

Downy Emerald

Cordulia aenea

Status
GB Red List: Least Concern



male



female

Identification

Length: 48mm. This species is one of three British Emerald dragonflies. It has a downy thorax, apple green eyes and a metallic green body with a copper sheen.

Male: has a slightly clubbed tail and narrow waist.

Female: has a fairly broad body.

Larvae: 22-25mm when fully developed. Spider-like, distinguished by their rounded abdomens, long, striped legs and distinctive black stripe on the side of the thorax. The shape and number of mid-dorsal spines are diagnostic between Emerald dragonfly larvae.

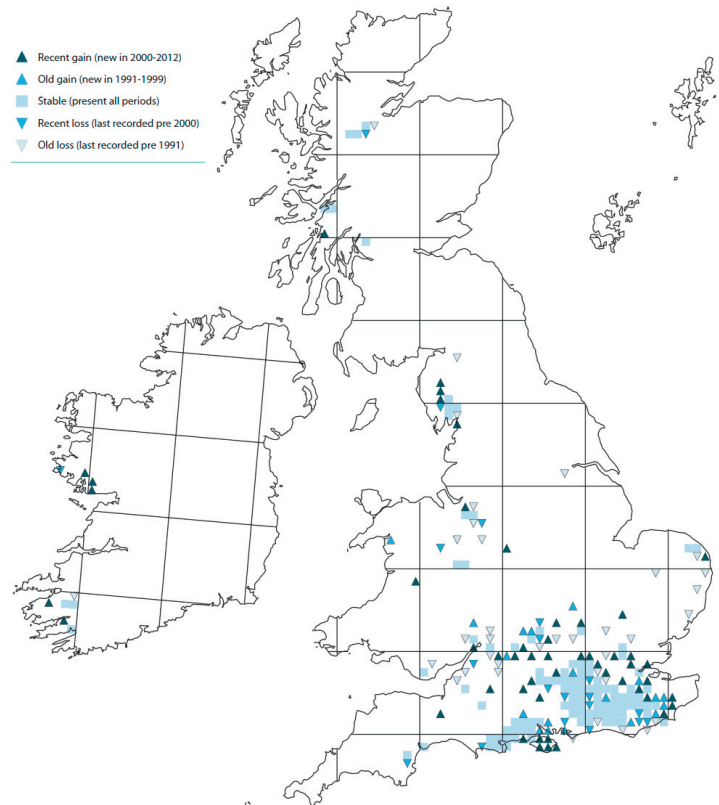
Distribution

The species has a scattered distribution from Devon to the Scottish Highlands. It appears to have a stronghold in the south east of England, but evidence suggests that the populations in East Anglia, the Shropshire and Cheshire meres and on the Hertford Essex border are declining. It is locally common on the wooded heaths of Surrey and Hampshire, Berkshire, Essex, Sussex, and the New Forest but also occurs in a few localities in Dorset, Devon, the Bristol Channel, Cheshire, Norfolk, Cumbria and north west Scotland.

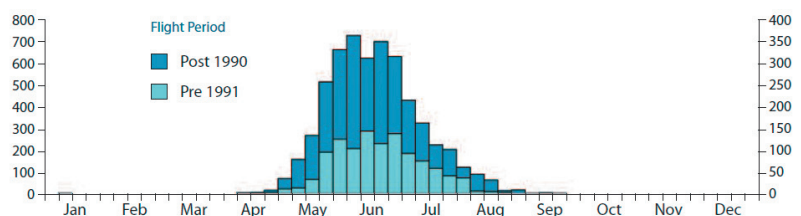
Behaviour

Males are characteristically seen patrolling the shoreline of tree-lined ponds, rarely crossing open water. They have a characteristically rapid flight, interspersed with fairly prolonged periods of hovering. In flight, the tip of the abdomen is held slightly higher than the thorax, giving the species a unique appearance. Females are commonly found along woodland rides, although both sexes can be found away from ponds feeding, roosting and mating. Adults appear reluctant to fly out of the woodland canopy and move between ponds.

