

Dragonflies and

Damselflies -

Odonata

of Belair National Park and surrounds



Marianne Broug

www.mariannebrougphotography.com

The word **Odonata** comes from the Ancient Greek ‘odonto’ and means ‘tooth’. Many insects have toothed mandibles but in this case it is believed to refer to the fact that the adults of this order have particularly strong and large mandibles and teeth, and are voracious predators.

Adults are also highly mobile in flight and extraordinary to watch. Each of their four wings can move independently, allowing them to change direction, speed and elevation in an instant. They can also hover and fly backwards.

In Belair National Park I have seen them characteristically near water, but they travel to all parts of the park: dry-land bush, along open sunny tracks and in denser Stringybark bushland.

Nymphs are fully aquatic, and although I haven’t seen the nymphs in action under the water, I have often seen their discarded exoskeletons (exuviae) on reeds, bushes or trees on the edges of permanent or semi-permanent water.

The order **Odonata** is divided into two distinct suborders: **Anisoptera (Dragonflies)** and **Zygoptera (Damselflies)**. I will describe each suborder more fully in the text.

In this publication I have only included the Dragonflies and Damselflies I have seen and photographed. I know there are a couple more species in the park, and I will add these when I can photograph them.

With their extraordinary eyesight and speed, both Dragonflies and Damselflies are notoriously difficult to photograph. I have had most success in the cool of the morning when they have yet to warm up, but in other cases a bit of luck or some stealth (very slow movement) has nabbed a photo or two. A few photos in this collection have simply been taken when one has landed right next to me or even *on* me!



Cast-off exoskeletons or exuviae (exuvia for singular) of a Dragonfly (left) and a Damselfly (right).



Acknowledgements

Thanks to **Chris Burwell** of the Queensland Museum for his expert identifications of Odonata on iNaturalist.

Thanks to **Brett Smith** of Ellura Sanctuary, for his expertise and the extraordinary database he has put together of all critters great and small www.ellura.info. Additionally, his personal help and suggestions are always very much appreciated.

Copyright © 2023 Marianne Broug

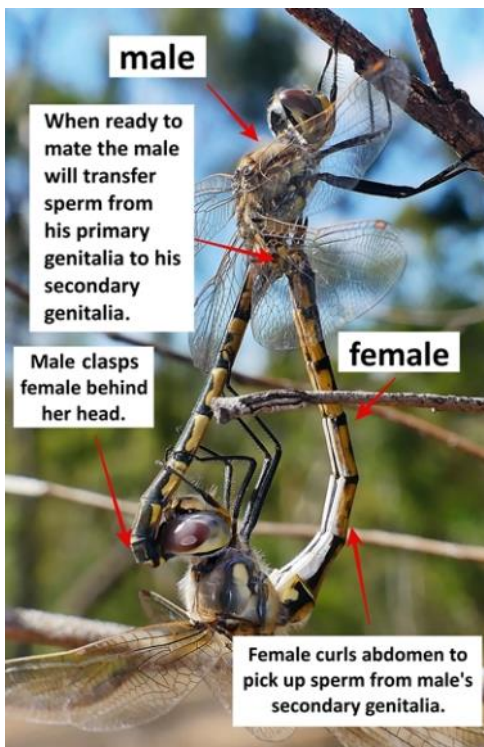
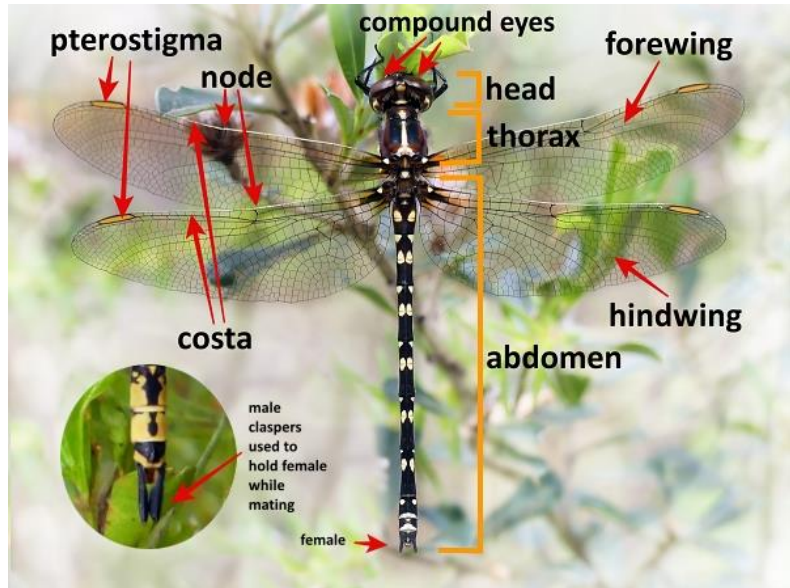
All rights reserved. No part of this publication may be reproduced or transmitted in any form or by any means without the written permission of Marianne Broug.

