

Decaying Wood

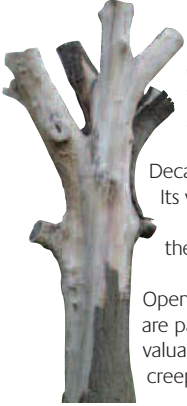
Managing a Valuable
Wildlife Habitat



In partnership with



Decaying Wood: Managing a Valuable Wildlife Habitat



At first sight, decaying timber may be mistaken for a sign of neglect or poor management of open spaces, parks and conservation areas. However, ancient trees, standing deadwood and fallen timber contribute to one of our most important habitats for biodiversity. This valuable resource supports a wide range of flora and fauna such as fungi, lichens, hoverflies, beetles, birds and bats.

Decaying wood is not a single habitat but consists of a complex series of changing microhabitats. Its value to different species does not only depend on the length of time that it has been decaying but also on other factors such as the time and cause of death, tree species, age range, aspect and the climate. Managing deadwood involves an understanding of many types of habitat and species.

Open grown ancient trees, which have developed broad spreading canopies and wide hollow trunks, are particularly important. Cavities formed in these trees due to the decay of heartwood provide valuable nesting and roosting sites for bats and birds such as owls, woodpeckers, nuthatches, tree creepers and tits. Many of these feed on the wide range of insects present in the decaying wood.

Decaying wood in the UK is home to almost 1800 invertebrate species. Living ancient trees are extremely important for wildlife because not only does the living tree support many species but also the longer a tree is kept alive the more decaying wood it will generate. Fungi play a vital role in the ecology of a site - helping to recycle dead organic matter. A tree population with a broad age range helps to ensure a continuity of these decaying wood habitats.

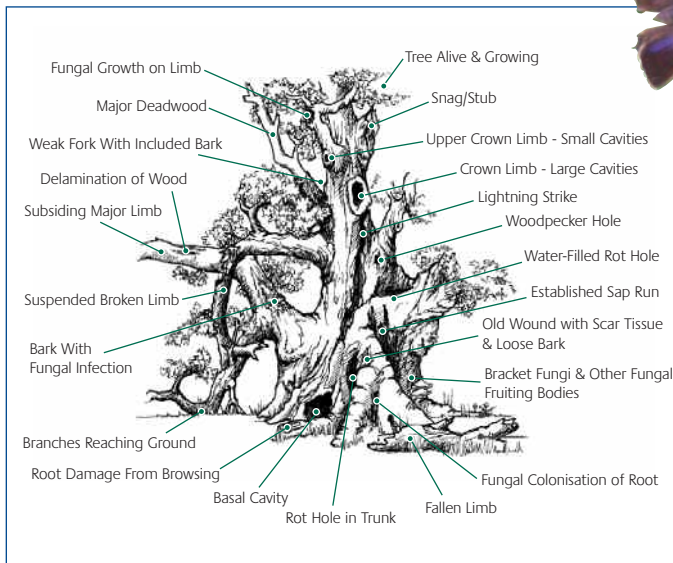


Purple hairstreak butterfly

The Anatomy of an Ancient Tree.

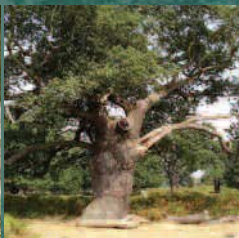
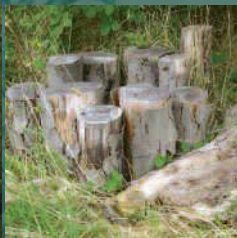
Insects gain access to heartwood via exterior damage such as old lightning strikes, torn limbs and rot holes. Rot holes are home to a wide range of species from bats to hoverflies. Water-filled holes can support specialised water beetles. Sap-runs are also vitally important for many invertebrates.

(Source: Read, 2000/English Nature)





Cardinal click beetle



Heartwood Decay

Colonisation of a tree by fungi is a natural part of its ageing process and the first step on the long road to veteranisation. The presence of fungal fruiting bodies does not usually indicate that a tree is about to die or collapse. In fact, heartwood decay fungi do not damage a tree's living sapwood but only break down the dead heartwood while the tree continues to thrive. This process creates hollows, which lessen the weight of the tree, often making it more stable. There are two main types of heartwood decay; white-rot and red-rot, and each supports different specialist species.

White-rotted heartwood is a vital food source for many species including the lesser stag beetle *Dorcus parallelepipedus* and the rhinoceros beetle *Sinodendron cylindricum*. In addition, many invertebrates are specialists, which are attracted to certain tree species and different stages of rot development.

