



# HEATHER BEETLE

Patrick Laurie of the Heather Trust examines the life cycle, habits, and long-term impact of the heather beetle



## THE HEATHER TRUST

The Heather Trust is an independent charity promoting integrated moorland management across the U.K. from sporting interests to agriculture, conservation and carbon management. The Heather Trust's heather beetle survey can be accessed online at [www.HeatherTrust.co.uk](http://www.HeatherTrust.co.uk). For more information, contact the Trust at [info@heathertrust.co.uk](mailto:info@heathertrust.co.uk) or on 01387 723201.



**1:** Beetle-damaged heather takes on a reddish colour, as the insects strip the plant's protective covering and it dehydrates

**2:** Many keepers have learned to live with the beetle, as treating with insecticide reduces the insect food store for upland birds

**3:** The larvae scrape and fray heather leaves, and are not affected by burning cycles

**4:** The adult beetles do not tend to fly far, and outbreaks can appear to occur with the wind as the beetles use it to disperse

As the summer fades away, many keepers, syndicates and moorland managers across the country will be forced to take notice of heather beetle damage. Heather beetle outbreaks are nothing new, but the vast population explosions which have taken place over the past few years have caused damage that is as extensive as it is staggering. Between 2009 and 2010, Langholm Moor in Dumfriesshire lost well over a thousand hectares of heather in a single season, and the evidence seems to suggest that without swift and costly intervention, the ground would have been permanently overtaken by grass.

Elsewhere, moors as far apart as Exmoor and Caithness have all experienced monstrous outbreaks that have stripped away several thousand hectares of prime heather moorland. Some scientists believe that the large scale nature of these outbreaks is being linked to global warming, causing milder, wetter springs that are conducive to successful reproduction. Heather beetles tend to lay their eggs in sphagnum mosses, but they can also lay in heather litter provided it is consistently moist enough. Mild springs increase the number of viable egg laying sites, so that when the adult beetles emerge from hibernation in April, they find an ideal spread of breeding habitats.

When the larvae hatch, they quickly start to feed on the heather leaves. At close quarters, it is possible to see that unlike caterpillars, which chew up entire leaves, the heather beetle larvae scrape and fray the heather leaves, shredding the plant's protective covering and causing dramatic dehydration. Within days, the leaves and stems start to look raw and threadbare, turning a conspicuous foxy red colour. Given that the bulk of this damage usually takes place in late July and early August, damaged heather is usually in the process of trying to flower. Even light damage will cause the heather plant to abandon flowering, meaning that one of the first real signs of beetle will be noticeable green patches in the great purple swathes of late summer time.

Once the larvae have finished feeding, they fall off the heather plants and mature into adults. These adults emerge in early autumn for another short period of feeding on what remains of the heather plants before dispersing into the surrounding moorland. Adult heather beetles are small, modest-looking creatures with shiny golden wing cases. Despite having well-developed wings, they are not great flyers, usually content to drift with the wind for a few hundred metres before landing again and descending into the leaf litter to hibernate. This can mean that beetle outbreaks appear to spread with the wind, confusing the symptoms with other causes of heather damage such as frosting.

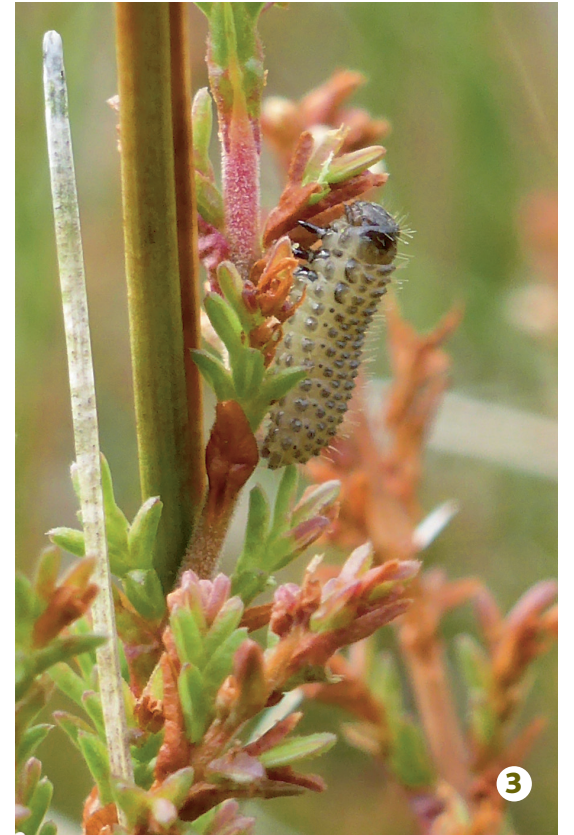
In fact, periods of cold weather can discolour heather in very similar way, and a hard winter can often make taller, more exposed plants seem red and unhappy. The key difference between frosting and beetle damage is obviously the timing of the discolouration – frosted plants are ginger until they either die or start growing in April and May, whereas beetle damaged plants become discoloured during late summer and autumn.

