Dragonfly Survey 2024
Vice County 66
Durham Wildlife Trust Region

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County Recorder VC66

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Summary

The British Dragonfly Society (BDS) works in conjunction with the Durham Wildlife Trust (DWT) to actively survey the region between the River Tees and the Tyne. This approach allows us to pay particular attention to a wide range of known sites via a dedicated app, and collect via iRecord & iNaturalist any other sightings within the region.

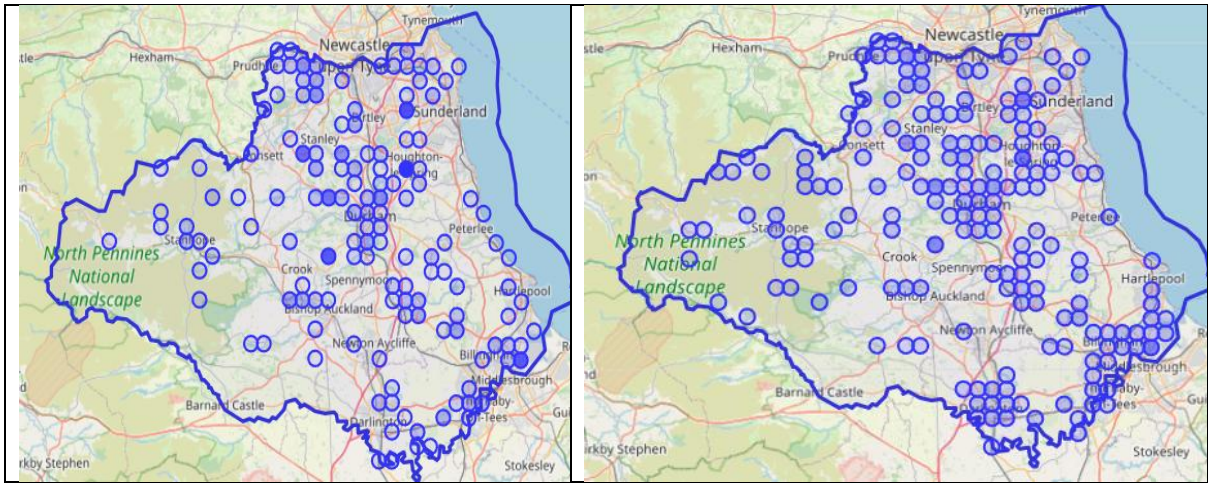
For the second year in a row, the very wet and cool summer meant that observations (as opposed to how many Odonata emerged) were down from the last warm, dry year (2022), with 3932 sightings, to 2531. This was despite the addition of iNaturalist as a method of submitting sightings.

In recent years, it has been apparent that there are 19 resident species in VC66, plus the occasional visitor that gets the local Odonata spotters excited. In 2024, we are now confident that Willow Emerald Damselflies are breeding at Joe's Pond (Rainton Meadows) as they have been observed at the same spot three years in a row, and this year, they were also spotted at other sites in both VC66 and just over the Tyne in VC67.

Another high point was the quite dramatic spread in just one year of Small Red-Eyed Damselflies. In recent years, they have been successfully breeding at Brasside Pond near Durham, with occasional other sightings. In 2024, they were spotted on 45 occasions at 15 locations, along with more in VC67, meaning that in 2024, they not only spread widely in VC66 but moved further north, too. It was particularly nice that they chose to breed in a brand new pond dug next to the main path at Rainton Meadows, allowing anyone to see them very close up.

The season started, as always, with a Large Red Damselfly this year on 26th April at Langley Park Wetlands, and they were soon spotted around the region. The first week of May saw the arrival of Common Blue, Blue-Tailed and Azure Damselflies, with the first dragonfly (Four-Spotted Chaser) on May 13th, virtually a match to 2023.

The wet winter of 2023/24 and the ongoing rain in 2024 meant that even the most shallow ponds retained water throughout the year, and boggy ground also appears to have supported breeding. This should all mean Odonata will be seen in good numbers in 2025.



2023 Sightings ***2024 Sightings***

While the sightings in VC66 continue to come mainly from the central region, in 2024 primarily, there were more locations covered, partly due to the addition of iNaturalist as a method of submitting sightings. The advantage of this tool is that a photo must be submitted, which makes for accurate, albeit slow, verification.

As the survey was, until recently, focussed mainly on Durham Wildlife Trust reserves, there are still many sightings at them, in particular Rainton Meadows, which continues to be a BDS hotspot with 16 species, including the Willow Emerald Damselflies. Only Oakenshaw NR matched that number of species. While Rainton had Willow Emeralds and Small Red Eyed Damselflies, Oakenshaw had Black Darters and Golden Ringed Dragonflies.

To see the best sites in VC66, use this link to view a Google Map that includes directions, parking information and a little detail on what you might see. Record your sightings on iRecord, iNaturalist or via this app.

In 2024, three BDS/DWT guided walks were run, and it is hoped that far more will go ahead in 2025. Events will be on the Durham Wildlife Trusts Events page and circulated by the BDS. My thanks, as always, to those who submitted sightings.

Cover photo Michael Coates. Survey tool courtesy of Protostar Surveys

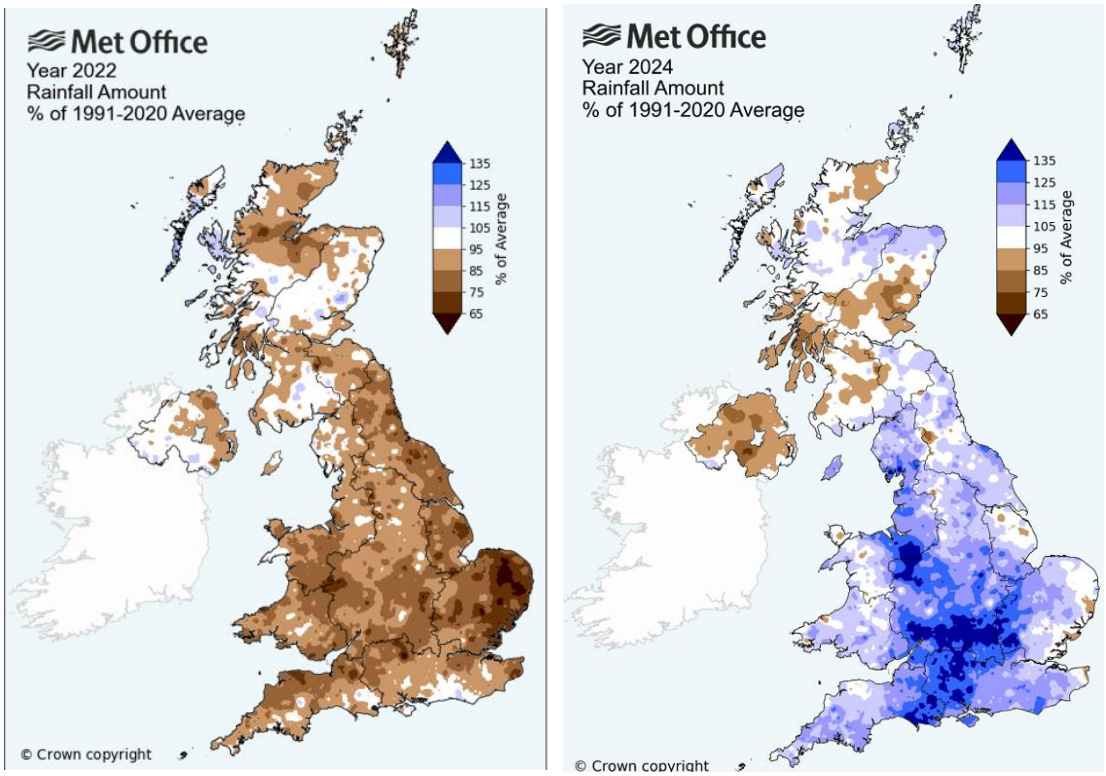
Detailed Analysis

Background

For some years, the Durham Wildlife Trust has surveyed Odonata at its 50+ sites along with nearby nature corridors. That survey is now combined with the records submitted via iRecord to create this joint BDS/DWT report.

The northeast of England generally has a cooler climate than the rest of England. However, the annual temperature has been increasing in recent years, and rainfall has become less predictable, with long dry spells often followed by flooding. The milder weather is likely responsible for hitherto southern species, such as the Willow Emerald and Small Red Eyed Damselfly, now successfully breeding in the northeast.

There were fewer sightings recorded in 2023 and 24 than in 2022, which is not an indication of Odonata numbers dropping but the link between finer weather and observers visiting sites. It is not surprising that observers ventured out less as the 2023/2024 storm season was a busy one, culminating in Storm Lilian in August, the first time 'L' has been reached in a single storm season since the naming system began in 2015. Then, no sooner were we in the 2024/25 season, Storm Bert brought heavy rain, with 150mm or more of rain falling in the wettest areas.



If you compare the two Met Office summaries showing average rainfall compared to the national average since 1981. In the left-hand graphic, you can see the propensity of brown, indicating that in 2022, most areas of the UK, including the North East, had less than the

typical average rainfall. In 2024, the blue colour shows how the UK had far more rain than is typical. While sightings were down as a result, ponds were full as we entered the winter, and they have maintained that water, which bodes well for 2025.