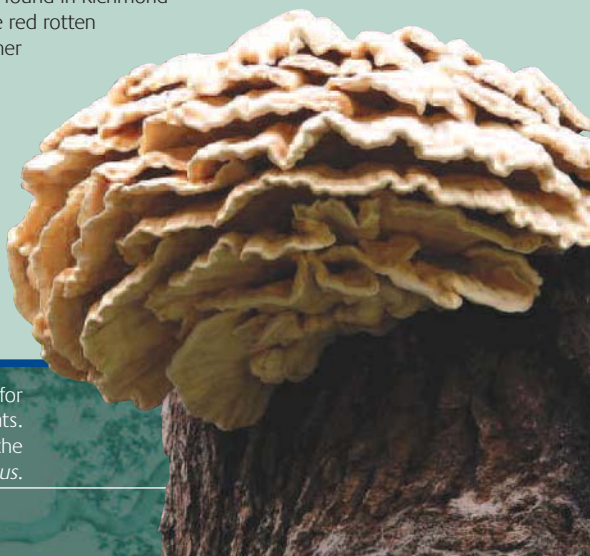
Red-rotted heartwood is home to an array of different decay invertebrates. The hairy fungus beetle *Mycetophagus piceus* feeds on the mycelial strands of the sulphur polypore fungus deep inside the decaying trunk. The cardinal click beetle *Ampedus cardinalis* is found in Richmond and Bushy Parks. This very rare beetle develops in the red rotten heartwood of old oaks and feeds on the larvae of other invertebrates.

The end product of heartwood decay is black wood mould that accumulates in the base of tree cavities. This material is home to some of our rarest invertebrates including the rusty click beetle *Elater ferrugineus* currently known from only 4 sites in the UK, including Richmond and Bushy Parks.



The Stag Beetle

The stag beetle found mainly in the south of England, is a threatened species in Britain and Europe. This is our largest insect; adult males can be up to 7cm long. The larvae are found mainly in rotting stumps where they consume vast amounts of decaying wood and take about five years to develop into adults.



Bracket fungi provide food and shelter for many beetles, moths and gnats.

This sulphur polypore is the habitat for larvae of the beetles *Eledona agricola* and *Hallomenus binotatus*.



Managing Ancient Trees and Decaying Wood



Specialist tree pruning methods include rip cuts and coronet cuts



A 'monolith', where a decaying tree has been safely stabilised.

A broad age range of trees is essential when managing decaying wood habitats. The presence of ancient, middle-aged and young trees ensures the future continuity of dead wood habitat. Most important is to prolong the life of mature and ancient living trees, if it is safely possible to do so. Tree surgery techniques can be used to maintain crown balance in trees, to prevent collapse and to encourage vigour. The work should be gradual and carried out over many years to reduce shock and ensure a positive response by the tree.

Specialist tree surgery techniques are now used on ancient and mature trees to mimic natural breakage. This allows entry points for fungi that further stabilise trees by rotting-out the heartwood. Trees are pruned to encourage healthy young growth at the base of the crown. Neglected trees often benefit from 'retrenchment pruning' to mimic veteranisation and gradually reduce the size of the crown and stabilise the tree. Releasing overcrowded mature and ancient trees from competition from invasive scrub such as *Rhododendron* (*Rhododendron ponticum*) and younger more vigorous trees, can also prolong life. Care must be taken to avoid sudden exposure of the tree to the elements that can damage the tree and the plants and animals that depend on it.

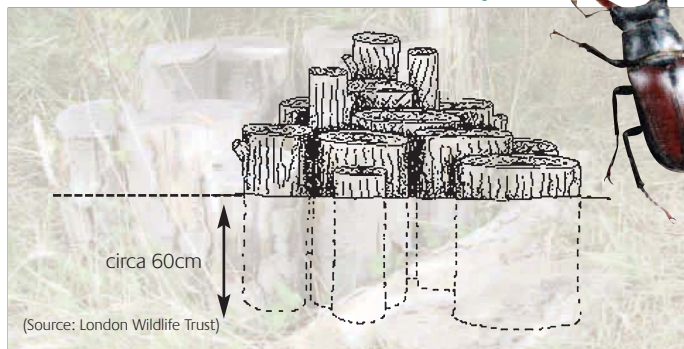
Where ancient trees represent a safety risk, one can fence off the tree or divert pathways to safeguard members of the public and as a matter of good practice. This may also remedy compaction around the root systems. Wherever possible, standing dead trees should always be retained. In public areas, these trees can be made safe by creating 'monoliths' which have been reduced in height and spread and then left to decay in a standing position. The decay process is slowed down but these trees can still support many species dependent on decaying wood and bridge the age gap whilst younger trees reach veteran status.