I’m happy to discuss use of any of my material for free if it is for non-profit conservation or educational use.

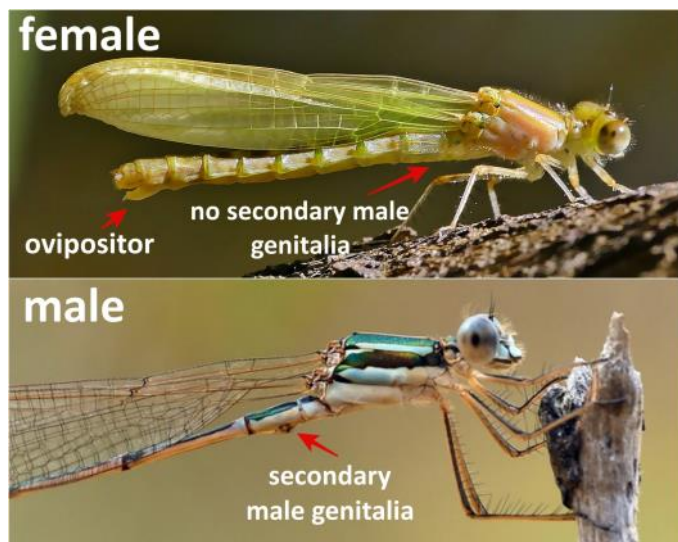
To contact me: www.mariannebrougphotography.com

Front cover image: Yellow-striped Hunter, Austrogomphus guerini. (Further description and photos in text.)

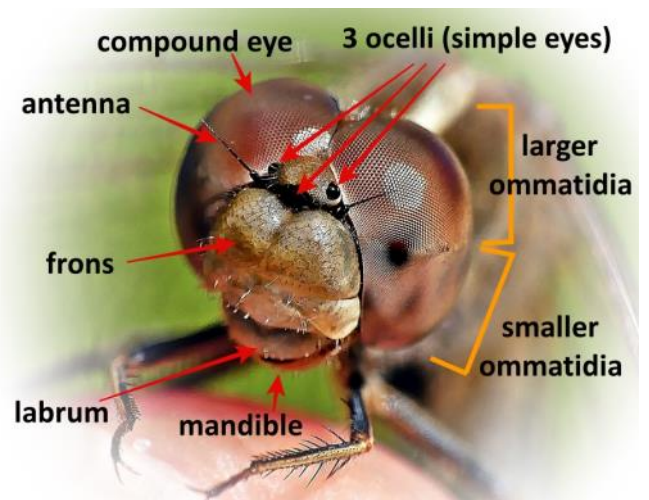
Anatomy



Above: The 'heart' or 'wheel' of mating. **Tau Emerald Dragonflies.**



Dragonflies have one of the most sophisticated visual systems in the animal kingdom and can see virtually 360 degrees. Each compound eye is made up of ommatidia which are hexagonal visual units consisting of a lens system and a group of light sensitive cells. A large dragonfly may have up to 30,000 ommatidia in each eye. As can be seen in the photo on the left, the ommatidia on the upper surface are bigger and those on the lower surface are smaller. The upper ones scan the sky above and are adapted to rapidly detect movement eg. from predators. The lower facets are smaller, providing higher spatial resolution (a more detailed image), making it easier for the dragonfly to detect prey.