There is no stage of the heather beetle's life cycle that can be disrupted in an attempt to control the damage. Heather beetles are a native, naturally occurring species, and any attempt to control them will come at a cost to other species. Traditionally, guidance was given to drain wetter

areas of moorland in an attempt to destroy breeding habitats for eggs and larvae, but the modern implications of drainage on open moorland are now more complicated than they have ever been. Besides, research in the intervening years has shown just how vital these damp areas are for generating insect life that is so important for young birds. The 1912 study, *Grouse in Health and Disease*, noted that black grouse had a particular taste for eating heather beetles, and that the crop of a blackcock was found to contain more than 300 beetles.

Some keepers have considered spraying infested heather with insecticide or applying for out-of-season burning permits to kill the beetle larvae, but neither will cure the problem. Applying insecticides would be disastrous for vital moorland insects, and beetle larvae have an uncanny knack of being able to drop off burning heather leaves and fall to safety as the flames pass overhead. The future will rest upon a form of management that accepts beetles as an inevitability, and learns how best to restore health to damaged plants once the dust has settled.

In the majority of cases, beetle damage can simply be burnt as part of the moor's annual burning programme. Although it is difficult to burn naked stems in any quantity, smaller patches simply return to normality after a good fire, regenerating from seed, stem and root, so that after a few years, the damage has been totally repaired. Recent trials have found that spraying and cutting damaged heather can also be a useful means of restoring the moor, but complications arise when the beetle population is sustained for several years.



management techniques produce different results in different areas of the country, and these also vary depending upon the weather and the nature of the outbreak. Leaving heather to recover on its own is a risky business, but there is no doubt that it often does.

Part of the problem is that we simply do not know enough about heather beetle outbreaks. The Heather Trust is leading the way on heather beetle research, and the Trust's heather beetle survey represents the only on-going campaign to gather information about beetle outbreaks across Britain. Although some beetle outbreaks are publicised, the majority of beetle damage goes unrecorded each year. Many keepers treat

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The fresh heather regenerating in the spring after burning, spraying or cutting is just eaten up and destroyed during July and August. After a few years, so much of the heather seed bank is used up that the density of emerging heather plants drops, making the area much more vulnerable to grass dominance. On one moor in the Peak District currently monitored by the Heather Trust, major beetle outbreaks have been occurring for so long that burning now produces little more than cotton grass. In this case, the future of the moor may well depend upon bringing in seed from elsewhere.

Contrarily, some beetle damage will naturally fix itself. In Sutherland, extensive heather beetle outbreaks destroyed 700 acres of heather on a sporting estate with a minor grouse interest. During subsequent years, as grass began to dominate the area of destroyed heather, the decision was taken to abandon the grouse interest and focus instead on the stalking, since the time and expense of repairing the damage was seen to be too great. Grouse numbers fell dramatically and the ground was totally left to its own devices for almost six years. However, as of the summer of 2012, the keeper now notes that a strong heather mixture is beginning to show, almost eight years after the initial outbreak. Cases like this make it difficult to provide definitive advice for treating heather beetle damage, particularly since different

heather beetle as a fact of life, and this is usually very sensible, but with evidence to suggest that beetle outbreaks are becoming more destructive and difficult to manage, it is clear that this problem poses an increasing threat to British moorlands.

The Heather Trust is always keen to hear about heather beetle outbreaks wherever they occur, no matter how small or insignificant they may seem. By building a store of evidence and learning about the effects of different management techniques, we improve our understanding of the problem and ultimately learn to deal with it as quickly, cheaply and efficiently as possible. ■

