* plant the whole crown is composed only by phyllodes.

## Similar species

*Acacia saligna* has largely been traded as seeds or potted plants. In the following, five *Acacia* species that are morphologically similar are described. These five similar species can be found in a number of MS as cultivated (forestry, soil consolidation, ornamental use etc.) or casual or naturalised, and are all available on trade. ***Acacia pycnantha*** differs significantly in its absence of basal raceme bracts (which enclose raceme buds before flowering in *A. saligna*); *A. pycnantha* also has stouter raceme axes and peduncles, conspicuously attenuate phyllode bases with longer pulvini, smaller glands, and glands at a certain distance from the base of the phyllode. The two species (*A. saligna* vs. *A. pycnantha*) also differ significantly in their gum chemistry. *Acacia saligna* is sometimes confused with ***Acacia microbotrya*** and ***Acacia rostelifera*** (with which it is commonly sympatric in some coastal habitats in the native range) but the pods and seeds of these three species are very different (see the table above for further details). ***Acacia provincialis*** was described as a garden hybrid between *A. retinodes* and *A. cyanophylla* (= *A. saligna*), but according to Flora of Australia (2001) this is incorrect, and a revised study on *A. retinodes* by M.C.O'Leary (2007) has shown that *A. provincialis* is not a hybrid and warrants recognition as a distinct species. The fifth species which might be confused with *Acacia saligna* is ***Acacia retinodes***.

Species	Phyllode	Gland	Flowers per head	Heads per inflorescence	Legume	Funicle & aril
<i>A. saligna</i>	Often pendulous, variable in shape and size, linear to lanceolate, straight to falcate, 7–25 cm long, (2–) 4–20 mm wide	More or less disciform, 1–2 mm wide, 0–3 mm above pulvinus (at the base of the phyllode)	25–55	2–10 (12)	Linear, flat, shallowly constricted between seeds, (50) 80–120 mm long, 4–6 mm wide	Funicle short; aril clavate
<i>A. microbotrya</i>	Patent to pendulous, acuminate, narrowly elliptic to oblanceolate, normally falcately recurved, 50–140 mm long, 5–20 mm wide	Not prominent, 5–30 mm above pulvinus	Variable	20–30 (40)	Moniliform to sub-moniliform, to c. 150 mm long, occasionally 200 mm, 6–8 mm wide	Once-folded slender funicle; aril clavate
<i>A. provincialis</i>	Variable, straight to shallowly recurved, narrowly oblanceolate or narrowly elliptic, (90) 100–150 (200) mm long, 15–25 (–35) mm wide, (linear on juvenile plants)	Normally single (rarely 2–4), 0–16 mm above pulvinus, not prominent	Variable	(18) 30–50 (54)	Linear, to 160 mm long, 5–7 mm wide	Funicle 3/4 or more encircling seed, red-brown to blackish; aril clavate
<i>A. pycnantha</i>	Often pendulous, falcately recurved to oblanceolate, 90–150 mm long, 10–35 mm wide	Close to the base of the phyllode (less close than in <i>A. saligna</i> )	40–80 (100)	4–23	Linear, 50–130 mm long, 5–7 mm wide	Funicle shorter than seed, aril clavate
<i>A. retinodes</i>	Variable, oblanceolate to linear, (50) 60–160 mm long, (2) 3–12 (16) mm wide, apex (sub)uncinate	Single on upper margin of phyllode, not prominent	(16) 18–30 (34)	5–10 (12)	Linear, 160 mm long, 8–11 mm wide	Funicle 3/4 or more encircling seed, red-brown to blackish; aril clavate
<i>A. rostelifera</i>	Linear to linear-elliptic or narrowly oblanceolate, 45–115 mm long, 3–17 mm wide,	Not prominent, 4–12 mm above pulvinus, often also at base of mucro	2–9	15–25	Patent to erect, sub-moniliform, to 90 mm long, 5–7 mm wide	Funicle short; aril prominent, twice-folded, orange or red

