The Dragonflies & Damselflies of Rye Harbour

Rye Harbour Fauna and Flora Volume 4

By Chris Bentley

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and
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Introduction

In 1965 **East Sussex County Council** published a report on the future development of the East Sussex Coast which included proposals to encourage the establishment of a Nature Reserve over the whole of the 728 hectares (c.1,800 acres) of the Rye Harbour Site of Special Scientific Interest (SSSI). In 1970 the shingle beach, now owned by the **Environment Agency**, was declared a Local Nature Reserve (LNR) by the County Council, who also appointed a Management Committee to administer the LNR. This was the beginning of Rye Harbour Local Nature Reserve. Since then further land has been added by agreement with neighbouring landowners and the County Council and by purchase of land by the **Sussex Wildlife Trust** with the help of the **Friends of Rye Harbour Nature Reserve**. It is hoped that further areas of the SSSI will become part of the Nature Reserve and so this report covers the whole area.

The present extent of the Nature Reserve includes the seaward shingle ridges extending inland to, and including, the gravel pit known as Ternery Pool and the nearby excavation known as the Quarry (Beach Reserve), a large gravel pit (Castle Water), a large area of meadow land and shingle ridges around Camber Castle (Castle Farm) and a small area of saltmarsh fringing the western bank of the River Rother between Rye Harbour and the river mouth.

Access to the Nature Reserve is free, but restricted to the network of footpaths. To avoid disturbance to wildlife all visitors are particularly requested not to enter the sign-posted "Wildlife Sanctuary Areas" or any of the other fenced areas within the Nature Reserve or any of our neighbours' land. There are four bird watching hides which are always open to the public.

RYE HARBOUR FLORA & FAUNA Dragonflies & Damselflies

This report should print out in booklet form so that you can make your own.

Print on both sides of 14 sheets of A4 paper.

Notes.

Information is available at the Kiosk in the car park and at Lime Kiln Cottage Information Centre where there are information boards, leaflets, reports and voluntary wardens to help you discover the wildlife of the Nature Reserve. Lime Kiln Cottage is open when volunteers are available.

Dragonflies & Damselflies

Dragonflies and damselflies belong to the insect order Odonata, which means ‘toothed ones’. In dragonflies, the two pairs of wings are a different size and shape (the scientific name for dragonflies is anisoptera, meaning ‘different wings’), with the rear pair being larger, and both pairs are held flat when at rest. In damselflies, both sets of wings are very similar (the zygoptera; ‘yoke wings) and the wings are raised at rest. Other differences include the generally larger size and more robust structure of dragonflies in relation to their smaller, daintier cousins, and the fact that in dragonflies the eyes usually meet on top of the head (always in the species found at Rye Harbour), while in damselflies they are separated.

Life Cycle

The life cycle of dragonflies and damselflies can be split into three major stages; egg, nymph and adult. Dragonflies and damselflies are very closely associated with wetland habitats, as both their eggs and nymphs (the young stages, equivalent to the caterpillar of a butterfly) are largely aquatic. Broadly speaking, eggs are laid in the water itself (either on submerged vegetation or freely) or on overhanging structures such as vegetation, trees or even concrete! Females may carry this out singly or attached to the male (see below), and in some species the female can become submerged during the process. Hatching may take anything from about three weeks to several months, depending on the species involved and what time of year they are laid. In some species (e.g Ruddy Darter), eggs laid early on in the season will hatch soon

- date - preferably 09 October 1997, but October 1997, autumn 1997, but 1997 or before 1997 can be used.

- your name and anyone else involved in identifying the species.

other information is useful;

- abundance - an exact count, or 1, 10, 100, 1000, or

- DAFOR- dominant, abundant, frequent, occasional, rare.

- sex/stage - male, immature, or flowering, rosette, seeding.

- record type - sighting, dead on road, trapped.....

- associated species - e.g. feeding on leaves of White Willow.

- comment - e.g. seen on road after heavy rain or found under stone.

Please make sure that you keep to public places, or, footpaths, or, that you have the landowner’s permission.

Wildlife Recording

The Nature Reserve keeps its wildlife records on a computer database called RECORDER, which enables a large amount of data to be kept safely and accessible. It can produce maps, tables, graphs, summaries and species lists for small areas, or the whole of Rye Bay. The database currently holds 200,000 records of more than 6,000 species.

You can help to add to this information which will help us to protect and manage the wildlife, and assess the populations and distribution of the many rare and endangered species that occur in the area.

What makes a useful record ?

A useful record does not need to be of an unusual species, we are lacking a lot of information on the distribution of many common species.

An acceptable wildlife record needs four basic parts;

- the name of the species - please indicate if you are not 100% certain.

- its location - preferably a name and a six figure grid reference e.g. Watch Cottage at TQ928175 .

afterwards, while eggs laid later will remain dormant until the following year.

Once hatched, nymphs of both dragonflies and damselflies (left) are voraciously carnivorous, feeding on small invertebrates, fish or even small amphibians depending on their size. The nymph stage can last several years in the larger species of dragonfly, and are thus longer lived than the adults which live for a matter of days or weeks. At the other extreme some species can complete their entire life cycle in a year or less! During this period the nymphs undergo several moults, and once fully grown will move out of the water in search of a secure structure on which to anchor themselves in preparation for their final moult which will produce the adult. This is usually a plant stem, but can be any rigid support. Unlike insects such as butterflies and moths, there is no pupal or chrysalis stage and the adult emerges directly from the skin of the nymph.

