Odonata Presentation Notes
for The Entomological Society of Victoria meeting February 19th 2013

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Abstract

This document is provided as reference notes to the presentation for The Entomological Society of Victoria meeting of February 19th 2013. It covers my photography and personal encounters and experiences and less technical aspects of taxonomy. The target audience is the amateur naturalist who is interested in identifying *odonata* (damselflies and dragonflies) in the field or from photos, which is my personal *modus operandi*.

This document also references "slides" that are to be used during the presentation. These consist of photographs mostly available from my web site.

Introduction

According to *The Complete Field Guide to Dragonflies of Australia* (Theischinger & Hawking, 2006), my primary reference, Australia has about 324 species. In Victoria we have a good range (about 80 species) of which I have observed 67. This presentation is mostly about my experience chasing, photographing and identifying these insects.

When I got my first digital camera about 10 years ago I needed subject matter to photograph. Being interested in everything in the natural world this of course included dragonflies. Early on I didn't specifically go searching for them but at some stage Simon Mustoe contacted me about an image on my web site. He was building one for identifying Victorian *odonata* and had also started an email group (ausodonata@yahoogroups.com) where interested parties could correspond (this group is still active). I gained a lot of knowledge from asking questions in this group about the photos I had taken. Although Simon has abandoned that web site for a more ambitious project it is still very useful for identifying our dragonflies and damselflies in Victoria.

I will discuss my experiences, web site, some different species found in Victoria and some things to look for when trying to identify adult damselflies and dragonflies.

My Photography and Cameras

I bought my first camera in late 2001. It had 3MPix and took good photos but its macro was limited to 20cm distance, which is insufficient for photographing things less than 5cm big. I damaged the lens in that camera so my next one was a 4MPix but it had "super" macro to 1cm. This also produced reasonably good photos but the pixel count was too low. It eventually wore out so my next camera had 11MPix, but its image quality suffered with a bad lens so 2 years ago I bought my first SLR, which had 16MPix and excellent image quality.

More *megapixels* might seem like a good thing but what it really means is each individual sensor component is smaller and therefore captures less light and therefore image quality suffers. My 16MPix camera had a 23.5 x 15.6 mm sensor but the next generation now has 24MPix in the same area and I feel the image quality has deteriorated as there are just too many receptors on the sensor.

When taking photos lighting is very important, particularly the amount of light. I use flash most of the time when using macro, even in sunlight (but then usually to try and fill shadows). Part of the reason is I shoot with aperture priority and increase the f-stop value (usually around F8-F11), which actually decreases the physical size of the aperture. A smaller aperture actually means greater depth-of-field, which is important for showing more details.

Another thing to consider is shooting with fairly low ISO as high ISO values mean noise. Combining low ISO and high aperture results in less light reaching each sensor element, which is why flash is usually required. This however yields the best image quality. When shooting not really close, such as an entire large dragonfly, wider aperture can be used as this helps blur the background. I find around F5-F6 is best for this.

I sometomes photograph just for later identification confirmation but if I intend on trying to get good diagnostic images then starting from a distance I will slowly creep closer. For some of the harder-to-separate species you need to remember the diagnostic features also, which may mean the side of the thorax or the like. Occasionally dragonflies themselves get close and when they land on me its difficult to photograph them.

My Dragonflies Web Site

Initially I put together some pages with a selection of photos. I then started writing pages for some species. All species I have seen are listed down the left and where I've created pages for a specific species the names are links to those pages.

A couple of years ago I put a partial key on my web site. It mainly lists species I'm familiar with (so Victorian species) and allows for the selection of certain attributes to help a novice short-list some possible species, which can then be studied further. Questions on such things as general geographic location and the colors of the insect can be answered and a weighted list will be produced.

Some other material on my site includes a list of when I've observed species for the first time, database records of all my sightings and some documents on more significant observations.

Identification

I identify almost all the species I see from photographs I take while in the field. As mentioned previously, I often take photos just for identification purposes. I virtually never go through the process of keying out a species but just look up the similar species if I can't remember what to specifically look for. Keying out a species from photos is very difficult as key guides are designed for individuals holding museum specimens and not people like myself who might take a few photos of an individual.

The first and most obvious distinction to make is to separate damselflies from dragonflies. The common misconception is that at rest damsels hold their wings closed above their body while dragonflies spread their wings out flat, perpendicular to their body.

