

# Wood ants

## in Scotland



An information and management guidance note



**W**ood ants are a vital piece of the biodiversity jigsaw in Scotland's forests, and are indicative of ecologically diverse, long-established woodlands. By feeding prodigiously on other invertebrates, and by being prey for other creatures, they act as 'keystone' species in the forest ecosystem. They indirectly influence plant growth, tree health and distribute the seeds of many specialist woodland plants.

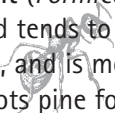
This note provides some basic information on wood ants for woodland owners and managers, and includes advice on how to protect and encourage the spread of colonies within a woodland environment.



## Identification and distribution

There are four species of wood ant in Scotland. They construct distinctive nest mounds that seethe with worker ants in the spring and summer. The identification of the group as a whole is not difficult even for the non-specialist, as they are the largest ants in Scotland, up to 10 mm in length and distinctively reddish-brown and black in colour. Telling the species apart is much more difficult, and requires expert knowledge.

- The **Scottish wood ant** (*Formica aquilonia*) is the most widespread of the four species, and is found patchily in forests throughout the Highlands, north to Sutherland and south to Arran. Within this range there are probably some woodlands where it has yet to be recorded. It builds relatively large nest mounds of pine needles, small twigs and other tree debris which, on occasion, can reach 1.5 m in height and can contain over 100,000 individuals.
- The **narrow-headed ant** (*Formica exsecta*) is a rare species with its stronghold in the open parts of the Scots pine dominated forests of Abernethy, Glenmore and Rothiemurchus. It is 6-8 mm long, slightly smaller than the Scottish wood ant, with a small notch on the top of its head, though one needs a hand lens and some practice to see this. Its nests are also smaller (only about 30 cm across at the base and up to 25 cm high), out in the open away from the shade of trees, and are made up of pieces of dried grass and small fragments of heather, etc.
- The **hairy wood ant** (*Formica lugubris*) is similar in size and distribution to the Scottish wood ant within Scotland, but is also known to occur as far south as Derbyshire and mid-Wales. It is relatively less common in the high rainfall areas of the west Highlands.
- The **slave-making ant** (*Formica sanguinea*) is a more vivid red than the other wood ants, and tends to be very aggressive when disturbed. It is also rare in Scotland, and is most often found in rotting wood and under stones in ancient Scots pine forest.



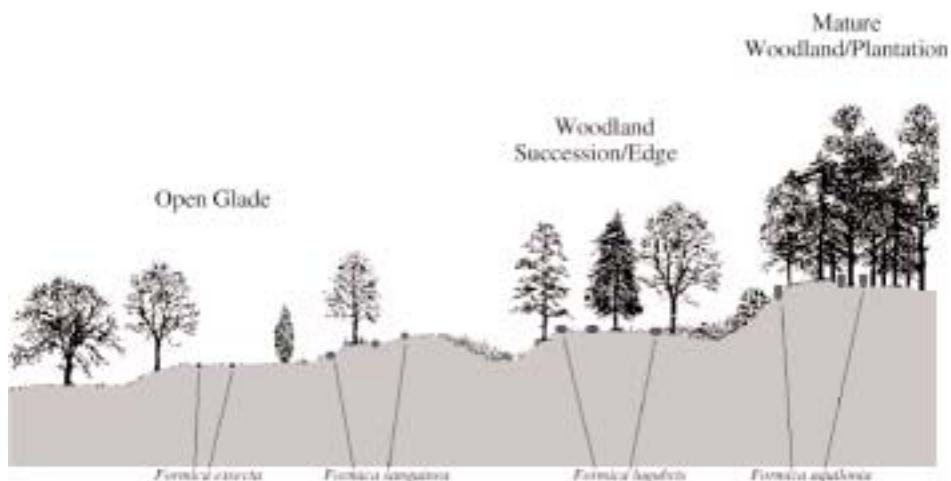
## Why are ants important to woodlands?