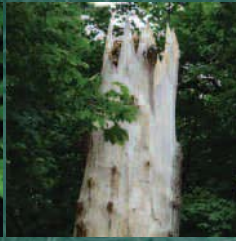
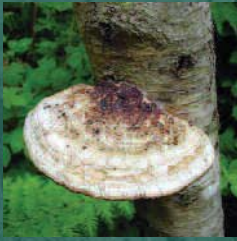
Stag beetle



Loggery

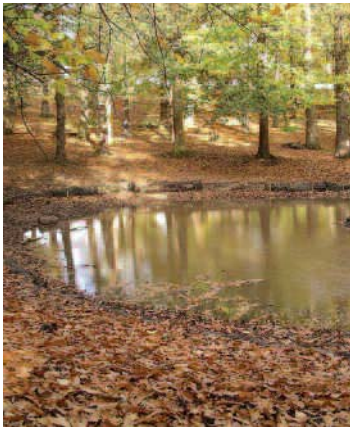
Large logs (10-50cm diameter) of hardwood (e.g. oak, beech, sycamore or ash) with bark still attached sunken about 60cm into the ground, in partially shaded areas.





Fallen Timber

Fallen timber should be left intact or in large pieces close to the parent tree. Such timber is less susceptible to environmental changes and is not easily disturbed by the public. Timber lying in various conditions of shade favour different species.



For example deep shade benefits some species of fly and dry timber in full sunlight is ideal for certain species of solitary wasp. Timber can be stacked to create habitat piles that provide food and shelter for birds, small mammals, insects and fungi. Logs may also be partially buried or sunk vertically in the ground to provide a home for stag beetle larvae.

Dead wood lying in water is also a specialist habitat for some very rare invertebrates and wherever possible should be retained. Decaying wood also benefits the water system; red-rotten timber releases algal inhibitors in the same way as barley straw, which is used to prevent algal blooms in lakes and ponds.

The *Cyanostolus aeneus* beetle only occurs under the saturated bark of waterlogged timber along rivers and streams. The larvae of the non biting midge *Orthocladius lignicola* specialise in submerged rotten wood. The hoverfly *Chalcosyrphus euonotus* develops in dead wood that is semi-submerged in freshwater.

Nectar Sources

Native nectar and berry bearing trees and shrubs and perennials provide a valuable source of food for many birds and insects - including many of those inhabiting decaying wood. Thus part of the management of these sites involves ensuring that suitable flowering plants are available nearby. These would include hawthorn, rowan, elder, holly, guelder rose, bramble, ragwort and thistle.



Hawthorn



How you can help

- Set aside an area of your garden for wildlife and don't automatically clear it up. Retain as much dead timber in your garden as possible.
- Place fallen timber in dappled shade and also partially bury it if possible. Allow bramble and bracken to grow over piles to create shade, moisture and humidity.
- Do not automatically fell trees with decay unless they are a safety risk. Reducing a tree by crown reduction or pollarding may mean that a tree can be riddled with decay but still remain safe.
- Allow fungal fruiting bodies to develop undisturbed.
- Leave old tree stumps in the ground do not grub or grind them out as they provide valuable habitat for many insects including the Stag Beetle, so will eventually rot away.
- Retain as many native flowering trees, shrubs and wildflowers as possible as these provide a valuable source of food for decay invertebrates, birds and small mammals.
- Avoid disturbing fallen timber. Many sites in the London Borough of Richmond upon Thames are important for decaying wood and in the Royal Parks it is illegal to take or to disturb lying timber.

Sites of conservation importance for decaying wood within the London Borough of Richmond upon Thames

Barnes Common: A Site of Metropolitan Importance for Nature Conservation and a Local Nature Reserve.

Barnes Common is rich in biodiversity, as it contains a kaleidoscope of habitats including important acid grassland, scrub and secondary woodland. The Site supports a diversity of species and concerted efforts are made to retain all standing decaying wood and to create habitat piles for small mammals, birds, insects and fungi to feed, nest and breed.

Bushy Park, The Royal Parks: A Site of Metropolitan Importance for Nature Conservation. As for Richmond Park, Bushy Park's 130 hectares of deer-grazed Lowland Acid Grassland is regionally important, but a survey in 2004 revealed it also to be the 8th most important Site nationally for decaying wood invertebrates. Among the rarities was the rusty click beetle (*Elater ferrugineus*) currently known from only 3 other places in Britain. Overall, the survey recorded more than 115 nationally scarce and notable invertebrates, including 68 species of beetle.

