

British Dragonfly Society Sussex Group Newsletter Spring 2019

No 42



The Missing Links

Deep in the heart of Sussex, there are wild places that nobody ever goes to. Places like Crowborough, Haywards heath and Findon are so remote that it is difficult to penetrate deep enough into the heartland to find rare species of dragonfly

Oh no, hang on a minute, it's one of the most populated parts of Britain and they are right next to some of our major urban conurbations. We're not entirely sure why some of our busiest places get ignored for dragonflies. It's partly about access and habitat availability, and partly about not realising that our busiest places are getting overlooked. We confess that when on a foray for new dragonfly sightings, we probably all edge towards the prettier parts of Sussex, rather than our own back gardens, but sometimes it's the back garden sightings which can tell us the most important things about dragonfly species and their conservation.

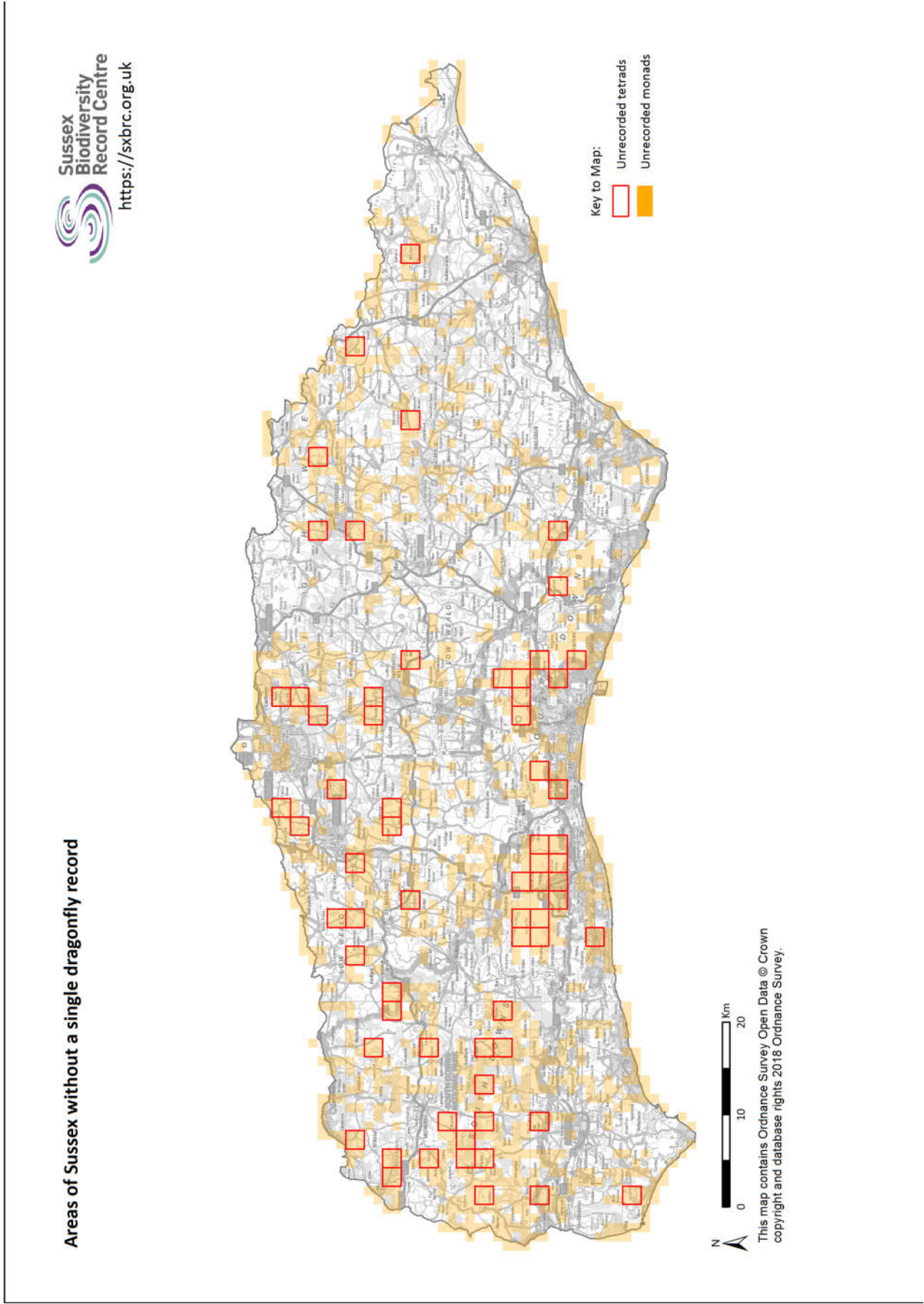


Our wonderful committee member Bob Foreman has prepared some marvellous maps for us, to show the 60 odd tetrads which have no dragonfly records at all in Sussex. Admittedly it's a bit more of a challenge to find a dragonfly up on the somewhat drier South Downs, but imagine how good it would feel if you were the first person in Sussex to put your name to dragonfly recording in one of these 10km squares?

These are the missing links in our dragonfly data below. We'll be going out on some Committee forays into the dragonfly recording deserts—do join us this year in our mission to fill in the gaps in the dragonfly jigsaw.

Continued ...

Below are the 67 10km squares in Sussex with no dragonfly records. The yellow patches show 1km squares which are also unrecorded.

