Rice breast disease (sarcocystosis) annual project update

What is sarcocystosis disease?

Sarcocsytosis is a parasitic disease caused by *Sarcocystis* species, which can infect a wide range of wild animals, domestic pets or livestock animals. In waterfowl, the disease is usually asymptomatic, meaning infected birds often appear healthy. Therefore, checking for cysts post-mortem is the primary way to determine if the disease is present. The parasite's lifecycle involves two hosts: prey species, in this case ducks (intermediate hosts), where the cysts form in muscle tissue, and predators, such as foxes (end hosts), which spread the parasite through their faeces which will contain the parasites eggs after consuming infected prey. The cycle begins again when the prey species consume water or food sources, such as grassy vegetation, that are contaminated with parasitic eggs from the predators' faeces (Figure 1).

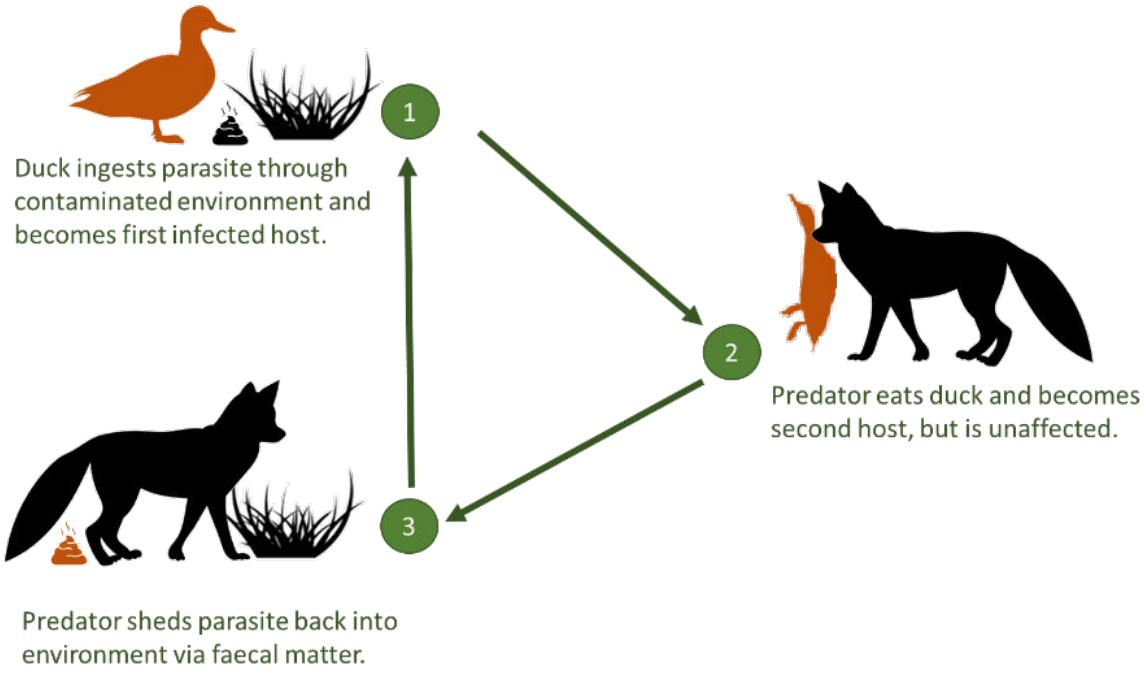

Figure 1. An outline of the Sarcocystis spp. parasite lifecycle between waterfowl (intermediate host) and predators (end host).

Why do we need your help?

This parasitic disease has been relatively common in North American waterfowl as far back as the 19th century, but cases have been rare in Europe until 2002. Since then, reports of rice breast have increased and become more widespread with reports in Norway, Poland, Finland, Lithuania, Hungary, Denmark and the UK.