As with their younger stages, adults are voracious feeders, taking a wide range of invertebrate prey (or even small vertebrates such as young frogs and toads in the case of the larger species) which they either catch on the wing, or pluck from the vegetation. Newly emerged adults (known as tenerals) are relatively weak fliers and will move away from water to avoid contact with fully adult individuals of the same and other species. During this stage, adult males of some species resemble adult females, developing their breeding colouration over a period of days. At the other

extreme, aged adult females can take on the colouration of males, and for many species there will be a gradual and continual change in colour throughout their adult life.

Once maturity has been reached (after about a week) there is a movement back towards water, when the serious business of finding a mate begins. Many of the larger species of dragonfly, such as Emperor and Brown Hawker, are very territorial, defending a section of ditch or pond from other males of the same species. Females of these species show no such behaviour, and spend most of their time away from water. When they do visit they may be immediately seized by a male, mating taking place soon afterwards. In general, smaller species of dragonfly and damselfly tend to be less territorial, though male Banded Demoiselle do hold territories of sorts, and overall there is a spectrum of behaviour from those species showing a high degree of territoriality to those that show virtually none.

Mating in both dragonflies and damselflies involves the male holding onto the female behind the head and the end of the female's abdomen linking to the front of the male's, forming a 'wheel'. In both sexes, the genital opening is at the end of the abdomen, but in males there is also a set of accessory genitalia under the second abdominal segment into which the male transfers sperm soon after maturity, hence the unusual mating configuration. The process itself may take a matter of minutes or last for several hours, and during this

BRITISH DRAGONFLY SOCIETY

The British Dragonfly Society was formed in 1983 to promote and encourage the study and conservation of dragonflies and their natural habitats especially in the United Kingdom. The BDS is a registered charity (No. 800196).

Membership of the British Dragonfly Society is one effective way of helping to conserve these interesting insects. If you are interested in finding out more about the benefits of membership, or are just interested in dragonflies and damselflies, you can visit the website at www.dragonflysoc.org.uk, or contact the membership secretary at the address below

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BDS Membership Office
23, Bowker Way
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e-mail - membership@dragonflysoc.org.uk
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Image Credits

Brown Hawker: Top D Goddard/BDS, bottom J Stevens/BDS
Emperor Dragonfly: Top A Welstead/BDS, bottom BDS
Hairy Hawker: A Welstead/BDS
Common Darter: Top D Kitching
Red-veined Darter: Top D Ashton
Small Red-eyed Damselfly: Bottom I Tew/BDS
Blue-tailed Damselfly: Middle D Kitching

Vagrant Darter (*Sympetrum vulgatum*)
Very rare migrant to south-east England, most similar to Common Darter from which separation is not possible without capture. Recorded in Britain on fewer than 10 occasions, mostly in the London area. Recorded once on the reserve, almost forty years ago.

Scarce Emerald Damselfly (*Lestes dryas*)
Very similar to Emerald Damselfly, and not easy to separate in the field. Always a scarce species in southern and eastern England, it was lost from many of its known sites during the 1950s and 60s and was feared extinct in the 1970s. It was rediscovered in Essex in 1983 and has subsequently been found in Essex, Kent and Norfolk. A small breeding colony existed at Castle Water during the 1940s, with the last record in 1947. While probably extinct as a breeding species on the reserve, a female was photographed on the Beach Reserve on 27th July 2006, most likely a vagrant (2006 was a year of unusual insect records all over Britain).

White-legged Damselfly (*Platycnemis pennipes*)
A small, damselfly, pale blue in the male, greenish-yellow or white in the female, in which the mid- and hind tibia have white feather-like expansions in both sexes. Three individuals were reported from ditches on Castle Farm on 7th August 2005.

period, pairs may also be seen flying in tandem, with the male still holding onto the female behind the head (left).

Identification of Dragonflies and Damselflies

A total of 25 species of Dragonfly and Damselfly have been recorded at Rye Harbour Nature Reserve. Of these, six are rare visitors and one is extinct on the reserve, leaving 18 regularly occurring species. Unlike many insects, the identification of dragonflies and damselflies can largely be carried out with reference to colouration and markings, rather than microscopic examination (though a x10 hand lens is useful for one or two species). This coupled with the limited number of species which occur at Rye Harbour, means that with a little patience it is relatively simple to assign a name to the vast majority of species you are likely to meet. However, a very basic knowledge of dragonfly and damselfly anatomy is useful.