[SLIDE GROUP 01]

The dragonfly genera *Cordulephya* perch with their wings closed. In Victoria *Cordulephya pygmaea* is fairly widespread east from Melbourne. It appears late in the season (around March) and can be found along rivers and creeks, including the Yarra around Warrandyte. It is also one of the smaller dragonflies we have.

Several groups of damsels may perch with their wings flat. *Synlestes weyersii* is a fairly large, slender, metallic-green species common in the eastern half of the state. You can readily find them along the upper Yarra River and ponds and lakes with enough riparian vegetation. These happily perch with their wings in any position, partly depending on sunlight and temperature. This is also the only species of *Synlestidae* found in Victoria.

The Flatwings is a family of damselflies containing quite a few species, that, as their common name suggests, spread their wings when perched. *Austroargiolestes icteromelas* is a very common species that can be found over much of the state. *Austroargiolestes calcaris* is generally quite similar in appearance, but slightly smaller. It can be found by rocky creeks from the Dandenong Ranges to alpine bogs around the NSW border. *Griseargiolestes intermedius* is a third member of this group in Victoria, common in alpine bogs but occasionally found closer to Melbourne. It is the smallest of the three and can readily be separated in the field.

To accurately tell these flatwings apart from photos you usually need to see the patterns on the side of the thorax. Mature males can however be identified with reasonable certainty as *Griseargiolestes intermedius* are slightly pruinose all over, *Austroargiolestes calcaris* have a very pruinose thorax and *Austroargiolestes icteromelas* don't have as noticeable pruinescence.

The previous discussion was used to illustrate wing position at rest can not be used to separate damselflies from dragonflies. The most reliable method I find is to look at the position and structure of the eyes. Damselflies tend to have their eyes out on the side of their heads, almost on stalks, while dragonflies eyes come closer at the top, often touching.

Some Common Dragonflies

[SLIDE GROUP 07]

One of the most common and widespread species, often encountered patrolling or disturbed from a perch when walking along forest tracks away from water, is *Hemicordula tau*. They can be found from the highest pools to the edge of the sea. A similar species is *Hemicordulia australiae*, still fairly common but encountered less often. When seen normally they can be separated by the coloration of the pterostigma and leading wing veins: that of *H. australiae* is black while *H. tau* is yellow. The frons however should be checked as *H. tau* has a clear “T” marking whereas *H. australiae* has just a dark patch. These are “Emeralds”, belonging to the *Hemicorduliidae* family.

That “T” mark on the frons cannot however be used as diagnostic for a different group. The *Aeshnidae* family is represented by two widespread and common species in Victoria – among the largest *odonata* in the state. And both of these have a similar mark on the frons.

Adversaeschna brevistyla has a mostly middle brown color. In mature males the pale dorsal markings on the front half of the body turn blue, giving this species its common name of Blue-spotted Hawker. They “hawk” (regularly hover in one spot) when patrolling over water or in open patches of forest. The bold, evenly-thick, pale, diagonal lines on the side of the thorax help with identification.

Hemianax papuensis has an overall yellow appearance with fairly square markings on the abdomen and no line markings on the thorax. I've encountered this species hunting over highways on warm days and ended up unavoidably collecting them in my grill.

The dragonfly I've encountered most often is a little smaller than than the previous two families but also found virtually everywhere. The color of the Wandering Percher, *Diplacodes bipunctata*,

varies quite a bit, mostly shades of yellow to orange-brown. Mature males are usually red (with some black markings). Its one of the first species I encounter each season, finding them resting on the ground in open woodland during September (while out looking for orchids). The two spots on the side of the thorax give this species its scientific name.

A similar, less common species is the Black-faced Percher, *Diplacodes melanopsis*. These don't have the two dark spots on the side of the thorax. Mature males also have a black head and thorax with a mostly red abdomen. Before they go red however they transmute through what I think is a beautiful orange phase.

I regularly see this species at the dam on Buttongrass Creek in Bunyip State Park. This has got to be one of the best places to observe odonata as I've recorded 27 species at this one dam (plus another 7 species in the park).

