

Ant Hills in Acid Grassland

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Ant hills are an impressive feature of the acid grasslands in Bushy and Richmond Parks. In some areas, many hundreds of these mounds form wonderful ant-created landscapes, many decades or even centuries old.

Each ant hill is the result of many lifetimes of labour by thousands of tiny Yellow Meadow Ants (*Lasius flavus*). A lack of disturbance is vital - the mounds cannot form in mown areas. They are also vulnerable to damage by erosion and compaction by trampling and off-road cycling.

Ant hills are of great ecological importance in our grasslands. Please help us to protect them.

What is an ant hill?

Each mound is created by a single colony of Yellow Meadow Ants, which may number between 8,000 –14,000 individuals. Worker ants are only 3–5mm long, but these industrious animals dig soil from below ground as they create a network of galleries. Particle by particle, working mainly at night, they take the excavated soil to the surface to gradually build and maintain the mound. As a result the mound contains only fine soil and no stones.

Ant hills may grow up to a metre tall and two metres across, although most that you will see are no more than half that size. The age of ant hills can be estimated from their above-ground volume, approximately one litre per year of age.

Why build an ant hill?

The mound contains a network of galleries within which the ants raise their young, tending eggs, larvae and pupae until they mature into adults. The function of the mound is to collect warmth from the sun, and the mass of soil also acts like a storage heater to maintain a more even temperature and humidity inside. Workers tending the brood move the young around inside the mound to keep them on the sunny side.

What do the ants eat?

Yellow Meadow Ants farm aphids that live underground on the roots of plants, much as we farm domestic cattle. Aphids are true bugs that suck sap from plants and excrete a sweet fluid ('honeydew') for which the ants 'milk' them. The ants are also predatory eating the root aphids and other small invertebrates to provide the protein in their diet. The aphids need the ants' protection against other predators and parasites. Eighteen species of underground aphid are entirely dependent on their association with ants. Foraging worker ants returning with full crops of liquid food pass regurgitated drops mouth-to-mouth to their nest-mates and young.

The life of an ant colony.

It is amazing to think that within a mature ant hill and under the surface of the surrounding grassland is an unseen ant metropolis that could have been there for a century or more. The ants vigorously defend their territory around the mound against other nearby colonies – this is why the ant hills are spaced out the way that they are. Yellow Meadow Ant queens have been known to survive for 22 years and it seems that they are replaced when they die and so the colony lives on.

Each summer, usually in July, when the air is warm and still, there is a 'nuptual flight' in which several hundred new queens (fertile females) and drones (males) fly out from the colony. Continued \rightarrow After mating, and they mate only once in their life, the queens break off their wings and look for somewhere to start a new colony. This is a risky business. Such swarms of ants are attractive to predators looking for an easy meal. Queens also may be killed if they land in an occupied territory. Sometimes more than one queen start up a colony together, but mature colonies usually have only one queen. A queen can lay as many as 100 eggs per hour to maintain her army of workers! Whether females develop into queens or workers depends on how they are fed when larvae.

By living deeper underground, Yellow Meadow Ants can co-exist and avoid competition with Black Ants (*Lasius niger*) that live in the surface soil layers and have much larger territories.

The ecological value of ant hills.

The presence of ant hills results in a greater diversity of flora and fauna in grassland habitat. Several insect-eating birds will feed on ants, but the most specialised is the Green Woodpecker.

> Although it nests in tree holes, it feeds mainly on grassland ants, which may be as much as 80% of its winter diet. The woodpecker pecks into the mound, breaking into the galleries and gathers the ants with its

extraordinarily long tongue which it protrudes deep into the mound.

The sun-warmed soil of an ant hill attracts many other insects, for example the Common Field Grasshopper prefers the soil of the mound for egg laying. The mounds make good basking sites for butterflies like the Small Copper and reptiles such as the Common Lizard. Ant hills have a different micro-climate and soil composition to the surrounding acid grassland and this favours different species of fungi, lichens, mosses, grasses and other flowering plants which colonise and help to bind the mound surface. The Royal Parks understands the importance of our ant hill landscapes. We are careful to avoid shading the mounds by inappropriate tree planting. Bracken can also spread and become dense enough to shade-out ant colonies. We are currently working to limit the further spread of bracken as necessary.

Reminder: Enjoy your visit to the Park but please respect the Park regulations. Cycle only on designated cycle tracks. Avoid disturbing deer, birds and other animals. Do not pick or take plants, fruits and fungi from the Park. Leave dead wood lying where it is. Keep dogs under close control and pick-up after your dog. Have consideration for other Park visitors. Do not light fires. Please take your litter home.

References:

Hölldobler B. & E.O.Wilson (1990) The Ants, Springer Verlag.

King T. (2006) The value of ant hills in grassland British Wildlife **17**(8), pp.392-397.

Pontin J. (2005) Ants of Surrey, Surrey Wildlife Trust.

What is acid grassland?

Lowland Acid Grassland is a plant community that forms on low-nutrient acidic soils. It is home to special and fragile wildlife communities with distinctive fine grasses, wild flowers, fungi, insects, spiders, reptiles, birds and mammals. This rare habitat in Britain is a priority for conservation in the UK Biodiversity Action Plan. In Bushy and Richmond Parks, we have two of the largest and best areas of this very special habitat in Greater London.

More about ants.

Ants are insects belonging to the family Formicidae, within the order Hymenoptera which also contains bees, wasps and sawflies. Ants are one of the dominant land organisms on earth, making up 10-15% of the entire animal biomass in most terrestrial habitats. One hectare of soil in the Amazonian rainforest contains more than 8 million ants. There are well over 11,000 species of ants worldwide, but only around 42 species are native to Britain.

A highly evolved form of social co-operation (eusociality) is an important factor in the success of ants. The genetics of sex determination in ants (haplodiploidy) means that female workers share more genes with their sisters than with their own potential offspring. So they work to help their mother to reproduce. Ant colonies are sometimes described as a 'superorganism' in which different 'castes' of individuals take on different roles and act together as one organism. Communication is mainly via a complex array of scents, pheromones, touch and sound.

