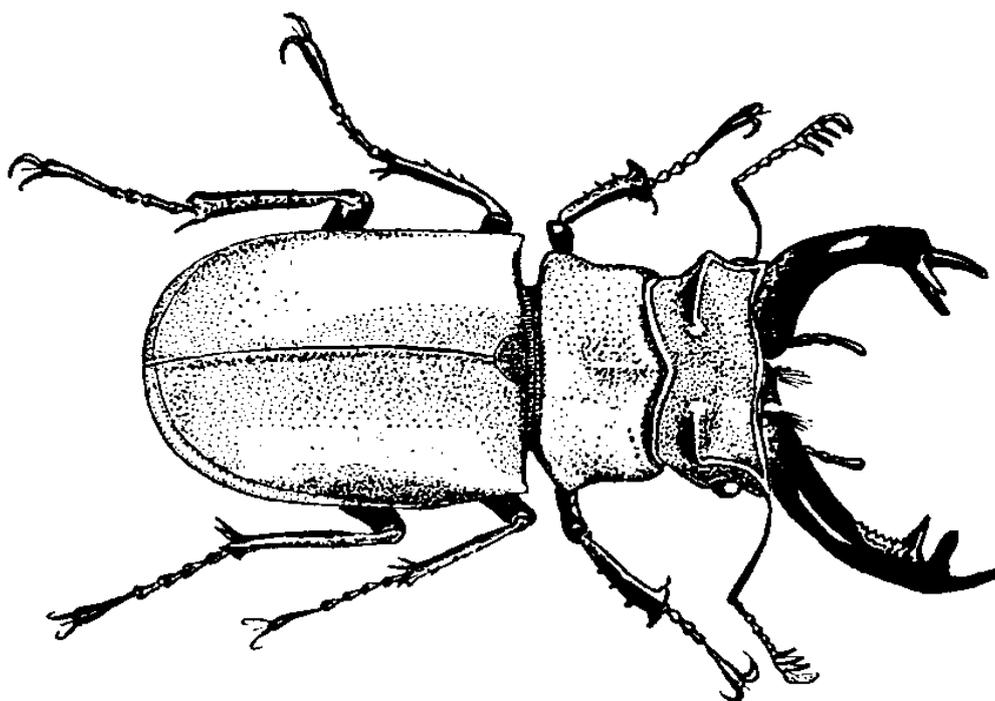




London
Wildlife
Trust

stag beetle

how to help its conservation in London



The stag beetle is a globally threatened species, protected under the Wildlife and Countryside Act 1981, and listed as a priority species for conservation in the UK and London Biodiversity Action Plans.

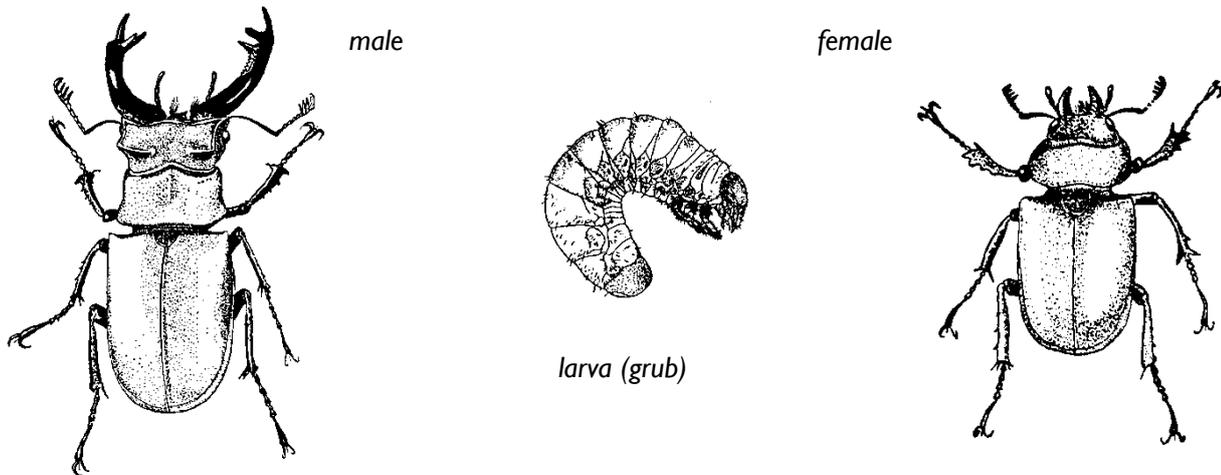
Destruction of its key habitat – dead wood – through the ‘tidying-up’ of woodlands and parks has been the prime reason for its decline, although in urban areas the impacts of traffic, trampling, cats and other predators will also be significant.

