

Odonata - A key to Australian families

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[Suborder key](#)

[Key to Zygoptera](#)

[Key to Anisoptera](#)

Key to larvae

About the key

This key is designed for the quick and effective identification of Australian dragonflies and damselflies to family level. Unlike other keys to Australian Odonata it focuses on the specimen, not its taxon, so there are no choices such as “Usually two antenodal veins?” or “Male hindwing rounded?”, questions that can only be answered if a series of specimens and/or species are being compared. This key should place any individual Australian odonate to its family.

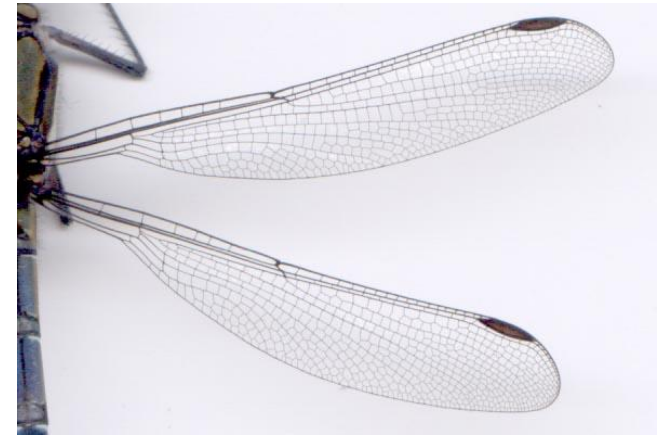
To use, choose an answer, or, where there are breakout links, follow a link.

Any errors, please email [John Trueman](#).

Suborder key: 1, general wing shape

- [Zygoptera](#)

Fore and hind wings similar in shape and venation.



- [Anisoptera](#)

Fore and hind wings dissimilar, the hind wing broader.

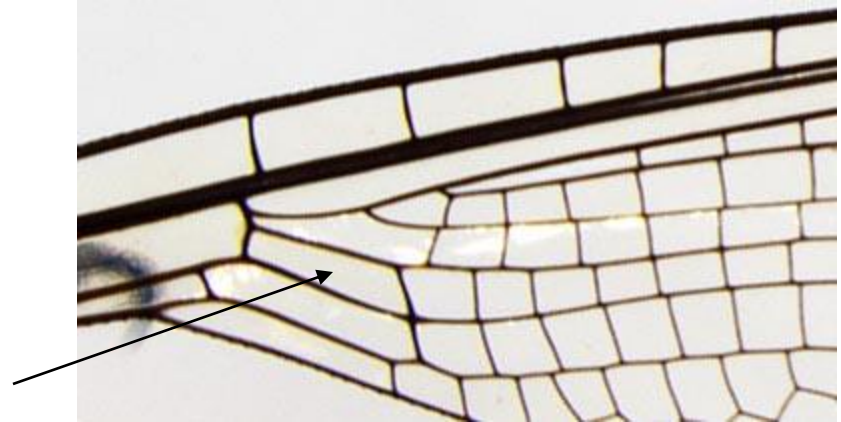


[Or see next question ...](#)

Suborder key: 2, discoidal cell

- [Zygoptera](#)

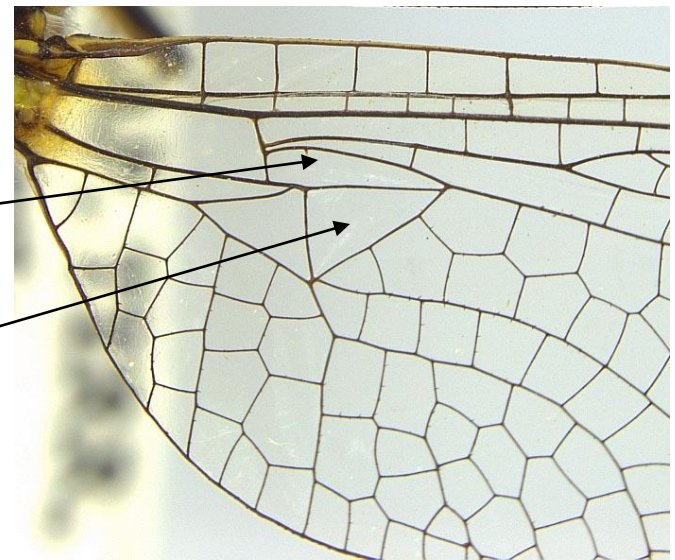
Discoidal cell
quadrangular, no triangle.



- [Anisoptera](#)

Discoidal cell divided into
'triangle' and 'supertriangle'

triangle



[Or see next question ...](#)

Suborder key: 3, Larvae

- Zygoptera
Larvae slender, with 3
(exceptionally only 2)
large caudal gills.

needs
pictures

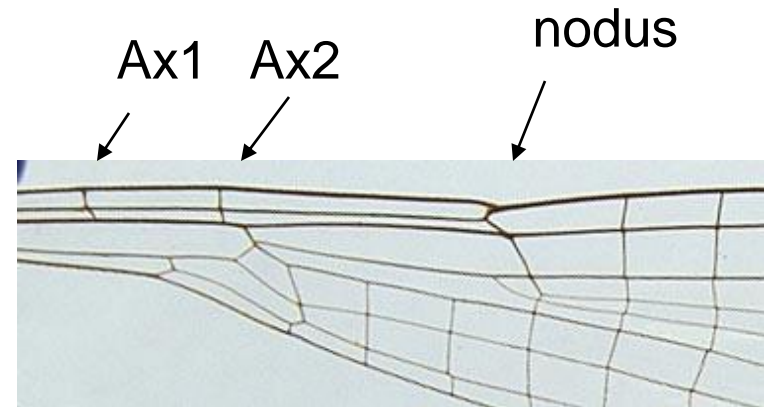
- Anisoptera
Larvae stout, without
external gills.

