NATURE

Acid grassland – an ecological treasure in the Park

by Dr Nigel Reeve

One reason why Richmond Park is so special is that it contains the largest area of lowland acid grassland in Greater London (about 700 hectares). Acid grassland supports a specialised wildlife community, including many kinds of plants, insects, mammals and birds, so it contributes enormously to biodiversity (see box), and the Park's status as a Site of Special Scientific Interest (SSSI) stems largely from this feature. The largest single region of acid grassland is in the central zone around the Pen Ponds.

Acid grassland generally benefits from deer grazing and light disturbance, which help to prevent invasion by bracken and to halt succession to woodland. But crucially, the quality of acid grassland depends on the relative infertility of the lime-poor acidic soils on which it occurs. This habitat is highly vulnerable to nutrient enrichment from a number of potential sources, such as the atmospheric nitrogen oxides expelled by vehicle exhausts.

Picking up after dogs is vital

Another major source of nutrient enrichment is dog walking. Elevated levels of phosphorus and nitrogen in the soil are clearly related to the volume of dog faeces and urine, which is greatest near car parks and paths. Aerial photos reveal highly visible evidence of changes in the structure and composition of grassland around car parks. Richmond Park is visited by more than 1000 dogs per day and the Pen Ponds area is the most heavily used zone. Apart from the added nutrients from dog fouling, the worming pills given to dogs are likely to kill invertebrates (insects, spiders, etc.).

There are ways of reducing this damage to the grassland and its wildlife in the core area of the Park. One is to limit parking in this area – this was one of several reasons for reducing the size of Pen Ponds car park earlier this year. A second is to reduce the proliferation of paths and persuade dogwalkers to keep dogs on short leads in grassland areas. In any case, dogwalkers are now legally obliged to pick up after their dogs.

The faeces and urine of deer, on the other hand, generally enhance the ecology of the Park. Where deer graze, they recycle nutrients locally within the Park rather than importing

additional nutrients. Deer faeces also support a specialised invertebrate community, including a nationally scarce beetle (Aphodius zenkeri).

The trampling effect

Some trampling is useful; it helps to stop certain plants from dominating and creates opportunities for certain types of animal. For example, some bare areas provide basking sites for heat-loving insects and habitat for burrowing bees and wasps. On the other hand, excessive trampling causes changes in vegetation type, soil erosion and compaction, and loss of species. Proliferation of paths causes problems too: the central area of grassland in the Park is highly fragmented by broad paths and open areas. These areas are avoided by many small ground-living animals, such as voles or shrews that need to hide from predators. This prevents them from moving about easily to find food, shelter or mates.

What is biodiversity and why does it matter?

Biodiversity is the richness and variety of all living things. Many different species play distinct roles in the processes of nature: herbivores (grass eaters), predators and the microscopic organisms that decompose waste and dead bodies all recycle the soil nutrients that enable plants to grow. A loss of species can cause natural systems to become less stable and unable to cope with changes in weather or human impact. Biodiversity matters even in small areas like gardens or parks – they all contribute to the biodiversity of our country and the world.

Myriad grass types

To the layman grass may be just grass, but the discerning eye can pick out dozens of types. The characteristic grasses of the Park's acid grassland include common bent, brown bent, wavy hair grass, early hair grass and mat grass (only found in a few London locations). In less well-drained areas, the species mix shifts to favour velvet bent, purple moor grass, tussock grass, plus a number of rushes, woodrushes and sedges.

Other characteristic plant species of the acid grassland include tormentil, sheep's sorrel, mouse-eared hawkweed, heath speedwell, heath bedstraw and harebell, plus two nationally notable species, brown sedge and upright moenchia. The acid grasslands of the Park also have characteristic sub-communities of mosses, lichens, fungi and flowering plants that occur on the anthills found in several drier areas.

Diverse animal species

A rich mix of animal species exists in Richmond Park's acid grassland areas. They include:

- **Butterflies.** Surveys have noted 546 species of butterflies and moths, including at least 21 scarce or threatened ones.
- **Beetles.** Over 1000 species have been recorded for the Park. Grazing by deer and rabbits provides especially good conditions for dung beetles. As well as performing the valuable ecological function of nutrient recycling, these beetles are a common prey item of kestrels and little owls in the Park.
- **Grasshoppers.** Of eight species of grasshopper and cricket identified in Richmond Park, five are grassland species, including the stripe-winged grasshopper, the common green grasshopper and Roesel's bush cricket.
- **Birds.** The central area of acid grassland supports small and vulnerable populations of threatened species that nest or feed in open grassland. Nesting birds include the skylark, reed bunting and meadow pipit. Birds that feed in the grassland include the green woodpecker, kestrel and the starling (which has declined so precipitously that it is now a Species of European Conservation Concern). The grey partridge is a grassland bird that was once common in the Park. Despite attempts to restock them in the 1980's they may now be extinct there as a breeding bird.
- **Small mammals.** The smaller grassland mammals (shrews, mice and voles) occupy an important position in the "food-web", eating invertebrates or vegetation and providing food for predators such as owls, kestrels, foxes and badgers. The Park's tussocky acid grasslands are important for these small mammals, who make runways under the dense grass so they can move around without attracting predators.
- **Hares.** The brown hare, a grassland mammal once common in the Park, has become extinct here relatively recently – the last record was in 1972.

Looking after the grassland

Given the importance of the Park as London's largest area of acid grassland supporting so many species of flora and fauna, it is vital to manage it. This means first of all knowing what is there today. The most up-to-date maps of the Park's acid grassland date back to the 1980s. To bring these up to date,

there is to be a grassland survey this summer, jointly funded by the Royal Parks and English Nature.

Grassland with anthill

Our knowledge of the Park's wildlife is greatly enhanced by the continuing work of a stalwart force of volunteer recorders, particularly the Richmond Park Wildlife Group which includes specialist flora, butterfly and bird groups. Recently, more than160 species of bee, wasp and ant have been recorded, nine of which are threatened species.

Looking after the acid grassland creates some dilemmas. For example, the bare areas created by works or trampling cannot simply be re-seeded because commercially available seed mixes contain inappropriate species or cultivars. Nor can they be fertilised. The best solution ecologically is to leave them bare to colonise naturally, but bare ground is unpopular with many visitors. Another method we are investigating is to strew "green hay" over the bare areas – cut grass (containing seed) from within the Park – but this is hard to do on a large enough scale. The best areas of grassland have many anthills that prevent the use of machinery and seed yields are low. For small-scale projects, hand-cutting by volunteer groups may be one answer.

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