Dragonflies - Anisoptera

The word **Anisoptera** comes from the Greek and means 'unequal wings'. This refers to the fact that the forewings and hindwings of Dragonflies are shaped differently from one another. The hindwings are also wider than the forewings. In comparison to Damselflies, Dragonflies are more robust, their eyes are larger and usually meet in the centre, and their wings are spread out flat when at rest. For quick reference, below is a collage of the nine species of Dragonfly I have seen in the park. Each species will be discussed more fully in the text that follows.



Emerald Dragonflies - Corduliidae



Emerald Dragonflies are named because their black 'backbone' shines an emerald colour in the sun.

The **Tau Emerald, Hemicordulia Tau** is the most common Dragonfly I see in Belair National Park, both near water and in the bush. Of note in the photo below are its abundant hairs and the separate complex musculature for each wing.



Australian Emerald, Hemicordulia australiae showing its glistening emerald 'backbone' and its striking emerald eyes. The pterostigma is black, whereas on the **Tau Emerald** (above) it is yellow.



Darners - Aeshnidae

The family **Aeshnidae** includes both Darners and Hawkers. **Aeshnidae** are some of the larger and more robust Dragonflies.

The **Swamp Darner, *Austroaeschna parvistigma*** (top three photos) is a Dragonfly I see fairly frequently in Belair NP, mostly in the more densely vegetated higher sections of the park, but also near Playford Lake. It is quite a dark Dragonfly and can be exceptionally well camouflaged on tree trunks and branches.



Blue-spotted Hawker, *Adversaeschna brevistyla*. I've only seen this Dragonfly infrequently, once rescuing one from a disused spider's web (above). Males have blue eyes and females have brown. Its characteristic blue spots are not evident in either of my photos. It is a large Dragonfly as can be seen by the size reference of the tip of my thumb in the photo above.



Australian Emperor, *Anax papuensis* is a larger size Dragonfly up to 70mm. After the Tau Emerald it is probably the Dragonfly I see most often in Belair NP. On hot days, sitting on a rock by the edge of Playford Lake, it is mesmerising to watch them skimming and swooping over the water.



In some species of Dragonfly, the male guards the female after insemination by hovering above her, in others, as this **Australian Emperor** couple (left) he will continue to grasp her while she lays her eggs just under the surface of the water. This behaviour perhaps helps the female to lay without falling into the water, as well as guarding her from the attention of other males. Photo taken on the edge of Playford Lake.

Clubtails - Gomphidae

Gomphidae are named for the club-shaped widening towards the end of their abdomen. However, females (as shown in my photos) can have very little widening and some species have none.

Yellow-striped Hunter, *Austrogomphus guerini* (also see cover image for the face-on view) is a smallish brown and yellow Dragonfly that I had seen a number of times but because of its speed had never photographed. Then one day as I was walking just above the top waterfall I saw this Dragonfly clinging onto a plant and unable to fly because the windy conditions. The wind certainly presented me with a photographic challenge but there were enough momentary lulls for me to snap a few photos!



Tigertails - Synthemistidae

Tigertails are generally smaller in size and have a very narrow abdomen.

I have only seen a **Swamp Tigertail, *Synthemis eustalacta*** irregularly in Belair NP. Like the **Swamp Darner** they seem to prefer the more densely vegetated areas in the east of the park.



Skimmers - Libellulidae



Wandering Percher, *Diplacodes bipunctata* is a small and quite common Dragonfly. It is a good species to illustrate sexual dimorphism, the mature male being bright red and the female tan/yellow. (Immature males can be a duller reddish). Left below is a side-by-side collage of a male and female. Of note is also the differences in their claspers. The photos of a female on my finger show how small they actually are. The pterostigma of Wandering Perchers is red.



Blue Skimmer, *Orthetrum caledonicum*. Although many Dragonflies travel some distance from permanent water, the Blue Skimmer does not. It is only the mature males that have the distinctive and easily-recognisable pale blue colour. The females and immature males are yellow and black and can look a little like a Tau Emerald. Of note is the yellowing towards the end of the wings.



Damselflies - Zygoptera

The word **Zygoptera** means 'equal wings' and refers to the fact the forewings and hindwings of Damselflies are basically the same shape and size as each other. In comparison to Dragonflies, Damselflies (as their name would suggest) are much more delicate and slender, their wings are almost always held upright when at rest, and their eyes are smaller and do not touch in the centre. They are extremely quick and have extraordinary eyesight. I have always found them extremely difficult to photograph.