links to
go to
larva key

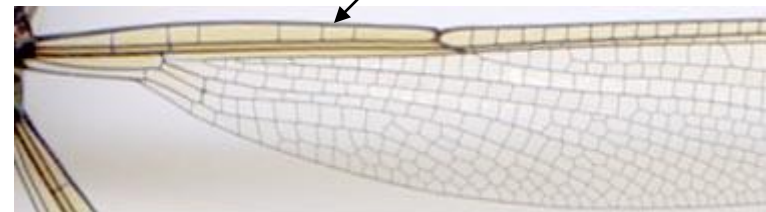
THE LARVAL KEY HAS YET TO BE WRITTEN

Zygoptera key: start

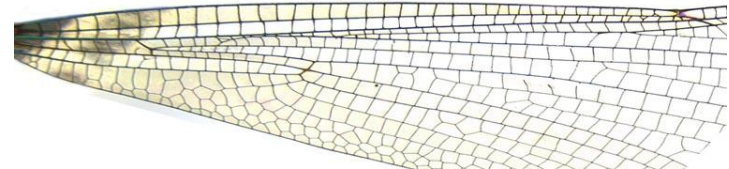
- [Two antenodal crossveins \(Ax\)](#)
- [Two complete Ax plus one or more that are incomplete](#)
- [Very many Ax](#)



From 1- 10 incomplete Ax



very many Ax



Many Ax: Is there a pterostigma?

Two families restricted to far north Australia

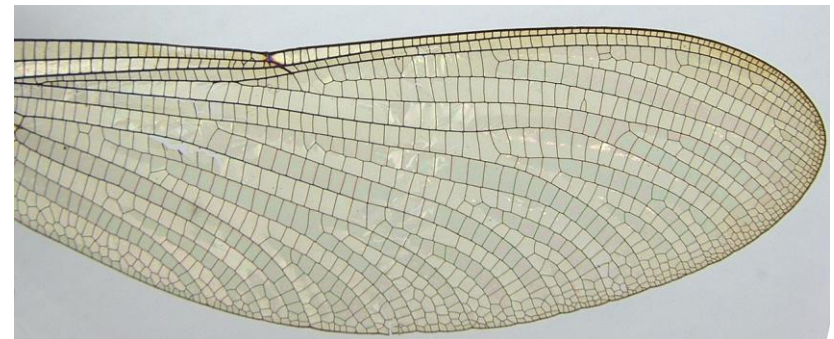
- Pterostigma present.
Abdomen shorter than wings.

Chlorocyphidae



- Pterostigma absent.
Abdomen longer than wings.

Calopterygidae



More than 2 Ax: Stout (and blue if male) or thin (black with yellow marks on thorax)?

These damselflies perch with wings outstretched.

- Large, stout damselflies, stream dwellers, males blue and black, females dun and black.

Diphebiidae

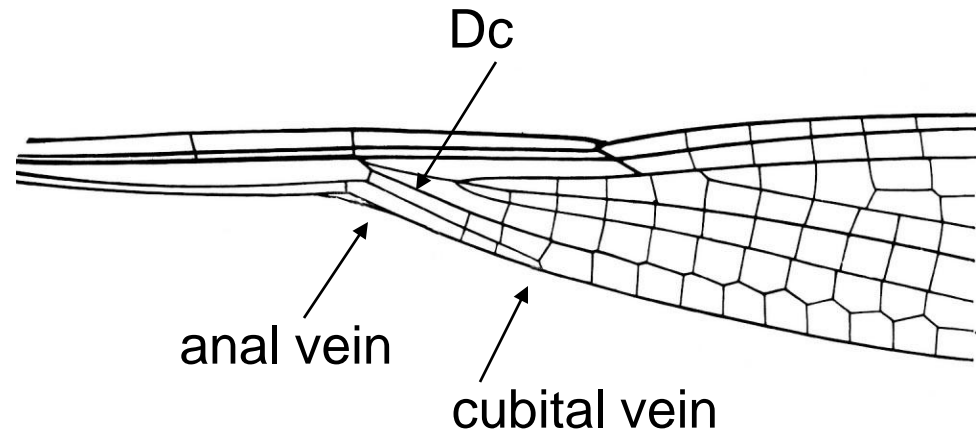
- Not stout, and black with yellow thoracic stripes. *Austroargiolestes icteromelas* from the Northern Tablelands of NSW occasionally present with >2 Ax.

Megapodagrionidae

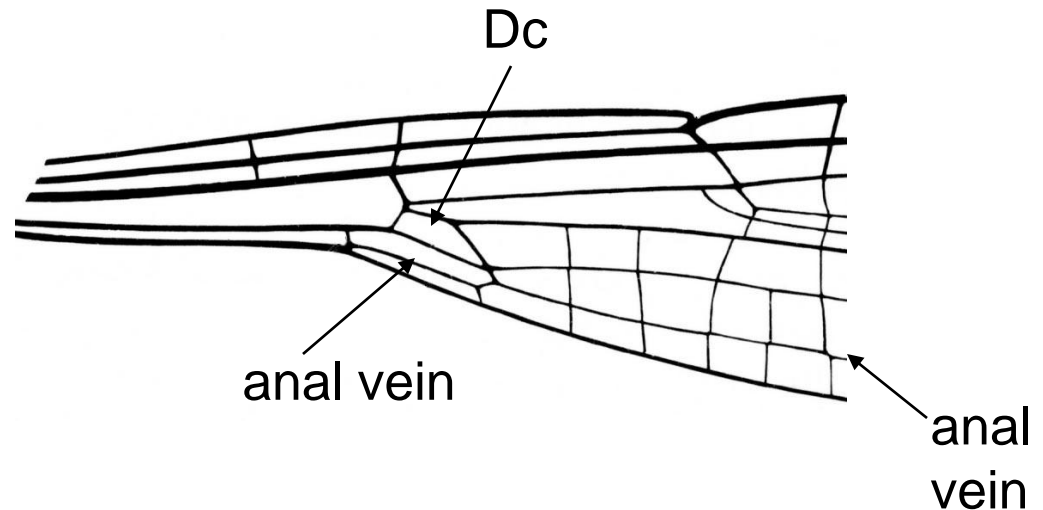


With two antenodals; look for the anal vein

- [Anal vein absent or not extending beyond the discoidal cell.](#)