Method

There are three methods by which sightings were recorded. Firstly, using an application developed by the author for reporting sightings at DWT sites and other hotspots.

For 2025, use this URL to access it https://survey.protostarsurveys.com/zs/OKClQj

Or use this QR code.

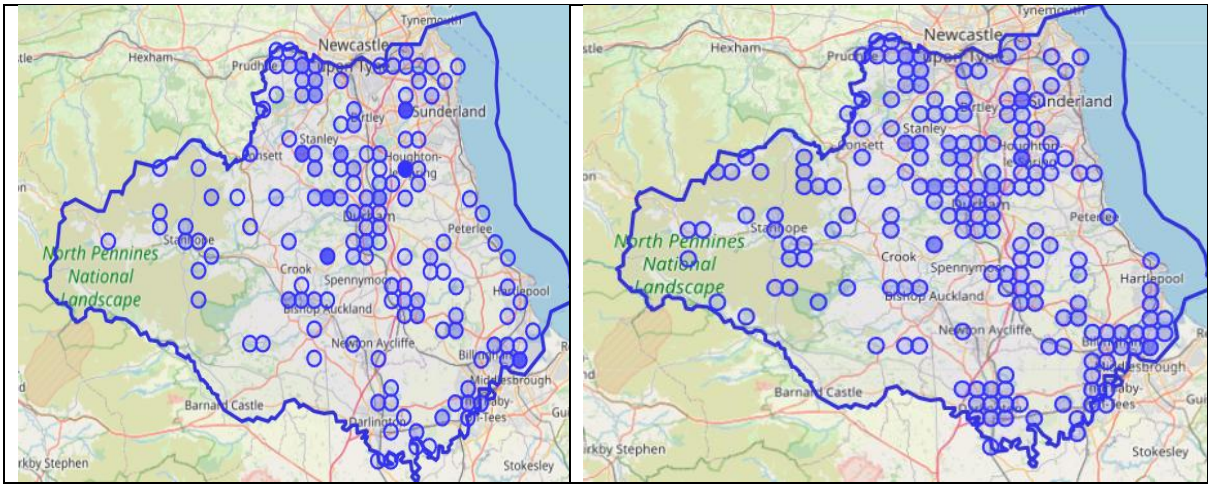
In 2024, Odonata sightings registered in iNaturalist were automatically submitted to iRecord, along with a photo.

The other method is via iRecord, in which all the DWT data is uploaded at the end of the season. While the iRecord data is used in national studies, it has pretty limited reporting capability compared to the DWT app, hence running both methods in our region.

Whatever the submission method, photographic evidence is encouraged even for the common species, as it is so easy to make a mistake, and it provides us with a great source of images. If a record was submitted by a new observer for a “scarcer” species and no photographic evidence was provided, the author would usually visit the exact location to confirm. As this is not always possible, photographic evidence is encouraged, especially for rarer species.

Locations

Despite the somewhat disappointing summer weather, observers still visited a wide range of locations and submitted sightings. Typically, there is a heavy emphasis on the centre of the region, but in 2024, there was a broader spread, including the western areas that are often more difficult to walk in.



2023 2024

2023/24 Odonata Sightings in VC66

Only six DWT reserves were surveyed, down from thirteen in 2021, so in 2025, spotters are urged to visit DWT reserves more often, in particular:

- Low Barns (only 14 sightings submitted in 2024)
- Barlow Burn
- Bishops Fen
- Black Plantation
- Hedleyhope Fell
- Lamelsley Pastures
- Malton
- Milkwellburn Wood
- The Whinnies
- Shibdon Pond
- Tudhoe Mill

Of particular interest is a new site, Stanley Moss Stanley Moss | Durham, which has bogland and shallow pools. Details of all sites can be found at https://www.durhamwt.com/nature-reserves

The British Dragonfly Society (BDS) denotes a site in the North East to be a "Priority Site" if it has:

- Nationally scarce species breeding
- Locally scarce species breeding
- 14 or more species

The Small Red Eyed Damselfly was, until 2024, considered to be a very rare locally breeding species, with just two confirmed sites, however, they were seen at numerous sites across both VC 66 and 67 in 2024, so if that occurs again next year it will be difficult to describe them as locally scarce.

Within VC66, the following sites are considered "Priority"; however, as other great DWT sites were hardly surveyed, it is quite possible that they also meet the criteria.

- Brasside Pond and Rainton Meadows – Small Red-eyed Damselfly
- Rainton Meadows (16 species)
- Oakenshaw Nature Reserve (16 species)
- Langley Park Wetlands (14)
- Greencroft NR (Anfield Plain) (14)
- RSPB Salthome (13)

Low Barns is normally on the list but there were very few sightings this year due to observers not recording there, so in 2025, Low Barns will be a priority.

Account of Species

Species by Number of Recorded Sightings (Times Observed)

NB: A sighting/record means at least one was seen, it is not the quantity observed.

Accepted name	Common name	No. of records	First record	Last record
Sympetrum striolatum	Common Darter	520	02/06/2024	16/11/2024
Ischnura elegans	Blue-tailed Damselfly	234	08/05/2024	18/09/2024
Enallagma cyathigerum	Common Blue Damselfly	224	07/05/2024	18/09/2024
Aeshna cyanea	Southern Hawker	191	20/06/2024	31/10/2024
Aeshna mixta	Migrant Hawker	156	28/07/2024	12/11/2024
Anax imperator	Emperor Dragonfly	148	20/06/2024	06/10/2024
Libellula quadrimaculata	Four-spotted Chaser	142	12/05/2024	27/10/2024
Pyrrhosoma nymphula	Large Red Damselfly	141	26/04/2024	05/10/2024
Coenagrion puella	Azure Damselfly	118	09/05/2024	18/09/2024
Lestes sponsa	Emerald Damselfly	112	24/06/2024	19/09/2024
Aeshna juncea	Common Hawker	94	02/06/2024	15/10/2024
Calopteryx splendens	Banded Demoiselle	86	16/05/2024	16/08/2024
Orthetrum cancellatum	Black-tailed Skimmer	73	02/06/2024	19/09/2024
Libellula depressa	Broad-bodied Chaser	72	13/05/2024	03/09/2024
Aeshna grandis	Brown Hawker	71	06/07/2024	03/10/2024
Sympetrum sanguineum	Ruddy Darter	48	05/07/2024	20/10/2024
Erythromma viridulum	Small Red-eyed Damselfly	45	27/06/2024	18/09/2024
Sympetrum danae	Black Darter	35	21/07/2024	03/10/2024
Cordulegaster boltonii	Golden-ringed Dragonfly	15	01/06/2024	11/08/2024
Chalcolestes viridis	Willow Emerald Damselfly	4	25/07/2024	14/09/2024

Species in VC66 in order of Emergence

Accepted name	Common name	No. of records	First record	Last record
1. Pyrrhosoma nymphula	Large Red Damselfly	141	26/04/2024	05/10/2024
2. Enallagma cyathigerum	Common Blue Damselfly	224	07/05/2024	18/09/2024
3. Ischnura elegans	Blue-tailed Damselfly	234	08/05/2024	18/09/2024
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18. Sympetrum danae	Black Darter	35	21/07/2024	03/10/2024
19. Chalcolestes viridis	Willow Emerald Damselfly	4	25/07/2024	14/09/2024
20. Aeshna mixta	Migrant Hawker	156	28/07/2024	12/11/2024

Azure Damselfly (Coenagrion Puella)

Azures were spotted on 118 occasions (down from 176). However, they were seen at 46 locations, which aligns with previous years.

Photo Alan Mould

Azures were seen in good numbers at Oakenshaw Wildlife Reserve, Rainton Meadows, Washington Wetland Centre, Twizell Woods, and across the region's centre.

In Alan's photo above, you can easily see three of the distinctive identification features that help distinguish them from the Common Blue Damselfly, namely the “coenagrion spur” on the side of the thorax (a black line that only partly covers the side), A black cup shape on S9 and unlike most of the other blue damselflies, the blue on top of their eyes is not connected by a straight blue bar.

Azure females are *polychromatic*, meaning that they can be seen in two distinct colour forms, with green being the more common (90% of all UK sightings) and the less frequent blue form. In last year’s report, the author suggested looking out for the blue form of female Azures, but it does not appear that any were photographed in 2024. Apart from being rare, it might be that observers were not sure what to look for. This photo from the BDS website highlights the differences, namely, blue markings (rather than green) on top of the eyes and blue segments across the top of the abdomen.

Blue Form Female Azure Damselfly. Photo Andrew Holloway BDS Website.

There is a commonly held view that damselflies often mate on floating leaves, possibly to form a discrete territory. However, this great photo by Carol Spencer (no blue-form females) shows that the Azures are not territorial.

