

# PARASITE MANAGEMENT IN LIVESTOCK AND GREATER HORSESHOE BATS

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## Greater horseshoe bats and dung beetles

Greater horseshoe bats, like all UK bats, are insectivorous and rely on a series of different insect species throughout the year for their diet. At many key points in the year especially in the late summer and even over winter, they require an abundance of dung beetles to survive and thrive. Over 50 species of dung beetles are known to exist in the UK and many different species are eaten by greater horseshoe bats throughout the year.

### Dung Beetles

Dung beetles usually complete their lifecycles in dung: eating dung, breeding in dung and burying eggs in dung as a food source for when they hatch out into dung-feeding larvae.

Many species of dung beetle are in decline, due to a combination of factors including the use of anthelmintics (worming products for livestock), soil disturbance, habitat change, and the loss of livestock from areas which were historically grazed.

Different species of dung beetles are specialised to live on rabbit, horse, cattle or sheep dung, however some species can be very generalist.

In the UK, dung beetles tend to be smaller than their tropical counterparts, with some being only a few mm long.

Dung beetles fly between samples of fresh dung, often at night. It is when the beetles are flying that they are often predated upon by greater horseshoe bats.

### Benefits of dung beetles to farms

- Estimated to save the UK cattle industry £367 million a year<sup>1</sup> through nutrient cycling, reduced parasite loads and improved grass growth.
- Shown to reduce the abundance of livestock parasites in pastures through making the dung unsuitable for parasite growth.<sup>2</sup>
- Improve soil health by burrowing into the ground and burying dung.
- Help raise the carrying capacity of the grazing area, so less total land is needed for grazing animals.



Photo: Thinkstock



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## Looking after your dung beetles

Dung beetles are sensitive to many types of wormer (anthelmintics), but especially to the avermectin based products.

Dung beetle larvae are especially vulnerable to wormers and are often killed by the presence of avermectins and similar products.

Adult beetles are still attracted in to the dung, however they can have sub-lethal side effects and eggs layed in these dung pats are unlikely to survive.

Avoid the use of avermectin based products where possible through March to October, especially taking care to avoid long-acting formulas. Always seek advice from a vet or SQP (animal medicines advisor) when planning your parasite management regime.

If anthelmintic treatment is necessary, keep stock in housing for 48-72 hours after treatment. This is because over 90% of working product is generally excreted from the body in faeces, especially so in the first 48-72 hours. Reducing the number of affected cow pats in the landscape means fewer dung beetles will be affected.

Treated dung can be composted and there is no evidence of composted manure treated with anthelmintics still having impacts on dung beetles and other soil fauna.



Photo: John Walters

## Reducing parasite loads

Various methods of reducing parasite loads are used, here are some examples to consider:

- Mix chicory, plantain and birds foot trefoil into grass swards. These plants contain substances which can reduce parasite loads in livestock. Some seed companies now produce specialist 'worming paddock mixtures'.
- Try to rotate grazing land as much as possible, allowing fields to rest for longer periods means that parasite lifecycles are interrupted and re-infection from pasture is less likely.
- Mixed stocking helps to reduce parasite loads as many parasites are host specific. Therefore sheep grazing a recently cattle grazed pasture may help remove cattle parasites from the sward and vice versa.

## Further resources

Some great resources are available online and ask your vet or SQP what alternatives are available for treating your livestock if treatment is necessary.

## Keep livestock outside

Importantly, without a healthy population of livestock, especially cattle, sheep and horses out in the countryside, dung beetle populations and therefore horseshoe bat populations will be affected. Try to keep farm animals outside on pasture as much as possible.

- 1: Beynon, S; Wainright, W; Christie, M; (2015) *The application of an ecosystem services framework to estimate the economic value of dung beetles to the U.K. cattle industry ecological entomology.* Vol 40, (S1), Pp 124–135
- 2: Sands, B; Wall, R. (2016) *Dung beetles reduce livestock gastrointestinal parasite availability on pasture* *Journal of Applied Ecology* doi:10.1111/1365-2664.12821.



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