- [Anal vein well developed](#)

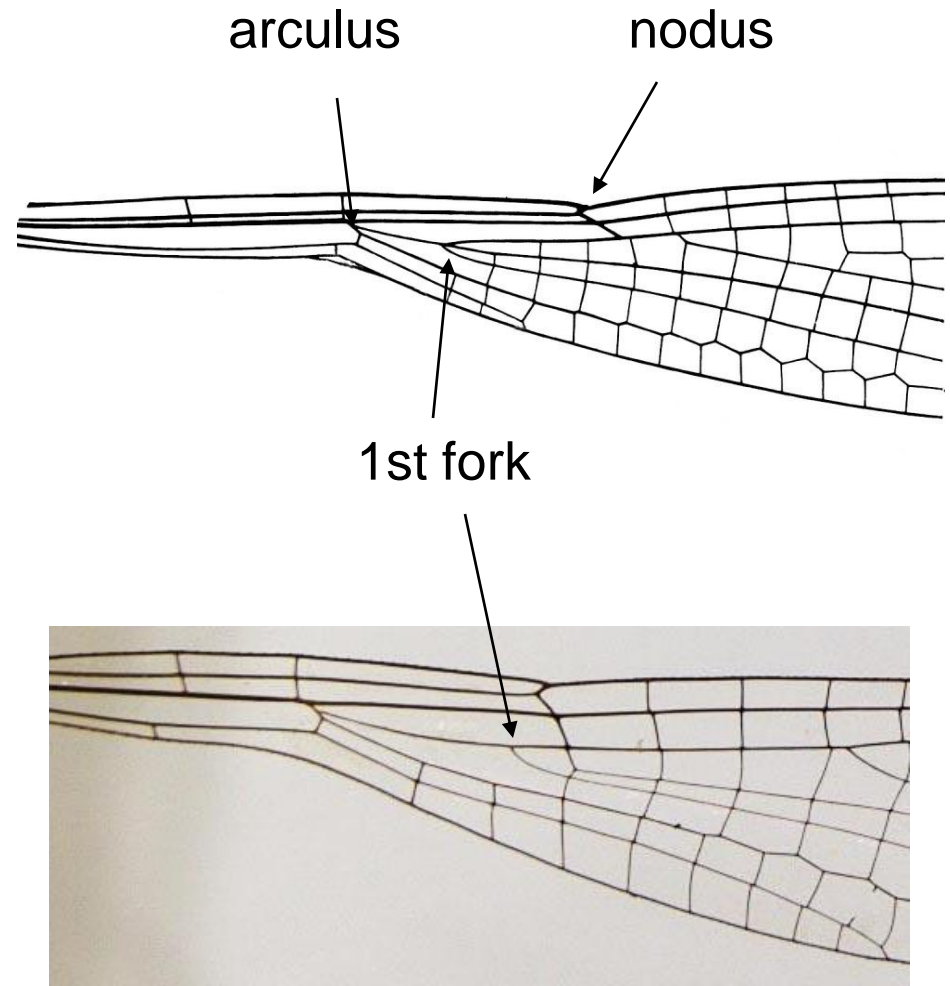


Anal vein absent or short: look to anterior sector of the arculus

- Anterior sector of arculus forking $\frac{1}{3}$ to $\frac{1}{2}$ way between arculus and nodus.

Lestoideidae

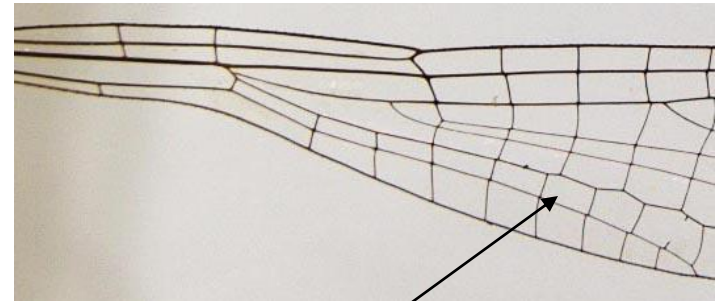
- [Anterior sector of arculus forking near or beyond nodus](#)



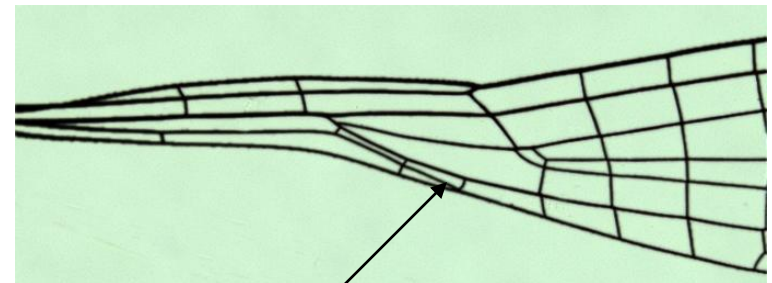
Anterior sector forking near or beyond nodus: look to cubital vein

Some of these are easily identified to family, others need a combination of characters

- Cubital vein more than two cells long
Isostictidae (part)
- Cubital vein two cells or shorter (Isostictidae or Protoneuridae)



cubital vein



cubital vein

Cubital vein 2 cells or shorter: look to general facies

- Wings suffused with yellow, or with some black/brown markings, and/or body with cream, green, blue or orange markings.

