

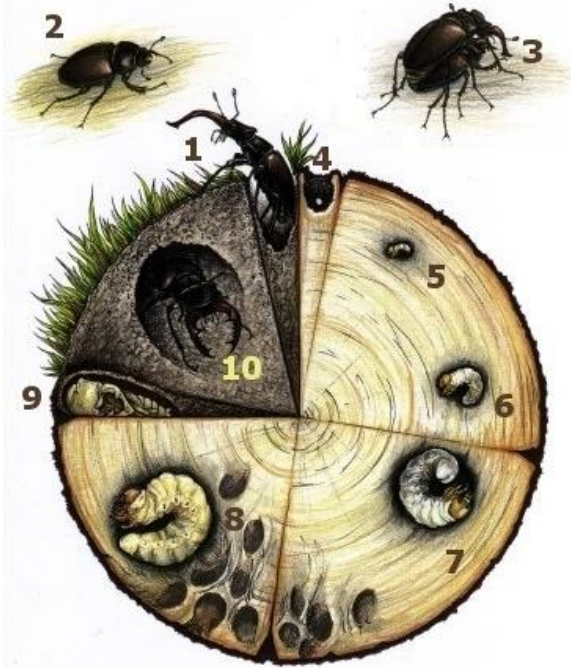
# HOW TO HELP STAG BEETLES

A short guide to make our urban environments stag beetle friendly

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## A bit about stag beetles and their life cycle:



*Lucanus cervus*, is named after appearance of the male: a large beetle with impressive jaws that look like antlers of a deer. The males (1) can be between 4 and 9 cm long and females (2) are smaller, around 3 to 4 cm with much smaller jaws. The beetle lives most of its life underground. Female adults lay eggs next to buried dead woody materials (4), on which the larvae will feed from. For the first two to three years it lives as a blind larva, growing up to 10 cm while building up fat (5-7). When fully grown, its color changes from white to yellowish (8). Finally, the larva will make a cocoon in the soil and undergo metamorphosis to become an adult (9). The adult beetle will wait inside the underground cocoon until the next spring to fly out (10). Once an adult, the stag beetle is not able to eat anymore. It is only able to suck up juices from tree wounds or rotten fruit. Male adults only live for a few weeks while females live a bit longer, up to a couple of months. The mating season starts around June and on warm summer evenings, the males start flying around sunset, whirring around, searching for females to mate with so the circle of life can start again (3).

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## Threats:

The stag beetle has a status of near threatened (NT) according to the International Union for Conservation of Nature (IUCN) with populations decreasing in Europe. It has also been included in the Annex II of the EC Habitats Directive classing it as a 'European Protected Species'.

- The most obvious problem is a significant loss of habitat. The "tidying up" of parks and gardens, has led to the removal of dead and decaying wood habitats, which is the stag beetles main food source.
- Stump-grinding in public areas or total tree harvesting in commercial forestry strongly affects the amount of underground dead wood that remains behind.
- Scaling up agriculture has led to the removal of hedgerows and other wooden elements throughout the countryside removing habitat as well as connectivity.
- In larger forest areas the stag beetle has become very rare or even disappearing, but in this case the decline in forest regions is mainly due to the fact that intensely managed forests became much darker and broad-leaved trees were substituted for conifers, which are unsuitable for stag beetles.
- Finally, stag beetles have a slow lifecycle, a short mating period and are poor colonizers making them extremely vulnerable to any landscape changes compared to other species that share the same habitat.

## Habitat & Conservation:

The stag beetle's breeding habitat consists of underground dead wood. This wood must meet some general conditions so that it is eligible for this beetle:

1. Broad-leaved woods of species like oak, beech, hornbeam, chestnut, ash, elm, sycamore, apple, cherry and black locust are suitable. Coniferous tree species and soft wood species (willow, poplar and birch) are in general not suitable as softwoods decompose too fast to become an important habitat.
2. There must be enough wood to digest. The wood of trees and shrubs that have fallen 2 years ago (sometimes even 1 year) are suitable for depositing eggs until it is almost completely digested. Larger trees can sustain multiple generations.
3. The dead wood must be in the ground or at least have direct contact with the ground.
4. The wood should be in a place where the water table should never exceed 50 cm below the surface, or the larvae will drown during the winter.
5. Stag beetles are generally limited to sandy and loamy areas, as females have to dig into the soil to lay the eggs. Heavy clay, chalk soils or areas with underground rock beds are unsuitable.
6. In Northern Europe, it is very important that the soil heats up sufficiently fast. Sand soils warm up faster than loam and clay; dry soils warm up faster than wet soils; and those from a steep south exposed slope warm up faster than those of a north slope. So northern stag beetles are often restricted to sites with a warm microclimate, while in the southern part of its range, the species is limited to north facing slopes with temperate conditions.