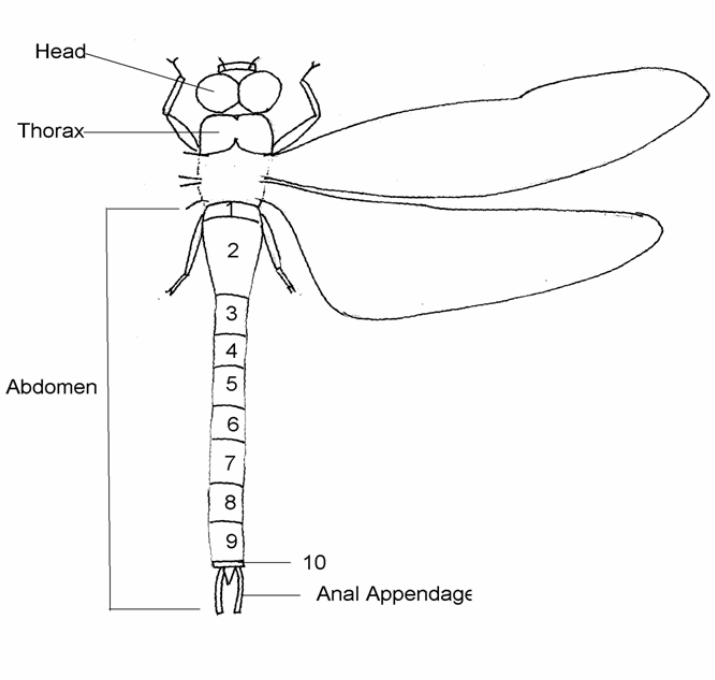


Fig 1. Diagram showing the basic structure of a Dragonfly

Fig. 1 shows the basic structure of a dragonfly. As with all insects the bodies of dragonflies and damselflies are made up of three sections; head, thorax and abdomen. On the head are the eyes (both the large compound eyes and often smaller, simple eyes called ocellae), a pair of small antennae and the mouthparts, while the thorax is the attachment point for wings and legs. The abdomen is further divided in to 10 segments on the last of which are the 'anal appendages'. These are used during mating, and may be long, strap-like and obvious, or short and relatively inconspicuous.

Other Species

Seven other species have been recorded at Rye Harbour, five dragonflies and two damselflies. Of these, one is probably extinct on the reserve and the remainder are either rare or very rare vagrants or migrant species and are unlikely to be met with.

Southern Hawker (*Aeshna cyanea*)

A large blue-green hawker dragonfly, the male with conspicuous green stripes on the thorax and a mixture of blue and green spots on the abdomen, female markings are all green. A rare species on the reserve, with less than five records.

Common Hawker (*Aeshna juncea*)

A large blue hawker dragonfly. The male has a mixture of blue spots and yellow marks on a dark-brown to black background. This is a species of acid, often upland habitats and has been recorded only once on the reserve, near the Bittern Viewpoint in 1994.

Lesser Emperor (*Anax parthenope*)

Similar to Emperor Dragonfly, though the blue colouration in the male is restricted to the first two abdominal segments, the rest being dull greenish brown. Both sexes have brown sides to the thorax (green in Emperor Dragonfly). A migrant species with less than five records on the reserve, the last in 2006.

Yellow-Winged Darter (*Sympetrum flaveolum*)

Males and females similar to other Darter dragonflies, but distinguished by the presence of an extensive, saffron yellow patch on the basal area of each wing and the lack of red venation. A migrant species recorded only twice on the reserve.

Large Red Damselfly (male)

Large Red Damselfly (female)

To help in the identification of the species found on the reserve, keys to dragonflies and damselflies are given below. The features used are based almost entirely on body/wing colour, and in most cases are easily visible. The keys work by narrowing down the possible species through a series of questions until the right answer is arrived at. In each of the numbered sections a series of choices are given, each leading to a different numbered section. For instance, say that you had found a broad bodied brown dragonfly with dark markings at the base of each wing. Section 1 of the dragonfly key has an option 'Abdomen mainly brown' followed by a number 2 (meaning go to section 2). Now there are two choices; wings completely dark tinted, or wings clear with or without dark patches at the front or at the base. The wings of our dragonfly are only dark at the base, not all over and so we move on to section 3. From here we go to section 4, as the wings have dark markings rather than being completely clear. We now have a choice between two species. Four-spotted Chaser is brown and has dark markings at the base of the hind pair of wings, but it has none at the base of the front pair, and also has dark markings at the front of each wing about half way along. In addition, our species is noticeably broad in the abdomen, and is in fact a female Broad-bodied Chaser. After making an identification using the key, go to the relevant section for that species and check your specimen against the description given in the text and the photograph.

Key to damselflies

1	Abdomen blue, blue and black, yellowish green and black or brown and black.	**2.**
	Abdomen metallic green/blue/bronze	**13.**
	Abdomen colour red and black	**Large Red Damselfly**
2.	Eyes red/red-brown	**3.**
	Eyes not red	**6.**
3.	Body with blue colouration	**4.**
	Body without blue colouration	**5.**
4.	Segment 10 of abdomen with black 'x' mark	**Small Red-eyed Damselfly (male)**
	Segment 10 of abdomen without 'x' mark	**Red-eyed Damselfly (male)**
5.	Thoracic stripes running length of thorax	**Small Red-eyed Damselfly (female)**
	Thoracic stripe only running half length of thorax and narrowing. Sometimes looking like an exclamation mark	**Red-eyed Damselfly (female)**
6.	Body metallic blue, wings with large dark patches	**Banded Demoiselle (male)**
	Body not metallic blue. Wings clear.	**7.**
7	Abdomen virtually all black, with any colour restricted to a small patch towards its end (segment 8)	**Blue-tailed Damselfly**
	Abdomen not like this	**8.**
8.	Body blue and black	**9.**
	Body bluish/yellowish-green and black	**10.**
9	Abdominal segment two with a black mushroom	**Common Blue Damselfly (male)**
	or stalk and ball mark	
	Abdominal segment two with either a 'U' or 'Y' mark	**10.**
	Markings not like this	**11.**
10.	Stripes on thorax broken, looking like an exclamation mark. Second abdominal segment with 'Y' shaped mark	**Variable Damselfly (male)***
	Stripes on thorax entire. Second abdominal segment usually with a 'U' shaped mark, though sometimes 'Y' shaped. Crown shaped mark on segment 9 abdomen.	**Azure Damselfly (male)***

