

Violet Click Beetle

Limoniscus violaceus



The Violet click beetle is about 12mm long and a beautiful deep-blue metallic colour. It is one of our most threatened invertebrates and is classified as Endangered on the European Red List of Saproxyllic Beetles (2018) and at Risk of Extinction by 2020. It is an S41 Priority Species in England, and a Red Data Book species. The beetle and its habitat are protected under Schedule 5 of the Wildlife & Countryside Act 1981 and Annex II of the European Habitats & Species Directive 1992.

Distribution

The species is currently only found at Windsor Forest (Berkshire) and Bredon Hill (Worcestershire), although there is also a single larval record from a third location close to the Bredon Hill site (Dixton Wood, Gloucestershire). The Windsor population is considered the larger of the two known populations. The importance of all three sites for the species is reflected in their designations as Special Sites of Scientific Interest (SSSI) and Special Areas of Conservation (SAC).



Distribution of the Violet click beetle in the United Kingdom
Black: post -1990 Yellow: pre -1990

Habitat

The larvae of the Violet click beetle develop in the richly organic accumulations of moist, compacted, black wood mould (resembling damp soot) found in hollowing trees. Wood mould itself is the woody debris that develops at the base of tree hollows during heartwood decay through the combined actions of wood-decay fungi and saproxyllic invertebrates. Large accumulations of wood mould are restricted to trees in the most advanced stages of heartwood decay, particularly those more than 200 years old.



Heart-rot decay in old Beech

The Violet click beetle is most often associated with wood mould at or below ground level (so called basal hollows), particularly where it has started to mix with the soil, but has on occasion also been found in hollows higher up the trunk. The complexity of microhabitats found within hollowing trees means they often play host to a wide variety of other animal species (e.g. birds) that contribute further to the organic content of the wood mould substrate through their nesting materials, droppings, prey remains and even corpses. It is thought these additional organic inputs may be crucial for Violet click beetle larval development.

In the UK, the Violet click beetle is mainly associated with old trees in active, defunct or remnant wood pasture as well as trees formerly in a regular coppice or pollard management cycle. Tree species is thought to be less important than the quality of the substrate and stage of decay. At Windsor, the beetle is associated with old Beech trees in a high forest setting, while at Bredon Hill/Dixton Wood the beetle is associated mostly with old Ash (including former pollards) in open-grown or woodland edge/hedgerow settings

Life cycle

Adults are thought to be crepuscular and active on warm evenings before dusk from April to June. Adult diet is unknown but they have been seen at Hawthorn so may feed on pollen or nectar, or else rely on stores laid down during the larval period. Larvae probably feed on a variety of organic debris within wood mould habitats including the remains

of other insects, and are also likely to predate small prey items. Depending on the quality of the wood mould, larval development may take up to 2 years, and appears to be sensitive to levels of humidity with damper conditions preferred. Tree hollows that are surrounded by a thick wall of intact woody tissue provide the most stable conditions for larval development by buffering the wood mould against rapid external changes in moisture content and temperature.

Fully-grown larvae change into adults (pupate) from July onwards in compact nodules of soil or chunks of dead wood within the wood mould substrate/cavity lining. The newly formed adults remain in their pupal chambers over winter before emerging the following spring to copulate and lay eggs. Eggs are laid in cracks within the decaying wood lining the hollow cavity.



Violet click beetle larva

Reasons for decline

The Violet click beetle requires the continuous presence of old (>200 years) hollowing trees in a landscape. To date, Violet click beetle has only been recorded from around 25 trees across all three known sites. The natural or deliberate loss of hollowing trees is the greatest threat the beetle faces, particularly where replacement trees are not available. The sparsity of suitable trees in a landscape, combined with the beetle's suspected poor dispersal abilities, may mean it is difficult to recolonise an area once it has been lost, or indeed prevent it colonising suitable habitat away from its current strongholds.

Today's old trees are under threat from a wide range of factors including under-management, intensive land use practices, tree diseases and climate change. For example, cessation of traditional management such as pollarding has left many old trees at risk of collapse due to top heavy crowns (e.g. lapsed pollards). Elsewhere, canopy closure through lack of grazing can lead to some old trees being shaded out by younger trees leading to premature death. Intensive activity around the roots of old trees, such as heavy grazing, ploughing, chemical spraying and visitor footfall can lead to direct damage of roots and soil compaction, as well as disrupting the vital mycorrhizal (fungal) associations that help sustain trees. Meanwhile, the arrival of novel pathogens and warmer, drier summers may mean that some tree species are no longer able to reach the age at which wood mould and other late-stage decay habitats develop.

Habitat management

The aim of the following management advice is to ensure the long-term continuity and connectivity of wood mould habitat across a landscape through the provision and protection of old trees.

- Maintain longevity of existing old trees (both dead and alive).
- Resist urge to tidy away pieces of fallen decaying wood or to remove old standing dead trees.
- Continue/reintroduce traditional practices such as pollarding and coppicing.
- Allow natural regeneration/plant trees in places where they can be allowed to persist for hundreds of years to provide next generation of old trees.
- Install "beetle boxes" to help plug existing age gaps.
- Consider veteranizing younger trees to accelerate development of decay and help plug existing age gaps.
- Maintain/plant nectar sources such as Hawthorn and other scrub species to provide food for adults.

Survey methods

The Violet click beetle and its habitat are protected under Schedule 5 of the Wildlife & Countryside Act (1981). Under the act it is an offence to collect specimens (adults or larvae) or disturb/damage trees where it is known to occur without a licence from Natural England. Given the importance of the wood mould substrate and the risk of mixing distinct soil horizons which may harbour unique humidity/nutritional profiles, direct disturbance of the wood mould is not permitted. Any monitoring undertaken should be through indirect techniques only.

The best method available for landowners and site managers is to simply monitor the availability of trees based on their suitability. Such assessments could be made as part of tree safety monitoring or as bespoke surveys.

Searching potential/known breeding trees by torch at dusk for emerging adults on warm evenings (mid-April to June) may yield results. Provided the wood mould is not disturbed during this process no licence is required. Alternatively, tapping branches of Hawthorn blossom with a stick over a white sheet after dark in May could reveal feeding adults.

The presence of other basal hollow specialists can also indicate the availability of suitable habitat nearby. The Red Collared Click Beetle (*Ischnodes sanguinicollis*) inhabits similar habitats to the Violet click beetle but is tolerant of a wider range of humidity preferring slightly drier substrates on average. Other click beetle species regularly recorded in the same basal hollows include *Ampedus rufipennis*, *Elatér ferrugineus*, *Procræus tibialis* and *Megapenthes lugens* alongside the darkling beetles *Pseudocistela ceramoides*, *Prionychus ater* and *Prionychus melanarius*.

The Back from the Brink Ancients of the Future project is led by Buglife in partnership with Plantlife and the Bat Conservation Trust.