London is a national hotspot for stag beetle, and considerable conservation work has been undertaken to understand its needs and address the threats.

This note aims to alert gardeners, park and woodland managers, arboriculturalists, landscape architects, planners and others of the importance of this magnificent beetle, and provides advice on how help to ensure that it may be conserved in London for the future.

What is a stag beetle?

The stag beetle (*Lucanus cervus*) is Britain's largest terrestrial (ground-living) beetle, between 5 and 8cm in length, and is one of three British species of a family of beetles, the Lucanidae, that numbers some 1000 species found mainly in the tropics. They are characterised by possessing large mandibles (jaws) which are often antler shaped, giving them their common name. The male stag beetle has very large mandibles; the female's are smaller but more powerful.



Why is it important?

The stag beetle is a globally threatened species, for which Britain supports a significant number. Protected in many parts of Europe, it receives a level of protection under the Wildlife & Countryside Act 1981 (as amended), which aims to prevent it from being collected for sale. **Annex I** provides a summary of the stag beetle's conservation status within Europe, Britain and London, as well as the factors which are believed to affect its decline.

The conservation requirements of the stag beetle are simple, but there is a need to alert the public, local authority parks and planning departments, landscape architects, gardeners and others as to what these are. This note provides advice based on the experience over the past 10 years on implementing conservation measures for the beetle in parks and gardens.

A dead wood denizen

The stag beetle requires dead wood to complete its lifecycle. Eggs are laid underground by logs, or stumps of dead trees, and the larva (or grub) will spend 4 - 7 years inside slowly growing in size. A wide range of woods are used, especially oak, but also ash, elm, sycamore, lime, hornbeam, apple, cherry and even some garden tree varieties. Coniferous species such as fir, pine and cypress, are usually avoided because of the acidic saps within the wood. The larvae are an important decay agent, helping to return the minerals of dead plant material to the soil. They do not, as often believed, eat the wood of live trees and shrubs, and are thus not a pest.

Adults emerge from the soil beneath logs or stumps from mid-May until late July. Males emerge earlier and appear to be more active as they search for females to mate, and can often be seen flying on sultry summer evenings an hour or two before dusk (and before thunder-storms). Short-lived as adults they generally die after mating, although occasionally some may over-winter in places such as compost heaps.

Stormbringers?

Ancient associations with storms and magical powers led to the beetles once being both feared and revered, and they appear as talismanic emblems in central Europe. For example, placing a stag beetle on your head, would protect you from being struck by lightning. Its vernacular names of thunder beetle, billy-witches, oak ox, and horse pincher give an indication of this mythology.

Where are London's stag beetles?

Numbers of stag beetles have declined since the 1940s, and their distribution across the country has contracted from a large swathe of southern England and Wales. Recent surveys suggest that they are now more restricted to the south-east, with concentrations along the Thames Valley, in north-east Essex/Suffolk, and the New Forest. London is one such 'hot-spot', and is nationally significant for the stag beetle populations it supports.

Stag beetle has recently been recorded from most London boroughs, but following surveys carried out since 1997, a distribution picture is emerging that shows a distinct pattern.¹ It appears to be significantly more common in the south and west of London, in a broad arc from Bexley, Sidcup and Orpington in the south east, sweeping westwards towards Beckenham, Sydenham, Dulwich, Tooting, Wimbledon, and Richmond, before tapering northwards through Twickenham, Hounslow, Uxbridge and Ickenham.

Rarely found in central London, through lack of appropriate habitats, it surprisingly appears to be less common or absent in much of north-west and parts of north-east London. However, there are clusters of records around Winchmore Hill in the north, Chingford and Woodford (around Epping Forest) in the north east, and Romford and Hornchurch further east.

The reasons for this uneven distribution have been the subject of research. Despite records of stag beetles appear strongly associated with particular soil types (disliking, for example, chalky habitats), and to some extent are controlled by climate, this doesn't easily explain the pattern within London.

Why conserve them?

