

# Annual Project Update: Rice Breast Disease (Sarcocystosis)

## What is Sarcocystosis?

Sarcocystosis is a parasitic disease caused by various species of *Sarcocystis* parasites. The parasite can infect a range of animals such as wildfowl or livestock if they consume contaminated water or food sources such as grassy vegetation (Figure 1). Once these animals are infected, they become the first host in the parasites lifecycle and develop cysts in their muscles. In ducks, these cysts look like grains of rice, hence the more commonly known name of the condition: rice breast disease (Figure 2). Carnivores such as foxes or dogs become the second host after eating an infected bird. The parasite produces eggs in these hosts which are passed back into the environment via faecal matter and the cycle begins again (Figure 1). Normally there are no symptoms present in the second hosts and although the cooking process will kill the parasite present in the bird, it is still not recommended to eat it.

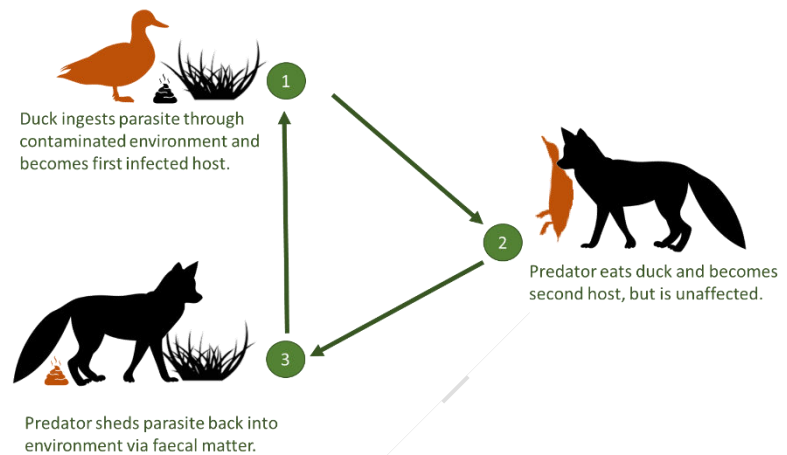


Figure 1. An outline of the *Sarcocystis* parasite life cycle between ducks and predators.

## Why is it important?



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

The number of reported rice breast disease cases in northern and eastern Europe within waterfowl populations has been rising throughout the last decade. This disease can cause several symptoms in ducks, such as weak muscles, loss of appetite, difficulty breathing, seizures, paralysis or incoordination, and cysts throughout the breast muscle. Whilst many birds may not experience most of these symptoms, others may have considerably reduced fitness. The development of cysts is currently the easiest and quickest way to diagnose the disease (Figure 2).

Continued surveillance is vital in monitoring the prevalence and distribution of this emerging disease and its long-term impact on wild bird populations. To achieve this, we rely heavily upon the wildfowling community's participation and ability to make diagnoses in the field by looking for and reporting 'rice-grain lesions' in the breast muscles of shot wildfowl (Figure 2).

## Findings this year

BASC have been collecting reports of rice breast disease since 2015. This update reports on data submitted by wildfowlers during the 2021/22 and 2022/23 shooting seasons.

### The total number of cases per year

In the 2021/22 season, 63 suspected cases of Sarcocystosis were reported and in the 2022/23 season 45 cases were reported. Although this implies a drop in cases, this figure may be influenced by consenting restrictions and self-regulation in line with the BASC severe weather policy. A reduction in shooting and campaigning during the Covid-19 pandemic is likely to have impacted shooters awareness of the reporting system, having a knock-on effect on the number of cases reported in these post-pandemic years. It is therefore highly probable that the number of cases reported greatly underrepresents the true prevalence of the disease in the UK as data is based only on what is shot and breasted by wildfowlers who are aware of the reporting system. This highlights the importance of increasing awareness this season.

### The distribution of cases throughout the UK

In both years, more than half of the reported cases were in England and over a third in Scotland. The remainder were mostly reported from Northern Ireland, with only one case being reported in Wales in the 2021/22 season.