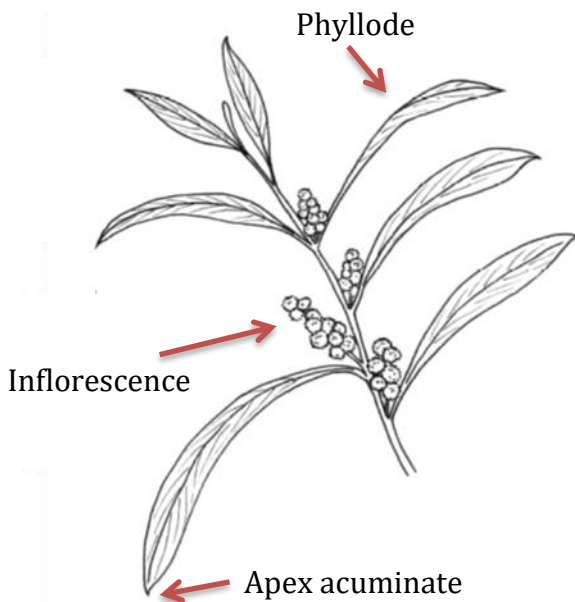
## Branchlets with phyllodes and inflorescences



### *Acacia saligna*

Branchlet with phyllodes. Phyllodes are often pendulous, variable in shape and size, linear to lanceolate, straight to falcate, 70–250 mm long, (2) 4–20 mm wide, often larger towards base of plant, green to glaucous, glabrous, with prominent midrib, finely penninerved.

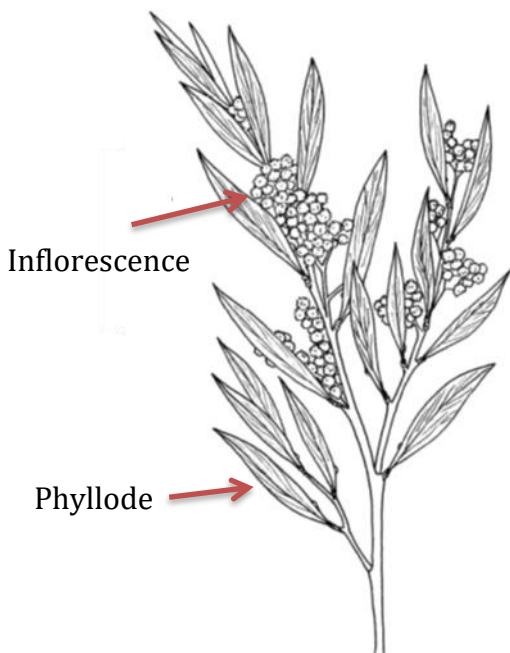
Zoom on the gland, ±disciform, 1–2 mm wide, located 0–3 mm above pulvinus (at the base of the phyllode).



### *Acacia microbotrya*

Branchlet with phyllodes and inflorescences (racemes); raceme axes mostly 10–60 (80) mm long, sparsely to densely covered with yellow or white hairs that are often absent at base of axes; heads showy, globular, 3–6 mm diameter at anthesis, 20–35 (40)-flowered, cream to pale yellow or bright lemon yellow.

Phyllodes patent to pendulous, acuminate, narrowly elliptic to oblanceolate, normally falcately recurved, 50–140 mm long, 5–20 mm wide.