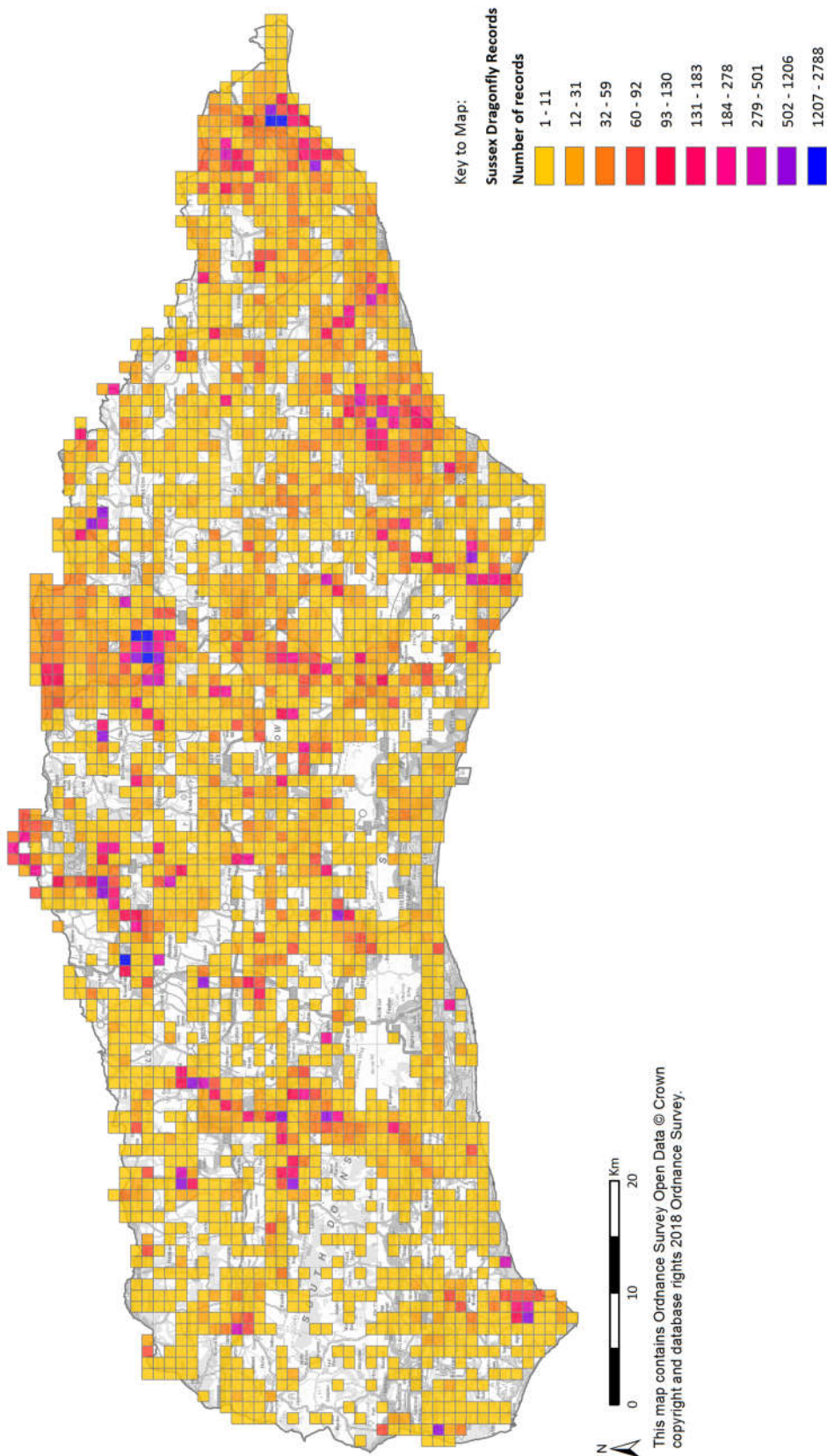


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If you're really keen, you could help us to increase the number of dragonfly records in your local area. For many squares we have either zero, or only up to 1-11 records ever recorded.

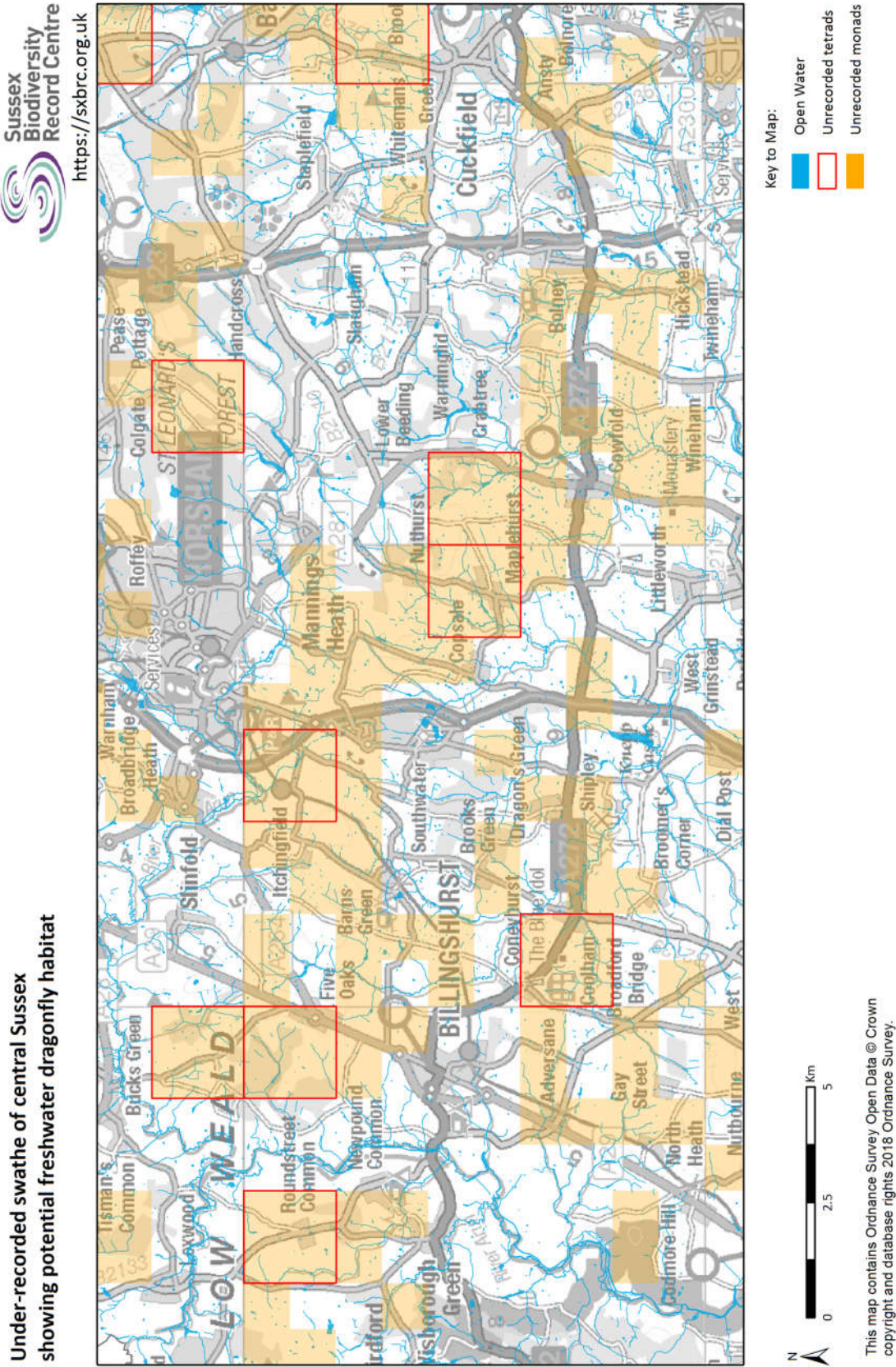


Number of Sussex dragonfly records per 1km square (monad)



Continued ...