The stag beetle's decline has been attributed to a number of factors, primarily the reduction of appropriate habitat – dead wood. The tidying up of woodlands, parks and gardens through much of the 20th century led to the burning or chipping of dead wood, and stump-grinding of felled trees removes another vital source for the beetle. The enhancement of many greenspaces for biodiversity since the mid-1990s suggests that this damaging trend has been reversed. However, more needs to be done, especially given that within private gardens vegetation loss appears to be on the increase.

In London and other conurbations, stag beetles also face the assaults of traffic, trampling, cats, foxes and other predators (such as crow and magpie) which may have an adverse impact at the most vulnerable stage in their life cycle – as adults seeking to mate and lay eggs for the next generation.

This advice note is to help ensure that gardeners, parks and woodland managers, local planning authorities, developers and landscape architects are alert to the possible presence of this beetle and to help secure its future within London.

Advice is provided in four ways:

- survey and monitoring populations;
- land management guidance, including habitat protection and creation;
- compliance with legislation;
- an example set of conditions to be used when determining planning applications.

¹ From data held in Greenspace Information for Greater London, collected from surveys by London Wildlife Trust, Peoples Trust for Endangered Species, London Natural History Society, London boroughs, Association of Croydon Conservation Societies, and others.

Where are the beetles?

It is important to hold an up-to-date and accurate assessment of where stag beetles are in London. Greenspace Information for Greater London (GiGL) is maintaining a database of stag beetle records in the capital. This helps to ensure that an updated record of their distribution is maintained, and also aids research to ascertain why they are present in some parts of London and not others.

The easiest way of providing data of stag beetles to London Wildlife Trust is via our web-page on <http://www.wildlondon.org.uk/stag-beetle-survey>. For records outside of Greater London please contact the People's Trust for Endangered Species.

Beetle management

Managing for stag beetles is easy; it's more a case of 'leave alone', than doing something special (although in some cases this may be required). The key is providing dead wood in sheltered areas. Retention of existing dead wood is ideal, as are measures to inhibit the unnecessary destruction of dead wood during management operations. In addition, creating habitat by installing 'new' dead wood – as, for example, loggeries - is also useful. The following parameters should serve as a guide:

Site management

- Retain as much dead wood - logs and stumps - as possible on site - the larger the better (to prevent burning, vandalism or removal). If possible some of this needs to be in the shade to avoid desiccation.
- Leave windblown trees *in situ*, except where they pose a safety problem.
- Make sure that most of the dead wood is lying on or close to the ground.
- Ensure that a buffer zone is managed around large dead wood so that the soils and vegetation are protected as much as possible from disturbance. Ideally this should not be cut between May and September.
- Avoid stump-grinding tree stumps wherever possible.
- Identify the needs of stag beetle in site management plans, and provide particular prescriptions for management of dead wood.
- If there is no dead wood on site, seek to provide this by building 'loggeries' or breeding boxes from preferably natural wood (do not use softwoods (conifers) or treated timber). These need to be on woodland edges where some degree of shade can be guaranteed (see page 5).

Site protection

- Seek to designate Sites of Importance for Nature Conservation (and statutory Local Nature Reserves, if relevant) on land where there are significant stag beetle populations.

Gardens

- Retain dead wood or install a loggery at the end of the garden (see page 5).
- Check the pond or water-butt during the adult flying season (May to July); they often fall in and cannot swim.
- Try and prevent cats (or other predators) from attacking the adults during the flying season.

Frequently asked questions

Digging up a log/tree-stump I've found a number of larvae. What do I do?

Try and carefully remove the larvae, and place them into some dead wood close by, making sure they are covered and in a cool, moist (but not wet) place.

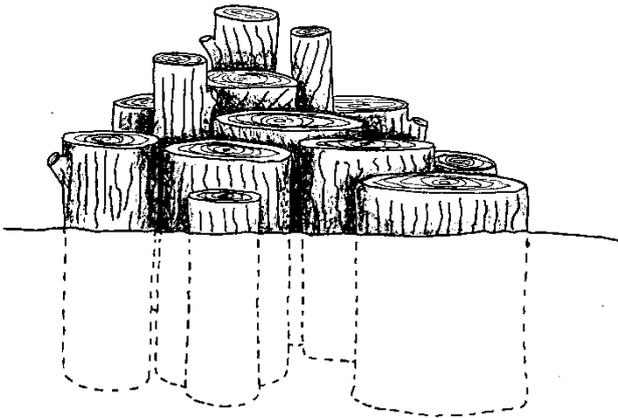
What do adult stag beetles feed on?