Below is a sequence of photos showing a Damselfly that has freshly emerged from its exuvia. It was pure luck that I happened to see the process unfolding and it was extraordinary to witness. The process documented here took about ten minutes after which the Damselfly slowly moved up the tree and out of sight. It is not so obvious from the photos, but not only the wings grew in size, the whole body also grew substantially. It is impossible to tell at this stage of development what species it is.

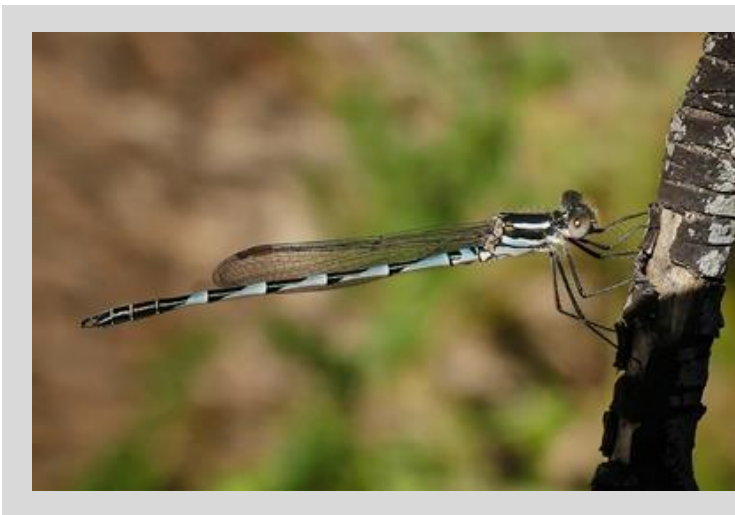
This Damselfly is a female, with ovipositor evident and no secondary male genitalia.



Ringtails and Allies - Lestidae



The **Slender Ringtail, *Austrolestes analis*** is distinguished from other Ringtails by its very slender abdomen. This Damselfly clearly shows the secondary genitalia of a male.



The **Blue Ringtail, *Austrolestes annulosus*** is named because the mature male is a striking blue colour. Females and less mature males are duller blue in colour. The **Blue Ringtail** can be easily distinguished from other species by the downward-sloping triangular markings on its abdomen. These can be clearly seen in this photo.

In comparison to other families of Damselfly, the pterostigma in **Ringtails** is more elongated.

The mature male of the **Wandering Ringtail, *Austrolestes leda*** is very bright blue in colour. The female is a duller blue or brown, and the immature male is a pale blue. **Wandering Ringtails** can be distinguished by the blue rings on the abdomen. The secondary genitalia of a male are clearly evident in these photos. Additionally it can be seen that the claspers are strongly curved. It is these that give **Ringtails** their name.



Narrow-winged Damselflies - Coenagrionidae

The **Eastern Billabongfly, Austroagrion watsoni** is a very small Damselfly, barely 25mm (1 inch) in length. It can be easily identified by the blue line on the back of its head, between the two eyes (right) and the two lime green stripes on the top of the thorax. In the mating photo (far right) the difference between male and female colouring can be clearly seen.



I have seen the **Red and Blue Damsel, Xanthagrion erythroneurum** around Playford Lake and near Railway Dam. It is immediately identifiable by its red head and the blue rings around the tail. Both male and female are similarly coloured although the female is duller than the male. Below left is a female. The other three photos are of males, the one on the right below is a juvenile male.



I found this **Aurora Bluetail, *Ischnura aurora*** caught in the sticky glands of a *Drosera*. I ordinarily leave nature alone to do its 'thing' but I thought in this instance it was a wonderful opportunity to have a closer look.

The thorax and eyes are a very striking apple green with black. The abdomen is reddish yellow fading to black.

The tail is blue-tipped.

The photo with my finger give a good indication of how small and delicate it is. Along with the **Eastern Billa-bongfly** on the previous page it is probably the smallest Damselfly I have seen.



I have seen the **Common Bluetail, *Ischnura heterosticta*** near various water sources in Belair NP. It is larger than the **Aurora Bluetail** shown above. The female can present in different colourings, one of which is very similar to the male, as is the case in the mating photo (left). It has a blue head, thorax and blue-ringed tail. The abdomen is mostly black.

