Norfolk Hawker

Anaciaeshna isosceles

Status
GB Red List: Endangered
NERC Act: Section 41 species
W&C Act: Schedule 5 species


Male


Female

Identification

Length: 67mm. This species is one of 2 brown hawker dragonflies found in Britain. The male and female are very similar in appearance and the species derives its scientific name from the yellow triangular mark on the second abdominal segment. Other features include the bright green eyes and largely clear wings.

Male: has a slightly narrower waist and more prominant yellow shoulder stripes than the female.

Female: has a thicker waist and less prominant shoulder stripes.

Larvae: 38-44mm when fully developed. Typically aeshnid body shape with large eyes. Textbooks should be consulted for seperation from other Aeshnids.

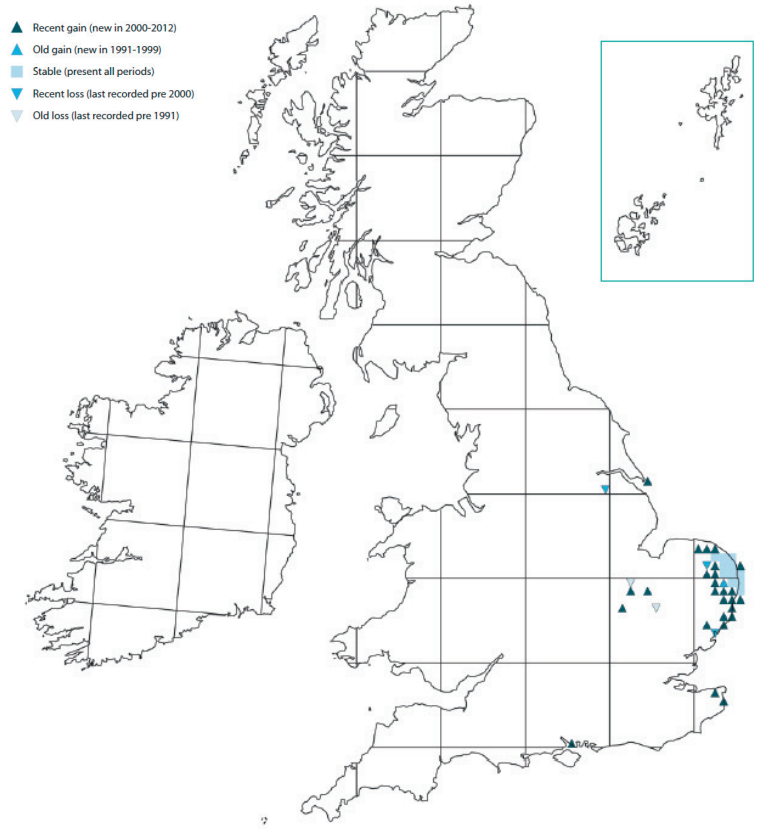
Distribution

In Britain this has always been a scarce insect and historically became confined to fens and grazing marshes, relatively isolated from polluted water in the Broadlands of Norfolk and Northeast Suffolk. However, in response to habitat restoration, government protection of grazing marshes, improvements in water quality and several warm summers, the Norfolk Hawker has recently spread, re-colonising former sites. The Norfolk Hawker responds swiftly to improvements but despite this, it is still vulnerable, even in sites where it is protected.

Behaviour

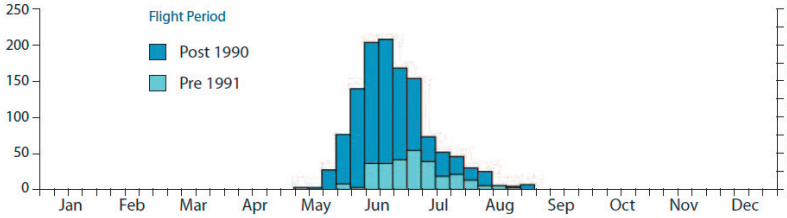
Males patrol low to the water and marshes, often chasing one another. The species is found perched more often than other Aeshnids. Tenerals and adults use woodland rides for hunting and roosting.