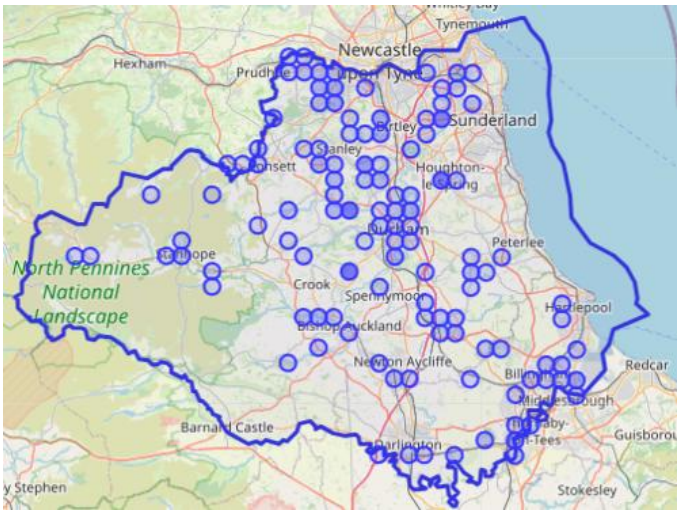
It is also quite possible that these (and other Odonata) you see mating and laying eggs might be quite old. A study published in the Journal of Animal Ecology explained how researchers tagged more than 1,000 Azure damselflies mating in a small pond in Hampshire and observed the intricacies of their sex lives through close-focusing binoculars for two years. Dr Christopher Hassall, Marie Curie Fellow in the University of Leeds' School of Biology, who led the analysis of the data, said: "For the damselflies, it doesn't matter how much sex they have had in the past, they can still keep on going until they die and they don't appear to pay a price for it."

Photo: Carol Spencer

A common question about Odonata is how long they live, and the answer is anything from a few seconds to a few weeks. Typically, they are predated, and this pair of Azures clearly chose the wrong place to mate and were found by an Orb Weaver Spider.

Photo: Malcolm Short

The sightings map clearly shows that most were in a central corridor, so in 2025, spotters are also asked to go further west.



2024 Azure Damselfly Sightings VC66

Banded Demoiselle (Calopteryx splendens)

Photo: Joe Finlay

The Banded Demoiselle is a particularly striking damselfly, which is probably why, in some countries, it is called a Banded Jewelwing. They have metallic blue or green bodies and partly tinted wings. The males have a distinct dark band in their wings (see photo).

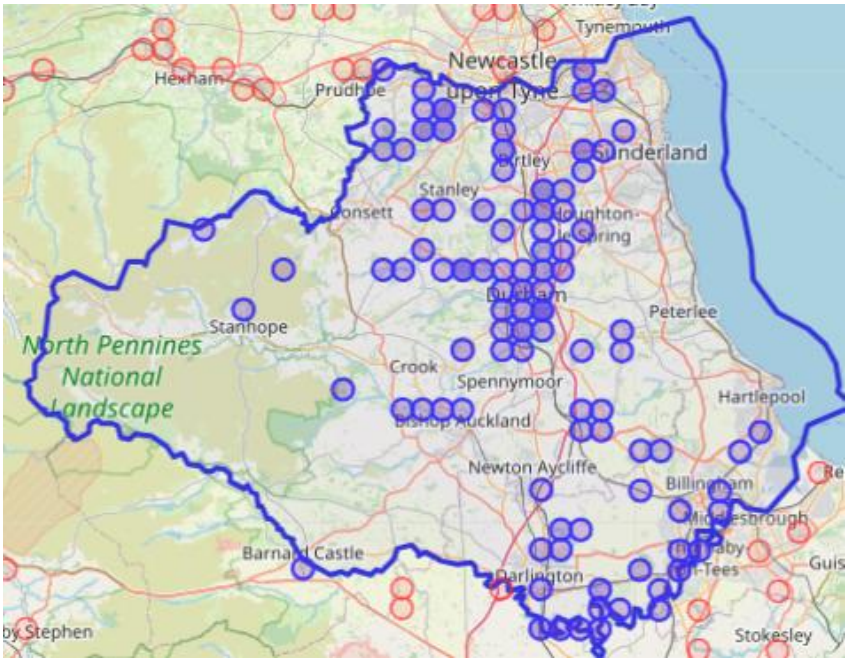
Photo: Malcolm short

Their flight style is distinctive, with a slow fluttering flight and their wings can be seen to flick with each beat. Spotters may well also see groups of Banded Demoiselle, and it is well worth watching them for some time if it is at the edge of a river. Males fly in front of the females and display an exaggerated wing flicking action, and they might then fly down to the water with their abdomen pointing upwards. This is thought to be a means of suggesting to the female that it's a good place to mate and lay eggs. If this approach works, then coupling is brief, and the female will fly off to lay eggs inside vegetation.

You can see it happening in this great video https://youtu.be/gKadVX7Ikv0 and in episode three of the recent David Attenborough Wild Isles series. While not an issue in VC 66, research from Lund University has shown that male Banded Demoiselles are sometimes attracted to females of the larger Beautiful Demoiselle species due to the larger female's higher fecundity

(reproductive capacity). Currently, we do not have Beautiful Demoiselles in VC66; however, once we do, it will be something to look out for.

The season started on May 16th, and they bowed out later than normal on 16th August. They were observed on 86 occasions.



2024 Banded Demoislee Sightings VC66

Black Darter (Sympetrum danae)

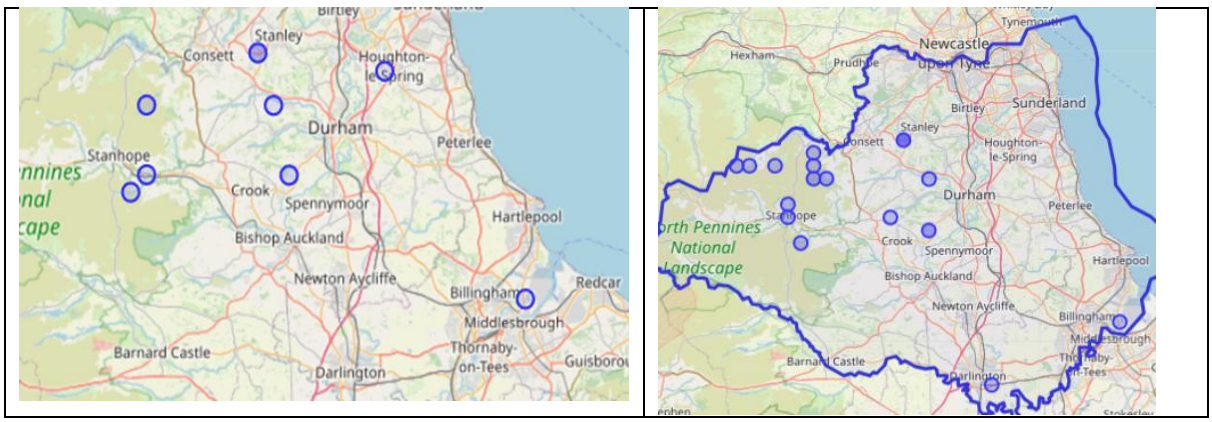
Photo: Malcolm Short

Black Darters were seen on 35 occasions between 21/07/2024 and 03/10/2024. They were still common at their stronghold at Greencroft NR (Anfield Plain) and were also seen at Burnhope Reservoir, Stanhope Ashes Quarry and Oakenshaw NR. As they prefer boggy ground, it was unsurprising that they were also seen in areas such as Waskerley Moor and Stanley Moss.

Photo: Mal Wilkinson

Both sexes are golden in colour when immature, which can lead to misidentification. With immature males and females, look for dark markings on the top of S8-10. Males have a nipped “waist” around S3, and their legs are completely black. Both sexes, when “old”, go completely black, and that can be seen when you compare the two photos of males.a

As can be seen in the distribution maps, the 35 sightings were at more locations this year.



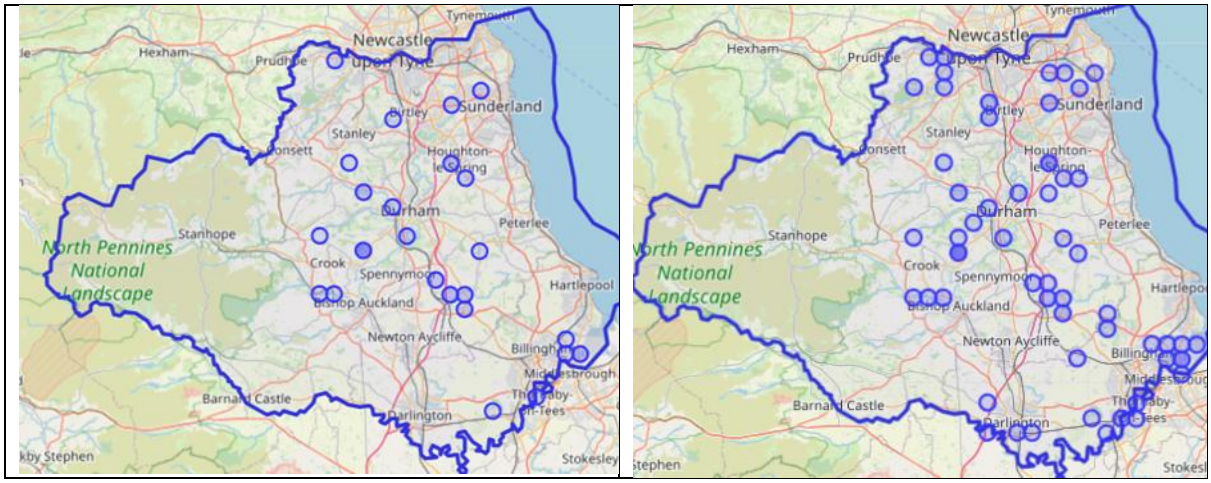
2023 (left) Black Darter Sightings VC66 and 2024 (right)

Black-Tailed Skimmer (Orthtrum cancellatum)

Black Tailed Skimmers were spotted on 73 occasions at 27 sites, including Oakenshaw NR, Langley Park Wetlands, and Rainton Meadows. While the number of sightings was consistent with previous years, the range of sites was wider, and some observers, even in VC67 commented that they were seeing more than usual. That is quite an achievement as this species generally rests on ground that matches their colouration, making them hard to spot.