## What can you do to help?

1. **Report your sightings:** take a photo of the stag beetle and send it to [www.stagbeetlemonitoring.org/report-observations](http://www.stagbeetlemonitoring.org/report-observations)
2. **Leave it alone:** if you find a stag beetle the best thing to do is to leave it alone, or if it's in immediate danger, move it to a safe location as close as possible to its original position
3. **Watch out for predators:** especially cats and magpies, during stag beetle mating season
4. **Follow up a transect:** this is a fun and interactive way to help your fellow stag beetles, find out how to do it on [www.stagbeetlemonitoring.org/monitoring-network](http://www.stagbeetlemonitoring.org/monitoring-network)

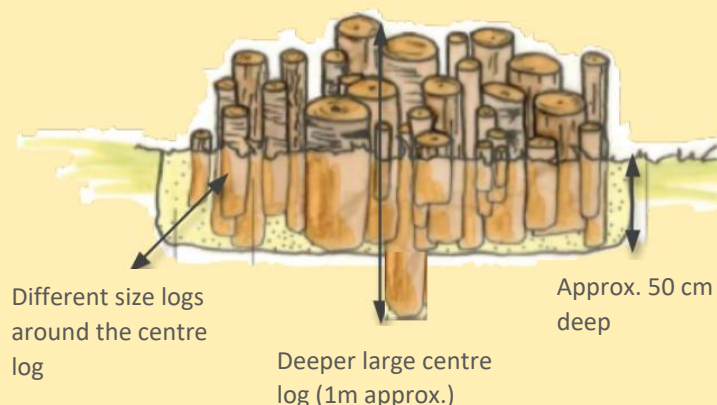
## Take care of stag beetles in private gardens and green spaces:

- Assure a continuity of underground dead wood in time and space by spreading necessary interventions like cutting trees over multiple years.
- Plan big changes carefully, avoid (construction) digging along dead wood or wooded areas. Find out if stag beetle populations are locally present and get advice from a specialist to avoid damage in advance.
- Leave old stumps and dead wood, stag beetles need to lay their eggs in rotting wood.
- Avoid stump grinding and burning dead wood, this could kill larvae and removes potential habitat.
- Avoid covering the ground around (dead) trees with polythene sheeting or concrete, emerging beetles can get trapped beneath it.
- Instead of removing dead trees intiarly, cut them 1m shorter than the distance between them and the nearest path so if they fall, they won't be a danger to bystanders.
- Maintain any old trees with sap runs.
- If you accidentally do dig up a stump with larvae, try to leave them as they are and cover them back up. If you need to remove the stump, be aware that permits are needed in most countries concerning disturbing this protected species. Try to dig 50 cm around the tree and then move carefully inwards. Collect all larvae and relocate the stump and the larvae in a similar position (sun, type of soil, water table).
- Use untreated wood, treated wood can be toxic for larvae.
- Lawn mowers can be lethal, please leave an un-mown patch around log piles when beetles are emerging from May to June. Using sheep grazing can be a solution.
- Cover water butts, to avoid stag beetles drowning. Drop some branches or a wooden plank in ponds to create an escape root.
- Create some coppiced areas which is an ideal habitat for stag beetles. Most trees and shrubs can be coppiced (cut to the ground every 10 years to generate firewood in traditional management).
- Try to plant some cherries or other trees that have ripe fruit at the beginning of summer, these fruits are a food source for adult beetles.
- Plant a tree whenever you cut a tree.



## Provide a home building a log pile:

- Log piles can be built at any time of year in forests, public green spaces and private gardens.
- Use untreated wood from any hardwood broadleaved tree. The logs should be at least the thickness of an adults arm.
- Site the logs in a warm place but with partial shade if possible to prevent them from drying out.
- Partially bury the logs in the soil in a vertical position so that they don't dry out (dig a pit from approx. 50cm deep and 2m wide). Place a large center log deeper in the ground and build around it for stability, filling the gaps with soil.
- New log piles can be used as playing areas, but older log piles might become unstable and are better fenced.
- Log piles cannot be removed, as it's very destructive for the larvae. New log piles need to be built every 10 years to provide a sustainable habitat.



Pictures and illustrations from: Maria Fremlin & Carim Nahaboo, Natalia Fanega-Sleziak, Arianna Tagliani, Leerschool et al.