Large Red Damselfly (*Pyrrhosoma nymphula*)

Identification: Males of this species are predominantly red with black legs and a black striped red thorax. Females are similar though somewhat more thickset, with a fine black line down the abdomen. There is also a female form in which the thoracic stripes are pale yellow rather than red and the abdomen has more black colouration (pictured opposite), with intermediates between this and the typical form occurring. Unlikely to be confused with any other species of damselfly occurring at Rye Harbour, as it is the only species which has red markings on the body.

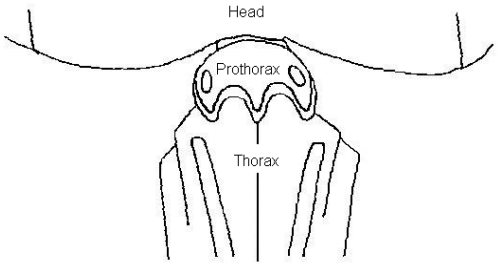
Ecology: Breeds in all types of still and flowing water and is tolerant of acidic, slightly brackish and mildly polluted conditions. Often one of the first colonisers at new ponds.

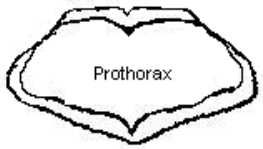
Distribution: Widespread and common in Britain as far north as Orkney, but scarce in some counties with extensive chalk (notably Wiltshire). It has declined in the intensively cultivated areas of the eastern counties, such as the Fens. *Pyrrhosoma* is one of the few genera confined to the Palaearctic region. A relatively uncommon species on the reserve, though increasingly frequent in the last few years with most records from the area around Castle Water Hide. Earliest date 19th April, latest 26th August.

Emerald Damselfly (male above, female below)

11. Segment eight of abdomen with spine underneath at the rear	**Common Blue Damselfly (female)**
Segment 8 without spine	**12.**
12. Segment 2 of abdomen with 'thistle' mark	**Azure Damselfly (female)***
Segment 2 of abdomen with 'mercury' mark	**Variable Damselfly (female)***
13 Wings clear, held apart and at angle to body at rest. Front and rear end of abdomen blue in male (this may rub off)	**Emerald Damselfly**
Wings held together at rest, either with large dark spot or completely clouded with a clear rectangle on the front edge towards the end on the front pair	**Banded Demoiselle**

*Both sexes of Azure and Variable Damselfly can be virtually inseparable by the novice. Males with broken thoracic stripes can easily be assigned to Variable Damselfly, but females can present more of a problem and are best left unidentified. Using a 10x hand lens both sexes can be separated with certainty using the shape of the prothorax (a small segment between the thorax and the head). In Variable Damselfly (below left) this is three lobed, while in Azure (below right) it is simple.





Key to dragonflies.

1. Abdomen largely brown	**2.**
Abdomen largely red	**6.**
Abdomen dark with blue/green markings	**8**.
Abdomen colour largely blue or green, or uniformly dark	**9.**
2. Wings completely dark-tinted.	**Brown Hawker**
Wings clear, (may have dark patches on front edge or at base)	**3.**
3. Wings with dark markings	**4.**
Wings completely clear (may have amber tint at base)	**5.**
4. Each wing having a dark spot about half way along at the front and dark markings at the base of the rear wings	**Four-spotted Chaser**
Dark markings restricted to base of wings. Very broad species	**Broad-bodied Chaser. (female)**
5. Abdomen with two irregular dark lines running its length	**Black-tailed Skimmer (female)**
Abdomen not like this	**6.**
6. Legs completely black with no pale markings (Males with a blood-red 'waisted' abdomen)	**Ruddy Darter**
Legs black with pale stripes running their length (Males with red abdomen only slightly 'waisted')	**7.**
7. Eyes blue below, pterostigma pale with dark border, veins at front of forward wing bright red (males) or yellow (female)	**Red-veined Darter**
Eyes not blue below, pterostigma uniformly dark, veins uniform	**Common Darter**
8. Thorax hairy, segment one of abdomen with single yellow spot	**Hairy Hawker**
Thorax not hairy, segment two of abdomen with yellow triangle	**Migrant Hawker**
9. Wings with large dark patches at base, abdomen very broad	**Broad-bodied Chaser**
Wings with no dark patches, abdomen not very broad	**10.**
10 Body metallic green (may have bronze/copper tint)	**Downy Emerald**
Body not metallic	**11.**
11 Abdomen blue with black tip.	**Black-tailed Skimmer (male)**
Abdomen blue without black tip but with black line running its length. Sides of thorax green.	**Emperor (male)**
Abdomen green with black/brown line running its length	**Emperor (female)**

Emerald Damselfly (*Lestes sponsa*)

Identification: A metallic green damselfly with blue markings at the front and end of the abdomen and thorax in the male, easily recognised because of its' habit of resting with its wings held half open. Very similar to Scarce Emerald Damselfly (see below), though this species is now extinct on the reserve. Female Banded Demoiselle can be metallic green, but are larger and have darkened wings.