Photo: Christopher Bill

Their preference for being on the ground starts at a very early age as they may travel some distance over land to find a suitable site to "emerge"; hence, it is relatively rare to find their exuvia on vegetation in a pond. Like most Dragonflies, they emerged a couple of weeks later than normal, on 2nd June and were last spotted on 19th September.



Left: 2023 Black Tailed Skimmer Sightings VC66: Right 2024

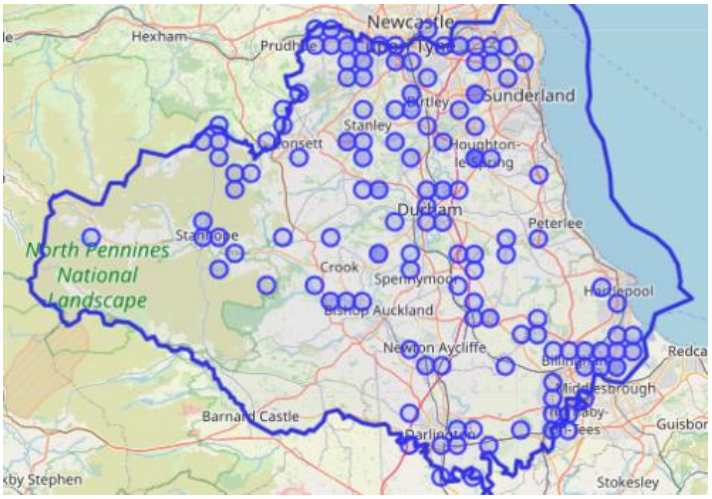
As you can see on the right above, once again, none were observed in the west of the region. This could be down to the relatively few observers in that area or because they tend to prefer lowland sites such as ponds, sand gravel, clay and peat workings.

Blue Tailed Damselfly (Ischnura elegans)

In the recent BDS State of Dragonflies report that summarises the last 50 years of records, it was apparent that the Blue Tailed Damselfly has been in decline in the previous 10 years.

Bearing in mind that the Blue Tailed Damselfly is one of the most pollution-tolerant species and will even be found in brackish water, they may have been impacted in recent years by the use of neonicotinoid pesticides (Barmentlo et al., 2019) which were introduced in 1991. **The good news** is that on Dec 21st 2024, the UK Government decided to stop issuing "emergency" authorisations for using neonicotinoids, so hopefully, this factor will no longer be an issue.

Photo: Joe Finlay



2024 Blue Tailed Damselfly Sightings VC66

Blue-Tailed Damselflies were the most frequently observed Zygoptera (damselflies) in VC66, with 234 sightings, just ahead of the Common Blue with 224.

The 234 sightings (up from 171) occurred between 18/05/2024 and 18/09/2024, with many seen at Washington Wetlands Centre, Rainton Meadows and RSPB Salhome.

Females occur in three different colour forms – one with a male-like appearance, something that protects them from mating harassment. In a new study, an international research team found that this genetic colour variation shared between several species arose through changes in a specific genomic region at least five million years ago.

By sequencing the DNA of the three colour forms of the BlueTail Damselfly and comparing it to the two colour forms in its closely related tropical relative Ischnura senegalensis, the researchers were able to demonstrate that this genetic colour variation in females arose at least five million years ago; through several different mutations in a specific genetic region on the damselfly's thirteenth chromosome.

Broad Bodied Chaser (Libellula depressa)

Photo: Joe Finlay

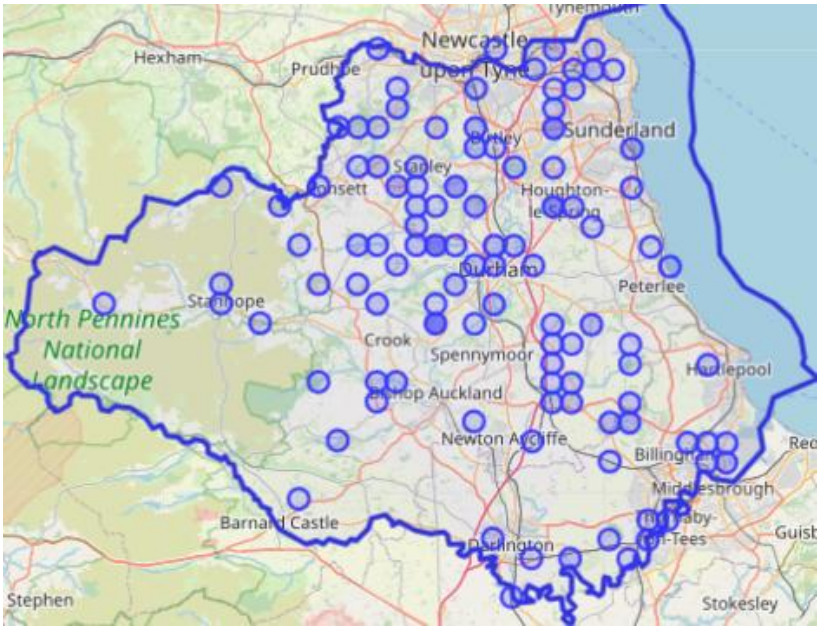
They were spotted at 29 sites (down from 42) on 72 occasions (down from 110). While the 2024 numbers were lower than 2023, they were similar to 2022. The recent variability does not constitute a pattern, however, Broad-Bodied Chasers are considered good indicators of environmental health. Their presence in a habitat often signifies a well-balanced ecosystem with clean water and abundant insect life.

Also, recent research has focused on understanding the impact of climate change on Broad-Bodied Chasers. Studies suggest that rising temperatures and changing precipitation patterns could affect their breeding and feeding habits, potentially leading to shifts in their distribution and population dynamics. Possibly, this is a factor in VC66.

Their mating process involves a complex aerial dance. Males will often hover above the water and perform a series of rapid zigzagging flights to attract females. Once a female is interested, they will mate in mid-air, and the female will then lay her eggs by dipping her abdomen into the water, as can be seen in Joe's photo.

The males are very distinctive, with their blue bodies and yellow flashes at the side. However, immature males look very similar to females, as can be seen in this photo by Paul Rogers.

While most Odonata were a little late this year, a Broad Bodied Chaser was first seen at Oakenshaw NR on 13th May, a full 10 days earlier than 2023. The last observation was at the same site on 3rd September.



2024 Broad Bodied Chaser Sightings VC66

Brown Hawker (Aeshna Grandis)

VC66 is about as north as these large Hawkers get in England. Hence, there were just 10 sightings in VC67 (South Northumberland) but 71 in VC66. Partly, this is because they are breeding successfully in the south of our region, particularly at Oakenshaw NR, Cowpen Bewley NR, Langley Park Wetlands, Joe's Pond, and Coatham Woods.

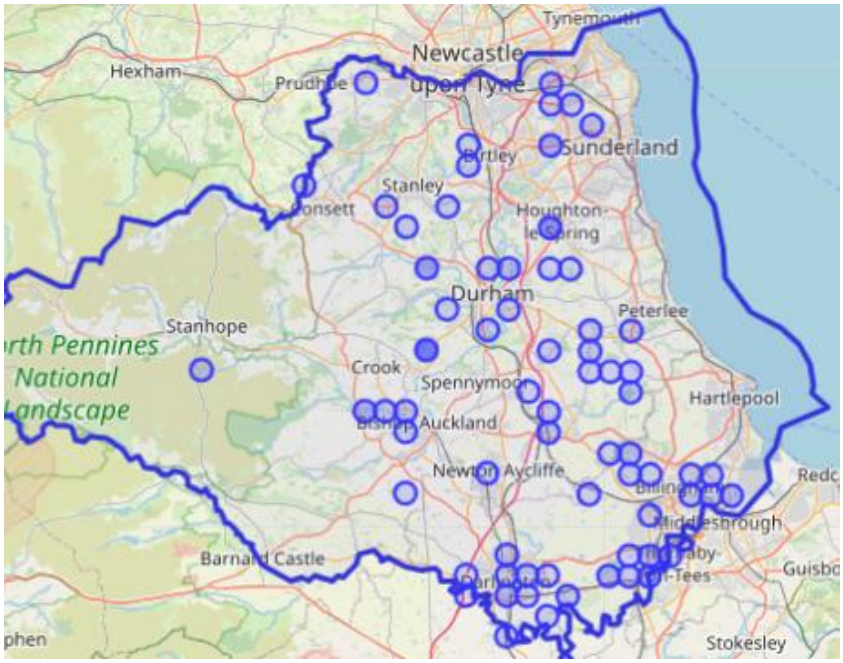
In Joe's photo on the left, you can clearly see the amber wings that make the Brown Hawker so easy to identify.