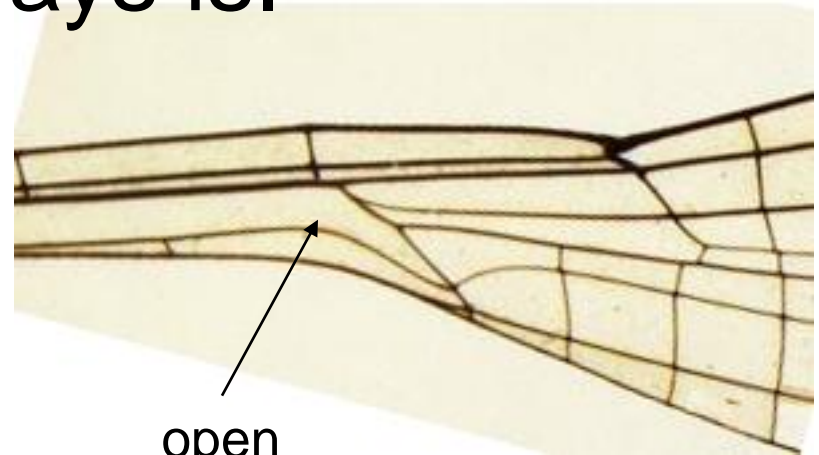
Protoneuridae

- Wings entirely clear (hyaline). Body dull brown or greenish grey without strong markings. **Isostictidae**

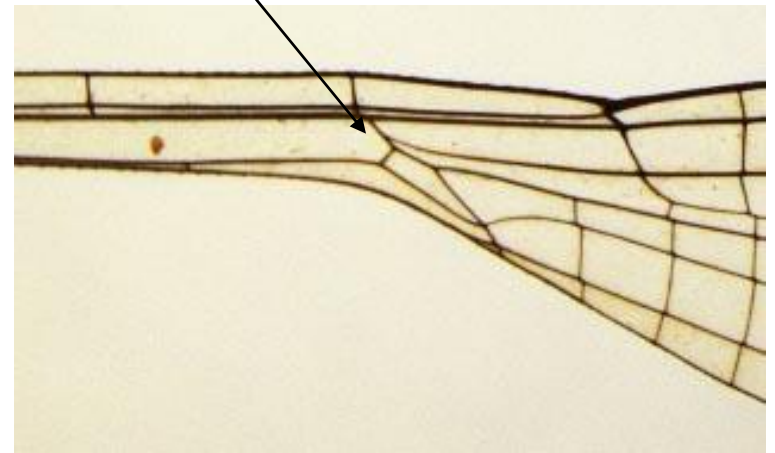


Anal vein well developed: Is the forewing discoidal cell closed? -- It almost always is.

- [Forewing discoidal cell open at its base. \(Rare\)](#)
- [Forewing discoidal cell closed \(= arculus present\). \(Normal\)](#)



open
closed



Forewing Dc open: Only two species

- Tiny, metallic green; SE Australia (Vic., Tas.)

Hemiphlebiidae

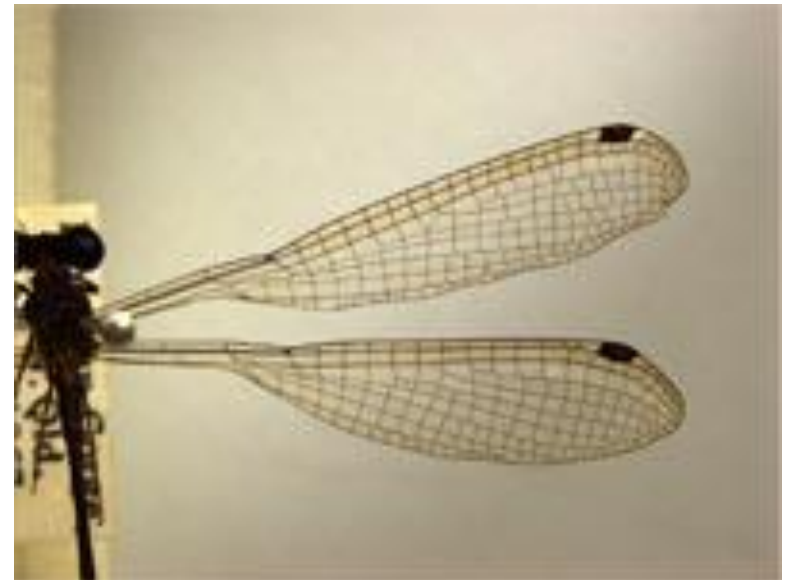
(Hemiphlebia mirabilis)



- Larger, black with whitish markings; NE Qld.

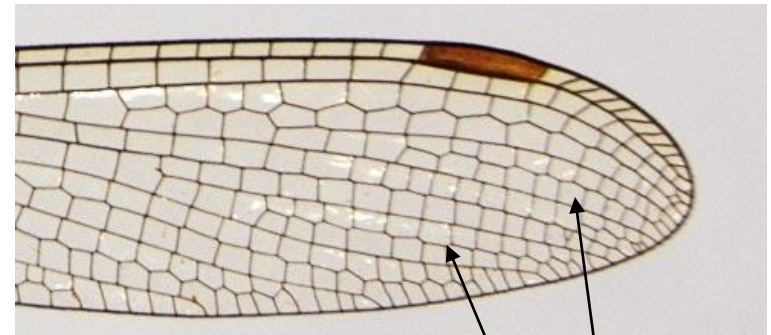
Synlestidae (part)

(Chorismagrion risi)

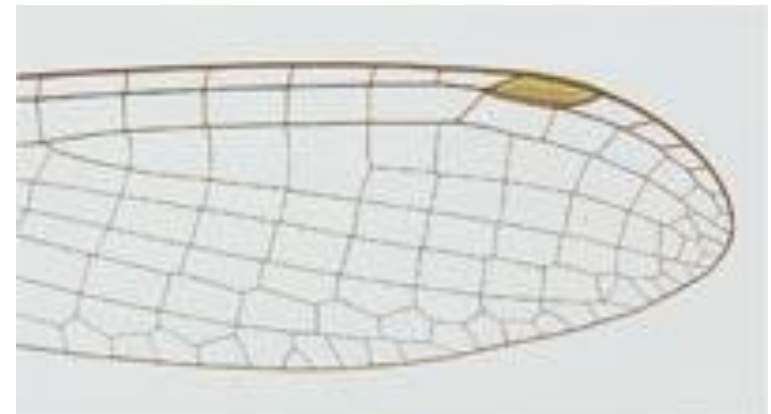


Arculus closed in all wings: look at the outer wing venation

- [Supplementary longitudinal veins present in outer region of the wing](#)
- No supplementary veins, **Coenagrionidae**