Ecology: Breeds in all types of still, lowland water with abundant emergent vegetation, and occasionally in well vegetated, slow-flowing streams.

Distribution: Widespread and common in the lowlands including many of the Scottish islands, although rather more local in much of the English Midlands. Occurs regularly in small numbers around Castle Water/Castle Farm. Earliest date 15th June, latest 21st September

Blue-tailed Damselfly (male)

Blue-tailed Damselfly (female) purple form

Blue-tailed Damselfly (female) pink form

Brown Hawker (*Aeshna grandis*)

Identification: A large red-brown hawker dragonfly with small blue and yellow markings and strongly brown-tinted wings. Males have a slight waist at segments one and two of the abdomen, these segments also having blue markings. These markings are lacking in the females which are also thicker bodied. This species could conceivably be mistaken for a female darter species, though the large size, strong flight and brown-tinted wings readily identify this species.

Ecology: Brown Hawker breeds in lakes, ponds, canals and slow moving rivers and shows a preference for open ground rather than woods. It is often abundant in urban areas within its range and a frequent visitor to garden ponds.

Distribution: A widespread and frequent species throughout the lowlands of the south-east and midlands of England north to Lancashire and Yorkshire, but scarce further north and absent from Devon and Cornwall. In Wales it is restricted to the borders with Cheshire and the Montgomery Canal. There is a single, 19th century Scottish record from Dumfries-shire. On the reserve occurs regularly but in small numbers, particularly around the northern end of Castle Water. Earliest date, 21st June, latest 18th September.

Brown Hawker (male)

Brown Hawker (female) egg-laying

Blue-Tailed Damselfly (*Ischnura elegans*)

Identification: A small, dark damselfly with a prominent blue spot near the tip of the abdomen and blue stripes on the thorax in the male. In the female, the blue on the abdomen can be replaced by brown, and that of the thorax by violet, brown or pink. In the latter two colour forms, the colouration covers the sides and part of the top of the thorax and stripes are absent.

Ecology: Breeds in all types of still and slow moving water and is reasonably tolerant of pollution and brackish conditions. Often the first coloniser at new ponds. Quite a strong flier and often found well away from water.

Distribution: Widespread and very common in England and Wales, rather more restricted in Scotland where it tends to prefer richer and more sheltered localities, but extends north to the Orkneys. It is however, absent at higher altitudes. One of the commonest damselflies on the reserve. Earliest date 30th April, latest 21st September.

Small Red-eyed Damselfly (male)

Small Red-eyed Damselfly (female)

Migrant Hawker (*Aeshna mixta*)

Identification: A medium sized hawker dragonfly, with a dark brown ground colour and largely blue markings in the male and greenish markings in the female. With good views, both sexes have a creamy yellow triangle on abdominal segment two, only found in this species, and the stripes on the thorax are absent, or at least indistinct. Most likely to be confused with Hairy Hawker (see below) and Common and Southern Hawker, which are both very rare on the reserve.

Ecology: Migrant Hawker breeds in ponds and lakes with well vegetated margins, showing a preference for more mature, flooded sand, gravel and clay pits. It may also breed in canals, ditches and, occasionally, sluggish rivers and streams and can tolerate mildly brackish conditions. It generally avoids acidic water bodies.

Distribution: In Britain it breeds from Cornwall and south Wales to the Humber, but is most abundant in the south-east Midlands. It has increased its range and abundance in Britain this century and is spreading north and west and bred in Cornwall for the first time in 1991 and Cheshire in 1993. The population may be increased in some years by massive influxes from the continent in late summer. Very common around the ditches and lakes on Castle Water and Castle Farm, particularly towards the end of summer when it is probably the commonest dragonfly on the reserve. Earliest date 5th June, latest 10th November.

Migrant Hawker (male)

Migrant Hawker (female)

Small Red-eyed Damselfly (*Erythromma viridulum*)

Identification: Very similar to Red-eyed Damselfly, though smaller and more slender. There is a blue wedge on segment eight of the abdomen, the sides of which are visible from above (absent/very narrow in Red-eyed) and extensive blue markings on segments one and two and a blue wedge on segment three (almost totally black in Red-eyed). There is also a black 'x' mark on segment 10 of the abdomen which is absent in Red-eyed Damselfly, and the eyes are tomato red rather than crimson (this also holds true for the females). In females, the thoracic stripes run the length of the thorax in Small Red-eyed, while in Red-eyed they only extend about halfway along and are rather narrow. Males can be confused with Blue-tailed Damselfly, from which they are separated by their red eyes and more extensive blue markings at the end of the abdomen.

Ecology: Associated with slightly eutrophic water bodies, where it is often found on floating vegetation such as Hornwort (*Ceratophyllum*) and Water Milfoil (*Myriophyllum*) though at Rye Harbour it probably utilises algal mats in the same manner as the previous species.

Distribution: A recent colonist to Britain first recorded in Essex in 1999. Found for the first time at Rye Harbour in 2002, where it was recorded from the area around the northern end of Castle Water among Red-eyed Damselfly. Since then, it has been recorded regularly at Castle Water as well as on Harbour Farm and in Rye Harbour Village.

