



Violet Click Beetle

Limoniscus violaceus

Species Action Plan

1. Introduction

The violet click beetle is listed as Endangered on the IUCN Red List. It is listed within Annex II of the Habitats Directive. The beetle was listed as a UK BAP priority species and subsequently included in Section 41 of the Natural Environment and Rural Communities (NERC) Act 2006.

2. Current Status

2.1 Ecology and habitat requirements

The violet click beetle is an 11mm long black beetle with a faint blue reflection that is found in ancient broad-leaved woodland and pasture-woodland. It is a saproxylic species (dependent on dead or decaying wood for all or part of its life-cycle) and requires the continued production of humid wood mould in the heart of decaying trees, seeming to favour trees where the decaying wood has attained a consistency like damp soot. This condition tends to be very rare in most woods, and in the UK the beetle has been found on only three sites and only within beech (*Fagus sylvatica*) and ash (*Fraxinus excelsior*). On the continent it has been found in field maple (*Acer campestre*) and oak (*Quercus* sp.). It is probable that a site would require a large population of veteran trees to contain a sufficient number that offered the specific habitat conditions needed to support the species.

The beetle breeds in tree cavities and the larvae develop over two years in a mixture of wood, leaf mould and other debris including bird's nest remains, bird droppings and dead birds or rodents. The larvae are predatory and possibly feed on the remains of other dead insects as well as the decomposing remains of birds or animals. For this reason they are often found within trees where raptors, owls or corvids are nesting further up in the tree cavity. The pupal chambers have been recorded in February. Adults have been found in similar habitat to the larvae and are thought to be primarily nocturnal with a very short emergence period. Adults have been recorded in April and May, and have been noted visiting hawthorn (*Crataegus monogyna*) blossom. Although the beetle is not thought to be in decline in Britain, the micro-habitat on which it depends is so specific that it is vulnerable in the long-term, in particular due to the imbalance of age distribution in the trees on sites at which it is currently known. The beetle is very sensitive to temperature and humidity changes within the tree to the extent that once the stability of the internal environment is compromised it can seriously impact on the existence of the colony (Skidmore, 2003).

2.2 Population and distribution

Violet click beetle is very rare throughout its range, which extends from the UK throughout much of western Europe to Slovakia and Poland in the east and Turkey to the south. It has been recorded in 187 localities in 17 countries (figure 1). It is recorded in the UK in only three locations: Windsor Forest in Berkshire, Bredon Hill in Worcestershire and Dixon Wood in north Gloucestershire. The beetle seems to be widespread on the escarpment and the upper north and west slopes of Bredon Hill with records from Bredon's Norton, Even Hill and Elmley Castle Deer Park (figure 2).

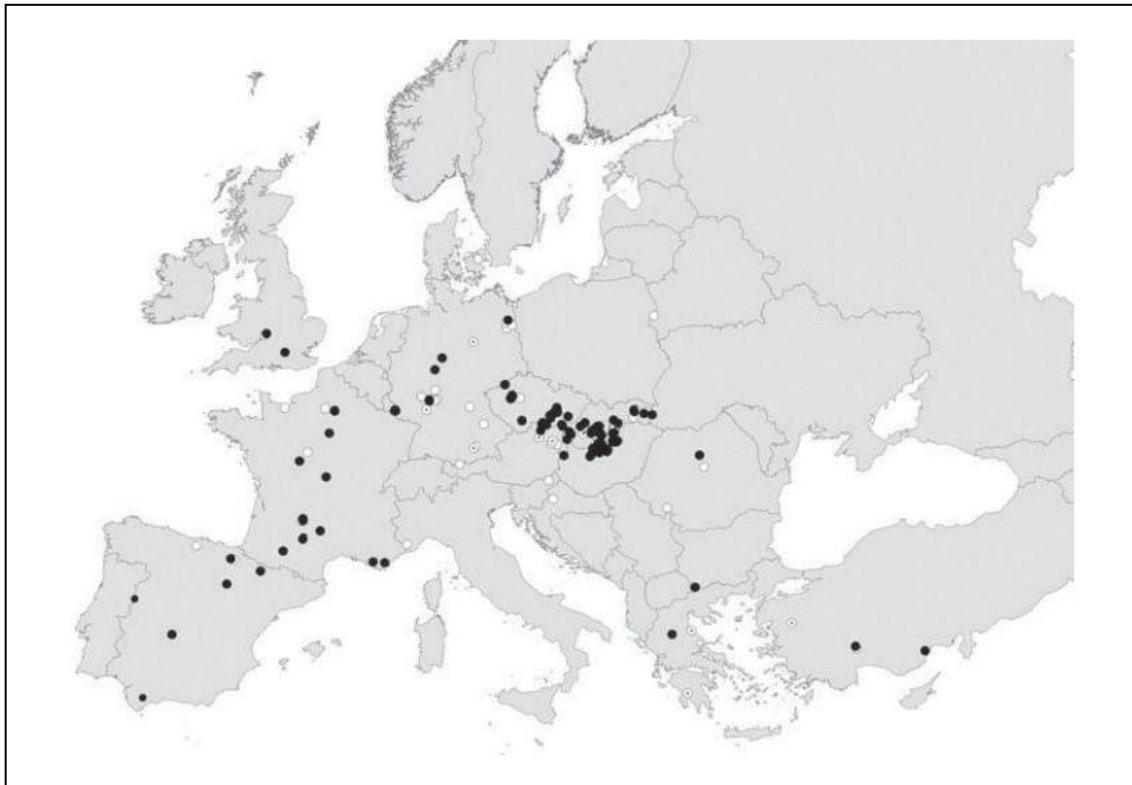


Figure 1. Known global distribution of violet click beetle. Map taken from Gouix *et al* (2012).