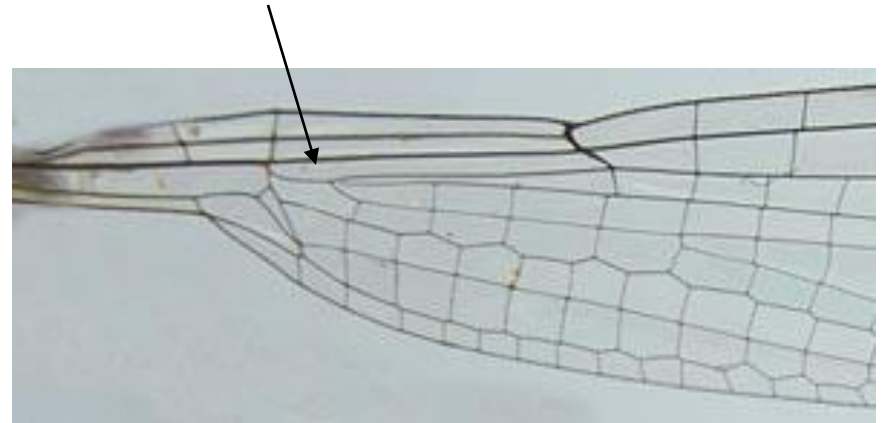
Supp. veins



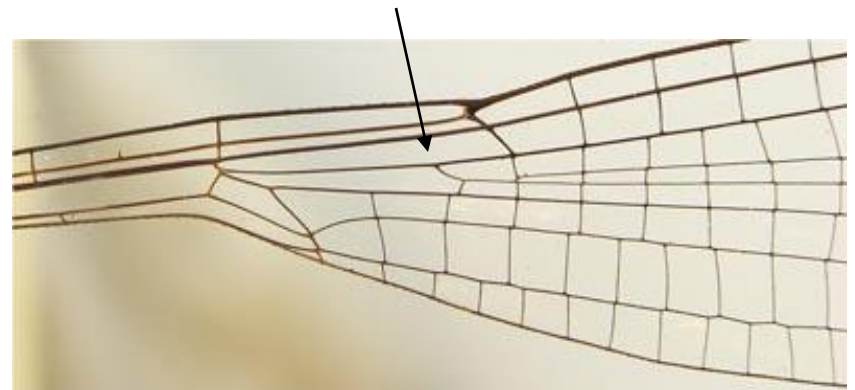
Supplementary veins present: look to anterior sector of the arculus

- Anterior sector of arculus forking near the arculus.

Lestidae



- [Anterior sector of arculus forking near the nodus](#)



Anterior sector forking near nodus: look to the cubital vein at the discoidal cell, or general facies

- Cu arched strongly forward. Large, metallic green or black damselflies.

Synlestidae

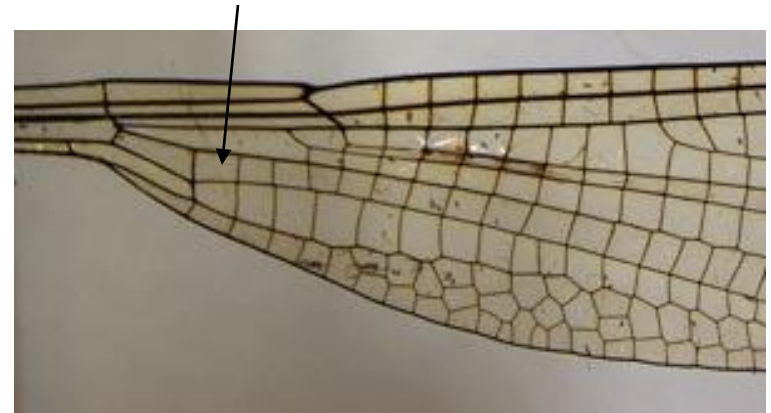
- Cu not strongly arched; these damselflies perch with their wings held out sideways.

Megapodagrionidae



Strong arch

Weak or no arch



Anisoptera key: start

- [Eyes widely separated](#)
- [Eyes nearly touching to broadly fused](#)



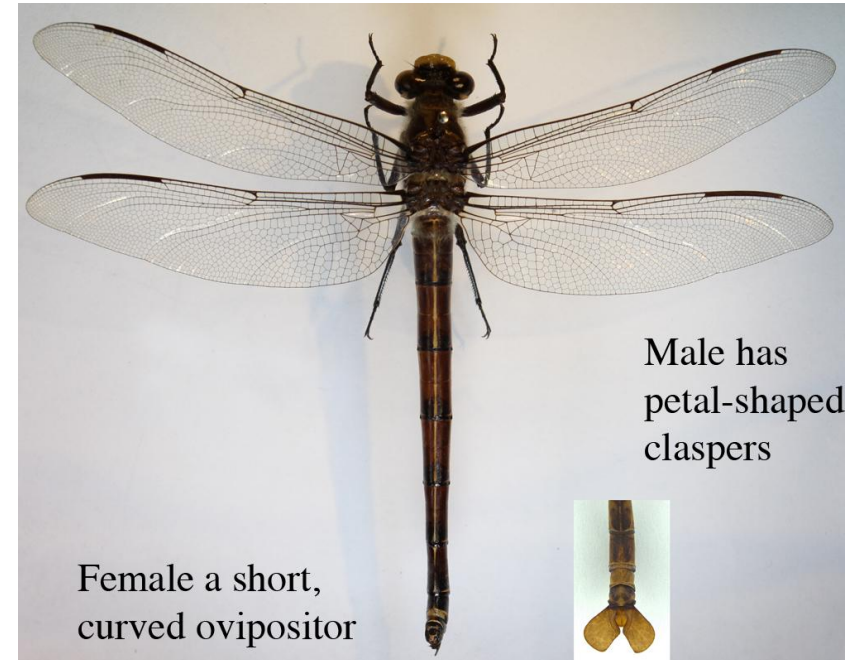
Eyes separated: look to multiple characters