Here's a close up of the Cuckfield area showing key gaps in the dragonfly data. Even parts of the lovely St Leonards forest, which we are sure has some rare finds, are unrecorded.



The last man standing. A possible new taxonomic entity for European Odonata

Article by Milen Marinov and Nurten Hacet of Trakya University, Turkey

Just like anywhere in the world, insects in the Bulgaria and Turkish region are not bound by political boundaries and share their historic evolutionary experience within the geographic area they have originated from. One particular part of the Balkan area is known for Bulgarians as Strandzha Mountain and as Yildiz Mountains for Turkish people. This is a unique place, with its foothills starting from the Black Sea. Scientists believe this is a remnant of a long mountain chain that ran across the Black Sea joining the Caucasus Mountains on the opposite end, far back in geological times.

Naturally this is a paradise for botanists who find themselves in a place like nowhere else in Europe. Two entomologists believe this might also be the situation with our favourite insects. This mountain is one of the best places in Europe to easily observe in one place species like Shady Hawker, Odalisque Damselfly, Turkish Goldenring and Bulgarian Emerald. Their studies show that perhaps there is another member of this groups of intriguing species which has gone unnoticed for the taxonomic world for a very long time - a possible undescribed subspecies of Beautiful Demoiselle.

To describe a new subspecies of Demoiselle is a very challenging task. Individuals from the study area do have some deviations from the rest of the European populations, however, in contemporary taxonomy colour variations are considered to be not enough for establishing a new entity. Therefore, they are on a hunt for a larger material from different parts of the continent for comparison to our specimens. Their intention is to compare morphological and colour features across Europe and perform molecular analysis to see how they all differ in order to test if they can really add another new feature for our home region.



Continued...

In this task they are relying on help with collecting specimens from as many countries as possible. Beautiful Demoiselle is a common species but they don't want to see population declines because of excessive collections and it is not their intention to contribute to this.

Therefore, they have put out a request for help with field sampling coordinated with Nurten Hacet. If you think you can contribute with some specimens from your area, please contact Nurten (address is provided below) first in order to see if there is anyone else who has already supplied enough material from your area or if more is needed.



If they are correct in their assumptions, this may be one of the last taxa to be described from Europe ever!

Contact details:

Nurten Hacet
Trakya University
Department of Biology
Faculty of Science
22030-Edirne/
TURKEY

**Female banded
demoiselle**

© B Rainbow

Eye in the Sky

All dragonfly species have excellent vision. Each compound eye is comprised of several thousand elements known as facets or ommatidia. These ommatidia contain light sensitive opsin proteins, functioning as the visual sensing element in the compound eye. But unlike humans, day-flying dragonfly species have four or five different opsins, allowing them to see colours that are beyond human visual capabilities, such as ultraviolet (UV) light. Together, these thousands of ommatidia produce a mosaic of "pictures" but how this visual mosaic is integrated in the insect brain is still not known.

This patterned concentration of opsin types, particularly those sensitive to blue and UV light, gives special advantages to hunting dragonflies. For example, it is thought that the sky appears to be very bright to a dragonfly, thereby providing a clear background against which small moving prey can be easily detected.

Are there colour-blind dragonflies? We don't know, There are some [species] that tend to fly only at dusk; perhaps some of them have limited colour vision. Dusk-active dragonflies have sacrificed most of their colour vision in favour of increased light-collecting capacity by having fewer, larger facets in their eyes. They also lack all colour sensitive opsins except green, which provides the broadest range of light sensitivity for any opsin. As a result, these dragonfly species probably also have a corresponding decrease in overall colour perception.

Dragonflies (and bees) have the largest compound eyes of any insect; each containing up to 30,000 facets, and the eyes cover most of the insect's head, resembling a motorcycle helmet. In contrast to a human eye, each facet within the compound eye points in a slightly different direction and perceives light emanating from only one particular direction in space, creating a mosaic of partially overlapping images.



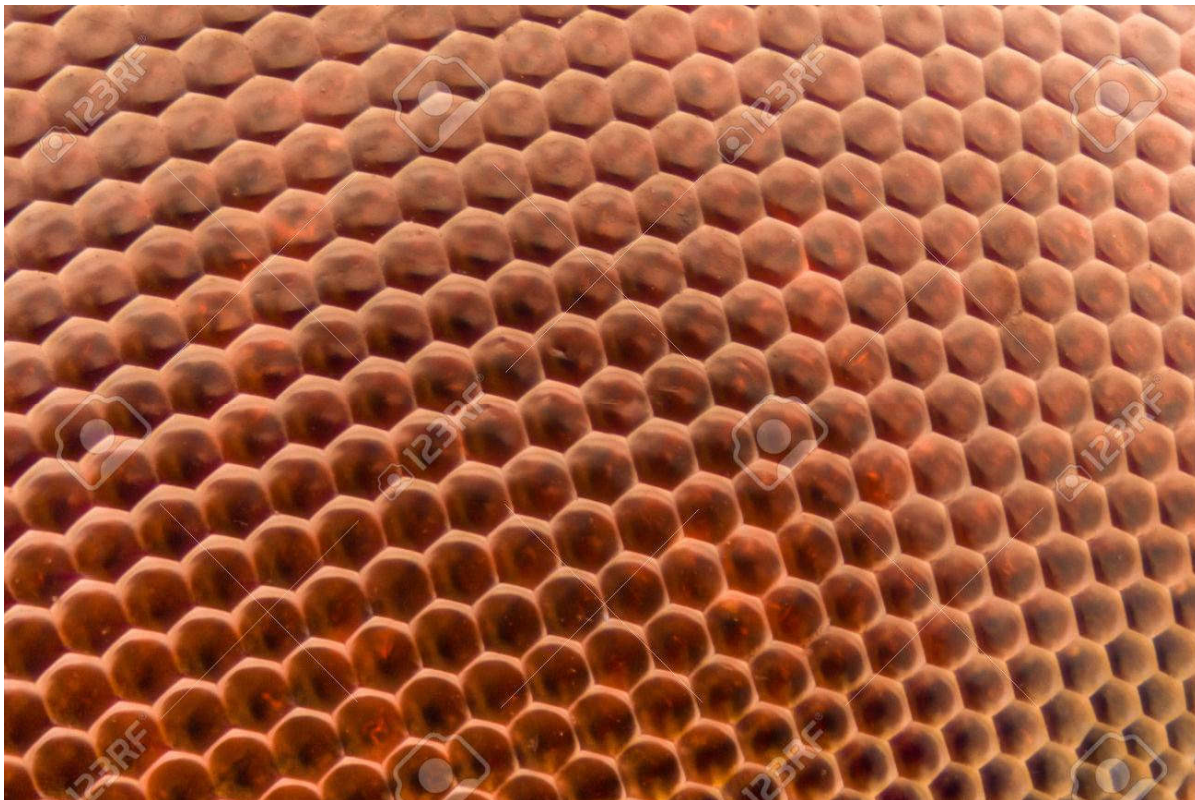
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Does this mean that dragonflies have 30,000 eyes? No, It's more like a human having 10,000 to 30,000 photoreceptors spread out across the retina -- but better than that because each facet has several spectral types of receptors. Dragonflies can also detect the plane of polarization of light, which humans cannot do without the aid of sunglasses. The advantages of this capability are unknown for dragonflies, but other insects are known to use polarized light as a sort of "sky compass" by which they navigate.