The Copse, Ham: A Site of Metropolitan Importance for Nature Conservation. There are many magnificent ancient oaks, several with limbs broken off from storm damage, which have numerous natural cavities that provide nesting sites for woodpeckers, nuthatches, treecreepers and bats which all feed on the tremendous numbers and diversity of invertebrates which are supported by these stately trees. As many of these insects rely on dead wood, all decaying wood is retained and left in situ where possible.

Crane Park: A Site of Metropolitan Importance for Nature Conservation. There are many mature horse chestnut, oak, ash, sycamore and alder trees throughout this Park, which provide a natural habitat for birds, bats and invertebrates. This park lies adjacent to the River Crane so it is also an important feeding ground for bats such as Pipistrelles that feed on the diversity of invertebrates, which are supported by the river and trees.

East Sheen Common: A Site of Metropolitan Importance for Nature Conservation. Once grazed by cattle, pigs and horses and used as a source of wood for fuel and tools, this open heathland/acid grassland has now succeeded to oak woodland with a dominant holly understorey. Several of the dead and dying birches are retained, as they provide natural nest sites for all three British species of woodpeckers.



Ham Common: A Site of Metropolitan Importance for Nature Conservation and a Local Nature Reserve.

The whole of the common was once grazed heathland and acid grassland. However after 1933, the grazing ceased, which over the years has resulted in succession to an oak and birch woodland. Many of the birches are now dying but contain valuable dead wood, which is retained for invertebrates, fungi and cavity nesting birds such as woodpeckers. One characteristic fungus of birch trees, which is seen here, is the birch polypore, a large brown and white bracket fungus, which resembles an inverted plate growing out of the tree trunk.

Home Park, Historic Royal Palaces: A Site of Metropolitan Importance for Nature Conservation.

This deer grazed parkland comprises of extensive acid grassland scattered with large oak trees. It covers an area of 750 acres and has remained uncommonly unspoilt since its opening in 1894. Decaying wood is stored on site for ecological reasons and an area within the paddocks has been left to create a haven for stag beetles and other invertebrates.

Palewell Common: A Site of Metropolitan Importance for Nature Conservation. Oak is the dominant species with hybrid black poplar, sycamore and hornbeam and elm, elder and holly forming a varied understorey.

This site is an important nesting site for many woodland birds and all decaying wood is retained where possible, as it provides an ideal habitat for small mammals, birds and the array of insects that thrive here.

Petersham Lodge Woods: A Site of Borough Importance for Nature Conservation. This former landscaped garden is now a fine, diverse area of open woodland, which lies adjacent to the River Thames. It was once the grounds of Petersham Lodge and many fine, mature trees date from around this time. An avenue of horse chestnuts, yews, holm oaks and cedars now provide an ideal habitat for an array of invertebrates, bats and birds to feed, nest and breed in this area.

Richmond Park National Nature Reserve, The Royal Parks: A Site of Special Scientific Interest (SSSI).

This historic deer park is also one of the countries top sites for ancient trees with over a thousand in the Park, some of which are estimated to be over 800 years old. These trees provide an important habitat for a diversity of fungi, lichens, birds, bats and invertebrates - over 200 rare species of beetle can be found there. The Park is the 3rd best site in Britain for decaying wood invertebrates and it is a European Special Area Conservation (SAC) in recognition of its importance for stag beetles. Richmond Park's 180 hectares of Lowland Acid Grassland is the largest area of this UK Biodiversity Action Plan priority habitat in the Greater London region.

Royal Botanic Gardens Kew: A World Heritage Site. The conservation area at Kew has an impressive stag beetle loggery, which has been created to show members of the public the value of decaying wood for the array of invertebrates that rely on this important habitat.



Noctule bat



References and Sources of Further Information

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- Read, H. (2000) Veteran trees: a guide to good management. English Nature. ISBN 1 85716 474 1 (English Nature Enquiry Service Tel: 01733 455 100)
- www.jwhs.co.uk/SB/Dead-Wood-Management.htm
- View the UK Habitat Action Plan for Lowland wood-pasture and parkland at: <http://www.ukbap.org.uk/UKPlans.aspx?ID=5>
- The Ancient Tree Forum at: www.woodland-trust.org.uk/ancient-tree-forum
- People's Trust for Endangered Species (information on Stag Beetles) at: www.ptes.org
- World Wide Fund For Nature: www.wwf.org.uk
<http://panda.org/downloads/forests/deadwoodwithnotes.pdf>

This leaflet has been produced in partnership with London Borough of Richmond upon Thames and The Royal Parks, on behalf of Richmond Biodiversity Group. It has been part funded by the EU LIFE Environment SUN Project.

For an electronic copy of this booklet and further information about Richmond's Biodiversity Action Plan, visit the Richmond Biodiversity Group website: <http://www.richmond-biodiversity.org.uk>

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