- Huge insects, pterostigma very long, males with petal-shaped claspers, females with a short but strong ovipositor

Petaluridae

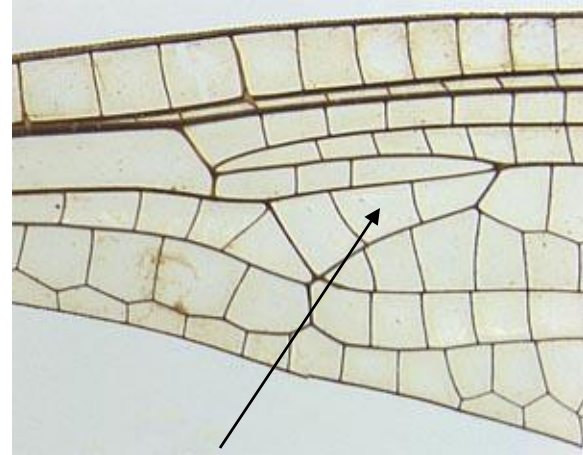
- Smaller insects, pterostigma normal, claspers normal, vestigial or no ovipositor

Gomphidae

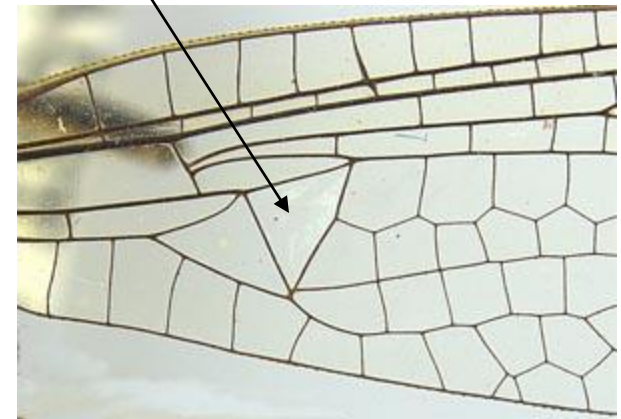
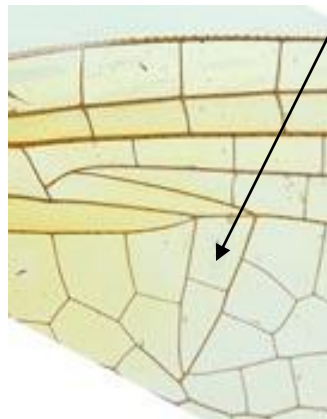


Eyes touching or nearly so: look to the forewing triangle

- [Forewing triangle elongate along the wing.](#)



- [Forewing triangle elongate across the wing or not elongate either way](#)



triangle

Fwg triangle elongate along wing: are there any wing spots?

Large, robust dragonflies, often with a hawking habit

- Front border of each wing with a series of red spots.

Neopetaliidae
(Austropetallidae)

- No red spots: wings hyaline (clear) or with brown markings.

Aeshnidae



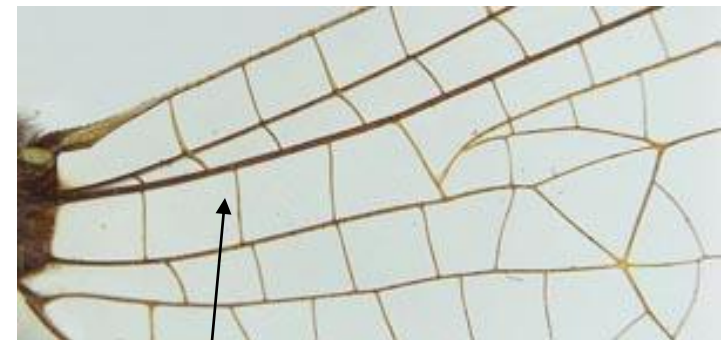
Fwd triangle not elongate along the wing: look to the median space

For a note re the quick identification of many **males** -- [see here...](#)

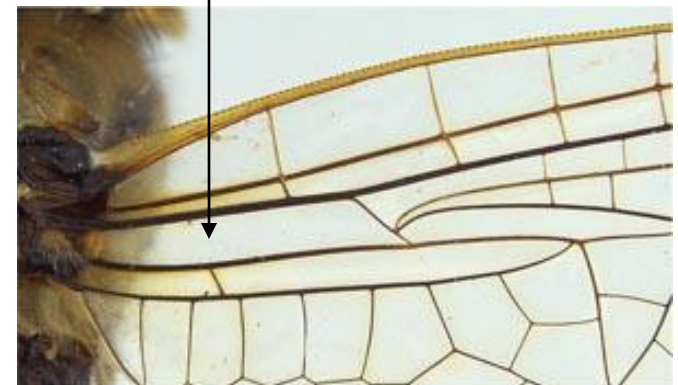
- Crossveins present in the median space

Synthemistidae

- [Median space free of crossveins.](#)



median space



Note re the males of some Libellulidae and Corduliidae

From this point all specimens are either Corduliidae or Libellulidae.

