

Medicated grit and disease update

Help keep medicated grit working

Red grouse numbers fluctuate in a cyclical manner, typically of 4-5 year duration, on many UK moors. The parasitic worm *Trichostrongylus tenuis* that lives in grouse guts is a cause of those cycles. Incorporation of a worming drug into grit, which is then ingested by grouse, has led to dampening of cycles, but not their cessation. However after 2007, when there was a change in the drug and the coating of the grit, grouse cycles appear to have ceased on moors with an effective gritting system. Subsequently, grouse numbers have doubled and record bags have been achieved, but for how long can this be maintained?

Our answer may come from the livestock industry, where over-use of wormers to kill parasitic worms resulted in the rapid on-set of resistance amongst surviving worms. Now, even newly introduced wormers may only be effective for as little as three to five years before resistance kicks in. Back in 2002, GWCT considered the difficult question of resistance to medicated grit amongst *T. tenuis* worms infecting grouse. We considered the hatchability of 56 batches of worm eggs collected from 12 moors when exposed to differing concentrations of worming drug. Two of the 56 samples showed high hatchability, indicating that the drug didn't stop eggs developing into larvae. We repeated these tests on a further 60 samples of eggs from 10 moors in 2013-14. We expected more samples to show high hatchability when exposed to the drug, but again only two samples, this time out of 69 tested, showed a high hatch rate indicating drug resistance.

These data may suggest the situation is no worse, but with greater use of medication, resistance is more likely and there are no grounds for complacency. Our testing will continue. In the meantime, we urge greater wisdom amongst grouse managers when deciding whether or not to use medication. We recommend that adult worm burdens from the previous autumn and faecal egg counts from early spring should guide any decision. Using these measures, we have shown that medication is not necessary on an annual basis and may only be needed one year in three. These moor specific parasite data should be a pre-requisite before vets prescribe wormers for wild grouse in their care. Only worming when necessary will keep medicated grit working for longer. Once resistance sets in the glory years will be over and it will be back to the boom and bust of grouse cycles.

Grit boxes and hygiene

Cryptosporidium baileyi (bulgy eye) spreads rapidly between grouse, but precisely how we are still unsure. As obvious symptoms are primarily of a respiratory nature, we first thought that transmission was via mucus expelled from the nasal cavity and needed direct contact or close proximity. However we now know that infective oocysts are found in both fibrous and caecal grouse droppings and hence infection is also within the gut. By tracking infected birds and determining which grit trays they use we have established that grit trays contain oocysts and hence are a potential source of infection. We all know that grouse poop in grit trays and we now know that poop contains plenty of oocysts, supporting the early suspicions of AHVLA scientists that grit trays may be a reservoir of infection and hence a transmission source. To confirm whether or not this is indeed the case, we are examining more trays for oocysts this spring. If proven, then we may suggest restricting access to trays by young grouse from mid-June onwards. Prevalence is high in young grouse, with no obvious signs of infection in June, but by August 10% or more are infected in shooting bags.

In the interim, we suggest the following hygiene standards at grit trays;

- Have trays with adequate drainage holes
- Slightly raising trays should aid drainage
- Avoid siting trays in wet locations
- Heavily contaminated sites should be abandoned, with a new location selected
- Old grit should be removed and disposed of away from the moor
- Faecal material should also be removed regularly
- Consider using grit dispensers akin to poultry feeders as opposed to trays, thus reducing the propensity of birds to poop in them

N.B. What we don't know however is whether trays form a greater health risk than general soiling of the environment with contaminated grouse droppings so don't throw the baby out with the bath water by jettisoning your trays. More updates as we learn.