Taken together, wood ant colonies are capable of having profound effects on woodland ecology, some of which can be beneficial to the woodland manager. Wood ants contribute to a healthy forest habitat in the following ways:

- ants remove significant numbers of insects which feed on pine needles and other leaves, eg. pine looper moth (*Bupalus piniaria*); indirectly this can increase timber growth
- the ants themselves can be a food source for other animals, such as woodpeckers, capercaillie, and red squirrels
- ants disperse the seeds of many woodland plants, including common cow-wheat, violets and wood anemone - this 'helping hand' is to be welcomed by woodland managers as they seek to expand their woodlands and to develop forest habitat networks;
- the nest mounds of wood ants are often occupied by a variety of other predators, parasites and 'guest' species, all wholly adapted to living within the confines of the mounds. One striking example, found exclusively in the mounds of wood ants, is the shining guest ant, (*Formicoxenus nitidulus*). It is only about 3 mm long and has a shining black abdomen.

### Niche Preferences of Wood Ants



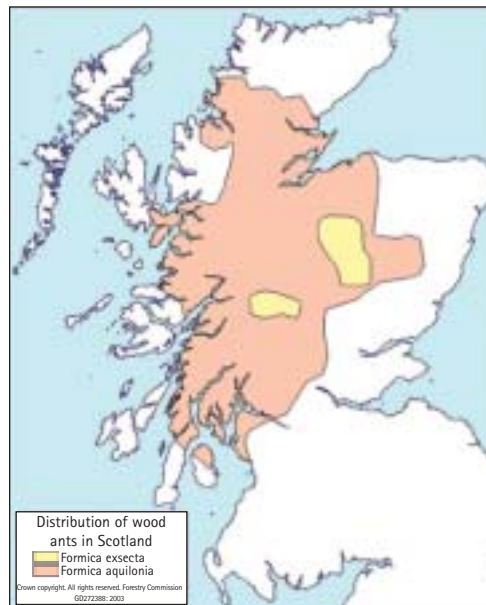
## Wood ant conservation



As Scotland's forests declined over the centuries so too did the wood ants; a decline that continued apace in the 20th century with the intensification of woodland management and the expansion of plantation forestry. The Scottish wood ant has survived locally in pockets of ancient woodland, whilst the narrow-headed ant has become very rare, hanging on in a few restricted areas of the Caledonian pinewoods. These species are now of conservation concern, and are included in the UK Biodiversity Action Plan. The Forestry Commission, Scottish Natural Heritage, the Scottish Wildlife Trust and other organisations such as the Woodland Trust Scotland are involved in implementing Action Plans for these species.

Wood ants have few predators, and most threats to their survival come from the destruction of woodland or the gradual shading-out of their habitat by densely stocked trees, particularly un-thinned conifer stands. Wood ants require at least some areas where light can penetrate the canopy; they cannot rear their brood without the heat provided by the sun, and will disappear within a few generations. Each of the four species occupies a slightly different part of the woodland (see diagram), ranging from relatively shady conditions, where the Scottish wood ant is often found, to very open woodland (or even moorland on the edges of woods) favoured by the narrow-headed ant. An ideal woodland is one that has a relatively open canopy, with a high proportion of glades, edges and natural canopy gaps.

The five initiatives listed in Box 1 are compatible with sound woodland management, whether for economic, social or environmental (or all 3) objectives. The key principle is to maintain structural diversity that provides the various species with the niche habitats they require.





### Box 1. Five ways to protect and encourage the spread of wood ants

- Mention the locations of wood ant nests in forest plans and grant scheme applications and tailor management prescriptions accordingly.
- Ensure areas of open space are included in the design of new woodlands close to existing wood ant colonies.
- Guard against inadvertent destruction of nest mounds, especially during harvesting or other machine-based operations, by temporarily demarcating their position (eg. with barrier tape).
- When clear-felling, retain individual or groups of (say 8-12) trees near to any nest mounds as a 'habitat refuge' for ants - these can be trees of poor form or growth, or 'non-crop trees'.
- Keep tracks and rides open (eg. by removing any self-seeding trees) to allow in sunlight.

For more information on measures that can be taken to protect and encourage wood ants in woodlands please visit the wood ant website on [www.swt.org.uk/what\\_we\\_do/species/ant/woodants.asp](http://www.swt.org.uk/what_we_do/species/ant/woodants.asp)

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Cover picture of Scottish wood ant on nest carrying pupa by Alan Featherstone-Watson; picture of Scottish wood ant nest in pinewood, and picture of hairy wood ants on oak leaf taken from Forest Life Picture Library. Diagram of wood ant niches by J Hughes and S Winter

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