The main key uses wing venation and will work for either males or females, but many males can be quickly identified to family by body colour or by oreillets present on the sides of abdominal segment 1 and an angulated base to the hindwing. Rules are:

- Oreillets present, hindwing base angulated ([view here](#)): some **Corduliidae**
- Body and/or wings with strong colour, typically red or blue: some **Libellulidae**

NB: Is it male? A male specimen will have secondary genitalia visible under abdominal segments 2-3 ([view here](#))

Male: has secondary genitalia on the underside of abdominal segments 2-3



male secondary genitalia
(retracted / erect)

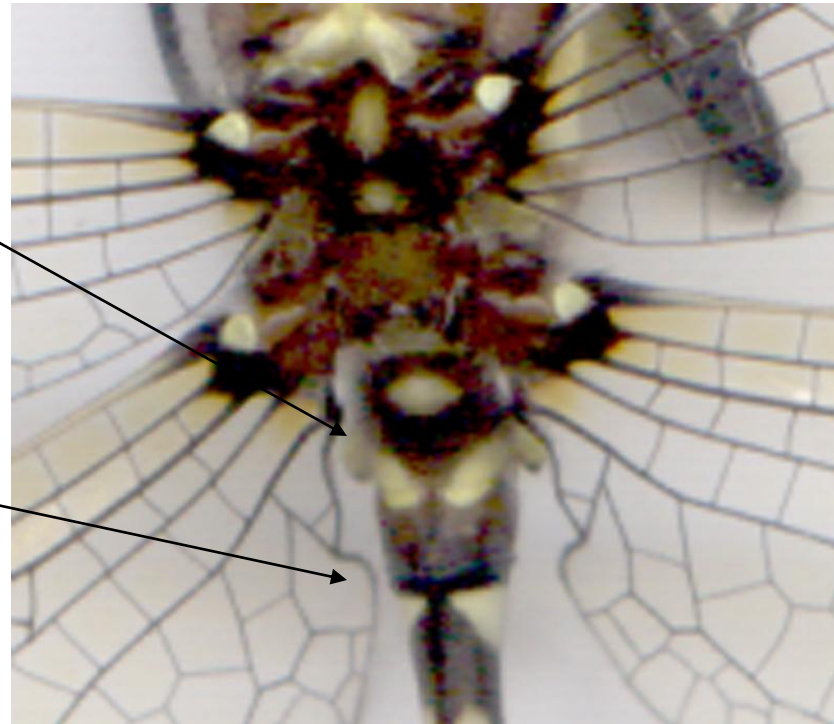
Oreillets on the sides of abdominal segment 2 in males: Corduliidae (part)

- Oreillets (ear-like projections) on side of abdomen

and

- hindwing base angled.

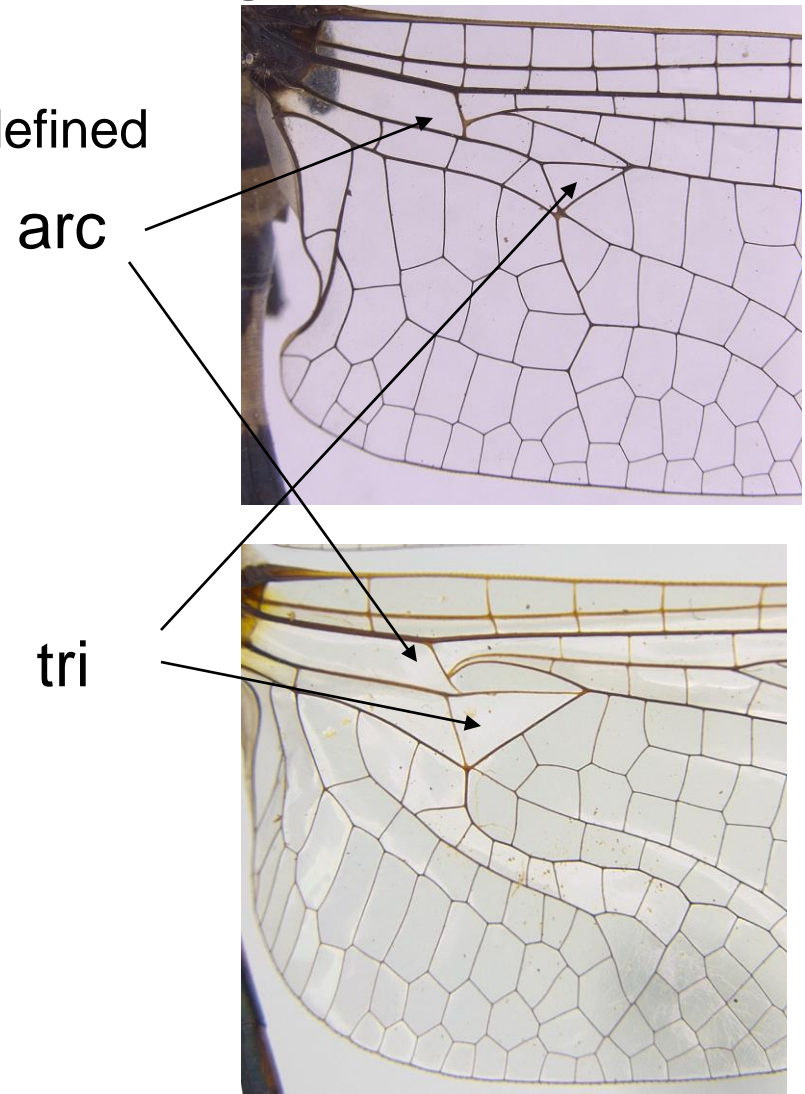
These two features always go together.



Median space free: look to the base of the hindwing triangle

Note: All that remain are Corduliidae and Libellulidae, but these families are poorly defined and difficult to separate.