Another visual advantage of the multifaceted eye is a dragonfly's acute sensitivity to movement, as anyone who has tried to catch one can tell you. "Dragonflies can see in all directions at the same time. That's one of many advantages of a compound eye; you can wrap it around your head," explains Professor Robert Olberg. "The spherical field of vision means that dragonflies are still watching you after they have flown by. However, the backward-looking part of the eye has rather low resolution. So, if you want to catch a dragonfly, let it go by you and then swing your net like a baseball bat from behind. If you swing at them while they are approaching they'll usually see the net coming and easily avoid it. They are awfully good at what they do." .

Many thanks to Professor Robert Olberg, who graduated with a PhD from the UW's Zoology Department, Dennis Paulson, director emeritus of the Slater Museum, and Professor David O'Carroll, who studies insect vision at the University of Adelaide in Australia

Extreme magnification dragonfly compound eye texture x 20 below.



IUCN Update on the diversity and conservation of European dragonflies and damselflies

Photo: Rassim Khelifa



A recent paper published in *Hydrobiologia*, Kalkman et al. shows that the highest odonatological diversity in Europe occurs in central and western-central Europe (**Fig. 1 below**).

The highest diversity of strictly lotic species (species associated with flowing water) exists in southwest France and parts of the Iberian Peninsula, and the hotspots for endemic species also occur in southwest France, the Iberian Peninsula, and the Balkan Peninsula.

The authors compared the diversity patterns of Odonata species listed in the EU Habitats Directive with those listed in the European Red List and showed “a strong mismatch” between species listed as threatened in Europe, which mainly exist in the Mediterranean, and species legally protected by the European Union, which are concentrated in central and western Europe. It appears that the mismatch has a historical origin.