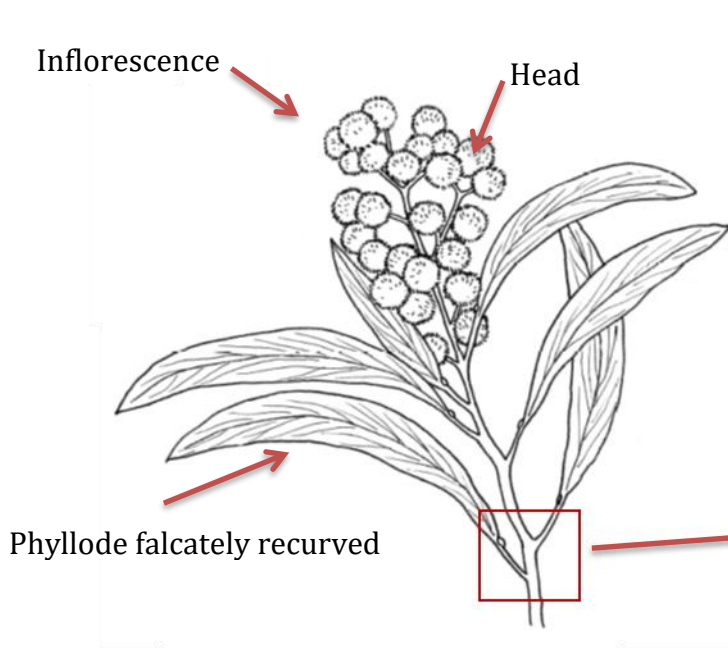


### *Acacia provincialis*

Branchlet with phyllodes and inflorescences (racemes); inflorescences racemose; raceme axes 20–40 (50) mm long; peduncles (3) 4–5 (7) mm long, glabrous; heads globular, (18) 30–50 (54)-flowered, golden to pale yellow.

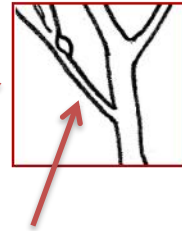
Phyllodes variable, uncrowded on stems (10–20 mm apart), straight to shallowly recurved, narrowly oblanceolate or narrowly elliptic, 100–150 mm long, 15–25 (35) mm wide, (linear, 100–200 mm long and 4–10 mm wide on juvenile plants), grey-green to glaucous, often lightly pruinose, glabrous, 1-nerved per face, obscurely penninerved; gland normally single (rarely 2–4), 0–16 mm above pulvinus, not prominent.

## Branchlet with phyllodes and inflorescences



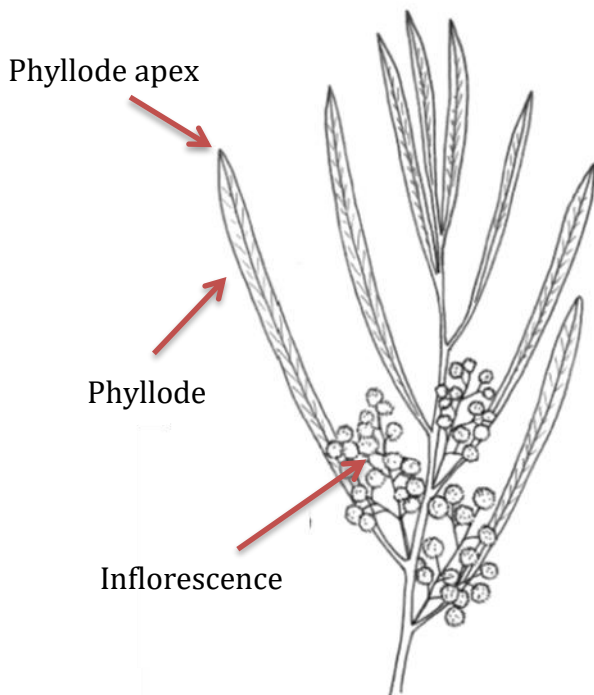
### *Acacia pycnantha*

Branchlet with phyllodes and inflorescences (racemes). Phyllodes often pendulous, falcately recurved to oblanceolate, pulvinus 4–7 mm long, 90–150 mm long and 10–35 mm wide, obtuse to acute, coriaceous, glabrous, with prominent midrib, penninerved. Raceme axes 25–90 mm long, stout, glabrous; peduncles 3–6 mm long, stout, glabrous; heads showy, globular to obloid, densely 40–80 (100)-flowered, bright golden, sometimes lemon yellow.