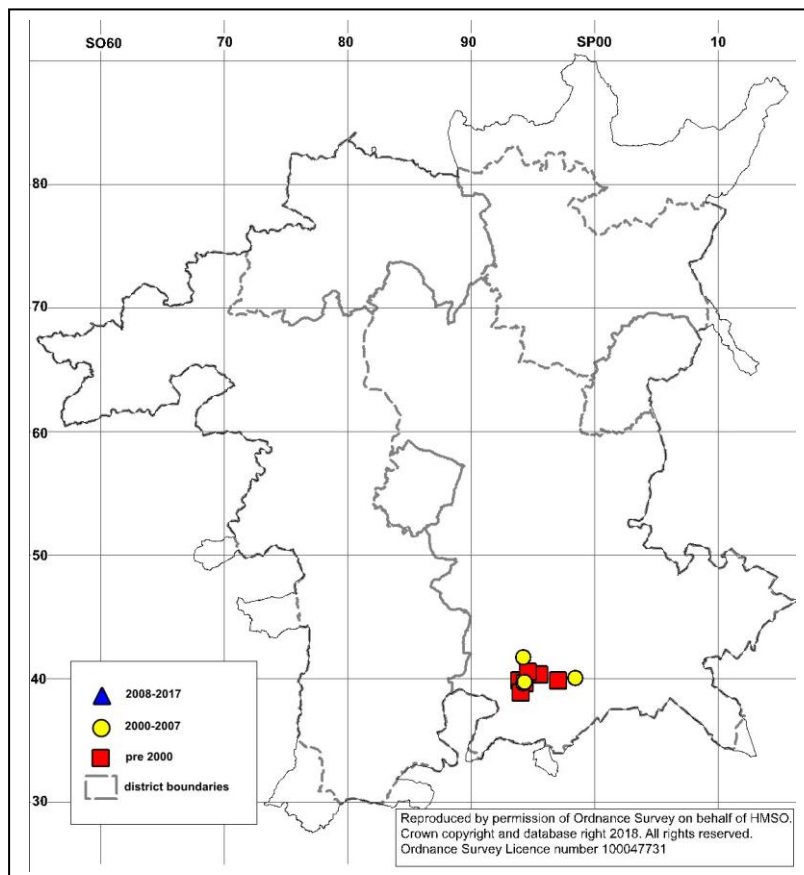


Figure 2. Records of violet click beetle in Worcestershire. Data supplied and map prepared by Worcestershire Biological Records Centre.

2.3 Legislation

The violet click beetle is protected under Annex II of the EC Habitats and Species Directive. It is listed on schedule 5 of the Wildlife and Countryside Act 1981 (as amended) and Section 41 of the Natural Environment and Rural Communities (NERC) Act 2006.

2.4 Summary of important sites

Bredon Hill

Violet click beetle was first recorded at Bredon Hill in 1989, although there is a 1939 record from 'Tewkesbury' that may refer to either Bredon Hill or Dixon Wood. Bredon Hill has been designated a Special Area of Conservation (SAC) due to the presence of the beetle. The hill is recognised as one of the top five sites in Britain for saproxylic invertebrates in general, including many Red Data Book and Nationally Scarce species. The greater Bredon landscape appears to be favourable for wood mould production but whether this is through the phenotype of ash trees found there, the local microclimate, or both is unknown.

Dixon Wood (also a SAC) is less than 10km to the south of Bredon Hill and the importance of the landscape between these two sites cannot therefore be understated.

3. Current factors affecting the species

The opening of a previously enclosed internal tree cavity to external climatic conditions, whether deliberately or accidentally, may seriously compromise the viability of a colony within that individual tree. This could be due to:

- Damage to trees during storm events.
- The removal of limbs for safety reasons.
- Pollarding of trees where the beetle's presence or absence has not first been established.
- Destructive surveying by well-meaning ecologists

Others factors affecting the species include:

- Lack of a replacement generation of trees.
- The impacts of tree disease such as *Chalara* ash dieback.
- Long-term changes in the environment such as the impacts of climate change, pollution, may affect fungi that contribute to decay in trees.
- The complete removal of old trees for safety reasons.
- Removal of decaying and dead wood to tidy up sites.
- The limited ability of the species, in common with much of the old wood insect fauna, to move across open country to disperse to new sites.
- Availability of nectar / pollen sources, especially hawthorn, in spring.