Archaosynthemis orientalis Austroagrion watsoni Adversaeschna brevistyla Austroargiolestes icteromelas Austrocnemis splendida Austrogomphus guerini Austrolestes analis Austrolestes cingulatus Austrolestes leda Austrolestes psyche Cordulephya pygmaea Diplacodes bipunctata Diplacodes melanopsis Eusynthemis brevistyla Eusynthemis guttata Hemianax papuensis Hemicordulia australiae Hemicordulia tau Ischnura aurora Ischnura heterosticta Nannophya dalei Orthetrum caledonicum Procordulia jacksoniensis Synlestes weyersii Synthemis eustalacta Tramea loewii Xanthagrion erythroneurum	Also seen elsewhere in the park are: Austroaeschna atrata Austroaeschna multipunctata Austroargiolestes calcaris Austrolestes annulosus Austropetalia tonyana Coenagrion lyelli Telephlebia brevicauda

Back to the dragonflies, the most striking in this *Diplacodes* group is the Scarlet Percher, *D. haematodes* with mature males being a vividly red-colored all over their body. They are a little more robust than *D. bipunctata* but, apart from mature males, can be difficult to tell apart from each other (*D. haematodes* also has two spots on the thorax). These don't often come to Melbourne but are common along waterways in east Gippsland (and north into Queensland).

Another significantly red dragonfly is the mature male *Orthetrum villosovittatum*. In Victoria this species is uncommon, being found mostly in east Gippsland. Females are a golden-yellow color.

In the same family but much more common, and one you're likely to encounter around Melbourne, is the Blue Skimmer, *Orthetrum caledonicum*. Mature males are easily recognised by their pale blue abdomen with a darkened end. They regularly perch on rocks and exposed ground beside water bodies. Females and immature individuals are more difficult to identify as they are yellow with black markings.

Austrogomphus guerini is a species of dragonfly having a mostly yellow body with black markings, with both males and females similar. They are common along the Yarra and spend a lot of their time basking on the ground, including gravel waling tracks, where it waits for either food or a mate to pass.

The Jade Hunter, *Austrogomphus ochraceus*, is also fairly common and looks quite similar. A third superficially similar species is *Hemigomphus gouldii*, although male *Hemigomphus* have quite different anal appendages compared with *Austrogomphus*.

There are quite a lot of species in the *Gomphidae* family, Victoria having only about half a dozen species. The main feature to look for within this group is the extent of the yellow dorsal line along the abdomen: For *A. guerini* it extends the entire length, for *A. ochraceus* it extends most of the abdomen except the last two segments and *Hemigomphus* don't have a stripe at all.

I have observed *Austrogomphus australis* and *Austrogomphus cornutus* along the Ovens River north of Wangaratta, which is the only “mature” inland river where I have seen much in the way of odonata. Another species I have seen there is *Nannophlebia risi*, which is similarly colored but this Archtail has quite a different stance.

Identification of Damselfly Species

[SLIDE GROUP 21]

Damselflies represent their own challenges when trying to identify them. Sometimes it is easy – mature male Auarora Bluetails, *Ischnura aurora*, are distinctively colored with green, red and blue. The other member of this genus we have in Victoria is *Ischnura heterosticta*, which starts to resemble numerous similar sized blue species. However separating them from the others is just a matter of observing the pale dots behind the eyes.

Another common damsel in the *Coenagrionidae* family is *Austroagrion watsoni*. These are characterised by a pale line extending much of the area behind the eyes. *Xanthagrion erythroneurum* also sports a line across behind the eyes but mature individuals are distinctively colored giving rise to their common name of Red and Blue Damselfly.

Austrolestes annulosus (the Blue Ringtail) is the bluest of the ringtails and fairly common around the state. Victorian species in this *Lestidae* family do not feature signiciant markings behind the eyes but can be narrowed down to one of two species by comparing the patterns on the side of the thorax.

The antehumeral stripe on *Austrolestes annulosus* is relatively thick and extends most of the thorax. This stripe is similar for the very common *Austrolestes leda* but there is an additional pale mark on the mesepimeron and the second abdominal segment is dark on the upper half with a

pale stripe along its length. This mark on the abdomen is similar to that of *Austrolestes analis* but *A. analis* have a larger, angled mark on the thorax. *Austrolestes aridus* is very similar to *A. analis* but the last two abdominal segments of *A. aridus* are pale.