Photo Joe Finlay

Brown Hawkers are also easy to identify, partly due to their large size and because they are the only predominantly brown species. While both genders are brown with amber wings, the male has a nipped waist and blue-tinted eyes, while the female's eyes are yellowish brown. If in doubt about the sex, get a photo of S10 and consult a field guide, as their appendages are quite different.

They prefer to lay their eggs in rotting wood, so placing a suitable branch or log into a pond is always a good idea to encourage Brown Hawkers.

They were observed on 71 occasions (similar to 2023) between 6th July and 3rd October, with some of the later sightings most likely being migrants from Europe.



2024 Brown Hawker Sightings VC66

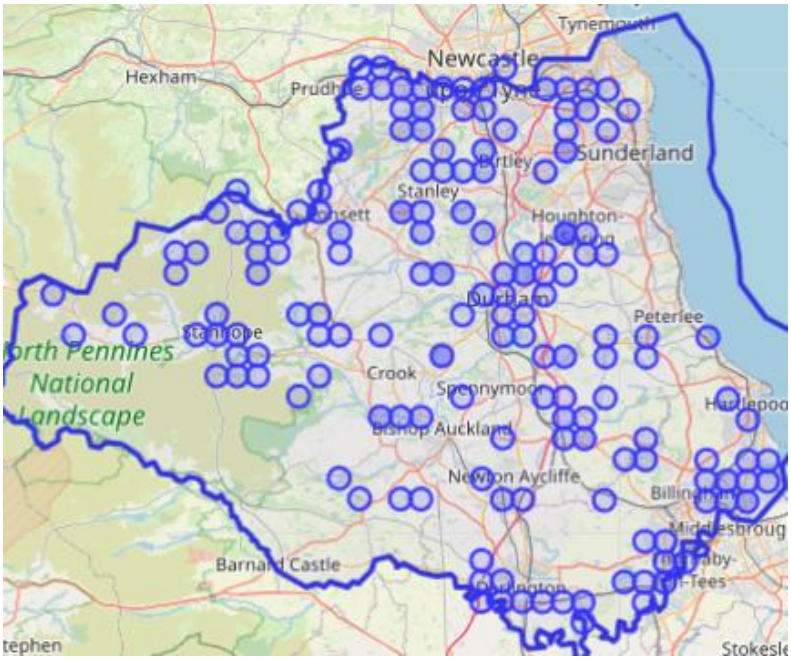
Common Blue Damselfly (Enallagma cyathigerum)

While generally regarded as the UK's most commonly seen damselfly, in 2022, they were the 6th most common Odonata in VC66. However, in 2023 and 2024 they returned to second place, with 224 sightings between 7/05/2024 and 18/09/2024.

Photo:Joe Finlay

In Joe's photo, you can easily see the Setae, which are fine hairs that seem to have some sort of sensory use. For females, they also serve to capture air when they are pushed under the water by the male, thereby allowing the female to float back up (sometimes) and live another day.

One reason for them being so common in the UK is the wide range of vegetation that occurs in mature ponds. A study showed that Common Blue Damselfly larvae preferred patches with structurally complex vegetation over patches with simply structured vegetation or lacking vegetation. Patches with simply structured vegetation were preferred over those with bare sediment, but the number of larvae showing a clear choice, which is regarded as an indication of the strength of the preference for a particular habitat, was relatively low compared to the number of individuals responding when complex vegetation was present. Based on the results presented, the study concluded that the preference of E. cyathigerum larvae for structurally complex vegetation is independent of the presence of predators, prey or competitors. This suggests that this behaviour of the larvae is either a learned or an innate response.



2024 Common Blue Damselfly Sightings VC66

Therefore, in terms of habitat management, ensuring that there is a complex range and structure to the pond vegetation will assist the Common Blues.

As can be seen on the map, they were observed across the region at a wide variety of locations.

Photo: Joe Finlay

Common Darter (Sympetrum striolatum)

Common across the UK, this was, once again, the most frequently observed Odonata in the VC66 region.

There were 520 sightings, a massive increase from last year's 283 sightings.

They were observed between 2nd June and 16th November.

Photo: Christopher Bill

Therefore, once again, a Common Darter was the last Odontata to be seen in the region. This is partly because they are plentiful in numbers but also because they can withstand temperatures below 12 Centigrade, which other species cannot, and they perch on surfaces that will help them soak up the heat. Common Darters are also migratory, both within the UK and during the Summer from mainland Europe to the UK, thus swelling their numbers.

Common Darters are ambush predators, waiting on a prominent perch until prey fly past and darting out to catch them. Once in flight, they are very manoeuvrable.

A 2021 study at Imperial College London, using high-speed cameras, showed that Common Darters perform upside-down backflips to correct themselves.

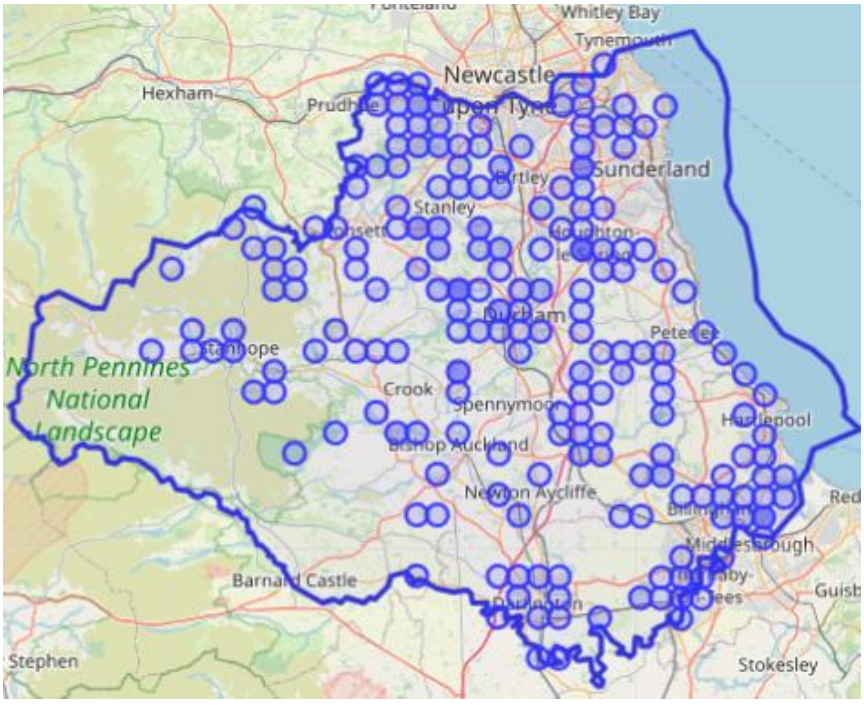
They also found that dragonflies perform the same righting manoeuvre whilst unconscious, suggesting the response has a large component of passive stability – a flight mechanism like that which lets planes glide when their engines are switched off.

To conduct the study, the researchers dressed 20 common darter dragonflies with tiny magnets and motion-tracking dots like those used to create CGI imagery.

They then magnetically attached each dragonfly to a magnetic platform, either right-side up or upside-down with some variations in tilt before releasing the insects into a freefall. The motion tracking dots provided moving 3D models of the dragonfly movements, which were captured by high-speed cameras for 3D reconstruction.

They found that conscious dragonflies, when dropped from the upside-down position, somersaulted backwards to regain the right-side up position. Dragonflies that were unconscious also completed the somersault, but more slowly.

This is not the only study about dragonfly acrobatics. In October 2023, in the journal Biodiversity and Conservation, an article called “From The Forest To the City, The Persistence of Dragonflies and Damselflies in the Urban Jungle” showed how, particularly in warm climates, dragonflies cool off by dipping into the water while flying. You can see a video of that here Dragonfly's Unique Water Behavior Explained | TikTok



2024 Common Darter Sightings VC66

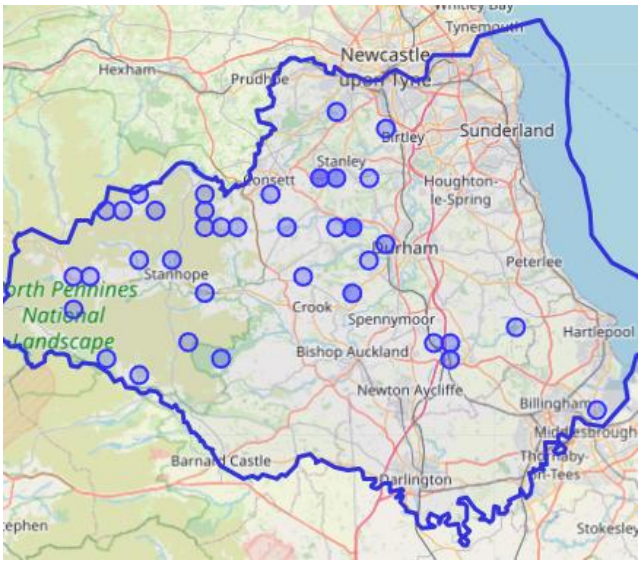
Common Hawker (Aeshna juncea)

Despite their name, they are not normally common in VC66. However, in 2024, they were seen on 94 occasions (up from 50) between 02/06/24 and 15/10/24.