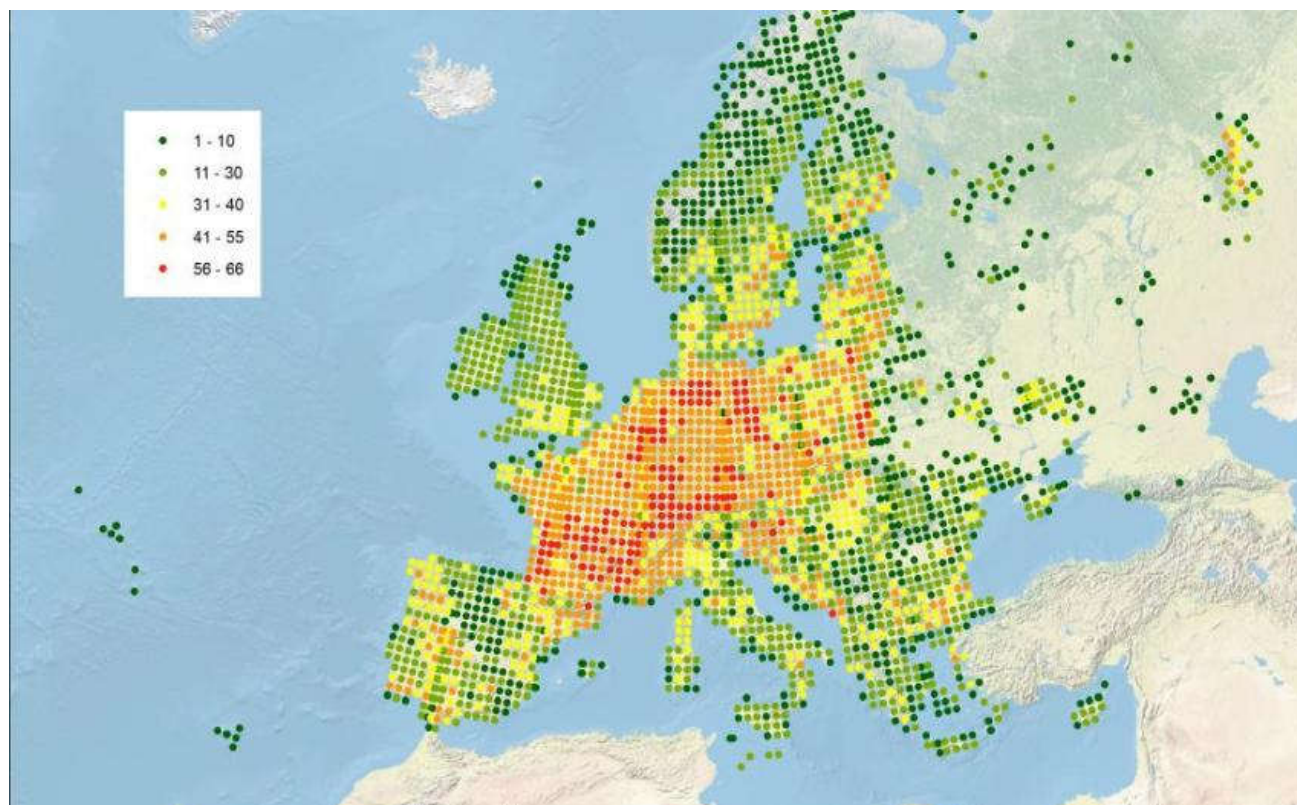


Fig. 1. Diversity map of the 143 European dragonfly species

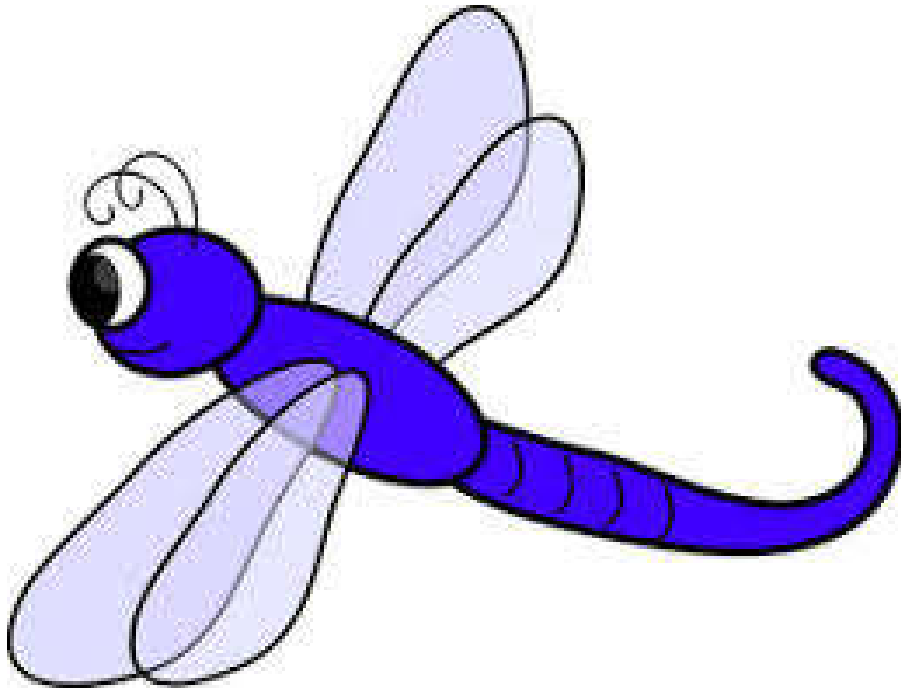
While the species listed in the Habitats Directive were mostly selected in the 1970s and 1980s, the water quality in this period in western and central Europe was quite poor. In fact, habitat quality has improved in this region since the 1990s, but meanwhile, habitat degradation has increased in the Mediterranean. For more information about this paper, you can access the entire article [here](#).

Another [IUCN assessment](#) estimated that approximately one out of seven (15%) European dragonflies are threatened in Europe, with a similar proportion being threatened at the EU level. An additional 11% are considered Near Threatened. By comparison, 23% of amphibians, 19% of reptiles, 15% of mammals, 13% of birds, 11% of saproxylic beetles and 9% of butterflies in Europe are threatened (Temple & Cox 2009, Cox & Temple 2009, Temple & Terry 2007, BirdLife International 2004, Nieto & Alexander 2010, Van Swaay et al. 2010).

About a quarter (24%) of the European dragonflies have declining populations, ten percent are increasing and roughly half of the species are stable. For the remaining 12%, the available information is too limited to define any population trends. Most of the threatened species are confined to parts of southern Europe. Currently, the main threat to European dragonflies is the desiccation of their habitats due to increasingly hot and dry summers combined with intensified water extraction for drinking and irrigation. Other important threats to species living in running waters are water pollution and the construction of dams and reservoirs. The highest levels of diversity and endemism, and the greatest proportion of threatened dragonflies show that these three areas are key for dragonfly conservation in Europe: the southern Balkan Peninsula, Crete and the Iberian Peninsula.

Kids Corner

Fun Dragonfly Facts for Kids



Hey kids (and adults!) - here are a few fun things that you may not now about dragonflies :-

1. They have been around for 300 million years.
2. Prehistoric dragonflies were much larger and could have a wingspan of up to 2 feet!
3. When first hatched, the larva or nymphs live in the water for around a year. Once they leave the water and begin to fly, they only live for around a month.
4. People in Indonesia like to eat them for a snack.
5. Having a dragonfly land on your head is considered good luck in some places
6. They are not related to flies, despite their name.
7. Groups of dragonflies are called swarms, clusters or flights.
8. Watching dragonflies, similar to bird watching, is called odong
9. Things that eat dragonflies include fish, ducks, birds, otters and water beetles.
10. Things that dragonflies & their larvae eat include tadpoles, fish, insects and each other!
11. Dragonflies need to warm up in the sun before taking off and flying for most of the day
12. Dragonflies don't sting and generally don't bite people.. However their larvae which live in the water can deliver a strong bite.

BDS – Sussex Field Trips

2019

Botany Bay, West Sussex

Sunday 23rd June, 10.30 a.m.—3 p.m.



Come and join us for a walk around this stunning private site which houses one of the best chalk streams in Sussex. This rare chalk ghyll stream also has a range of chalk pools and ponds which have been slowly restored from a polluted trout fishery, to an incredible wetland site over the last few years. The site is one of the hidden gems of Sussex. We will start on the old trout lake, and make our way up the almost prehistoric, fern covered, chalk spring fed ghyll, spotting dragonflies and damselflies on the way. The unique ecology of the chalk water should yield some interesting finds.

Depending on numbers and the weather, we may visit an alternative site in the afternoon.

Our meeting place will be SU 95648 16884, just off the Duncton High St, in Duncton, West Sussex. Please park around 50m into the Seaford College entrance on the right hand side. Parking is limited, so please car share where possible. No dogs please. Numbers will be limited to 20, so if you are a larger car share, please contact Fran beforehand to check we have places. Bring a packed lunch, sun/rain protection and binoculars.

Walk leader contact : Fran Southgate; 07825 797520; fransouthgate@sussexwt.org.uk

Continued...

Etchingham, East Sussex
Sunday 28th July. 10.30 a.m. — 3 p.m.



This is an opportunity to visit a fantastic private farm on the Eastern Rother valley near Etchingham. The site boasts ancient ghyll woodlands, a range of modern and historic ponds, meadows, floodplain wetland and riverine habitat, and some lovely views to boot. It will be a fairly long walk, as it's a large site (at least a few kilometres over some uneven and hilly terrain). Depending on time, we may visit an additional site with a member of the High Weald Area of Outstanding Natural Beauty team in the afternoon.