Austrolestes cingulatus (Metallic Ringtail) and *Austrolestes psyche* (Cup Ringtail) are both uncommon, similar to each other and their thoracic patterns are also similar to *A. annulosus*. However their abdominal markings are quite different to *A. annulosus*. Two distinguish between the two requires a clear view of the second abdominal segment; the front part for *A. cingulatus* is pale while for *A. psyche* the segment is dark along the top the entire length.

Nosoticta solida is a fairly common, distinctly orange damselfly. It occurs along large, slow rivers, perching amongst the riparian vegetation.

Some Rare Damselflies in Victoria

[SLIDE GROUP 33]

Austrocnemis splendida is a tiny species with mature specimens (malesin particular) featuring a metallic golden color and some pale blue markings. I have observed them mostly perched on the surface of water – even just on surface tension – where there was dense, submerged aquatic vegetation. I know of one healthy population.

Apart from the unique abdominal markings, *Coenagrion lyelli* features a pale triangular shape behind each eye joined by a line. I know of two healthy populations for this species.

Pseudagrion aureofrons (the Gold-fronted Riverdamsel) is another one of those species that is more common further north of the country but isn't sighted very often in Victoria. In 2006 I discovered a colony on the Yarra River near Warrandyte. They appeared there late in the season (March) for several consecutive years but haven't been sighted there since. They also occur along the Murray River. Mature males are brightly and distinctively colored.

Males will usually continue clasping the female after mating while she deposits eggs. However the first time I observed this the female kept climbing down a reed stem until the male released her after she had completely submerged. She crept into the depth out of my view and spent five minutes under water before literally popping to the surface and instantly flying off into vegetation to rest and preen.

A less noticeable damselfly is *Rhadinosticta simplex* (Powdered Wiretail), not only because it is small and slender but also because it mostly hangs inconspicuously amongst vegetation along watercourses. I first observed this species along the Yarra River near Warrandyte but it can be found along forested rivers in the eastern half of the state.

In December 2008 a new population of *Hemiphlebia mirabilis* (Ancient Greenling) was discovered serendipitously while surveying orchids with a group in a swamp in south-western Victoria. Last known populations in Victoria were a few individuals from Wilsons Promontory – I have been to those sites numerous times since and failed to find any. Subsequently quite a few sites for this species has been identified west and south from the Grampians.

This species has some unusual mannerisms. Usually after landing, or when another *H. mirabilis* is flying or lands nearby, they will wave their tails furiously several times. This involves curling the abdomen right over until it almost touches their own head. I believe this has to do with their

mating behaviour, which involves a male landing on and clasping to the wings of a female then walking up the wings before mating continues more traditionally. If they wave their tails like that it might discourage another from this process or perhaps brush off such a male if it does land. Male *H. mirabilis* will try to latch on to any vaguely potential mate, as can be seen by the photos of one handing on to a male *A. analis* and two apparently trying to mate with a male *I. Aurora*.

Some Rare Dragonflies in Victoria

[SLIDE GROUP 38]

Earlier I showed *Orthetrum caledonicum*, a common and widespread species. Similar in appearance are the mature males of *Crocothemis nigrifrons*. Their abdomen is however completely blue. *C. nigrifrons* also appear generally darker when observed together with *O. caledonicum*. I have not observed this species in Victoria but a few kilometres across the border in South Australia. Larvae have also been collected from the Murray near Wodonga but as far as I'm aware adults have not been recorded in this state.

Just across the border back in Victoria I have observed *Austrothemis nigrescens* in the same swamp as I first saw *Hemiphlebia mirabilis*. This is one of only two sites where I have recorded them for Victoria (although it seems a common species around Perth). The females and immature males have a predominantly yellow appearance but males can become a vivid red (which I have not personally observed).

Somewhat similar in appearance are female *Nannophya dalei* (Eastern Pygmyfly). These are however significantly smaller than *A. nigrescens* and more abundant. Although not particularly rare they seem to prefer good water quality with ample aquatic vegetation in bogs and small dams. Mature male *N. dalei* have a vivid red abdomen and also a habit of flicking their tail down, probably as a signal to other males.

A very similar species is *Nannophya australis*, which is rare in Victoria – I have only recorded this species at one site (in east Gippsland). The females and immature males look virtually identical to *N. dalei* (except for an extra cross-vein) but mature males exhibit pruinescence.