As they are relatively rare, spotters are advised to visit Greencroft NR, and they are also frequently seen at Langley Park Wetlands, Oakenshaw NR and out in the moorland areas to the west of the region, e.g. Waskerley Reservoir and Burhope Resevoir.

Their eggs are injected into vegetation, as can be seen in Mal Wilkinson's photo. Their first winter is spent in the egg stage, and they often remain as larvae for at least another year, so, along with a preference for laying eggs in boggy areas, the impact of two wet seasons might mean their numbers continue to increase.

While this might apply to all dragonflies, one study showed that where large numbers of Common Hawker larvae were present, many displayed stunted growth and did not develop fully, thereby either dying or delaying their emergence. This "self limiting" behaviour might be why we still see relatively few Common Hawkers as they are focussed at relatively few locations.



2024 Common Hawker Sightings VC66

Emerald Damselfly (Lestes sponsa)

Photo Carol Spencer

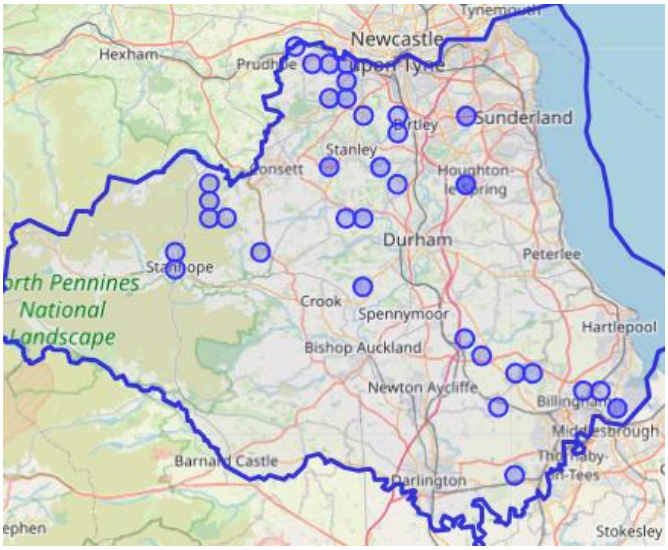
Easily identified when in its adult state due to the bright iridescent emerald colouring of its upper thorax, and as you can see in the photo above, the female has brown eyes and is dark green from S3 onwards. The photo also clearly shows the hairs and spines on its legs, plus the Ovipositor that the female uses to cut into vegetation before releasing an egg.

Photo Christopher Bill.

The male is a far darker emerald with blue eyes and a blue pruinescence on both ends of the abdomen (segments 1, 2, 9 and 10) as it matures. The wing spots are dark. All of this is important to note because until 2024, if you saw an emerald-coloured damselfly in VC66 it would have been Lestes Sponsa. However, for the first year, multiple sites in the region had Willow Emerald Damselflies, and they are certainly breeding at three of those sites.

NB: The Willow Emerald is much longer, and has light wing spots, no blue pruinescence and the male's appendages are distinctly light with dark tips.

There were 112 sightings of Lestes sponsa between 24th June and 19th September. They are typically widespread around the region; however, they were not seen in much of the west of our region. They were most frequently spotted at Rainton Meadows, Gibside NT, RSPB Salthome and Oakenshaw NR.



2024 Emerald Damselfly Sightings VC66

Emperor (Anax imperator)

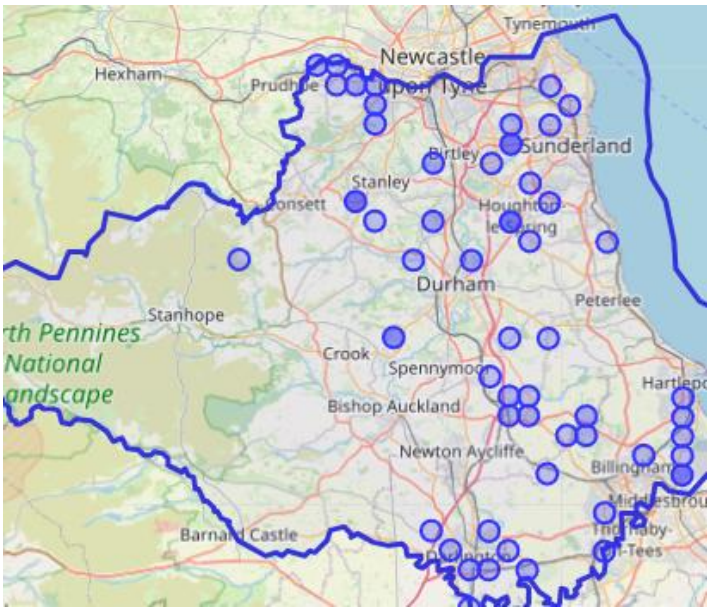
It is easy to identify, as it is the UK's largest dragonfly. Both sexes have an apple-green thorax without any noticeable black markings. The male (see photo) has green-blue eyes, an apple-green thorax and a sky-blue down-curved abdomen. However, it is always worth taking a close look at S10 as there is a female blue form as well.

Emperors are becoming more common in VC66 and are frequently spotted patrolling up and down small ponds, making them very easy to spot.

There were 148 sightings, up from 109 between 20/06/2024 and 06/10/2024.

Photo Joe Finlay

Greencroft NR, Oakenshaw NR and Rainton Meadows had the most sightings. None were recorded in the west of the region, which might be partly because fewer spotters venture there. However, national distribution maps also show that this far north, they tend to be nearer to the coast, possibly as it is warmer.



2024 Emperor Dragonfly Sightings VC66

Four Spotted Chaser (Libellula quadrimaculata)

Photo: Michael Coates

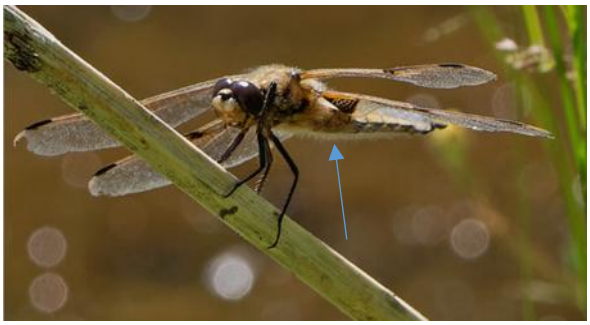
Four Spotted Chasers are very striking due to their wing colouration near their thorax and, of course, the distinctive four spots. They are quite aggressive and territorial, so expect some action if you see more than one. While none of our spotters saw more than ten at any one time, in mainland Europe, they have been known to swarm with up to 2.5 billion of them. Apparently, these swarms, which were first studied in detail in 1971 by Dumant and Hinnekint, happen about every ten years, so maybe one day we will be on the trailing edge of such a swarm.

The male and female are difficult to differentiate. The female, particularly when immature has more gold on its thorax and upper abdomen than the darker males; however, primarily, you need to see (and ideally photograph) the anal appendages from different angles and, from a side view, look for secondary genitalia.

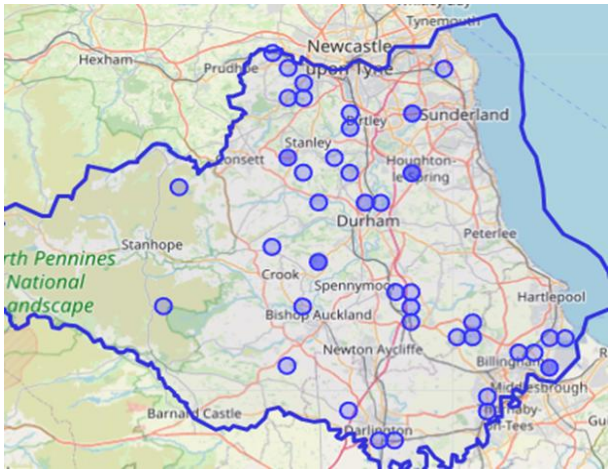
Male

Male

Female



Female



2024 Four Spotted Chaser Sightings VC66

They were spotted on 142 occasions (up from 123) between 12/05/2024 and 27/10/2024, which is a longer season than normal. They were seen at 42 sites, particularly at Rainton Meadows, Oakenshaw NR, Greencroft NR, Washington Wetlands Centre, Pity Me Carrs NR and RSPB Salthome.