Red-eyed Damselfly (male)

Red-eyed Damselfly (female)

Emperor Dragonfly (*Anax imperator*)

Identification: The Emperor is, in most respects the largest British dragonfly. In males, the abdomen is largely turquoise-blue, while in the female this is replaced by a greenish colouration. In both sexes the thorax is green and there is an irregular black or brown stripe running the length of the abdomen. The most likely confusion species is Lesser Emperor Dragonfly (see below), though this species is much less likely to be met with on the reserve.

Ecology: This species breeds in larger ponds, lakes, flooded sand and gravel pits, dykes, canals and slow flowing rivers where there is abundant marginal vegetation. It rarely breeds in small ponds.

Distribution: Emperor Dragonfly is widespread in southern England and south Wales, but absent from upland areas of Dartmoor and from the chalk downlands of Hampshire and Wiltshire. It becomes scarce in the north-Midlands although it may be extending its range northwards and has recently been found at a number of recently created ponds on former colliery sites in Derbyshire. This species is common around Castle Water and Castle Farm, with the odd record on the Narrow Pits and Beach Reserve. Earliest date 31st May, latest 13th September.

Emperor Dragonfly (male)

Emperor Dragonfly (female)

Red-Eyed Damselfly (*Erythromma najas*)

Identification: Largish, dark coloured damselfly with striking, bright red eyes. The red eyes distinguish this species from all others occurring at Rye Harbour with the exception of Small Red-eyed Damselfly (see below) Males are generally dark with blue markings and no thoracic stripes. Females lack the blue markings, instead having areas of green colouration, and have short, narrow thoracic stripes, often with a pale spot towards the rear giving the appearance of an exclamation mark.

Ecology: Breeds in lakes, larger ponds, wide ditches, canals and sluggish rivers with a special preference for places where water lilies, or *Potamogeton* species with large floating leaves, grow, on which the adults sit. (at Rye Harbour the species tends to use algal mats for this purpose!). Adults are strong fliers, keeping close to the water surface and resting on floating leaves well out from the shore.

Distribution: Locally common in southern-central England, the Midlands and the Welsh borders. Reaches its northern limit at the Pocklington and Leven Canals in Yorkshire and is rare in the south-west peninsular. Absent from Scotland and Ireland and only just gets into Wales (Montgomery Canal). On the reserve, there is a small established colony at the northern end of Castle Water, and there have been occasional records elsewhere on Castle Water. Earliest date 3rd May, latest 31st August.

Common Blue Damselfly (male)

Common Blue Damselfly (female)

Hairy Hawker (*Brachytron pratense*)

Identification: A medium sized, dark hawker dragonfly with a noticeably hairy thorax. At Rye Harbour, confusion is most likely with Common and Southern Hawker (both very rare on the reserve) and Migrant Hawker. With good views, Hairy Hawker can be distinguished by its hairy thorax and yellow spot on segment one of the abdomen. In addition, Hairy Hawker is on the wing somewhat earlier (particularly compared to Migrant Hawker), and any Hawker seen on the reserve in May and June will almost certainly be this species.

Ecology: Breeds in mesotrophic, unpolluted lakes, ponds, mature sand and gravel pits, ditches and fens where there is an abundance of tall emergent vegetation such as club-rush, reed, bulrush and great fen sedge. Occasionally in slow moving rivers.

Distribution: Most abundant in the coastal grazing levels of Somerset, Sussex, Kent and Norfolk and also occurs in the East Anglian and Anglesey Fens, the Cheshire Meres and the coastal wetlands of south Wales. It was recently (1984) discovered breeding in a few isolated sites in south-west Scotland. In many parts of the midlands, East Anglia, and Romney Marsh it has declined considerably in the post-war period, but has increased again recently especially in more mature sand and gravel pits and in unpolluted fen dykes in Cambridgeshire. Occurs in small numbers around Castle Water and Castle Farm. Earliest date 22nd April, latest 20th July.

Hairy Hawker mating in 'wheel'. In this picture the male is above, the female below.

Common Blue Damselfly (*Enallagma cyathigerum*)

Identification: Males are largely blue, with a mushroom, or 'stalk and ball' mark on segment two of the abdomen (fig 4: the best feature to distinguish it from Azure and Variable Damselfly). Females are bluish or brownish with black markings, and are distinguished by the presence of an obvious spine under the end of the abdomen, which is visible to the naked eye.

Ecology: This species breeds in all types of still and slow flowing water where there is abundant marginal vegetation, although not usually very small water bodies.

Distribution: Widespread and common north to Orkneys and Shetland and occurring at higher altitudes than other damselflies. On Scottish Lochs it is often the only damselfly present. It readily colonises new ponds and is often one of the first species to appear. The commonest of the 'blue' damselflies on the reserve, widely distributed around Castle Water and Castle Farm. Earliest date 30th April, latest 12th October.

Fig 4. 'Stalk and ball' mark on segment two of male abdomen in Common Blue Damselfly

Variable Damselfly (male)

Variable Damselfly (female – blue form)

Downy Emerald (*Cordulia aenea*)

Identification: A dark copper or bronze-metallic coloured dragonfly with a hairy thorax. The eyes are bright green in mature adults and the male abdomen is club-shaped. In flight, the tip of the abdomen is held slightly higher than the thorax, giving a unique 'head down' appearance. Confusion is only likely with other species of emerald dragonfly, neither of which occur on the reserve.

Ecology: Found in well vegetated neutral to mildly acidic ponds, lakes and canals, often with sheltered bays with overhanging trees.