Tramea loewii (Common Glider) is a large yellow-orange dragonfly with mature males turning to red. It is distributed through much of Australia but rare in Victoria. There are several similar species in the family that can readily be separated by the dark markings on the hind wings but this is the only one likely to venture into Victoria. In November of 2011 I observed several fresh specimens in a swamp in the western Grampians so presumably they bred there (possibly the only such record).

Austrocordulia refracta has been on the Victorian check-list for some time (though there is uncertainty about the data) but in December of 2011 I saw a medium-sized dragonfly flying swiftly around a pool fairly low to the surface. With the help of experts it was soon identified from my blurry photos. The following January I returned and, with the help of Geoff Walker, managed to get some better photographs. This spot on the Wingan River in Croajingolong National Park is still the only location I have seen *A. refracta*.

Another fairly rare dragonfly is the slender *Parasynthemis regina* (Royal Tigertail). I first saw this species in Langwarrin, which I believe was the first record south of the Dividing Range. They seem to be more common around lowland creeks and river billabongs in northern Victoria. Interestingly Frank Pierce has recorded them at numerous dams this summer near the Yarra upstream of Warrandyte.

Darners

[SLIDE GROUP 45]

Darner is a term applied to the *Telephlebiidae* family, most species of which are forest dwellers. They are fairly large dragonflies, mostly brown with pale yellow markings and can be confusing to separate for the uninitiated.

The one in this group I have encountered most is *Austroaeschna multipunctata*, which are fairly common along creeks in the forests east of Melbourne (near where I live). Since there is a similar species in the Grampians I spent a bit of time at Mt Buangor State Park and Mt Cole State Forest over the past two seasons but despite being less than 100km from the Grampians I have only seen *A. multipunctata* at these sites.

The similar species that seems to only exist in the Grampians is *Austroaeschna ingrid*, described in 2009 by Gunther Theischinger. Separating *A. ingrid* from *A. multipunctata* is quite technical but includes examining the male inferior anal appendages – as yet I do not have good photos of male *A. ingrid*.

Austroaeschna pulchra is the easiest of this group to identify with its large, pale marking on its abdomen, the only such species in Victoria.

Austroaeschna atrata can be found in the forests east of Melbourne (including Sherbrooke Forest) and does not have any noticeable pale marks on top of the thorax. *Austroaeschna subapicalis* is very similar, normally having significant pale dorsal markings on the thorax. It seems to be much less common than *A. atrata* in Victoria but I have great trouble separating these at the moment.

In a different family but similarly patterned on the body is *Austropetalia tonyana*. It has obvious dark red markings along the leading edges of the wings. It has interesting behaviour in that it breeds almost exclusively by waterfalls and adults flight records are limited almost entirely to the month of November. They have been records at Sherbrooke Falls and occur east, apparently up to quite high altitudes.

The most commonly encountered is probably *Austroaeschna unicornis*, males of which can be observed patrolling along rivers looking for mates. Females oviposit in old logs in the water.

The best place to observe *A. tonyana* I have found to be Toorongo Falls near Noojee. The males fly up and down the falls, mainly in the early evening, searching for females. They occasionally rest, usually close to the cascading water, where they are likely to get splashed. I have observed females ovipositing in soaked, dead vegetation hanging by the falls.

Telephlebia brevicauda is a Darner but quite distinct to the others in Victoria. It too has wing markings but the entire leading edges are dark. This species spends most of the day resting, hanging under vegetation and rocky overhangs. In the evening, usually between sunset and dusk, they emerge to hunt.

Spinaeschna tripunctata is a fairly rare species and prefers fast-flowing rivers. Its abdominal markings are distinctive. I first observed this species on the Wonnangatta River (near Dargo) in February 2011. At this one corner of the river there were several around and difficult to photograph, that's until I went spotlighting at night when I saw two coupled pairs about 10m apart. The following morning I observed a female ovipositing on fallen bark in quite turbulent

water.

At this same location I quite a few *Notoaeschna sagittata* and for the first time got lots of good photos and observed their amazing behaviour. Females oviposit on the sides of rocks under rushing water.

At the same site where *Austrocordulia refracta* was recorded I was finally able to confirm *Austrophlebia costalis* for Victoria. I had seen them there for a few seasons but was never able to get any photos. With these photos and video I take this opportunity to announce the presence of this species in Victoria (thanks to Gunther Theischinger for verifying the species for me beforehand).