Due to the diversity of the habitats, we should see a good range of different dragonfly species. We are on the hunt for new records of Willow emerald, and we hope to find some records for some of the unrecorded dragonfly squares too.

Parking is limited so please car share if possible (or come on the train!)

Bring a packed lunch, sun/rain protection and binoculars. No dogs please.

BOOKINGS ONLY : - Please contact Fran Southgate on 01273 497555 to book a place,

For information on the day contact 07825 797520



EYE — D Corner No 21

Vagrant emperor—*Anax Ephippiger*



Vagrant emperor © Matthew Clifton Bowley

This species erratically occurs in the UK at any time of year, and was seen in Sussex last year. Its appearance is usually associated with the arrival of winds from the Sahara. This medium-sized hawkler has an overall pale brown appearance and brown eyes.

In the male, the abdomen is brown with a blue saddle on the upper side of segment 2. A black dorsal line extends down the abdomen and gets broader on segments 8-10, resulting in the appearance of paired brown spots. The eyes and thorax are brown with a yellow green lower half and 2 distinctive black bars are present on the frons. The anal appendages are broad and distinctively pointed. The females are darker in colour and the blue saddle on segment 2 is far less obvious and has a violet shade. The female anal appendages are broad and distinctively pointed.

Though the Emperor and Lesser Emperor may appear similar to the Vagrant, the pattern of the wing cells in the Vagrant Emperor is diagnostic, with the cells arranged in 3 irregular rows rather than 2 regular rows in the Emperor and Lesser Emperor.

This dragonfly is on the IUCN red list—category of least concern and is found both in terrestrial inland and freshwaters, and marine and artificial waterbodies.

National News—BDS

If you have a dragonfly photo, but are not sure which one it is, then try the BDS' new dragonfly identification page [here](#).

Distribution trends of European dragonflies under climate change

A new study by Tim Termatt et al. examines shifts in dragonfly species distribution across Europe in response to a warming climate. Data from a total of 10 European regions and 99 species were studied and compared to changes in climate over recent decades. The results indicate that European dragonfly species are showing an overall pattern of range expansion in response to increasing temperatures. Dragonfly communities of European regions are becoming increasingly composed of warmer-dwelling species, although this response lags slightly behind increases in temperature. While warm-dwelling species are benefitting from a warming climate, cold-dwelling northern may disappear from their southern regions, such as the Northern Damselfly, *Coenagrion hastulatum*, in Scotland.

The study demonstrates how dragonflies can be used as biodiversity indicators both on a local and regional scale when investigating the impacts of climate change. It also indicates the potential value of having centralized European database for dragonfly records and data for other freshwater invertebrates.

For more information, click [here](#).



New to Recording Dragonflies?

Here's a few tips to help you get started. A basic dragonfly record has 5 parts to it:

1. Your name and contact details
2. The date you made your sighting
3. The name of the site you were at
4. An OS Grid Reference for the site (Guide on how to do this to follow very shortly)
5. What you saw

Other information that can be recorded, and is useful to us, includes the type of habitat, the weather, the altitude of the site and breeding behaviour.

Please send your records to
bobforeman@sussexwt.org.uk or enter them into i record on the web.



Adopting a Waterbody

It's easy!

I'm sure that many of you get out and about in the countryside on a regular basis, and that on your way you spot the odd streak of dragonfly colour zooming across your field of vision. If you would like to adopt a local pond, reservoir or stream that you visit regularly and tell us what dragonfly life you see there then it couldn't be easier.

Just complete and return the form below to Bob Foreman, Sussex Dragonfly Society, c/o Sussex Wildlife Trust, Woods Mill, Henfield, BN5 9SD. All returns will be held in our local database so that we can provide you with support on identification. If you're not great at identifying dragonflies, never fear, you can email or send us your pictures and we'll get our experts to identify them for you!

