fact FILE stag beetles

Stag beetles are one of the largest insects in the UK (they can grow larger than a matchbox in size) and they are one of most charismatic beetles we have.

Male stag beetles are easily identifiable by their large antler-like mandibles

MICK BRIGGS, INSET JACR ROTHAMSTEAD

COMMON NAMES Stag beetle, horse pincher, thunder beetle, oak ox

SCIENTIFIC NAME *Lucanus cervus*

DESCRIPTION An adult beetle's head and thorax (middle section) are shiny black in colour and its wing cases are chestnut brown. Adult males are 35-75mm long and have large antler-like mandibles. Females grow between 30-50mm long, with normal sized mandibles.

HABITAT Woodland edges, hedgerows, parks and gardens.

DIET Larvae feed on decaying wood. Adults have not been seen feeding but do take moisture from ripe fruits.

HABITS The stag beetle has a very long life cycle the majority of which is spent underground in their larval stage. After spending between three and upto seven years in the larval state they then build an ovoid-shaped cocoon in the soil, upto 20cm below ground, that can be as large as an orange and take upto three weeks to build. Within it the larva will pupate and finally metamorphose into an adult, emerging from its cocoon in the autumn and spending the winter and spring in the soil. Adult beetles usually emerge from mid May onwards and by the end of August most of them will have died after mating. They do not survive the winter.

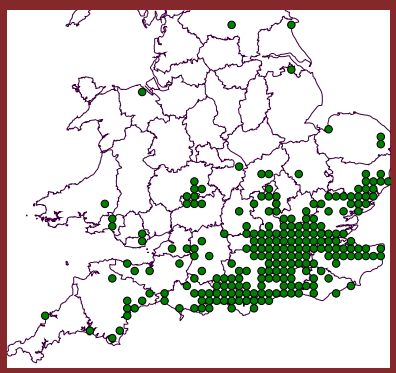
BREEDING Females are often seen on the ground looking for somewhere to lay their eggs. Males, on the other hand, tend to be seen flying at dusk looking for a mate. Females lay small, round eggs below ground near to rotting wood, particularly log piles, rotting tree stumps and old fence posts.

DISTRIBUTION Throughout western Europe; including Britain (though not in Ireland) and it has been introduced to some offshore islands.

EUROPEAN CONSERVATION STATUS Common and widespread but evidence of a drastic decline is mounting.

UK distribution

Stag beetles are relatively widespread in southern England, especially the Thames valley, north Essex, south Suffolk, south Hampshire and west Sussex. They are also found in the Severn valley and coastal areas of the southwest.



Female beetles prefer light soils to dig down to bury their eggs and newly emerging adults have to find their way to the surface. Areas like the North and South Downs, which are chalky, have very few stag beetles.
They also prefer areas which have the highest average air temperatures throughout the year and the lowest rainfall. It is not surprising, therefore, that they are mostly restricted to the south east with small populations in a few areas in Devon and Worcestershire.

We are particularly keen for people to hunt for stags in the counties on the border of their known range:Cambridgeshire, Devon, Gloucestershire, Lincolnshire, Norfolk, Warwickshire, Worcestershire and Yorkshire.

Male stag beetle pupae (above left) have very distinctive mandibles. They are approximately 35 - 60mm in length. These pupae are found underground, away from wood, between August and September. Female stag beetle pupae are harder to distinguish from other species. However pupae found in wood are likely to be lesser stag beetles.

HEINZ ROTHACHER, KOEHLER, DEBORAH HARVEY

identifying larvae

greater stag beetle (*Lucanus cervus*)

A fully-grown stag beetle larva can be up to 11cm long. They are fairly smooth skinned have orange head and legs and brown jaws. They are quite chunky, and the gut contents can sometimes be seen through the skin in the lower half, giving the appearance of a blackish patch along the back. This is particularly evident in smaller larvae, which have less fat. They are nearly always found in damp decayed or decaying wood below ground and can be up to 50cm down. Placed on the ground they take up a C shape.

lesser stag beetle (*Dorcus parallelipipedus*)

The lesser stag is the most easily mistaken for a stag beetle larva, since it also has the same orange head, similar legs and brown jaws, and comes to rest in the same C shape. It is virtually impossible to distinguish a small stag beetle from a lesser stag beetle larva without resorting to classification guides and a hand lens. However, as a general rule, the lesser larva will be found above ground in drier wood, often in great numbers. There are also often lesser stag beetle adults present, near to the larvae.

longhorn beetle *(Prionus coriarius)*

The longhorn larva is quite different from a stag beetle larva in that the body and head appear to be merged and the head is altogether squarer and smaller. It also has a black head and the body markedly tapers from anterior to posterior, almost coming to a point. They are found above ground. the larvae are found deep into wood, which is not necessarily rotting, although dead, and they don't form large cavities but rather long tubes within the wood.