Distribution: In Britain this species is most common in south-east England, though there are scattered records north to northern Scotland. Recorded for the first time at Rye Harbour during 2008, when up to two were recorded regularly at the northern end of Castle Water during June and July, including an ovipositing female on 5th June. Earliest date 5th June, latest 3rd July.

Downy Emerald (male)

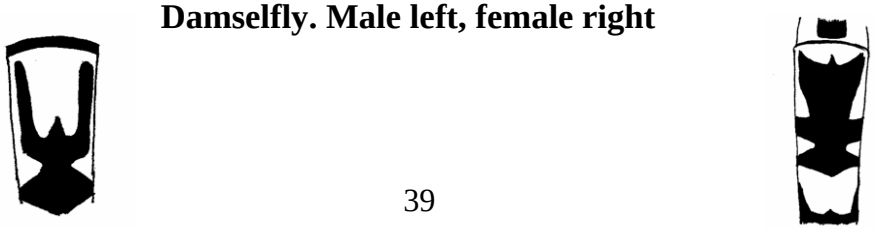
Variable Damselfly (*Coenagrion pulchellum*)

Identification: Resembles Azure Damselfly, though with more extensive dark markings. In males, the blue thoracic stripes are often broken, looking like exclamation marks, and the black marking on segment two of the abdomen is normally 'Y' shaped (fig 3). While typical specimens are readily identified, this species is very variable, and separation from Azure Damselfly is not always easy. Females are similar to Azure Damselfly, but can usually be separated by the presence of a black 'mercury' mark on segment two of the abdomen (fig 3).

Ecology: Breeds in fens, mesotrophic ponds, lakes, slow flowing ditches, canals and peaty pools in cut-over bogs, usually where there is abundant emergent vegetation.

Distribution: Most commonly in the coastal levels of Gwent, Somerset, Sussex, Kent and Norfolk and in the fens of East Anglia and Anglesey. Elsewhere in England and Wales it is widespread but scarce and has declined in recent decades. Recently (1984) found breeding in south-west Scotland. On the reserve, occurs in small numbers around Castle Water and Castle Farm. Earliest date 28th April, latest 21st August.

Fig 3. Markings on segment two of abdomen in Variable Damselfly. Male left, female right



Azure Damselfly (male)

Azure Damselfly (female)

Broad-bodied Chaser (*Libellula depressa*)

Identification: A very broad-bodied and flattened dragonfly, the abdomen largely pale blue in the mature male, and brown in the female. Both sexes have a large black patch at the base of each wing and yellow at the sides of the abdomen (more extensive in the female). With good views, this combination of characteristics makes the species unmistakable.

Ecology: This species breeds in well-vegetated ponds, lakes, canals, and ditches, but is one of the first dragonflies to colonise newly created ponds and will breed in small garden ponds. In the south-west it occasionally breeds in peat pools, and can tolerate mildly polluted conditions.

Distribution: Broad-bodies Chaser is widely, but thinly distributed throughout southern Britain, becoming scarce in the north Midlands. It has conspicuously declined in eastern England, from the Fens to Yorkshire, but there have been some signs of a recovery in recent years. In the past this was a relatively rare species on the reserve, though in the last couple of years it has become more common, and during 2008 ovipositing behaviour was witnessed at Castle Water, the first time this has been recorded on the reserve. Earliest date, 11th May, latest 8th August.

Broad-bodied Chaser (male)

Broad-bodied Chaser (female)

Azure Damselfly (*Coenagrion puella*)

Identification: Males are largely blue with a 'U' (very rarely 'Y') shaped black mark on segment two of the abdomen (fig 2), and a crown shaped mark on segment nine. Females are largely black with bluish or yellow-green markings and a 'thistle' mark on segment two of the abdomen (fig 2).

Ecology: Azure damselfly breeds in all types of still and slow flowing water with abundant emergent vegetation.

Distribution: Widespread and common in England and Wales, and the southern-central lowlands of Scotland. Reaching its northern limit around Forth-Clyde line. It is scarce or absent in chalk districts and in some of the intensively agricultural areas of eastern England and is seldom found at moderate to high altitudes. A common species on the reserve. Earliest date 1st May, latest 22nd August.

Fig 2. markings on segment two of abdomen in Azure Damselfly. left male, right female

Banded Demoiselle (male)

Banded Demoiselle (female)

Four-spotted Chaser (*Libellula quadrimaculata*)

Identification: A medium sized dragonfly with a broad abdomen (though not as broad as that of the preceding species). Unlike most other species of dragonfly and damselfly, the males of this species have no bright colouration, being similar in appearance to the female. Colouration is largely brown, though the abdomen has black from segment seven or eight to the tip, and the sides are yellow-orange. The main identification feature is the presence of a dark spot about half way along the front edge of each of the four wings.

Ecology: While this species is most frequent in bog pools associated with heathland, it will breeds in a wide range of still-water habitats from grazing level ditches to bog pools and lochans in upland areas, and can also be present on slow-moving streams.

Distribution: Four-spotted Chaser is widespread throughout Britain and Ireland as far north as Orkney, but scarce or absent from apparently suitable areas of the Pennines and north-east England. This is an uncommon species on the reserve, with less than ten records, all of these from the area around Castle Water. However, due to its drab colouration and rapid flight it may well be overlooked. Earliest date 22nd May, latest 8th July.