Distribution Map



Photos, left-right: Ruth Hallam Christophe Brochard., Map and flight chart, Cham et. al.(2014).

Flight Chart



Lifecycle

Mating takes place on emergent vegetation. Females then oviposit alone. The eggs are laid, usually underwater, into plant matter, usually Water-soldier (*Stratiotes aloides*), but sometimes other plants and even dead material. Larvae develop over 2 years. Emergence is typically also on Water-soldier, with a first bout of emergence containing mainly males and a second mainly females.

Habitat

The best breeding habitats are unspoilt grazing marsh dyke systems with clean, non-saline water, margins with rushes and flag iris, an abundance of Water-soldier and the presence of other aquatic plants, such as frogbit. It is also found on ponds with these features. Favoured habitat has slow flowing to still water. Trees and bushes are needed close to breeding sites, providing adults with hunting routes and resting places over night or during bad weather.

Threats

During the last century around 30% of grazing marshes were converted to arable land, significantly reducing the amount of suitable breeding habitat. Intensification of agricultural practices, plus increasing pollution from domestic sources, has led to a rapid increase in the levels of nitrates and phosphate entering the aquatic system. This has led to a loss of aquatic vegetation and an increased incidence of algal blooms. Additionally, the runoff from agriculture (pesticides), industry, road run-off and domestic sources all pollute the aquatic environment. Changes in water level caused by pumped drainage systems and lowered water tables also disrupts suitable habitat.

Unsympathetic management and neglect of ditch and dyke systems are a grave threat. Dredging of the ditches with machinery removes the plant matter as well as dragonfly larvae, making the ditches untenable. Traditional management relied on manual labour; stretches were cleared of plants and dredged by hand. Undoubtedly this would have caused less habitat disruption, leaving plants and larvae behind.

The species is not tolerant of brackish or saline water, with serious implications for the species from climate change and increasing sea levels. Without sufficient coastal protection, the predicted sea level rise is liable to inundate the broads with salt water, forming an estuarine ecosystem. This was illustrated at Ludham marshes where the inundation of saline water overflowing from the adjoining tidal river during the winter of 1993/94 was considered to be the reason for the recorded fall in numbers of flying adults between 1993 and 1995.

Management Advice

Every effort should be made to maintain land under a system of extensive grazing in areas where the species is present, suspected or on adjacent land. Steps should be taken to avoid the nutrient enrichment of any dyke systems supporting or capable of supporting the Norfolk Hawker. Impacts of agricultural runoff from arable land can be minimised on adjacent land by the development of buffer strips.

Any action that minimises the seepage of saline water into dykes where the Norfolk Hawker is known to breed is to be encouraged, although successful action is likely to be very limited in years of severe flooding.

Although dykes and ditches containing breeding Norfolk Hawkers need to be cleared periodically, it is important to undertake this on a rotational basis to ensure that there are always undisturbed areas with suitable vegetation for refuge. Furthermore, care should be taken to avoid restricting water flow. Where practical, alternate banks should be cleared in different years leaving a reservoir of larvae whilst maintaining the flow. A longer term management regime could be effective, but dykes should not be allowed to become choked with vegetation. In all cases emergent vegetation encroaching from the dyke banks may have to be controlled. Any material removed from the dykes should be allowed to drain on the bank before being removed from the site to allow evicted larvae and other invertebrates to make their way back to the water.

Although trees and hedges are required in the vicinity, the judicious lopping of hanging branches is recommended when most of the dyke is shaded for at least part of the day.

Sites for habitat restoration or creation should be carefully chosen that will support Water-soldier and emergent vegetation. In addition efforts should be targeted to provide refuge areas in the event that the Norfolk Broads is flooded through sea level rise. Consequently maps predicting the impact of flooding should be consulted. Reconversion of land from arable back to grazing marsh could be beneficial.

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.

Anaciaeshna isosceles habitat at Westbere Dyke, Kent. © Gill Brook. Inset: *Anaciaeshna isosceles* larva © Christophe Brochard

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