Zoom on the gland on the phyllode, often slightly exserted, sometimes 2, with the lowermost 3–45 mm above pulvinus.

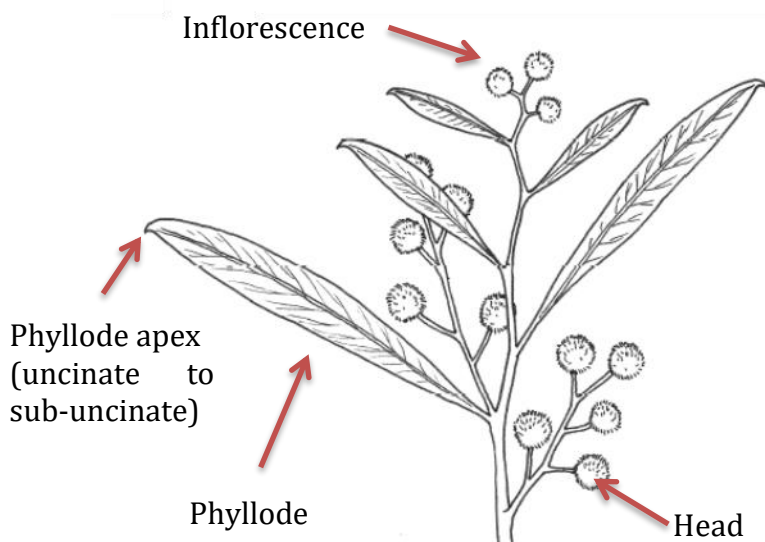
Pulvinus



### *Acacia retinodes*

Branchlet with phyllodes and inflorescences (racemes). Phyllodes variable, crowded on stems (4–10 mm apart), oblanceolate to narrowly oblanceolate or linear, (50) 60–160 mm long, (2) 3–12 (16) mm wide, acuminate, normally uncinete (or sub-uncinate), green to grey-green, not pruinose, glabrous, 1-nerved per face, obscurely penninerved; gland small, 0–3 (–7) mm above pulvinus.

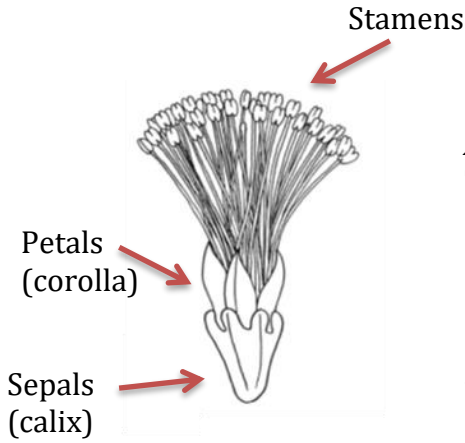
Racemes much shorter than phyllodes, consisting of 5–10 (12) heads, sometimes appearing paniculate towards the ends of the branches; flower-heads pale yellow, c. 18–30-flowered.



### *Acacia rostellifera*

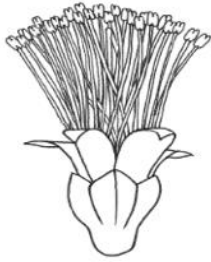
Branchlet with racemose inflorescences (racemes). Phyllodes linear to linear-elliptic or narrowly oblanceolate, 45–115 mm long, 3–17 mm wide, uncinete to sub-uncinate, sometimes eccentrically rostellate, thin, frequently punctulate, glabrous, 1-nerved or imperfectly 2-nerved; lateral nerves obscure; glands not prominent, 4–13 mm above pulvinus, often also at base of mucro. Racemes 3–9-headed, axes 10–30 mm long; peduncles 3–8 (–10) mm long, glabrous; heads globular, 5–7 mm diam., to 10 mm when fresh, sub-dense, 15–25-flowered, golden.

