

## Managing land for the Narrow-bordered Bee Hawk-moth

Ensuring the long-term survival of the Narrow-bordered Bee Hawk-moth, as with many other species, is probably more likely if sites are linked, enabling an exchange of adults between neighbouring colonies. The loss of suitable habitat can be damaging by making the surviving populations more fragmented and thus isolated.

The precise habitat requirements are not fully understood, however, the Narrow-bordered Bee Hawk-moth occurs in similar habitats to the Marsh Fritillary and the caterpillars share the same foodplant. The following general principles that benefit Marsh Fritillary may also be beneficial to the Narrow-bordered Bee Hawk-moth.

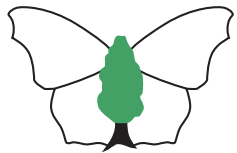
A degree of light grazing, preferably by cattle, is essential to maintain flower-rich areas and devil's-bit scabious in an open sward. Sheep selectively feed on devil's-bit scabious and can thus reduce and even eliminate it from sites. Uncontrolled burning, draining, agricultural improvement and cessation of grazing can all be detrimental.

The overall aim is to maintain abundant foodplant in a sward of variable height 8-25cm (3-10in) on open damp moorland or grassland, with a good supply of nectar sources in sunny situations. Extensive all year grazing by cattle or ponies is ideal. Autumn/winter grazing is also suitable as is spring/summer grazing on wetter sites. Some scrub cutting may be necessary. It is best to cut a little each year, between October and March and avoid clearing all the scrub as other insects and birds use it for shelter and breeding.

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# learn about the Narrow-bordered Bee Hawk-moth



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**The Narrow-bordered Bee Hawk-moth is a day-flying moth that closely resembles a bumblebee. It is on the wing from mid-May to early July and can be found on moorlands, grasslands and open woodlands where its caterpillar's sole foodplant, devil's-bit scabious, grows in abundant patches. Its scientific name *Hemaris tityus* comes from *hemera*, meaning 'the day', referring to its day-flying behaviour. *Tityus* was a giant in Roman mythology and the moth's relatively large size is perhaps testament to this.**

**The UK government has listed the Narrow-bordered Bee Hawk-moth as a UK Biodiversity Action Plan Priority species, in need of urgent conservation action.**



Narrow-bordered Bee Hawk-moth caterpillar



Traditional cattle are ideal at maintaining suitable habitat



Devil's-bit scabious is the caterpillar's sole foodplant in Scotland



Feeding damage made by caterpillars when small



Feeding damage made by caterpillars when larger

# a declining species

The Narrow-bordered Bee Hawk-moth *Hemaris tityus* was once widespread across the UK, but is now mainly restricted to western Britain. In Scotland there are colonies in the Cairngorms, Moray and Easter Ross and in the west from Argyll north to Wester Ross. It is widely distributed across Europe but possibly declining, and probably extinct in the Netherlands and Portugal.

## Early stages

In Scotland, the eggs are laid singly, usually on the lower leaves of devil's-bit scabious. The females select devil's-bit scabious growing in open sites where the vegetation is usually less than 15cm (6in) high. The eggs are smooth, shiny and green and hatch around nine days after laying. The caterpillars develop from late June to August.

Most hawk-moth caterpillars have a small but obvious horn-like tail. Narrow-bordered Bee Hawk-moth caterpillars are generally green, but as they grow, they often acquire purplish-brown dashes and blotches on their flanks and a similarly-coloured tail. They feed at night, hiding by day on the ground or on the underside of the leaf, and readily roll up and drop to the ground if disturbed. After a relatively short feeding period they pupate and over-winter in a flimsy cocoon on the ground.

The presence of Narrow-bordered Bee Hawk-moth caterpillars is often betrayed by their feeding damage and frass (caterpillar droppings). When small, they neatly chew round holes about 1cm (c1/4in), across on one or both sides of the central rib of the leaf. Larger caterpillars create more widespread feeding damage that extends to the edges of the leaf.

Searching for caterpillars and feeding damage with nearby frass can be a very frustrating exercise, but has the advantage over looking for adults, that it is not weather dependent and it identifies breeding sites.

In Scotland, the Narrow-bordered Bee Hawk-moth has identical tastes to the Marsh Fritillary butterfly, their caterpillars both feeding solely on devil's-bit scabious. However, the moth has a far wider distribution and their known ranges only overlap in Argyll where they regularly occupy the same sites. They also have different life-styles; fritillary caterpillars live communally, over-winter and live for nine months before pupation, while hawk-moth caterpillars live singly and for only two months before pupating.

## Adult moth

Nectaring is crucial to the Narrow-bordered Bee Hawk-moth to provide energy for its powerful flight, propelled by rapid wing-beats. It feeds on a variety of flowers preferring louseworts, bugle and bird's-foot trefoil growing in sunny, sheltered locations. Adults are on the wing from mid-May to early July, generally flying before midday in temperatures above 16°C. If you want to observe them closely they can sometimes be attracted to flowering sprigs of lilac taken into the field.

With its transparent wing-patches and furry body, the Narrow-bordered Bee Hawk-moth is a fantastic bumblebee mimic. Fortunately, there are subtle ways to tell moth from bee. The moth is more agile, flies straighter and hovers when nectaring, using its long tongue to feed, whilst bumblebees have a jerky flight and land on flowers to feed. Conveniently, the very similar Broad-bordered Bee Hawk-moth does not occur in Scotland. The Narrow-bordered Bee Hawk-moth sexes are similar, with the males having slightly thicker antennae.

**Size bars: actual size**  
**Adult (wing span)**  
 41-46mm (c1<sup>3</sup>/<sub>4</sub>in)

**Caterpillar (fully grown)**  
 38-45mm (c1<sup>3</sup>/<sub>4</sub>in)

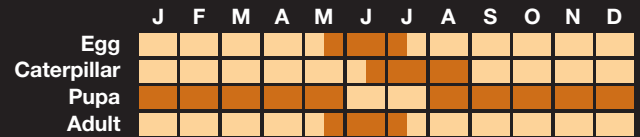
## Do you have Narrow-bordered Bee Hawk-moth on your land?

If you have the right habitats for the Narrow-bordered Bee Hawk-moth on your land we are happy to provide free detailed advice on suitable management.

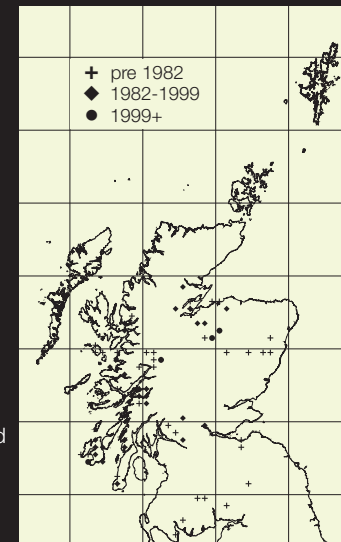
## Do you want to get involved?

We need your help to undertake survey work to establish the true distribution of the Narrow-bordered Bee Hawk-moth in Scotland. If you want to help or have seen Narrow-bordered Bee Hawk-moth we would like to know.

If you can help us with either of the above please contact us: [details on the back page.](#)



Life-cycle of the Narrow-bordered Bee Hawk-moth



Distribution of the Narrow-bordered Bee Hawk-moth