Golden Ringed Dragonfly (Cordulegaster boltonii)

Photo Wayne Penrose

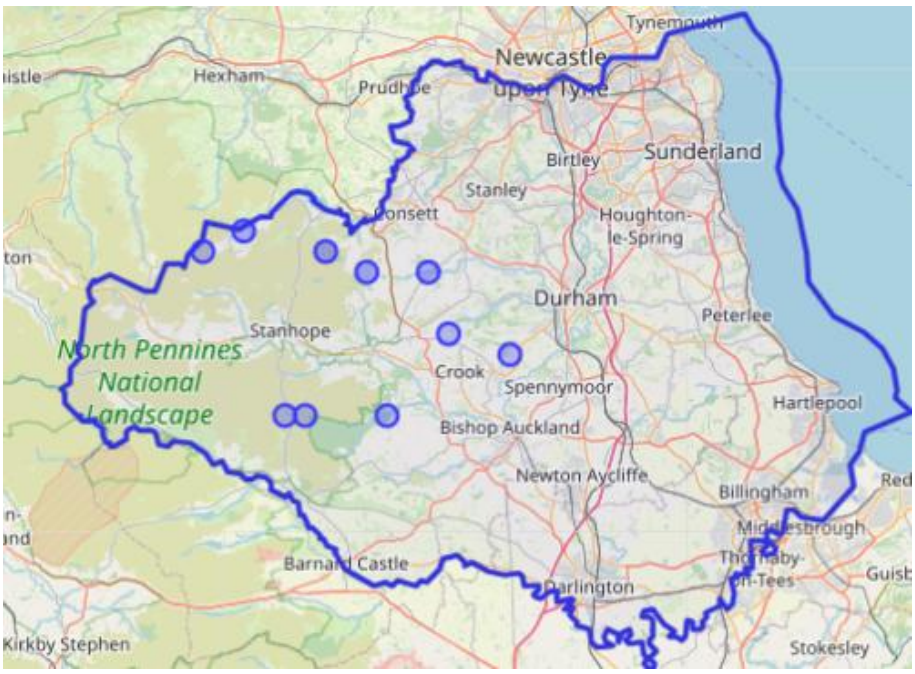
The Golden-Ringed Dragonfly is one of the largest dragonflies in Europe, with a wingspan ranging from 8 to 10 centimetres.

The adult dragonflies have a striking appearance, featuring a black body with bright yellow rings around their abdomen. This colouration gives them their distinctive name.

The females, when viewed from any angle, have a very long and distinctive Ovipositor that looks like a dagger or a spike, hence Americans call this species a Spiketail. Below, you see S9/10 for a male on the left and a female on the right.

They are commonly found near clean, fast-flowing streams and rivers. They prefer well-oxygenated water bodies with rocky substrates.

They are more common in moorland and heathland areas, which possibly explains why they are relatively rare in VC66, or at least why they are spotted less often. In 2024, they were only seen at 11 sites (down from 16) and only on 15 occasions (14 in 2023) despite there being more ways of submitting sightings.



2024 Golden Ringed Dragonfly Sightings VC66

Large Red Damselfly (Pyrrhosoma nymphula)

The author was surprised to see a pair of Large Red Damselflies at Rainton Meadows, in tandem linkage, the first stage of mating. The male was holding onto the female, despite having his head eaten by a Four Spotted Chaser.

You can see a video of this troubling event Large Red Damselfly Mating Horror here.

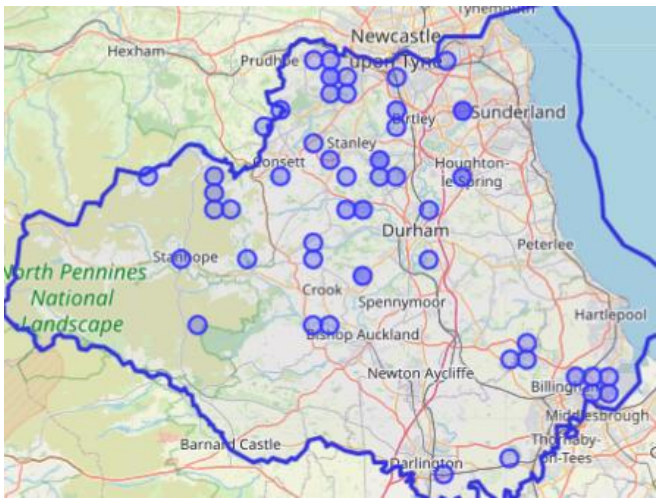
The Large Red is always the first species to emerge in VC66, as before the winter, they grow to a stage that damselflies would normally reach in spring, and then they go into diapause over winter, thereby giving them a head start in the spring.

When mating is more successful, they look like these fine specimens photographed by Carol Spencer at Twizel Woods, which is one of the best sites for seeing Odonata close-up.

When they mature, the female has three colour forms:

1. melanotum (mainly black abdomen)
2. intermedia (S1-5 red, S6-10 black)
3. fulipes (S1- 6 red, S7-10 black) as can be seen in the photo above.

Large Red Damselflies were common around the region and were seen on 141 occasions between 26th April (the first Odonata of 2024) and 5th October, showing that they have a long season.



2024 Large Red Damselfly Sightings VC66

Migrant Hawker (Aeshna Mixta)

Often called the Autumn Hawker, they are traditionally found further south than VC66; as they prefer warm environments.

However, their numbers have steadily increased nationally since 1970. Globally, they have even been seen as far north as Calgary.

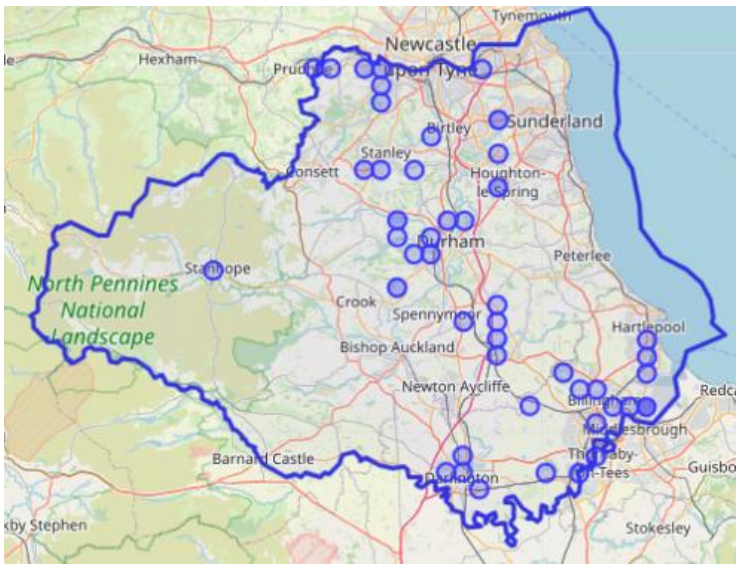
The larvae, however, can tolerate low temperatures, which might explain why they are increasingly being seen in our region.

Photo: Christopher Bill.

Although they are now residents, they are also migratory, and therefore, with a strong wind from the south, we could be benefiting from continental migrants.

A great indicator that autumn is fast approaching or is upon us, the Migrant Hawkers often perch on autumnal leaves, making them particularly beautiful to watch. At a guided tour of Rainton Meadows last September, the group were delighted to witness at least 20 Migrant Hawkers in an acrobatic display all around them.

While the male is clearly blue and brown, immature males are more violet and brown. Probably, at a transition between the two, Joe Finlay photographed this specimen that has clear red markings.



2024 Migrant Hawker Sightings VC66

Migrant Hawkers were seen on 156 occasions (up from 112) between 28/07/2024 and 12/11/2024.

They were seen in good numbers at Rainton Meadows, Langley Park Wetlands, Oakenshaw NR, Brasside Pond, Shibdon Pond, Washington Wetland Centre and RSPB Salthome.

Ruddy Darter (Sympetrum sanguineum)

Occasionally confused with male Common Darters, observers are getting better at spotting this striking species.

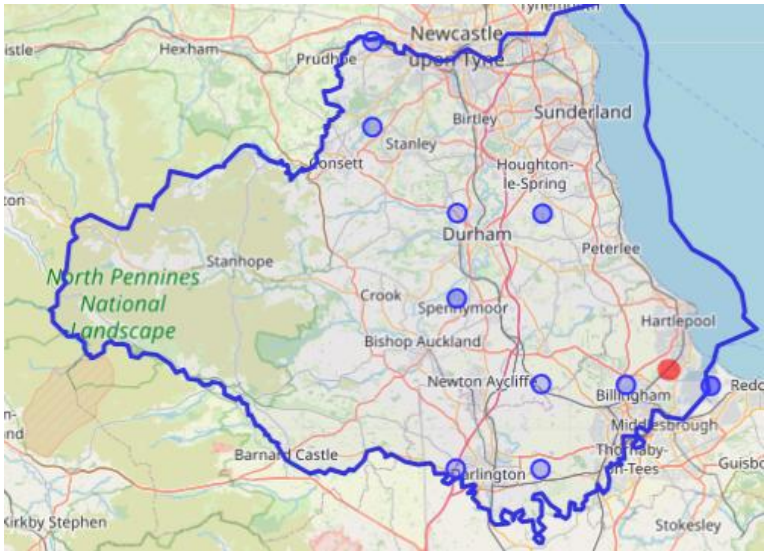
The key differentiators can be seen in this photo. Ruddy Darter males are a deep red, with solid black legs (no white stripe) and have a nipped “waist”.

