Butterfly Conservation

factsheet

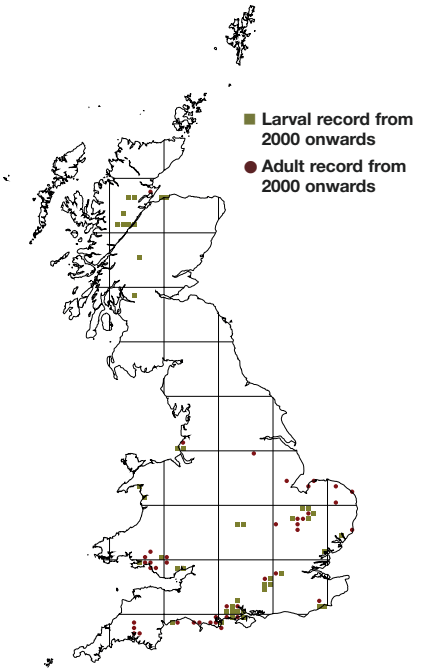
Goat Moth larval damage, with young larva emerging from a hole in the bark

Goat Moth

Cossus cossus

Conservation status

Priority Species in UK Biodiversity Action Plan, Section 41 & 42 (NERC Act, 2006), Scottish Biodiversity List.



So-called because the larvae emit a strong and rather unpleasant smell, reminiscent of a male goat. This species has the longest larval stage of any British moth, feeding for up to four years, reaching up to 10cm in length. The adult is amongst the heaviest of the UK's moths, with a wingspan of about 9.5cm.

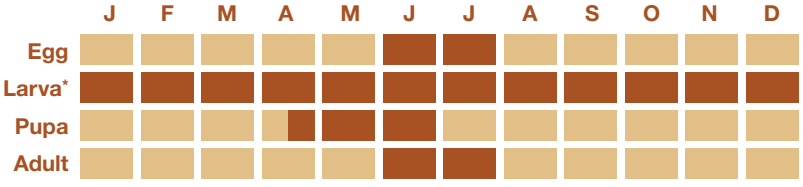
This moth has declined in abundance and distribution since the 1960s or possibly earlier and, whilst small colonies may be overlooked, large numbers are rarely reported today. It has been regarded as a pest of forestry and by gardeners, with the use of fumigants and insecticides being recommended in the past, whilst the removal of trees or parts of trees is still in use today as a method of control or because of the perception of a potential safety hazard. Agricultural intensification, the drainage of low-lying grassland and water meadows, changes in woodland practices, and the removal or neglect of pollards in hedgerows are all likely to have impacted on this species.

Foodplants

Larvae feed under the bark and in the heartwood of a range of broad-leaved trees, and on occasion can occur higher up in branches. Willow, including pollards, and sallow *Salix* spp. and poplar *Populus* spp. are seemingly most favoured, but larvae and burrows have been found in Ash *Fraxinus excelsior*, birch *Betula* spp., elm *Ulmus* spp., oak *Quercus* spp., Alder *Alnus glutinosa*, Apple *Malus* spp. and other fruit trees, with birch probably being the most favoured host tree in parts of Scotland.

Habitat

Frequents a range of habitats where host trees are typically found in open situations, with trees in low-lying or damp situations prone to winter flooding appearing particularly favoured. Also found in hedgerows, parks, large gardens, open woodland, woodland edges, dry heathland, roadsides, golf-courses, riverbanks, old flooded pits, on floodplains with trees stressed by a high water table, and groups of pollarded willows around ponds in farm fields. Has been found to utilise birch with trunks only 15cm in diameter. It is not known why some trees are selected and others are left untouched, but stress, such as through a high water table, could make trees more susceptible to this moth. It may be that trees where the sun warms the bark are also needed. Trees that already host larvae are frequently utilised again by egg-laying females, these trees often referred to as 'Goat Moth trees'.



*overwinters three or four times

Life cycle

Single-brooded. The eggs are laid, usually in small batches, in crevices or on bark of living trees near old burrows or other damage. Young larvae enter the tree, at first remaining under the bark, later boring deep into the wood on which they feed. The slow-growing larvae do not become fully grown until the third or fourth year. The burrows of the fully grown larvae are circular in cross-section and up to 20mm in diameter. Sap often seeps from the holes the larvae make at the trunk's surface, with frass ejected from these, often accumulating at the base of the trunk.