Name

Address

Contact Tel No

E-Mail

Name of Adopted Site



Sussex Dragonfly Society Newsletter

Top Ten Things To Do To Keep Dragons Flying In Sussex

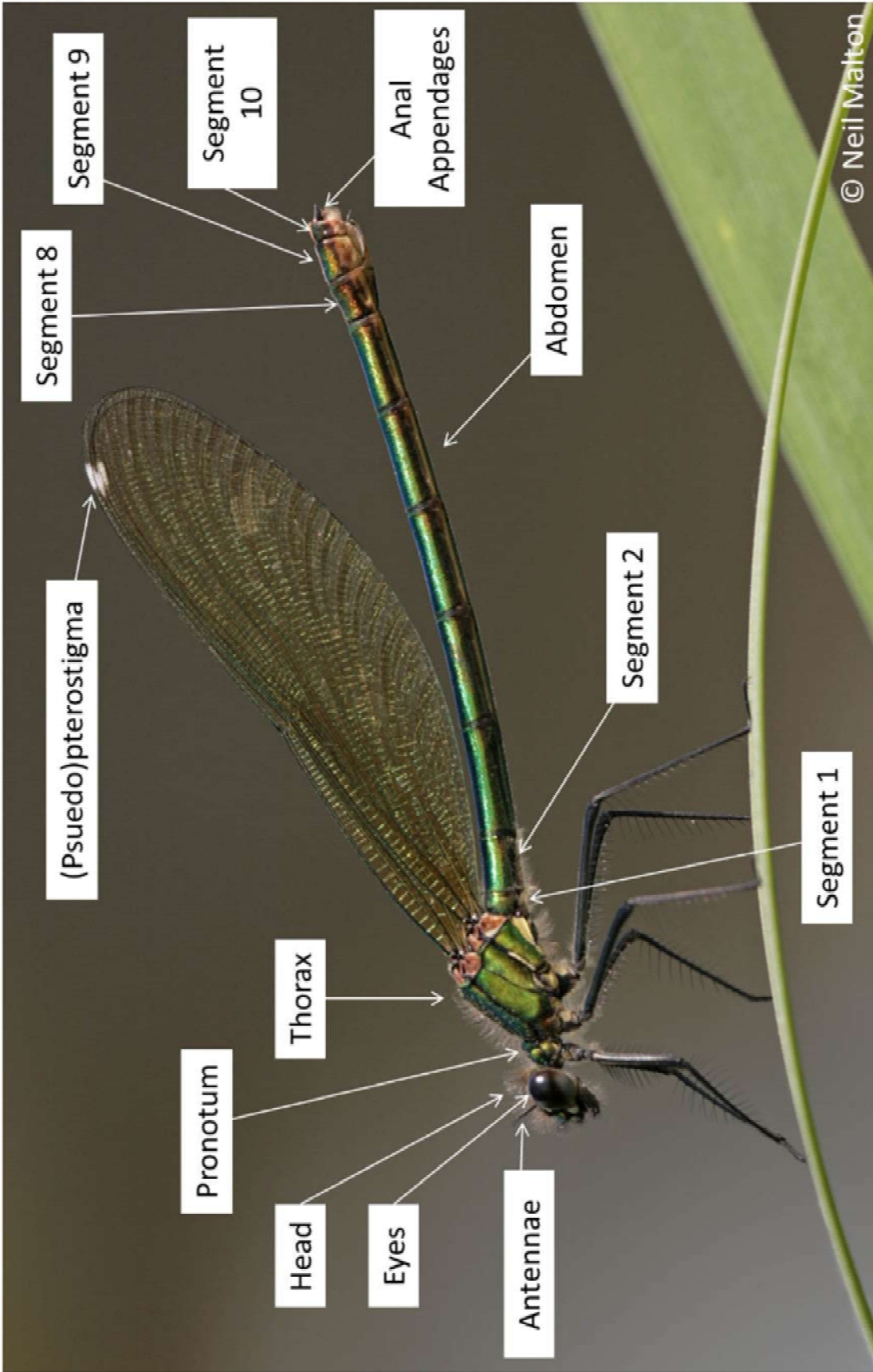
1. Report your sightings either at www.brc.ac.uk/irecord, or to the Sussex Biodiversity Records Centre at Woods Mill
2. Take photos of unusual dragonflies that you see and post them on the SDS website or SWT twitter feed
3. Come on our free training days and guided walks with local experts – more pairs of eyes mean we know more about what's happening with our dragonflies
4. Create a pond in your garden
5. Become a member of your local group – No charge, just send your contact details to fransouthgate@sussexwt.org.uk or c/o Fran Southgate, Sussex Wildlife Trust, Woods Mill, Henfield, BN5 9SD, and we'll keep you up to date with our newsletters.
6. Adopt a waterbody near you and report back to us on its dragon and damselfly fauna
7. Report the first and last times you see individual species in each year
8. Use less water! Simple as it sounds if we use less water there is less pressure on our water resources and therefore on our wetlands that these amazing insects rely on.
9. Use eco products for washing clothes and washing up — they leave less damaging residues in our waste water and so help our winged friends by reducing pollution.
10. Don't pour chemicals down the drain



Confused by dragonfly and damselfly terminology? These handy diagrams from the British Dragonfly Society web pages should help you learn your pterostigma's from your pronotums!

Damselflies are insects in the sub-order Zygoptera (meaning "paired-wings"). All four wings are near enough equal in size and shape. They are usually small, weakly flying insects that stay close to the water margins or water surface. When at rest, most species hold their wings along the length of their abdomen. The Emerald Damselflies are an exception and usually hold their wings partly open when at rest. They are therefore known as Spreadwings in North America. The eyes are always separated, never touching. The larvae have external plates (lamellae) at the end of the abdomen, which act as accessory gills.

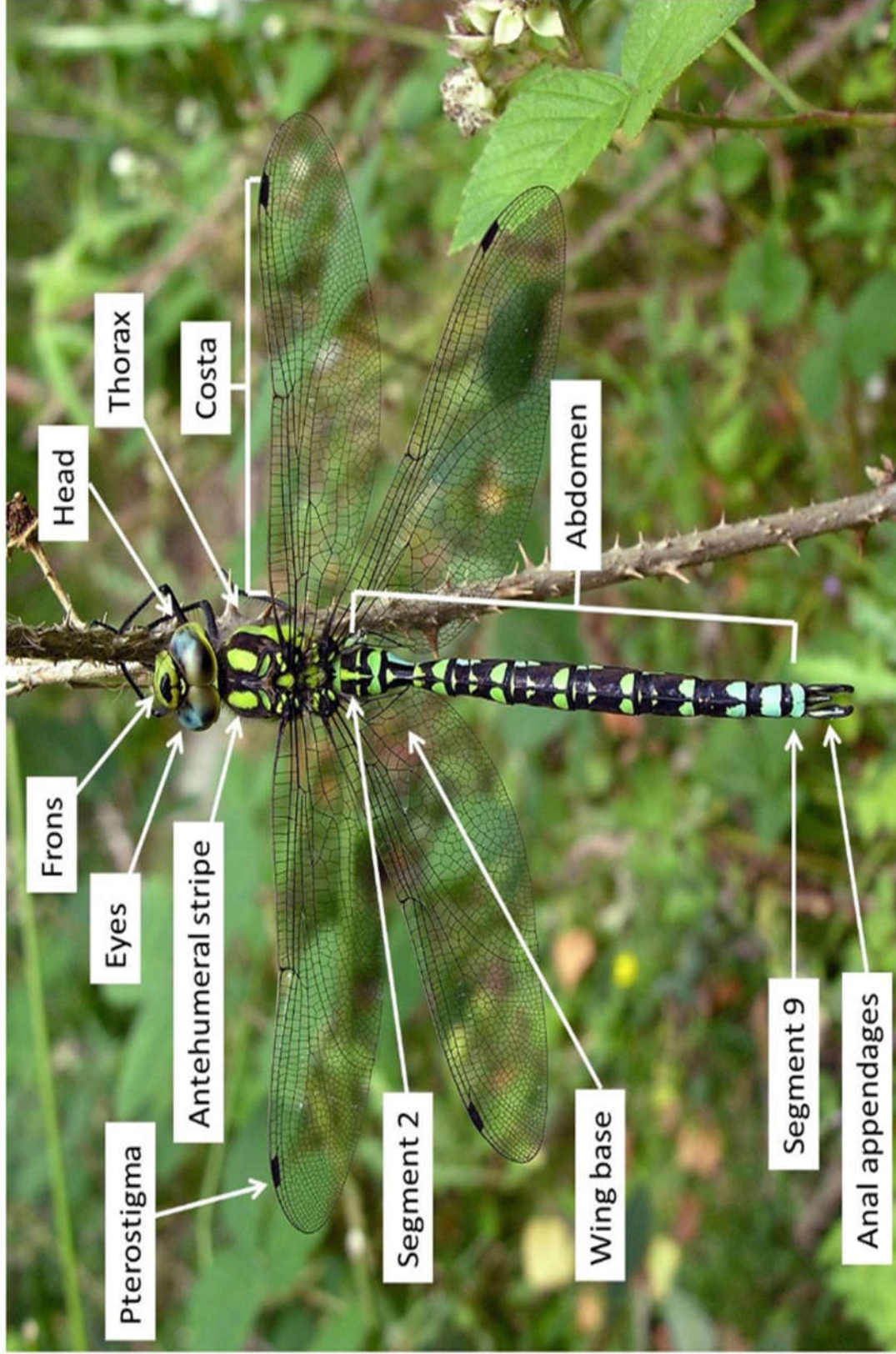
The labelled diagram below may help to define the various anatomical terms used in the descriptions in the species pages.