Four-spotted Chaser

Banded Demoiselle (*Calopteryx splendens*)

Identification: Large metallic greenish-blue (males) or metallic green/greenish bronze (females) damselfly. The males have a dark band across the wings which are used in threat displays to delineate their territory, while in the female the wings are completely darkened except for a small clear patch at the outer front edge of each wing.

Ecology: Banded Demoiselle prefers slow flowing streams and rivers, usually with muddy bottoms. Sometimes occurs on canals and, very rarely, lakes. Males are active fliers and can be found well away from breeding sites.

Distribution: This is a locally common species in the lowlands of southern Britain and Ireland, but thinning out westwards and scarce to absent in Cornwall and north-west Wales. Scarce or absent from northern Britain although a small population is present on the Solway Plain in Cumbria and there are isolated populations on the Wear in Durham and the Blyth and Wansbeck in Northumberland. Absent from Scotland. A relatively rare species on the reserve, with only three recent records, between 22nd May and 2nd July.

Red-veined Darter (male)

Red-veined Darter (female)

Black-Tailed Skimmer (*Orthetrum cancellatum*)

Identification: A large dragonfly, abdomen with blue dusting and a black tip in the male. Females are brown with two irregular dark lines running down the abdomen. With good views, not likely to be mistaken for any other species on the reserve.

Ecology: Black-tailed Skimmer prefers larger ponds and lakes, especially gravel pits, with bare sandy areas on the banks where the males 'skim' over the water surface flying low and very fast returning repeatedly to settle on the same bare area of bank. Females are less in evidence and spend much of their time in nearby vegetation. Wanders widely and readily colonises new habitat.

Distribution: This species is almost restricted to that part of Britain south of the Wash-Severn line where it is locally common. Also occurs in Northumberland, and at a few localities in the Midlands and the southern half of Wales. Common around Castle Water, with a small number of records on the Beach Reserve. Earliest date 2nd May, latest 12th September.

Black-tailed Skimmer (male)

Black-tailed Skimmer (teneral female)

Red-veined Darter (*Sympetrum fonscolombii*)

Identification: Similar in size and general appearance to Common Darter, the distinctive feature being the presence of red veins at the base of the front wing in the male (yellow in the female). There is also a saffron yellow patch at the base of the hind wings and the pterostigmata are pale with dark edges, while the eyes are brown above and blue below.

Ecology: This is a migratory species which in warm climates breeds almost continuously, with several generations per year. Preferred habitats are shallow, warm waters, including bare pools, temporary water bodies and coastal lagoons.

Distribution: An abundant species in southern Europe, since the 1990s Red-veined Darter has been increasingly common in north-west Europe and more or less annual Britain, where breeding has become a regular occurrence (though such colonies rarely persist). Up until recently this species had only been recorded three times in the area in about a hundred years, the most recent in `1998. However, on 2nd August 2007 seven exuvia were collected from a recently dug pit on Harbour Farm, with another found on 30th June 2008, the first confirmed breeding in the area. In addition, further larvae were found in a recently excavated pool at Castle Water on 21st September 2009, with two old exuvia from here on the 22nd, an emergent adult on the 25th, and an adult male from Harbour Farm on the same date.

Common Darter (male)

Common Darter (female)

Ruddy Darter (*Sympetrum sanguineum*)

Identification: A bright red darter dragonfly with markedly 'club-tailed' abdomen in the male and brown colouration in the female. At Rye Harbour, most likely to be confused with Common Darter. In mature males, the bright red colouration and ‘club-tailed’ abdomen easily separates Ruddy Darter. Females and immature males however, are more difficult, and the most reliable feature (for both male and female) is the lack of pale marking on the legs of Ruddy Darter.

Ecology: Ruddy Darter breeds in the marshy margins of ponds, lakes, old gravel and clay pits, canals and ditches where there is an abundance of tall emergent plants. It can tolerate quite brackish conditions and occurs in coastal grazing marshes where sea club rush is often dominant.

Distribution: This species has a south-eastern distribution in Britain and is rare in south-west England and Wales and becomes scarce in the north-Midlands extending as far north as north-east England. It has shown a marked increase in abundance in recent decades and may be spreading northwards. A common species around Castle Water and Castle Farm. Earliest date 7th June, latest 25th September.

Ruddy Darter (male)

Ruddy Darter (female)

Common Darter (*Sympetrum striolatum*)

Identification: A small darter dragonfly, males have a red abdomen with a few black markings and a slight 'waist' at segments 3 to 5 (though less than in Ruddy Darter, see below), while the thorax is brown, sometimes with yellowish stripes, and has black lines on the sides. Females are brown, also with black markings on the thorax and abdomen. In both sexes the legs are black striped yellow. Overall, similar to other Darter Dragonflies, particularly Ruddy Darter and Red-veined Darter at Rye Harbour (see under those species for separation).

Ecology: Common Darter breeds in a wide range of still to slow flowing water bodies including ditches, ponds, lakes, peat pools, and, occasionally, slow flowing streams and rivers. It has also been recorded from brackish habitats.

Distribution: This is a widespread species in Britain and in Europe, except in the extreme north. One of the commonest species of dragonfly on the reserve, and widely distributed. Common Darter has a very long season, with the earliest date on the reserve on the 6th June and the latest 29th November.