Trees can support one or a few, to many larvae. Severe infestations can kill the tree, but this may take several years. In their final autumn, from August onwards, some larvae leave the tree, hibernating in a silk-lined cell in the ground. Other larvae remain in the tree. Pupation takes place in April and May, the larvae in the tree making an exit 'window' in the bark by gnawing away all but the outermost surface before making a silken cocoon in which they pupate.

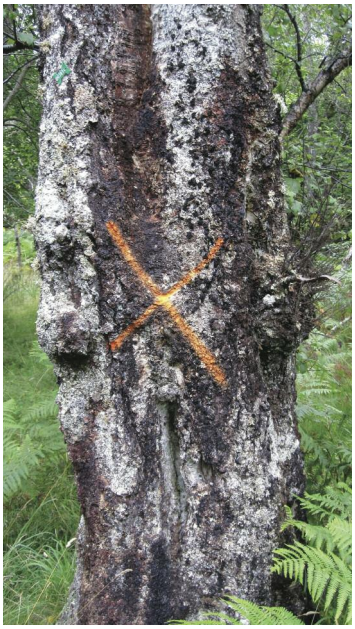
Habitat management for the Goat Moth

Larger trees can support colonies of the Goat Moth for many years. A wide range of other invertebrates, many scarce or threatened, are associated with the sap runs and burrows of this species. The rare tachinid fly *Xylotachina diluta* is a specialist parasite of Goat Moth, whilst a variety of flies develop in the sappy wounds and tunnels created by the larvae, e.g. the hoverflies *Ferdinandea ruficornis* and *Volucella inflata*. The sap running from trees hosting the Goat Moth is also used by many nocturnal moths, and the UK's Crimson Underwings (both UK BAP species) have been found feeding at these sap runs.

- Existing 'Goat Moth trees' should be retained, with consideration given to tagging trees and highlighting their importance with local authorities/landowners.
- Surgery or the felling of trees hosting the moth should be avoided unless it is considered essential for public safety reasons. Where there is a possible safety issue, the public should be kept away from potentially unsafe 'Goat Moth trees' wherever possible.
- Neglected pollards should be carefully and appropriately re-cut to make safe and to prolong the life of the tree. Ancient pollards can also be of great value to a range of other invertebrates.
- If planning habitat restoration work where there is the potential for Goat Moth to occur, then consideration should be given to survey to identify trees that may be supporting this moth.
- To ensure a continuity of habitat that provides suitable trees to support the moth, where existing 'Goat Moth trees' are known to occur other trees of the same species should be allowed to grow to maturity, for potential use by future generations of larvae.

How to survey/monitor

The adult comes infrequently to light, even where it is well-established, whilst the female occasionally visits sugar (a sweet sugar-based bait painted onto tree trunks). As they cannot feed, it maybe that they mistake the sweet smell for sap caused by previous larval damage and therefore a potential egg-laying site. Larvae can occasionally be found basking on tree trunks, whilst large larvae are sometimes seen wandering over paths etc in autumn in search of a potential pupation site. However, perhaps the best means of surveying is to search for infested trees, such as those with large exit holes and with sap runs, these still likely to be supporting the moth. In some situations, trees with less foliage can indicate the presence of Goat Moth.



top Goat Moth larva
left Marked tree showing feeding damage by Goat Moth
right The hoverfly *Ferdinandea ruficornis*

Butterfly Conservation

Saving butterflies, moths and our environment

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This leaflet has been produced with funding from Natural England

Compiled by Mark Parsons, with assistance from Tony Davis, Steven Falk (Buglife) & Tom Prescott. The map was produced by Les Hill (Butterfly Conservation).
Data were provided from the National Moth Recording Scheme, courtesy of Butterfly Conservation. Map produced by MapMate™ using Digital Map Data © HarperCollins-Bartholomew 2013.
Photographs by Jane Bowman, Steven Falk, David Green & Andrew Masterman.

February 2013. Designed by www.nectarcreative.com 01942 681648.