Dragonflies

Dragonflies are insects in the sub-order Anisoptera (meaning "unequal-winged"). Hind wings are usually shorter and broader than forewings. They are usually large, strongly flying insects that can often be found flying well away from water. When at rest, they hold their wings out from the body, often at right angles to it. The eyes are very large and usually touch, at least at a point. The larvae have no external lamellae (gill plates).

The labelled diagram below may help to define the various anatomical terms used in the descriptions in the species pages.



A fully revised and updated **Britain's Dragonflies: A Field Guide to the Damselflies and Dragonflies of Great Britain and Ireland** by Dave Smallshire and Andy Swash was published this August.

Britain's Dragonflies is a comprehensive photographic field guide to the damselflies and dragonflies of Great Britain and Ireland. Written by two of Britain's foremost Dragonfly experts, this fully revised and updated fourth edition features hundreds of stunning images and identification charts covering all 57 resident, migrant and former breeding species, and six potential vagrants.

This redesigned, updated and expanded edition features:

- An introductory spread that covers the twelve types of dragonfly and damselfly with a to-scale example of each, including additional introductory sections for the most difficult groups; blue damselflies, hawkers and darters.
- Over five hundred stunning photographs – many of which are new – and even more b/w and colour illustrations
- Up-to-date distribution maps that reflect recent range changes and records
- Detailed, easy-to-use identification charts for adults and larvae



Princeton
University
Press

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Secretary:	Fran Southgate
Technical specialists:	Phil Belden — philbelden@sussexwt.org.uk
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Other Useful Contacts

Wildcall – Free advice on all wildlife issues. 01273 494777; WildCall@sussexwt.org.uk
British Dragonfly Society - bds@british-dragonflies.org.uk
Booth Museum - boothmuseum@brighton-hove.gov.uk. 01273 292777
Freshwater Habitats Trust (ex Ponds Conservation) — www.freshwaterhabitats.org.uk
Sussex Wildlife Trust — www.sussexwildlifetrust.org.uk
National Insect Week — www.nationalinsectweek.co.uk

Donations

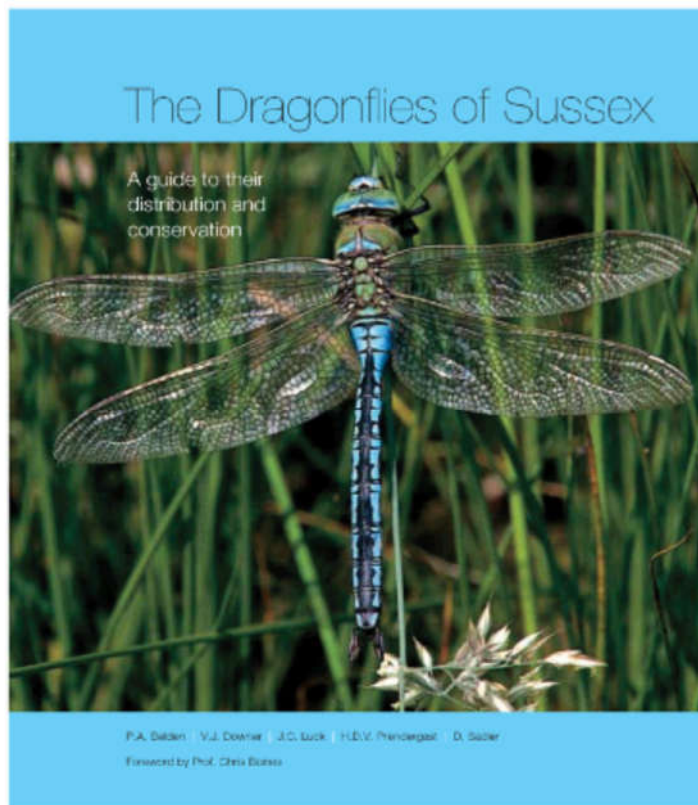
The Sussex Dragonfly Society is run exclusively with donations and proceeds from the sale of the Dragonflies of Sussex book.

If you would like to make a donation towards dragonfly work and restoring wetlands for dragonflies then please write a cheque made out to British Dragonfly Society (Sussex Group), and send it FAO Fran Southgate, Dragonfly project, c/o Sussex Wildlife Trust, Woods Mill, Henfield, BN5 9SD. All donations will be reserved exclusively for dragonfly and damselfly work, surveys, and wetland habitat enhancement work.

Useful Publications

- The leaflet 'Dragonflies and Damselflies in your garden' is available as a pdf file at :- www.british-dragonflies.org.uk/sites/british-dragonflies.org.uk/files/images/GardenDragonflies_0.pdf
- Field Guide to the Dragonflies & Damselflies of Great Britain & Ireland. S Brooks & R Lewington.
- Guide to the Dragonflies and Damselflies of Britain. Field Studies Council
- Dragonflies: New Naturalist. PS Corbet. Collins
- How to encourage dragonflies and damselflies on your land can be downloaded [here](#).
- "British Dragonflies" 2nd edition. D Smallshire and A Swash.

The Essential Garden Companion & Guide for Countryside Explorations **THE DRAGONFLIES OF SUSSEX**



The first ever published book on Sussex Dragonflies.
by Phil Belden, Vic Downer, John Luck, Hew Prendergast & Dave Sadler.

The indispensable guide to these aerobatic, highly colourful and beautiful insects.
With detailed distribution maps and notes on status, habitat and conservation, , etc.

Available from Sussex Wildlife Trust, Woods Mill, Henfield, Sussex BN5 9SD. (01273)
492630, or from good book shops (ISBN 0-9525549-1-7)

NOW JUST £5 plus post & packaging
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Proceeds go to dragonfly and wetland conservation

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