They have been seen feeding on sap-runs from trees, and will feed on honey in captivity. However, many probably don't feed at all – despite their large jaws they are not carnivorous

Do I try and help a stag beetle on its back upright itself?

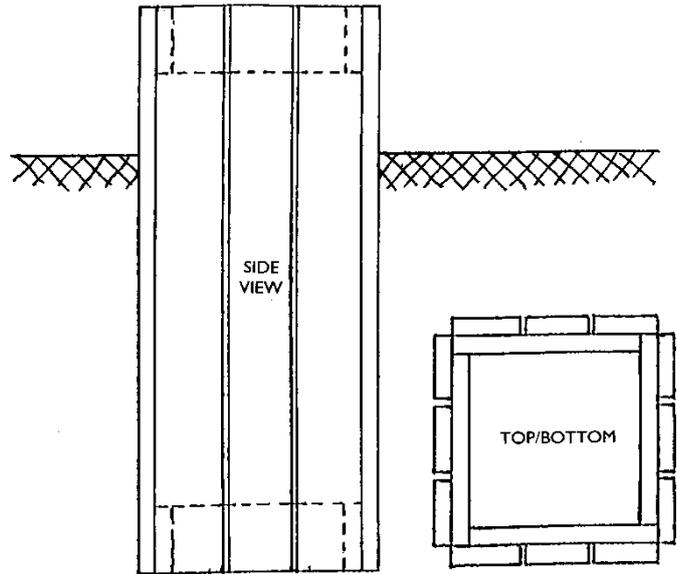
In roads and pavements there is little to help beetles to right themselves; they will be vulnerable to predation or crushing. If one can (using fingers, a twig, or paper) help a beetle up, and put it in a safe place.

Loggeries and boxes



Loggerie

Large logs (10-50cm diameter) of hardwood (e.g. oak, beech, sycamore, ash) with bark still attached sunk c60cm into the ground, in partially shaded areas.



Artificial breeding box

Made of hardwood timber, 2cm thick, a box 49 X 21.5 X 21.5cm open at each end, covered on the four sides with 61 X 7 X 2cm slats, leaving <1cm gaps between (to allow access to beetles and larvae) to make total length of 61cm.

One end covered with fine wire mesh to enable drainage, the other open. Filled with damp hardwood sawdust and fine woodchips, sunk 45cm into the ground with open end standing c7cm above soil level. As developed by Colin Hawes of the Suffolk Naturalists' Society.

Compliance with the legislation

The stag beetle is a 'protected species.' Listed on Schedule 5 of the Wildlife & Countryside Act 1981 (as amended), it protects the beetle from being sold in the UK. A major threat to the species, especially in Europe, has been through private collectors (who trade in them for collections), and in certain parts of the world, such as Japan, this trade is still thriving where stag beetles (of many species) are kept for pets and as status symbols.

Therefore if an individual offers a beetle for sale, or removes a beetle from its habitat with the intent of sale, it may therefore be controlled by the Act. If stag beetles are found to be offered for sale, collected for sale, or a sale is witnessed, consult Natural England immediately.

Natural England are the agency responsible for the interpretation of the Act, whilst the Metropolitan Police are responsible for enforcing it. There are exemptions to the implementation of the Act, and these will be spelt out by Natural England.

Planning implications

The presence of stag beetles is not an obstacle to development, but as a priority Biodiversity Action Plan species sympathetic measures should be considered to accommodate the beetle's needs wherever possible. If a planning proposal is likely to threaten a known site where stag beetles are found, we suggest conditions are imposed on any permission granted, along the lines of:

Condition 1: Prior to the commencement of the development, a survey of the application site shall be carried out to establish the presence or otherwise of any protected or rare species. For stag beetle adults this should be undertaken between early-May and early August. Records for the site's locality (for example, held by GiGL), and the presence of dead wood may give an indication of the beetle's presence (but logs or tree stumps should not be broken up to search for larvae). Details of the methodology, findings and conclusions of the survey shall be submitted to the local planning authority within one month of the completion of the survey. This should include a data search with relevant organisations.

Condition 2: Should the results of the survey referred to in Condition 1 above indicate that stag beetles are present within the application site, then details of the following shall be submitted to and approved in writing by the local planning authority prior to the commencement of the development:

- a: a scheme of mitigation or enhancement works to minimise the adverse effects of the development on protected species; and
- b: a programme of timings for the works referred to in (a) above.