North Yorkshire had the highest number of reported cases, contributing to 15% of the total number of cases reported across both years combined (Figure 3). Other counties with a considerable number of reports include the Scottish Highlands, Norfolk, Shropshire, the Scottish Borders, and Dumfries and Galloway, with these five regions accounting for nearly a third of all reported cases (Figure 3).

Currently there is no clear pattern of disease distribution but with more time and data we may see higher case numbers at important wintering sites due to the arrival of migrant birds. However, it is interesting to note that compared to previous research findings, there appears to be a wider distribution across the home countries. It is likely that with continued climate change, migratory patterns of birds will shift, changing the distribution of this disease in the UK and Europe. This possible change makes it all the more important to continue reporting cases of the disease.

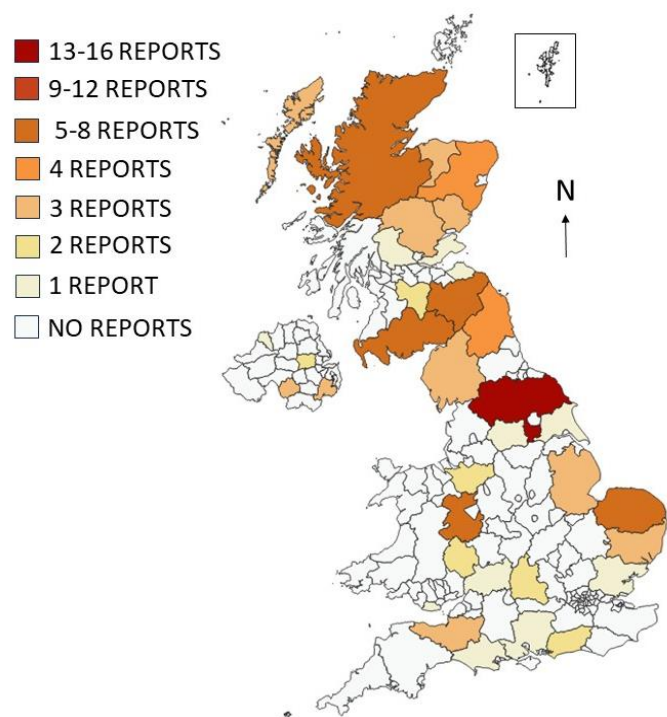


Figure 3. The number of reported Sarcocystosis cases in wildfowl across Great Britain and Northern Ireland from September 2021 to January 2023 (n=108). Counties are coloured based on the number of sarcocystosis cases reported.

## Species affected by Sarcocystosis disease

A total of five waterfowl species suspected to have Sarcocystosis were reported. Mallard were the most commonly reported species (Figure 4). The majority of birds that were aged were identified as adults, and of those that were sexed most were identified as males. It is important to note that these numbers may be more representative of bag returns than the actual prevalence of rice-breast disease in different species.



Figure 4. The percentage of Sarcocystosis cases reported of each species across the 2021/22 and 2022/23 wildfowling seasons combined (108 cases in total).

## Effects of Sarcocystosis on the condition of the bird

The majority of reported cases (72%) found birds to be in good condition (plump breast muscle with some fat). This was consistent across all species except teal, of which 50% were reported to only be in fair condition. No respondents reported any birds with emaciated muscle condition. The percentage of birds reported to be in good condition is greater than in previous years, suggesting that the severity of the disease and its impact on bird health is not worsening over time.

## Further comments from respondents

Many people reported birds to appear strong in flight and some commented that other birds in the same flock or location also looked healthy. This highlights the importance of inspecting wildfowl breasts following shooting as symptoms of the disease may not be obvious and we suspect the infection rate is under-reported.

## Implications of disease for wildfowlers

More data is needed to confirm how this disease impacts the overall health of infected birds to determine the potential consequences this may have at the population level. Although there are currently no suggested methods of controlling the disease, the more data collected, the more accurate the knowledge base of its prevalence and distribution will be.

With increased reporting, it may be that specific wetland sites are identified as prevalent rice-breast disease areas, allowing us to study the disease more closely in certain locations.

For more information about this citizen science project and how to participate, visit BASC's [Sarcocystosis Project Page](#). If you have any questions, contact [monitoring@basc.org.uk](mailto:monitoring@basc.org.uk).