Distribution Maps



Flight Chart



Lifecycle

Mating lasts up to an hour and a half, with females seized and taken to the treetops where copulation takes place. Females oviposit alone, repeatedly dipping the abdomen into the water whilst in flight. Larvae are sedentary, living in leaf litter at the bottom of the pond and congregating in shallow edges. They are most active at night and take 2 to 3 years to develop. The maiden flight takes the dragonflies into the tree canopy, where they mature.

Habitat

Still waterbodies within, or close to, deciduous woodland with scattered bankside trees, sparse stands of emergent vegetation and a carpet of leaf litter on the pond floor will offer the best conditions for breeding. Stands of reedmace are important on 'Parkland' sites. Ideally a breeding pond will hold permanent water with a large surface area and a long undulating shoreline with deep, narrow bays. Sections with open sunny margins, a moderate accumulation of leaf-litter and areas of open water with floating-leaved aquatic plants are all required by the larvae and adults.

Threats

The loss of woodland ponds, in addition to the destruction and fragmentation of deciduous woodlands, are thought to be major threats to this species. Loss of woodland habitat may explain the current, disjunct distribution. The excessive clearance of bankside trees also has a negative effect by making sites less attractive to adults. Equally, dense tree shade will deter the species. Inappropriate management of the emergent vegetation can have a detrimental impact on the species. Sparse stands are necessary but dense beds of emergent plants will deter the species. Over abstraction of water may pose a serious threat, particularly as the species has a 2 to 3 year development period. Consequently, seasonal drying of the water body will exterminate the population.

The dredging of ponds is detrimental to larvae of this species, eliminating both the larvae and larval habitat. This practice is known to have exterminated the species from a number of sites. Nutrient enrichment is thought to be one of the factors that influenced range contraction, particularly in East Anglia. Ponds with large populations of wildfowl are likely to be unsuitable as a result of eutrophication of the water.

Sticklebacks are predatory and feed by pecking amongst the substrate. Consequently, early instar larvae are at risk in ponds with high densities of sticklebacks.

Sources: Cham, S., Nelson, B., Parr, A., Prentice, S., Smallshire, D. & Taylor, P. (2014). Atlas of the Dragonflies in Britain and Ireland. Field Studies Council.

Photos: Typical Downy Emerald habitat (left) and parkland habitat (right) showing adjoining woodland habitat in both. Inset: Downy Emerald Larva: Christophe Brochard.

Management Advice

Where populations exist it seems that Downy Emerald activity is centred at one important locality with 'satellite' populations at neighbouring ponds. Therefore, it is important to focus conservation activities on the main site. Each stage in the life cycle utilises the available habitat in different ways. This must also be taken into consideration to effectively conserve the species.

The Downy Emerald is poor at dispersing so sites are unlikely to be recolonised, in the short term, if poor management practices eliminate a population. Sites should not be over managed; the excessive removal of aquatic and bankside plants and woodland will be detrimental. Thinning of dense beds of emergent vegetation may be necessary to improve oviposition sites, as dense stands of emergent vegetation and heavily shaded pond margins are avoided. Bank vegetation can, however, be very important emergence supports so is best cut back after the end of the adult emergence period. The removal of aquatics should only be undertaken if the pond supporting the main population is in danger of becoming overgrown. Where shading by bankside trees is too intense, overhanging boughs should be pruned, allowing patches of sun to reach the water. Dense tree shade will deter the species as it restricts the amount of open water. However, scattered, large bankside trees are required to provide plenty of leaf litter, therefore management must be carefully balanced. Habitat restoration and creation may be worthwhile; Downy Emeralds do occasionally colonise sites naturally. The creation of woodland corridors between ponds would help colonisation. If dredging is essential, no more than a third of the water body should be cleared in any one year. Any activity that results in reduced water levels in the pond, such as abstraction, diversion or drainage, should be avoided.

Feeding of wildfowl should be discouraged to avoid nutrient enrichment. The introduction of carp into ponds should also be avoided. Carp are bottom feeders that up root submerged aquatic plants. This causes turbidity and can encourage algal blooms. In addition carp fishermen often use high protein baits, leading to eutrophication.