## Flowers



### ***Acacia saligna***

The small bright yellow or golden-yellow (or even orange-yellow) flowers are fluffy in appearance due to the presence of numerous stamens. They mostly have five relatively inconspicuous petals and sepals (5-merous). Calyx not half so long as the corolla, truncate or sinuate-toothed. Petals smooth. Flowers are densely arranged into small globular clusters (7-12 mm across) called heads or capitula with 25-55 flowers.



### ***Acacia microbotrya***

Flowers mostly 5-merous, the rhachis and peduncles when young minutely silky or mealy-tomentose. Calyx very thin, lobes very short or slightly spathulate, often readily separating into distinct sepals. Petals glabrous or minutely pubescent, the midribs prominent.



### ***Acacia provincialis***

Flowers 5-merous; sepals clearly united,  $\frac{1}{2}$ – $\frac{2}{3}$  petal length, 5-lobed, lobes thickened and ciliate, oblong-oblancheolate to spathulate, with silver-golden hairs; petals 1.5–1.8 mm long, single nerved, glabrous, but thickened and papillose at summit.



### ***Acacia pycnantha***

Flowers, mostly 5-merous, the rhachis and peduncles rather stout. Calyx shortly lobed, ciliate, usually about  $\frac{2}{3}$  as long as the corolla. Petals smooth, glabrous, distinct or readily separating. Flowers are densely arranged into small globular clusters (6-10 mm across). The small globular flower clusters each contain 40-80 (100) flowers.



### ***Acacia retinodes***

Flowers 5-merous; sepals clearly united,  $\frac{1}{3}$ – $\frac{1}{2}$  petal length, oblong-oblancheolate to spathulate, with silver-cream hairs; petals 1.2 mm long, coated with short white hairs and papillose hairs lining edge and at summit, 1-nerved.

**Disclaimer** – *A. rostelifera* flower is not shown, as it was not possible to find any reference image or herbarium sample. In *A. rostelifera* flowers are 5-merous, sepals united, calyx short, truncate; petals quite smooth, without the prominent midribs of *A. saligna*.

## Legumes



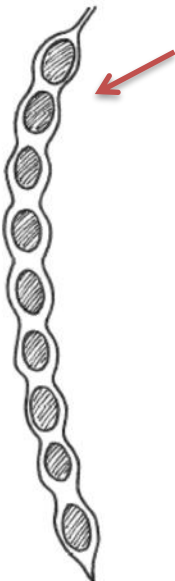
### ***Acacia saligna***

Legume narrow and very elongated, (50) 80-140 mm long and 4-6 mm wide, hairless (i.e. glabrous) and somewhat flattened. Legumes vary from being straight to strongly curved, and are slightly constricted between each of the seeds. They are green in colour when young and sometimes sparsely covered in a white powdery substance (i.e. pruinose), but turn light brown or brown in colour as they mature. Legumes have hardened paler-coloured margins and contain 4-10 seeds.



### ***Acacia pycnantha***

Legume 50-160 mm long, and 5-7 mm wide, hairless (i.e. glabrous) and somewhat flattened. It is straight or slightly curved and sometimes slightly constricted between each of the seeds. Green in colour when young and turn brown or dark brown as they mature.



### ***Acacia microbotrya***

Legumes moniliform to sub-moniliform, 90-200 (240) mm long, (5) 6-9 mm wide, thinly coriaceous, reddish brown to blackish (dry), glabrous.



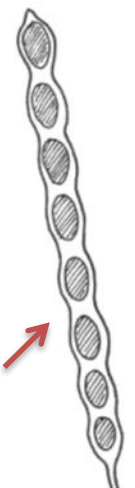
### ***Acacia retinodes***

Legumes linear, flat, shallowly constricted between seeds, 80-120 mm long, 4-6 mm wide, thinly coriaceous, glabrous.