- [Hind wing triangle well beyond the level of the arculus](#)
- [Hind wing triangle at or near the arculus](#)
(separated from it by no more than the length of the arculus)



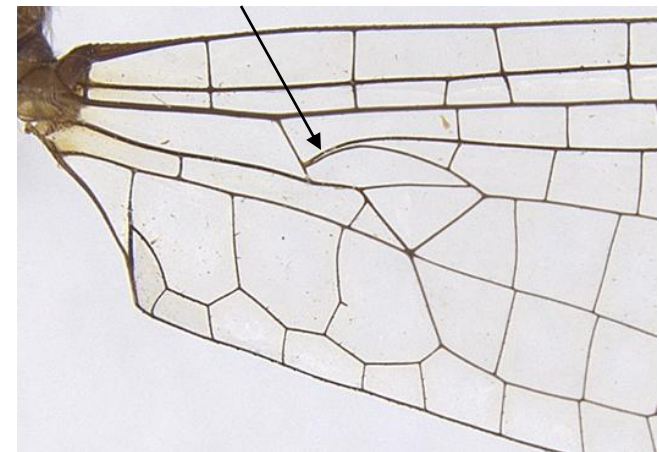
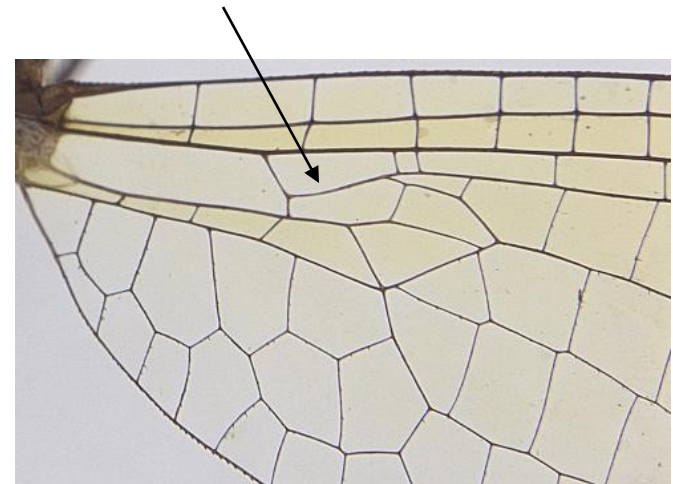
Hindwing triangle well beyond arc: look to the sectors of the arculus

- Sectors of Arc form a long stalk, in both wings.

Libellulidae (part)
(*Tetrathemis*)

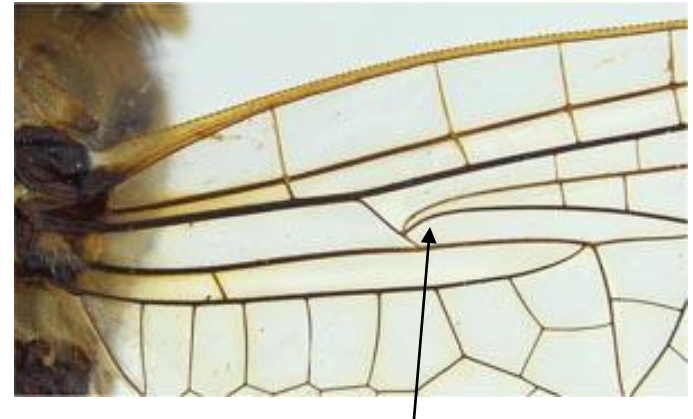
- Sectors of Arc separate at a shallow angle, in both wings -- a short stalk or no stalk.

Corduliidae (part)



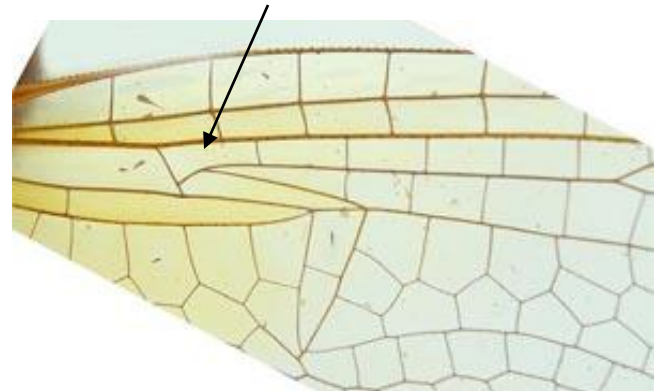
Hwg triangle near the arc: look to the sectors of the forewing arculus

- Forewing sectors of Arc diverge from their origin.
Corduliidae (part)



sectors diverge, no stalk

- [Sectors of Arc on a short stalk](#)



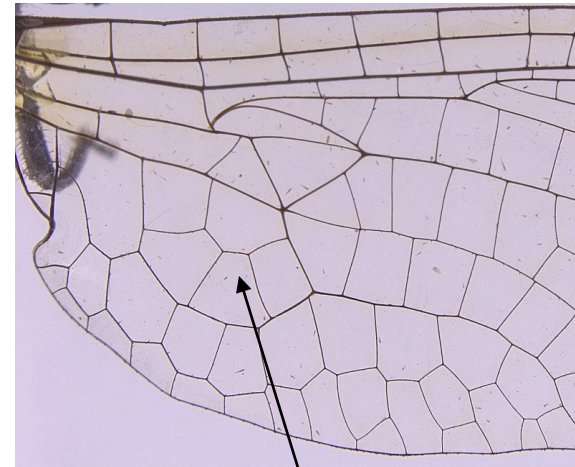
sectors on a stalk

Sectors stalked: look to multiple characters

- Anal loop 5-7celled, rounded. Hwg Arc in line with 2nd Ax, wings hyaline, body metallic.

Corduliidae (part)
(*Pseudocordulia*)

- Not with that combination of characters.
Libellulidae (part)



anal loop

[Further clues for separating Corduliidae and Libellulidae](#)

Some partial identifiers for Libellulidae versus Corduliidae

- Bright colours, especially blue or red, occur often in mature male Libellulidae but never in Corduliidae.
- Metallic black with yellow markings is the typical body colour in Corduliidae but also occurs in some Libellulidae.
- Both males and females of Libellulidae have a rounded base to the hindwing, but this condition also applies to some Corduliidae. In other Corduliidae the hindwing is angulated in males.
- In most Libellulidae the sectors of the arculus are fused into a short stalk, whereas in most Corduliidae they are not. But exceptions occur in both families. Long stalks occur only in Libellulidae.