Photo Joe Finlay

The distinctive shape of the males’ abdomen and the black legs are important to look out for, as immature males have the same colouration as mature females. If you look at Malcolm Short’s photo below, at first glance, it’s a female, but the nipped waist, light green/brown eyes and prominent drop at S9, signify an immature Male.

No females were photographed in VC66 this year, so to see the difference, here is a great photo from the BDS website by Gareth Torks.

In 2022, they were only seen at 10 locations on 28 occasions, and in 2023, sightings rose to 15 locations on 38 occasions, and now in 2024, 18 sites (closely clustered) on 48 occasions, so there appears to be a general trend upwards.



2024 Sightings Ruddy Darter VC66

If you want to see a Ruddy Darter, they are most often seen at Rainton Meadows, RSPB Salthome, Maidenvale NR, Oakenshaw NR, and Cowpen Bewley Woodland Park and Snipe Lane Pond.

Small Red Eyed Damselfly (Erythromma viridulum)

The big story of 2024 was the dramatic spread of Small Red Eyed Damselflies (SRE) not only across VC66 but into VC67.

In previous years, they had been seen in good numbers at Brasside Pond and occasionally at a couple of other sites, but in 2024, they were seen in reasonable numbers at 15 locations.

Photo: Tim Burton (Snipe Pond)

45 sightings were recorded. However, the large number was in part due to the excitement leading to people deliberately visiting sites such as Rainton Meadows, where they were easily visible.

While Brasside still appears to be their main breeding ground, it is evident that they have spread across the region and were seen laying eggs at a variety of other sites. Of particular interest was a brand-new shallow pond at the rear of Rainton Meadows. It was so new that hardly any vegetation existed within it apart from a few clumps of floating weed, and that's what the SRE loves. As the pond is very small, it was easy to see the SRE. In 2024, SRE were spotted at:

Barmston Nature Reserve, Washington	Rainton Meadows
Brasside Pond Durham	Ropner Park, Stockton-on-Tees
Clockburn Lake	Rossmere Park, Hartlepool
East Rainton, Houghton le Spring	Shibdon Ponds
Hartlepool Power Station Estate, Teesmouth	Snipe Lane Pond
Herrington Country Park	Stargate Ponds
Low Newton Junction NR	Warrior Drive, Seaton Carew
Mount Pleasant Park	

Working on the assumption that the large breeding group at Brasside migrated across the region, a common question is how do they spot water to land near? The answer is that Odonata, like most insects whose larvae develop in freshwater, possess positive **polarotaxis**, i.e., are attracted to sources of horizontally polarized light, because they detect water by means of the horizontal polarization of light reflected from the water surface. They can, however, be deceived by artificial surfaces (e.g. oil lakes, asphalt roads, black plastic sheets, dark-coloured cars, black gravestones, dark glass surfaces, solar panels) reflecting highly and horizontally polarized light. So, in essence, as they fly across different habitats, water reflects polarized light and is observed. Furthermore, as some species prefer brackish or boggy water, those sources reflect light differently and can be identified by the species that prefer them.

This ability has also been tested with larvae in laboratory conditions, where they follow light shone through a gauze above the water, meaning that they can discern refracted light even at that early stage.

You can read more about how Odonata see light here.

Photo: Michael Coates (Rainton Meadows)

If you have not seen one yet, the key is to look for the distinctive red eyes in the males. Females do not have red eyes, nor do they have a blue or coloured ring on s8-10. Once mature, they have a much broader black shoulder stripe than any of the colourations of the female Blue Tailed. Fortunately, as with most Odonata, where there is a female, there is likely to be a male, so spotters should first look for the male, and then photograph any likely female and consult the guidebooks.

Southern Hawker (Aeshna cyanea)

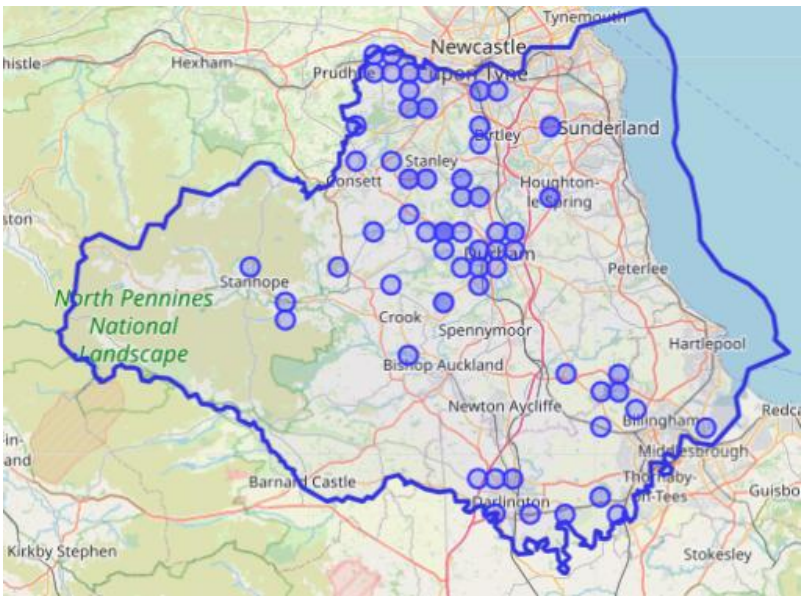
Photo Mal Wilkinson

Despite their name, Southern Hawkers are frequently observed in VC66; however, as they are so quick and active, it is rare to get such a clear photo as Mal's of one in flight. Apart from clearly showing the male's colouration, you can see how the Superior Appendage ends with a downward-facing part, highlighting that dragonflies avoid mating with the wrong species by having appendages that are specifically "designed" to attach to the correct female.

This is mechanical isolation, one of the methods of reproductive isolation that avoids inter-species breeding. The other isolation methods are

- Temporal isolation: Species breed at different times.
- Behavioral isolation: Different mating behaviours or rituals.
- Gametic isolation: Sperm and egg are incompatible.

They were the second most common dragonfly (as opposed to damselfly) in VC66. They were observed on 191 occasions at 66 sites.



2024 Southern Hawker Sightings VC66

Willow Emerald Damselfly (Chalcolestes viridis)

Photo Michael Coates (Rainton Meadows)

Willow Emeralds were spotted at Rainton Meadows (Joes Pond) and Cowpen Bewley NR. They were also seen just south and just north of the VC66 boundary. While pairs have been seen at Rainton Meadows for the last three years, in 2024, they were seen in reasonable numbers (at least 7), and as Joe's Pond is not the easiest to view from, the likelihood is that there were more. They were observed during July-early September.

The key to identifying them is that the male has very pale, almost white anal appendages with tiny dark interior appendages. There is a very pale marking on the tip of its wings. Even

though the depth of field put them out of focus, you can clearly see the white appendages and pale wing spots in the photo below.

Photo: Michael Coates

They lack the powder blue pruinescence that can be seen on the male Emerald Damselfly, and also, if you look at their thorax from the side, there is an irregular spur.

Photo Michael Coates

Discussion Points

In recent years, a greater number of people submitted sightings via iRecord, but a smaller number submitted large amounts of data. While it is wonderful news that so many different people are submitting records, it does increase the reliance on their photographs to confirm the species (as they are unknown to the author), and also, the BDS has less influence over where they go and survey. A small group of spotters originally from the DWT survey have continued to submit large numbers of sightings and have been proactive in trying to reach all the 60+ hotspots. However, a few have moved away or have stopped submitting sightings, and so we are now dependent upon a core group of 6 regulars.

The Google map that shows the hotspots in VC66, along with directions, parking information and a guide to what you might see, can be found at https://shorturl.at/APDaT

As mentioned earlier, in 2025, it would be great if more DWT reserves could be surveyed so that we have long-term data and can use it to influence management plans. In addition, some of the recently acquired sites have the potential for Odonata but have not been surveyed at all, for instance, Cuthberts Moor, Ricknall Carrs, Stanley Moss and Bishops Fen. Please note some of those will need a formal visit organised. See the DWT website for details of sites that do have public access.

While iRecord is an excellent tool for submitting sightings, as mentioned, the DWT app is better in that it allows easier recording of behaviours, and it encourages spotters to visit the key sites. A revised version is available via this link https://survey.protostarsurveys.com/zs/OKClQj

Acknowledgements

The author would like to thank all those who submitted sightings, and in particular, Keith Walton, Joe Finlay, Ian and Elaine Burnell, Christopher Bill, David Howdon, Tom Guy, John Humble, Malcolm Short, Julie Hogg, Mal Wilkinson, Carol Spencer, Carol Inskipp, Helen Jeffries, Vivien Kent, Tim Burton and Mark Newsome. Otherwise, my thanks go to all the many people who submitted records and some great photos, apologies if your name has not been mentioned.

Lastly, thanks also go to the DWT volunteers and staff who maintain the reserves and create new habitats for these iconic creatures.