The Importance of Bare Ground

The importance of bare ground can often be overlooked but is an essential part of all habitats including grasslands, woodlands, wetlands and heathlands. Areas of bare ground provide localised warm spots, essential for species such as the dingy skipper butterfly Erynnis tages and reptiles like the common lizard *Zootoca vivipara.* Bare ground also provides germination spots for a wide range of annual species including arable plants. This benefits a variety of specialist seed feeding invertebrate species such as the ground beetle *Ophonus laticollis*. This species had declined by 88% between 1900-69 and 1970-2004 and is now only found in five counties, including Cambridgeshire (Buglife, n.d.)

Many lichens and bryophytes (mosses and liverworts) cannot compete with other species so are reliant on bare ground to survive. The recent flora of Cambridgeshire's bryophytes showed that many species associated with these habitats have been lost from sites due to succession (Preston and Hill, 2019). A recent article on the bryophytes of Devil's Dyke in Cambridgeshire revealed that this site holds over 120 bryophyte species, including 32 calcicoles (specialists of base-rich microhabitats) the majority of these needing bare earth to establish (Preston and Hill, 2020). Bare ground, especially patches on loose soils are also important for invertebrate species to nest, including a large range of solitary bee and wasp species.

Tuft stripping at our Cooper's Hill reserve to restore the heathland has the added benefit of creating bare earth. This is a crucial nesting habitat for a wide variety of insects including solitary bees and wasps. Shown here are (from top to bottom): the beewolf *Philanthus triangulum*, a jewel wasp *Hedychrum sp.*, sandpit mining bee *Andrena barbilabris* and hairy-legged mining bee *Dasypoda hirtipes*. Photos © Ryan Clark

Bare ground is a transient habitat, over time developing into a vegetated habitat. Bare ground would have historically been created through the impact of large herbivorous mammals through trampling and grazing. We use grazing animals to attempt to replicate this effect on our reserves. Where this is not possible, active management is required to create large areas of bare ground through processes such as turf stripping and soil reprofiling. In woodlands, the exposed root plates of fallen trees are also a significant source of bare ground and, when safe to do so, we leave fallen trees in place.

Resetting habitats to early successional states is resource-intensive, as the areas have to be large enough to ensure that they take a significant period to revegetate. This process is needed to create bare ground, essential in its own right, but also to encourage sparsely vegetated areas to develop. This leads to a mosaic of habitats that are beneficial to a wide variety of species. The amount of bare earth on a site is factored into the management plans for our heathlands and grasslands, to ensure that we are maintaining the correct balance.

References

Buglife (n.d.). *Species Management Sheet: Set-aside downy-back beetle (Ophonus laticollis).* [online] Buglife. Available at: https://cdn.buglife.org.uk/2019/08/Downy-back-beetle_0.pdf [Accessed 10 Nov. 2020].

Preston, C. and Hill, M. (2019). *Cambridgeshire's Mosses & Liverworts: a Dynamic Flora.* Newbury, UK: Pisces Publications.

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Bare ground is essential for a wide variety of species. This patch of bare ground at Cooper's Hill nature reserve is home to large colonies of solitary bees, solitary wasps and tiger beetles. It is also used by a wide variety of species such as butterflies and lizards for basking purposes. Photo © Ryan Clark