Condition 3: Mitigation and/or enhancement works shall be carried out in accordance with the scheme and programme approved in accordance with Condition 2 above.

Note to applicant

The stag beetle is considered to be globally threatened, and listed as a priority species in the UK Biodiversity Action Plan. It is protected through its listing in Schedule 5 of the Wildlife & Countryside Act 1981 (as amended). Guidance states that the habitat of a protected species may be a material consideration in planning.

Further action?

This guidance adopts a precautionary position given the current knowledge of stag beetle in London and its particular requirements. Any issue that arises may need to be addressed on an individual basis; further advice should be sought from the relevant organisations. Work is needed in monitoring the beetles to assess trends of populations, and how they are affected by the possible changes to their neighbourhoods through development or management. For example, the loss of London's garden vegetation, analysed by London Wildlife Trust and GiGL in 2009, may be significant in the longer term.²

Stag beetles are not just important in their own right, they serve as a 'flagship' for a whole range of animals, plants and fungi that are dependent on dead wood. Many of these are rare for the same reasons that stag beetles are declining – the loss of dead wood habitat. Very many of these are agents of decay; they help transform dead wood into soil and nutrients for new growth, and as such are vital components of woodland and parkland ecosystems. Taking measures to conserve stag beetles in London should help to ensure that this more elusive biodiversity is conserved too and the health of our green spaces is maintained.

With this in mind any information that may be of assistance to our work in understanding further the requirements of the stag beetle in London will be gratefully received.

² Smith, C. (2010). *London: Garden City? Investigating the changing anatomy of London's private gardens, and the scale of their loss*, London Wildlife Trust, Greenspace Information for Greater London, and Greater London Authority.

Annex I: Stag beetle conservation status within Europe, Britain and London and the factors affecting its decline

Protection

The stag beetle is listed on Appendix III of the Bern Convention, on Appendix 2 of the Habitat Directive, on Schedule 5 of Wildlife & Countryside Act 1981 (as amended), and as a Priority Species on the UK Biodiversity Action Plan (1995). It is also receives protection in a number of European countries such as Germany, Hungary, and Switzerland.

Status

Although locally common in certain areas, the stag beetle's European range has probably contracted for many centuries as woodlands have been converted to agricultural landscapes, conifer plantations and urban development – it is now extinct or very endangered in a number of countries such as Latvia and eastern Germany. In Europe it is associated with old forests and woodlands which predominantly consist of broadleaf trees such as oak, elm, lime, etc., but is also found in gardens in certain areas.

The stag beetle distribution in Britain is concentrated to the south-east of the country – its absence in the north may be climate related. In the 1940s this extended to southern Wales, the Dee, Cumbria, and across to the north Yorkshire and the Wash. Recent surveys suggest that this has significantly contracted, with the predominant distribution over a broad swathe from Dorset, Hampshire, West Sussex, Surrey, Berkshire, London, north-east Essex, eastern Suffolk and northern Kent. Outlying clusters are found in bordering counties to the west, but it appears to be absent from all its former northern sites, apart from the Dee.

Greater London is one the most important areas for this species in Britain, with its range concentrated in the southern and western boroughs (see over). Gardens appear to be the most important habitat for the beetle in the capital; this is where most have been seen by the public and where most recent data has originated from. Epping Forest, Richmond Park, and Wimbledon & Putney Commons have been designated as Special Areas of Conservation (SACs) for stag beetle. SACs are designated under the Habitats Directive, a European law which provides for the creation of a network of protected wildlife areas across the European Union, known as 'Natura 2000'.

