

White-faced Darter

Leucorrhinia dubia

Status
GB Red List: Endangered



male



female

Identification

Length: 33-37mm. This small species of Darter is not easily mistaken with any other due to the creamy-white frons which gives the White-faced Darter its name.

Male: a narrow black abdomen with orange or red markings, although markings are pale yellow in immature males. These markings can darken with age, making some males appear entirely black in flight.

Female: a less narrow black abdomen with yellow markings.

Larvae: 15-18mm when fully developed. Typical squat, Darter larval body shape, usually with distinctive dark stripes on the underside.

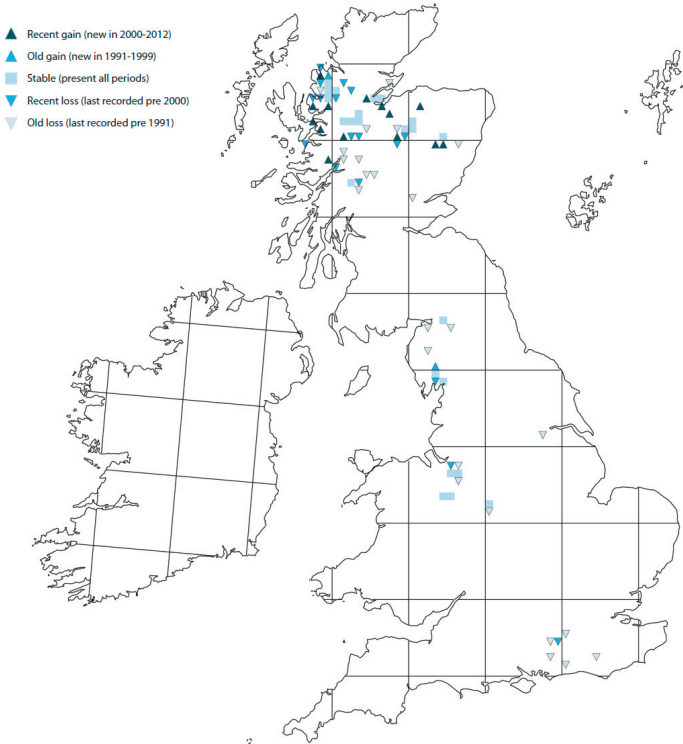
Distribution

The species has declined, notably in England, in the last 35 years and is now present at less than half the localities at which it occurred in the mid 20th Century. It is found at isolated sites from the Midlands to north Scotland. Historically it occurs as far south as Surrey, but this population is now extinct, with Chartley Moss now the most southerly distribution in the UK. Major strongholds for the species occur in the highlands of Scotland. The populations in both Inverness-shire and Ross-shire are particularly important, as the species appear to have declined in Perthshire and been lost from Argyllshire.

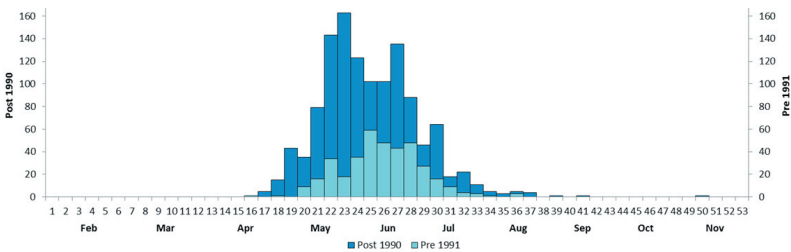
Behaviour

Males are territorial near water, but not when basking on logs and bare ground. Females are seldom found near water, preferring to bask on open ground or perch amongst the surrounding vegetation. Adults of both sexes roost in trees and bushes that can be up to 50m away from the nearest pool, thus avoiding low nocturnal temperatures.

Distribution Maps



Flight Chart



Lifecycle

Females oviposit alone, flying low over suitable pools and dropping eggs onto waterlogged Sphagnum moss or among the stems of cotton grass. For egg laying to be elicited the Sphagnum needs to be covered by standing water. Larvae generally take 2 years to develop. Emergence usually begins early in May. A variety of weather conditions are tolerated for emergence but a lack of wind is important. Observations indicate that teneral tend to fly to the nearest suitable scrub or woodland.

Habitat

The White Faced Darter is a species of lowland peatbog, requiring oligotrophic bog pools with a considerable, semi-submerged Sphagnum rafts. Emergent vegetation, such as cotton grass or rushes provides emergence supports and resting sites. The species is confined to waters without fish. Despite the historic belief that the larvae of the White-faced Darter require acidic water in order to survive, research indicates that acidity is not as important as the presence of fish. Fish are unable to survive in acidic waters and thus bog habitats do not support them, thereby removing this predation pressure upon the larvae. This is important because the larvae actively hunt during the day and are very vulnerable to predation. Away from its aquatic habitat, the species also requires scrub or woodland, which provides important roosting and feeding sites.

Threats

Approximately 95% of the original lowland raised bogs have been destroyed in Britain, limiting the availability of habitat for the White-faced Darter. Industrial scale peat extraction, agriculture reclamation, drainage and afforestation have significantly reduced the number of breeding sites in the last 40 years.

Changes in hydrology, which lead to lowering of the water table and drying of the habitat, have serious implications for the species, destroying and fragmenting the habitat, while pools are lost to scrub and trees. Over abstraction of water may pose a serious threat, particularly as the species has a two year larval period. Changes in water chemistry and pH are detrimental to the White-faced Darter by altering the habitat. Nutrient enrichment caused by leaching of agricultural fertilisers are deleterious to this species, causing changes to the vegetation structure.

As a holarctic species, the White-faced Darter is threatened by the prospect of climate change. It may already be retreating northwards in response to a warming climate.

The presence of fish is a limiting factor on the distribution of the White-faced Darter as the larvae are active during daytime and have no anti-predator reactions.

Management Advice

Although woods provide roosting and feeding areas for the White-faced Darter, active management is required to ensure that scrub encroachment is controlled, invasion of birch and conifers is prevented, and the open peatland habitat is maintained at existing and potential breeding sites.

The control of scrub encroachment will help prevent drying of the habitat, but any activity that results in reduced water levels should also be avoided. Scrub and trees should be cut back from areas where it is encroaching on to open peatland. Once cut the timber should be removed to prevent damage or eutrophication of the fragile habitat. Birch scrub is more difficult to remove as tree can quickly regenerate from remaining stumps. It may be necessary to use an herbicide, such as glyphosate. This must be undertaken with care, using the relevant guidelines.

Management of the aquatic vegetation is important, as bog pools will ultimately be lost through successional processes. White-faced Darter larvae appear to survive in pools at different successional stages, including those that are completely covered by submerged Sphagnum. However, pools with extensive floating rafts and some open water appear to be the favoured breeding habitat. Although some open water is required, the optimum amount is unknown. However, in pools that are becoming overgrown, some Sphagnum should be raked back by hand. Any Sphagnum removed must be treated with care as the larvae live within the vegetation. Where possible the Sphagnum should either be left within the pool or used to seed newly created habitats. If the Sphagnum must be removed it should be left on site, to allow the larvae to return to the bog pool, before being removed.

Water quality should be maintained to ensure that pollution and eutrophication do not threaten the White-faced Darter. The introduction of fish into pools supporting the White-faced Darter should be avoided.

Habitat creation and restoration is important on damaged peatlands and re-introductions are a viable option, with two re-introduction projects carried out in the UK to date.

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.

Leucorrhinia dubia habitat at Chartley Moss, Staffordshire. (© Genevieve Dalley); Inset: *Leucorrhinia dubia* larva (© Christophe Brochard)

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