rose chafer (*Cetonia aurata*)

These larvae are smaller (approximately 2cm) and much hairier than stag beetle larvae. Their legs are shorter and the larvae have a chubby appearance. When placed on a flat surface the larva will turn on to its back and move along rapidly. Their orange heads are smaller than those of a stag beetle larva. The rose chafer larva is most likely to be found in compost heaps in large numbers – sometimes hundreds.

cockchafer (*Melolontha melolontha*)

These have the appearance of poorly nourished stag beetle larvae. They have long legs and are quite hairy though not as hairy as the chafer. Their heads are also smaller than the stag beetle larva. If placed on the ground they run as if their rear end was in a sack. These are root feeders, which are most commonly found in lawns, feeding on the living roots of grass. They can be quite numerous over an area of lawn.

DEBORAH HARVEY, COLIN HAWES

reasons for their decline

The most obvious problem for stag beetles is a significant loss of habitat. Many woodlands were sold for development in the inter-War years; just think of all the suburbs built since the 1920's. The introduction of the Green Belt in 1947 did restrict suburban expansion but since then many of London's surviving open spaces have sadly been developed, including many woodlands. Development will continue to reduce stag beetle habitats, but increased awareness of their existence can help defend the beetles against developers.

In addition the 'tidying up' of woodlands, parks and gardens has led to the removal of dead or decaying wood habitats which is the stag beetle larvae's food source. Tree surgery operations such as stump-grinding of felled trees removes a vital habitat for the beetle. Although 'tidying up' still continues in gardens, woodlands and park managers are now much more aware of the need to retain dead and decaying wood as part of the woodland ecosystem. The Royal Parks' management plans for Richmond Park, and other Royal Parks, include the retention of suitable dead wood to help encourage stag beetles to settle.

Predators such as cats, foxes, crows, kestrels and others may also have an adverse impact at the most vulnerable stage in the beetle's life cycle, when adults are seeking to mate and lay eggs. Though this is largely natural predation, it has been suggested that the rise in the numbers of magpies and carrion crows in the last decade may be having a significant impact on stag beetle populations.

Humans are, unfortunately, a direct threat to the stag beetle. Adult beetles are attracted to the warm surfaces of tarmac and pavements, making them particularly vulnerable to being crushed by traffic or feet. Stag beetles have a fearsome appearance and sometimes people kill them because they look 'dangerous'. We need more volunteers to help with research so that we can further understand these intriguing insects.

Changes in weather patterns are also likely to have an impact on our Lucanidae friends. Exceptionally dry or wet weather is likely to substantially affect the larvae. Wet and windy weather can inhibit adult beetles' flying ability.

People's Trust for Endangered Species, 15 Cloisters House, 8 Battersea Park Road, London, SW8 4BG
Registered charity no. 274206 Tel: 020 7498 4533 www.ptes.org stagbeetle@ptes.org

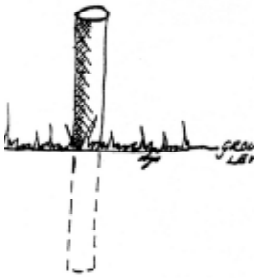
helping stag beetles

...in your garden

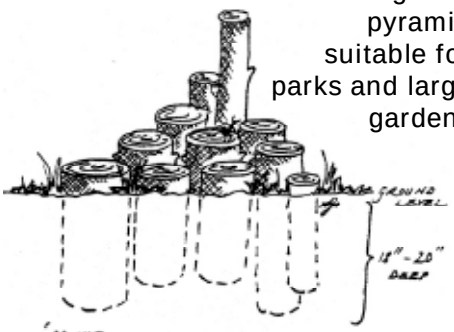
stag beetles are harmless and do not damage living wood or timber. The larvae only feed on decaying wood so please do not kill them.
leave old stumps and dead wood in your garden as females lay their eggs near the rotting wood and roots of trees such as oak, apple, ash and cherry. Please leave fallen trees in large pieces in contact with the soil so that the wood remains moist and is able to rot. Avoid stump-grinding and chipping and please don't burn the dead wood.
avoid polythene sheeting covered with bark chippings or garden fleece as a way of controlling weeds. Newly emerging adult beetles can get trapped beneath it in spring and die.
be alert for predators such as magpies and cats. Scare magpies away and keep pets indoors at dusk when stag beetles are flying and vulnerable.
cover water butts and also provide an access out of ponds for beetles such as a small plank. If you see a beetle in water that looks dead please take it out - they often revive!
try and avoid decking your garden as emerging stag beetles can get trapped beneath it. It also blocks potential nesting sites.
lawn mowers can be lethal for emerging stag beetles so please leave an unmown area around stumps and logpiles when stags are emerging in may & june.
buy untreated woodchips or mulch to provide ideal habitat for females to lay their eggs in.
if you find larvae when you are digging in the garden, if possible cover them back up and do not disturb them. However if you need to remove rotting timber posts or stumps, please dig a hole in a quiet corner of your garden and put them in, together with some of the rotting wood from their original site. Cover loosely with soil.

create a logpile in your garden to attract plenty of different invertebrates.