### ***Acacia provincialis***

Legumes linear, to 160 mm long, 5-7 (8) mm wide, firmly chartaceous



### ***Acacia rostelifera***

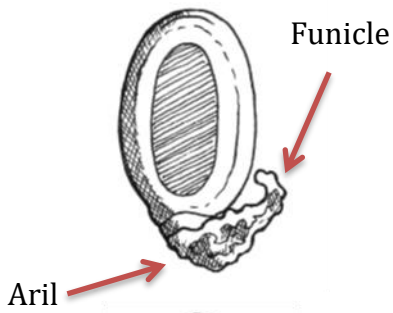
Legume patent to erect, sub-moniliform, to 90 mm long, 5-7 mm wide, constricted between the seeds, with up to 10 articles, firmly crustaceous, breaking readily at constrictions.



## Seeds

### *Acacia saligna*

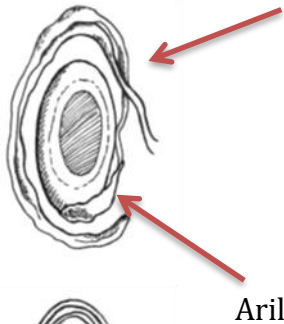
The seeds are longitudinally aligned in the legume, they are dark brown to black in colour, oblong or oval (i.e. elliptic) in shape and have a shiny appearance. These seeds (5-6 mm long and 3-3.5 mm wide) also have a yellowish, fleshy, club-shaped structure (i.e. clavate aril) attached to them; funicle short.



Funicle

### *Acacia microbotrya*

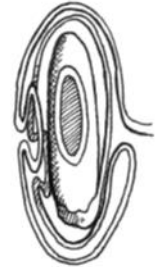
Seed oblong to elliptic, 5-8 mm long, 3-5 (6) mm wide, sub-shiny, dark brown to black, smooth or minutely pitted,  $\frac{1}{2}$  or more commonly wholly encircled by a light brown to dark red-brown, slender once-folded funicle; aril clavate.



Aril

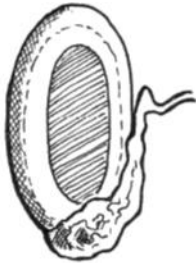
### *Acacia provincialis*

Seeds longitudinal, oblong to oblong-elliptic, 4-6 mm long, dark brown to black; funicle  $\frac{3}{4}$  or more encircling seed, red-brown to blackish; aril clavate.



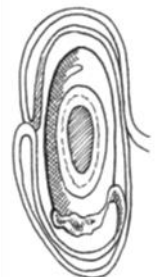
### *Acacia pycnantha*

Seeds longitudinal,  $\pm$ oblong, 5.5-6 mm long, somewhat shiny, black; aril clavate, funicle not so long as the seed, thickened upwards, either not folded, or with 1 or 2 very short folds at the base.



### *Acacia retinodes*

Seeds longitudinal, oblong to oblong-elliptic, 4-6 mm long, dark brown to black; funicle  $\frac{3}{4}$  or more encircling seed, red-brown to blackish; aril clavate.



### *Acacia rostelifera*

Seeds longitudinal, oblong to widely elliptic, 4-6 mm long, 3-4 mm wide, dull or shiny, dark brown; funicle short, expanded into a terminal orange or red prominent aril twice-folded below seed and attached centrally to it.



### Common names

BG	No common name
HR	akacija
CZ	akácie modrolistá
DA	tåre-akacie
NL	wilgacacia
EN	golden wreath wattle
ET	pajuakaatsia
FI	siniakaasia
FR	mimosa à feuilles de Saule
DE	Weidenblatt-Akazie
EL	siauralapè akacija
HU	No common name

GA	acáise shailduilleach
IT	Acacia saligna
LV	vītollapu akācija
LT	siauralapè akacija
MT	l-akaċja
PL	No common name
PT	acácia
RO	salcâm saligna
SK	akácia vrbovitá
SL	vrbolistna akacija
ES	acacia de hoja azul
SE	tårakacia

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