As an emerging disease, monitoring the occurrence and spread of it is vital to understanding the potential impacts it may have on our native and migratory waterfowl populations. The current method of monitoring generally relies on duck shooters to report suspected cases. In the UK you can report cases through BASC's online reporting form. Citizen science initiatives like this are crucial to gathering information that would otherwise be difficult or impossible and contribute to scientific research. We suspect that the disease is still significantly underreported in the UK, and likely across other parts of Europe too, therefore we encourage you to inspect all shot waterfowl and report any findings to us so that we can map and better understand the spread of the disease in the UK.

How to identify and report suspected cases

Sarcocystosis disease causes rice-grain-like cysts to develop, usually in the breast muscle of the bird but sometimes in other muscles like the thighs (Figure 2). The cysts can vary in size and in earlier stages of infection there may only be few cysts visible. These cysts are likely to go unnoticed when the bird is whole or the skin is not peeled back, as they are only visible within the muscle. Therefore, breasting shot waterfowl is the best way to ensure you can inspect the bird thoroughly before eating it.

Figure 2. An example of the rice-grain-like cysts in the breast

Live birds often don't show signs of the disease and in several cases hunters have observed that the infected bird was strong in flight and didn't appear any different to other birds in the flock. This highlights the importance of inspecting wildfowl breasts before consumption.

The 2024/25 season at a glance

Species and age composition

In the 2024/2025 season, we received a total of 75 suspected cases of sarcocystosis which included five waterfowl species. Mallard were the most commonly reported species (55%) followed by wigeon (28%) and teal (11%), along with very few gadwall (2%) and shoveler (1%), and two unspecified species (2%). Overall, there were approximately double the number of males compared to females.

Geographic spread

Over half (53%) of cases were reported in England, with of the remainder primarily reported in Scotland (37%) and fewer in Wales (8%) and Northern Ireland (1%). At a regional level, the highest proportions of reports come from northern England (25%), East Anglia (16%), south-west Scotland (13%) and central Scotland (11%). Due to the small sample size, this distribution of cases does not offer any clear patterns on occurrence or prevalence of the disease but does indicate cases are not unique to a single location.

Condition of birds

Based on shooters' assessment of the birds' condition, it appears that the majority were in good (54%) or fair (38%) condition. On a condition scale where 4 is good and 1 is emaciated/very poor, mallard and wigeon scored 3.5 and 3.4, respectively. This suggests birds with the disease generally appear to be unaffected from a fitness perspective.

Proportion of the bag

As part of our post-season follow-up, some respondents voluntarily shared their bag numbers to allow us to assess the proportion of the bag suspected to have sarcocystosis. Of a total of 565 birds we gathered from bag data, 7% were found to have rice breast (although not all were necessarily checked for rice breast). Broken down by species, 9.6% of mallard, 10.9% of teal, and 3.6% of wigeon harvested were suspected to have sarcocystosis. Whilst the proportion of individuals found to be infected is not insignificant, unless all carcasses are inspected for infection and bags where there are no cases are reported, it is likely that the reported proportion of infected birds is inflated.

Cyst burden

This year we asked for carcass samples to assess the cyst burden in the muscle of infected waterfowl. We received a total of 6 carcasses, of which the breasts weighed on average 65g and contained an average of 177 cysts. It is clear that even birds that appear healthy can carry a substantial number of cysts in their muscle; however, whether this indirectly affects muscle health or survival remains unknown.

With increased and continued reports of this disease we are starting to build a picture of locations and species where this disease is more prevalent. Understanding where and how disease in waterfowl occurs is key to helping establish what is driving disease and what impact it is having on our wildfowl. This project is not possible without the vigilance and contributions from wildfowlers and inland duck shooters, whom we would like to thank for their continued support.

This season remember to:

- be vigilant

- inspect the breast muscle of shot waterfowl
- report any suspected cases of rice breast disease through BASC's surveillance form
- encourage others to do the same

For more information about this project and how to participate, visit BASC's sarcocystosis project page. If you have any questions, contact monitoring@basc.org.uk.