4. Current Action

4.1 Local protection

Almost 360 ha of Bredon Hill are designated as a Site of Special Scientific Interest (SSSI) and a SAC due to the presence of the violet click beetle. Part of this area is also designated a National Nature Reserve (NNR) and the entire hill falls within the Cotswolds Area of Outstanding Natural Beauty (AONB).

4.2 Site management and programmes of action

The survival of the beetle is largely dependent on maintaining the habitat conditions and micro-climate within the trees in which it lives. The only currently known host-tree species in Worcestershire is ash, which seeds well and can mature rapidly. Some areas of Bredon Hill, particularly the NNR, have good amounts of regenerating ash and efforts have been made to try and prematurely age some trees by pollarding. Natural England is carrying out a programme of veteran tree management that includes haloing, thinning and stock proofing to protect the trees of high habitat value. Work is also being done to address the age gap between the veteran and early mature trees and to diversify the tree species present to create resilience to tree disease and climate change.

There has been some investigation of the construction of artificial dead wood habitats. On Bredon Hill English Nature set up five compost bins containing a mixture of sawdust, wood shavings and chicken droppings, with the occasional dead mammal, in replication of an experiment first used in Windsor Park in 1988, to see whether favourable conditions for the beetle could be created artificially. This first attempt was unsuccessful but a second attempt is planned for 2018/19 in collaboration with the Back from the Brink project (see section 4.3).

Historically many young trees on the hill were removed to allow for increased stock grazing. Management of the woodland-dominated SSSI units is focused on replanting to compensate for past tree removal and to supplement areas where there is a lack of native regeneration. In some areas ash is being out-competed by sycamore (*Acer pseudoplatanus*) and management in these units includes a programme of thinning to remove the sycamore. Within the NNR a more pragmatic approach is being taken to the presence of sycamore, recognising the role that alternative tree species may have in increasing the resilience of the site to climate change and to the potential impacts of Chalara ash die-back.

There are a number of agri-environment scheme agreements in place on Bredon Hill. These variously involve the restoration of parkland habitat, tree planting programmes and scrub management.

4.3 Survey, research and monitoring

Saproxylic invertebrate ecology is a huge area of research in Europe, and the UK is of significant interest because of the amount of semi-natural ancient woodland remaining in the country and, in particular, the numbers of veteran trees in our countryside. Saproxylic invertebrates comprise about 6% of the total British invertebrate fauna. The UK is fortunate to have a number of ecologists of international standing contributing to saproxylic invertebrate research and adding to our knowledge of, amongst others, the violet click beetle.

- The violet click beetle is part of Natural England's Species Recovery Programme, which began in 1991 with the aim of reversing declines and / or improving the status of some of the country's most endangered species.
- Skidmore undertook a survey in Windsor Park in 2002-2003 on behalf of English Nature as part of a several year investigation into the range and status of the violet click beetle in Britain. The methodology and results were published in English Nature Research Report 514.
- Several papers presented at the second pan-European conference on Saproxylic Beetles in London in 2002 focused on current research and status of violet click beetle. The conference was hosted jointly by English Nature and the People's Trust for Endangered Species (PTES). A copy of the proceedings, including full text of all the papers, can be purchased from PTES. See: www.ptes.org/about/publications.html.
- Mitchell *et al* (2014) assessed the potential ecological impact of ash dieback (*Chalara*) on UK woodlands. A case study on Bredon Hill was produced as part of this work. The results of the assessment were published in Natural England Commissioned Report NECR151.
- In 2015 Natural England, working with partners, secured Heritage Lottery funding for the 'Back from the Brink' programme. Over a five year period 200 species will benefit from 19 projects, including the 'Ancients of the Future' project led by Buglife, which will focus on species including the violet click beetle that are dependent on dead and decaying wood.

5. Associated Plans

Ancient and Veteran Trees, Woodland.

6. Conservation Aim

Suitable available habitat for the violet click beetle is maintained and extended on and around Bredon Hill and the species' continued presence is confirmed.

7. Conservation Objectives

Also refer to objectives within H6 Veteran Trees Habitat Action Plan

- Promote tree planting and wood pasture and parkland creation and restoration schemes in the landscape on and around Bredon Hill and southwards to Dixton Wood
- Engage with and educate landowners on the importance of veteran trees for saproxylic invertebrate communities and provide guidance on appropriate veteran tree management
- Promote maximum natural ash regeneration on sites with Violet click beetle records
- Monitor veteran ash trees and newly regenerated ash trees for possible resistance to *Chalara* and put in place a scheme to clone saplings from local trees that appear resistant

- Where appropriate plant tree species including beach, field maple, oak and sycamore on sites with Violet click beetle as a possible future alternative host tree for the species
- Support the survey work for adult beetles taking place as part of the Buglife 'Back from the Brink' project
- Continue to experiment with, research and monitor artificial breeding site designs

References and further information

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Back From the Brink project <https://naturebftb.co.uk/the-projects/ancients-of-the-future/>