

Variable chafer

Gnorimus variabilis



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The Variable chafer beetle is about 20mm long. It has a black body colour with small white or yellow flecks. It is classified as Vulnerable (EU27) or Near Threatened (Europe) on the European Red List of Saproxyllic Beetles (2010). It is a Red Data Book species in Britain.

Distribution

Currently only found at Windsor Forest and Great Park (Berkshire) and Parham Park (West Sussex). The importance of these sites for saproxyllic invertebrates is reflected in their designations as Sites of Special Scientific Interest (SSSI) and in the case of Windsor Forest and Great Park, as a Special Area of Conservation (SAC).

Habitat

Larvae develop in hollowing oak and Beech trees, at the interface of hard heartwood and moist decayed interior red-rot. Red-rotten wood develops during heartwood decay through the actions of wood decay fungi. Suitable hollows are only likely to develop when the tree is more than 200 years old.



Distribution of the Variable chafer in the United Kingdom
Black: post -1990 Yellow: pre -1990

At Windsor and Parham, the Variable chafer is associated with old oak trees in wood pasture, and at Windsor also with oak and Beech trees in a high forest setting. Most larvae have been recorded in oak, in addition to the importance of the quality of the substrate and stage of decay.

Life cycle

Adults are found in the larval habitat, resting on trees, or in flight. Flower visits have not been documented in England but have been reported in Europe, although the flowers visited are not specified. The larvae feed on hard red-rotten wood at the interface with moist decayed interior red-rot. The usual period required for larval development is 2 or 3 years. Larvae stop feeding in the autumn and hibernate over the winter when fully-grown, pupating in the following May. Pupation in captivity takes place amongst frass and wood fragments, at the bottom of the breeding substrate. The newly formed adults emerge in late May, and in captivity have mated while buried. Eggs are laid at random in the larval substrate.



Red rot in oak

Reasons for decline

- The Variable chafer requires the continuous presence of old decaying oak or Beech trees in a landscape.
- The natural or deliberate loss of decaying oak and Beech trees is the greatest threat the beetle faces, particularly the potential loss of continuity if replacement trees are not available.
- Although the beetle can fly it may have poor dispersal abilities, which may prevent it colonising suitable habitat away from its current stronghold.
- Old trees are under threat from a wide range of factors including under-management, tree diseases, and climate change.
- Increasing canopy density due to 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 vital mycorrhizal (fungal) associations that help sustain trees.
- The arrival of novel tree pathogens, increased temperatures, extended periods of drought, or heavy rainfall causing soil instability, may mean that some tree species die prematurely, or are no longer able to reach the age at which red-rot develops.
- Cessation of traditional management has left old pollards at risk of collapse due to top heavy crowns.

Habitat management

The aim of the following management advice is to ensure the long-term continuity and connectivity of red-rotten oak or Beech across a landscape through the provision and protection of old trees.

- Ascertain whether tree recruitment rates have been sufficient to prevent an age gap in availability of red-rotten oak trees, and that recruitment is still taking place.
- Maintain longevity of existing old trees (both dead and alive).

- Allow natural regeneration or plant oak and Beech trees in places where they can be allowed to persist for hundreds of years to provide the next generation of old trees.
- 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.
- Acorns can also be collected and distributed into suitable areas.
- Establishment of new trees near old oak trees needs to be carefully planned, as oak is a light-demanding tree and sensitive to overcrowding.
- Where important trees are experiencing crown competition from adjoining younger trees, the younger trees should be removed gradually over a period of years.
- Consider veteranising younger trees to accelerate development of decay and help prevent gaps in the availability of suitable trees.
- Veteranisation techniques could include pollarding a new generation of young trees.
- There is also a need to study the potential of fungal inoculation to start the development of suitable red-rotten wood; this requires the tree to be of sufficient age to have developed a core of heartwood.
- Maintain or plant nectar sources such as Hawthorn and Elder which may provide food for adults.



Hawthorn blossom may provide food for adults

Searching potential/known trees for adults may produce results, although the red-rotten substrate should not be disturbed due to the disruptive effect this will have on the condition of the rotten wood.

Adults are encountered in the larval habitat between May and July, and on tree trunks or in flight in July. There are no accounts of other species recorded in red-rotted hollows occupied by Variable chafers.

Nieto.A and Alexander.K.N.A. (2010) European Red List of Saproxylic Beetles, IUCN

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



Survey methods

The best method available for landowners and site managers is to monitor the availability of trees based on their suitability.