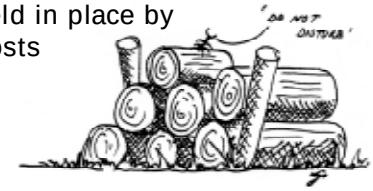
Single logs on or in soil



Large log pyramid suitable for parks and large gardens



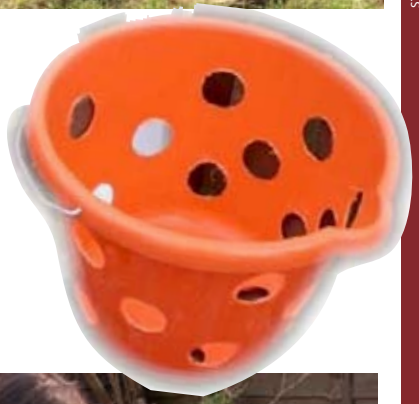
Log 'pile' - logs held in place by posts



STEPHEN HEYWOOD, COLIN HAWES

...in other ways

if you find a dead stag beetle please wrap it carefully in paper or kitchen towel (NOT plastic) and put it carefully in both a box and a well-sealed envelope with details of exactly where you found it. Please post it to PTES and it will forwarded on to researchers who are studying beetle sizes and genetics.



bury a bucket for beetles and help us to monitor the larvae, how they are doing and where they are. By filling the bucket with a mixture of wood chippings and soil, an artificial breeding site is created for stag beetles where their larvae can develop and be monitored during this time. For full project details and to register your bucket please visit: www.ptes.org/work/baps/BB4B.html

DEBORAH HARVEY INSET PTES

count beetles on the road If you walk along the same 500 metre stretch of road at least once a week during the beetle's flight season, mid-May to the end of August, please consider helping us by regularly completing a simple form and sending us details of all dead stag beetles that you see. Please email stagbeetle@ptes.org for a survey form.

People's Trust for Endangered Species, 15 Cloisters House, 8 Battersea Park Road, London, SW8 4BG
Registered charity no. 274206 Tel: 020 7498 4533 www.ptes.org stagbeetle@ptes.org

planning & development

PROTECTED STATUS

The stag beetle is a 'protected species', which is listed on Schedule 5 of the Wildlife and Countryside Act 1981. The major threat to stag beetles in the UK is the removal of larval habitat, i.e. dead wood. The removal of hedges and trees (both of which will have dead portions underground), as well as stumps, causes the greatest habitat loss. If stag beetles and/or stag beetle larvae are known or thought to be present at a site where an application for planning has been submitted, and are likely to be disturbed or destroyed whilst work is carried out at the site, it is recommended that someone with an understanding of the insects' requirements be present to see that any larvae and/or adults are carefully translocated to a suitable natural or purpose-built habitat close by.

PLANNING & DEVELOPMENT

The presence of stag beetles is not an obstacle to development, but as a priority Biodiversity Action Plan species in the UK, we ask that sympathetic measures are taken to accommodate their needs wherever possible. If a planning proposal is likely to threaten a known site where stag beetles are found, we recommend the following actions:

Action 1: Before development starts, an environmental assessment survey of the application site should be carried out to establish whether any protected or rare species are present, or if they are using the site in anyway. For adult stag beetle this should be undertaken between mid-May and early August. Previous environmental records for the site and the presence of dead wood may give an indication that stag beetles could be present (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.

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

a) A scheme of mitigation or enhancement works to minimise the adverse effects of the development on protected species. It is recommended that someone with a good knowledge of stag beetles is on site when any dead wood, wooden posts, shrubs, stumps, hedges or trees are removed, so that larvae or adults that are disturbed/dug up can be spotted, retrieved and placed out of harms way.

www.greatstaghunt.org

In 1998 we launched the hugely successful Great Stag Hunt and received sightings of stag beetles from thousands of volunteers across England.

If you see a stag beetle or dig up any larvae we would like you to register it by going to the website above or calling PTES for a survey form. Please encourage others to join in, too. You´ll not only be helping stag beetles, but hundreds of other invertebrates as well.

people's trust for endangered species

Royal Holloway University of London

London Wildlife Trust

Bromley THE LONDON BOROUGH

People's Trust for Endangered Species, 15 Cloisters House, 8 Battersea Park Road, London, SW8 4BG
Registered charity no. 274206 Tel: 020 7498 4533 www.ptes.org stagbeetle@ptes.org