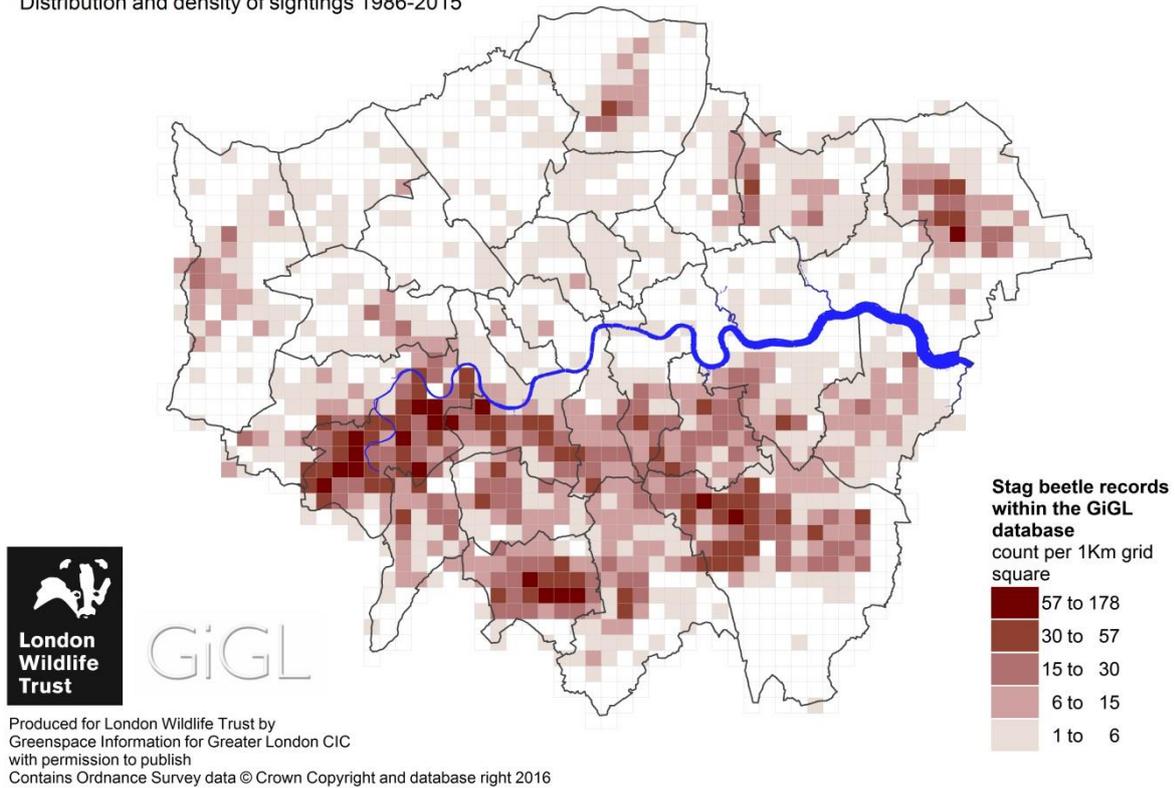
Recent Government reporting on the UK conservation status of stag beetle suggests the species' overall future prospects are 'favourable', based on the habitats it requires being broadly sufficient in quantity and quality.³ Nevertheless, with the pace of changes in gardens over recent decades (for example the loss of garden vegetation), suggests that this doesn't necessarily apply in London.

Factors contributing to the decline of stag beetle

- Loss of habitat through re-development, agriculture, plantation forestry, and garden clearance.
- Tidying-up of parks, woodlands and gardens, through the removal of dead wood (by stump-grinding, uprooting, burning, chipping or tipping).
- Lack of awareness of the beetle's presence on sites.
- Unintentional crushing on pavements and roads – the beetles appear to be attracted to the warm surfaces that these provide.
- High predation pressure on the adults from cat, fox, crow, and magpie, especially in urban areas.
- Perceptions as a 'creepy-crawly' or potential pest leading to persecution or intentional destruction.
- Collection

³. Joint Nature Conservation Committee (2013). European Community Directive on the Conservation of Natural Habitats and of Wild Fauna and Flora (92/43/EEC) *Third Report by the United Kingdom under Article 17 on the implementation of the Directive from January 2007 to December 2012 Conservation status assessment for Species: S1083 - Stag beetle (Lucanus cervus).*

Thirty years of stag beetle sightings in London
 Distribution and density of sightings 1986-2015



Text and design by Mathew Frith. Map prepared by Greenspace Information for Greater London.
 Line drawings: adults – Sandars (1946); larva – Klausnitzer (1995); nest-box – Hawes (1999).

This advice note is a revised version of those previously published in 2000, 2008 and 2012. It has been prepared from information that is currently available as a result of the work of many partners involved in the conservation of stag beetle.

The Trust cannot be held responsible for changes that may occur subsequent to new information being made available, or of the action taken by others based on the contents of this advice note. Legal advice on stag beetles should always be sought from Natural England in relation to specific cases.



www.gigl.org.uk



www.wildlondon.org.uk



www.ptes.org

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