Salmonellosis in Garden Birds

Agent

Salmonellosis is a disease caused by bacteria from the genus *Salmonella*. Many species of *Salmonella* bacteria exist, some of which can be carried by, or cause ill health in, garden birds. Particular strains of the bacterium, *Salmonella* Typhimurium (phage types 40, 56v and 160)*;* typically cause disease known as salmonellosis in garden birds in Great Britain.

Species affected

Salmonellosis tends to affect gregarious seed-eating garden birds, with the greenfinch and house sparrow most frequently affected in Great Britain. However, a range of garden bird species are susceptible to the disease, including other finch species such as the bullfinch (*Pyrrhula pyrrhula*), chaffinch (*Fringilla coelebs*), goldfinch (*Carduelis carduelis*) and siskin (*Carduelis spinus*).

Pathology

Salmonella typically causes disease in the gullet. Generalised infection affecting internal organs, including the spleen and liver, commonly occurs.

Signs of disease

Birds affected by salmonellosis tend to show non-specific signs of ill health, for example lethargy and fluffed-up plumage. Wild birds suffering from a variety of conditions can exhibit similar signs of disease and there are no characteristic signs of salmonellosis that allow it to be diagnosed without specialist veterinary examination. Affected birds are frequently observed to remain around feeding stations and continue with attempts to feed until the terminal stages of the disease. The disease may progress over several days or even weeks; consequently affected birds are often very thin or emaciated.

Disease transmission

Salmonella bacteria are relatively hardy and can persist in the environment for some time (likely period of weeks to months, longer in favourable environmental conditions). Research indicates that the *Salmonella* bacteria that cause disease in garden birds are well-adapted to these species and that infection is most likely to have been caught from other wild birds. The main route of spread is likely to occur when infected bird droppings contaminate food or water sources.

Disease patterns

Salmonellosis has been reported as a sporadic cause of disease outbreaks in garden birds since the 1950s. These disease outbreaks tend to occur during the winter months, peaking between November and February, however exceptions to this seasonal pattern may occur.

Salmonellosis occurs most commonly in the western regions of England (including the South West and the West Midlands) and in Wales. It is infrequently reported from the eastern regions (including East Anglia). Salmonellosis

incidents also occur in Scotland and surveillance indicates that finches are most commonly affected in northern Scotland and house sparrows in southern Scotland. The reasons for variation in the geographical distribution of salmonellosis incidents in Great Britain are unclear.

Long-term monitoring has revealed that the patterns of garden bird salmonellosis are more complex than previously appreciated. The absolute number of salmonellosis outbreaks varies between years, and has reduced significantly in recent years (since 2008). The *Salmonella* Typhimurium phage types responsible for the disease outbreaks also change over time and space.

Risk to human and domestic animal health

Garden birds in the UK may carry *Salmonella* bacteria and other disease-causing agents (for example *Campylobacter, Chlamydia psittaci* and *Escherichia albertii*) that can affect people and pets.

The strains of *Salmonella* Typhimurium that affect wild birds have the potential to affect humans. However, this risk is small and should be kept in proportion: only 0.2% of all *Salmonella* isolates from humans in England and Wales over the period 2000-2010 were those typically associated with wild birds.

We therefore recommend following sensible hygiene precautions as a routine measure when feeding garden birds and handling bird feeders and tables. Following these rules will help avoid the risk of any infection transmitting to people and help safeguard the birds in your garden against disease.

- Clean and disinfect feeders/ feeding sites regularly. Suitable disinfectants that can be used include a weak solution of domestic bleach (5% sodium hypochlorite) and other specially-designed commercial products (See *Further information*). Always rinse thoroughly and air-dry feeders before re-use.
- Brushes and cleaning equipment for bird feeders, tables and baths should not be used for other purposes and should not be brought into the house, but be kept and used outside and away from food preparation areas.
- Wear rubber gloves when cleaning feeders and thoroughly wash hands and forearms afterwards with soap and water, especially before eating or drinking. Avoid handling sick or dead birds directly. For instance, use disposable gloves or pick the bird up through an inverted plastic bag.

If you suspect you might have contracted *Salmonella* infection, you should seek medical advice.

The strains of *Salmonella* Typhimurium that affect wild birds have the potential to affect domestic animals (*e.g.* cats that predate birds) and livestock. Members of the public who have outdoor cats that become sick around the same time that sick and dead garden birds are observed are recommended to share this information with their veterinary surgeon.

Diagnosis

Diagnosis of salmonellosis in garden birds relies on post-mortem examination. The signs of the disease at post mortem are fairly characteristic and additional laboratory tests are used to confirm the diagnosis of the disease.

If you wish to report finding dead garden birds, or signs of disease in garden birds, please visit **www.gardenwildlifehealth.org**. Alternatively, if you have further queries or have no internet access, please call the **Garden Wildlife Health** vets on **0207 449 6685.**

Control

Whilst medicines are available for the treatment of salmonellosis in captive birds, effective and targeted dosing of free-living birds is not possible.

Where a problem with salmonellosis exists, general measures for control of disease in wild bird populations should be adopted:

- Since the infection is spread when infected droppings contaminate food or water sources, ensure optimal hygiene at garden bird feeding stations, including disinfection (as described above).
- Ensure that water provided for garden birds is fresh and clean on a daily basis.
- Feeding stations (such as bird tables and hanging feeders) encourage birds to congregate, sometimes in large densities, thereby increasing the potential for disease to spread between individuals when outbreaks occur. **If many birds in your garden are affected, we recommend that you consider significantly reducing the amount you feed, or stop feeding for a period (2-4 weeks).** The reason for this is to encourage birds to disperse, thereby minimising the chances of new birds becoming infected at the feeding station. Gradually reintroduce feeding, whilst continuing to monitor for further signs of ill health (See *Further information*).

Prevention

Following best practice for feeding garden birds is recommended to help control and prevent transmission of disease at feeding stations all year round (See *Further information*):

- Routine good table hygiene. Clean away uneaten food and droppings before putting out fresh food and disinfect feeders/ feeding sites on a regular basis.
- Provision of clean and fresh drinking water on a daily basis.
- Provision of fresh food from accredited sources.
- Rotate positions of feeders in the garden to avoid build-up of contamination in any one area and pay particular attention to clearing food remains that fall on the ground.

Further information

Best feeding practices should be followed at all times to help ensure that the birds visiting your garden remain healthy. More information can be found on the Garden Wildlife Health website www.gardenwildlifehealth.org. (email: gwh@zsl.org, telephone: 0207 449 6685).

Scientific publications

Hughes, L.A., Shopland, S., Wigley, P., Bradon, H., Leatherbarrow, A.H., Williams, N.J., Bennett, M., de Pinna, E., Lawson, B., Cunningham, A.A. and Chantrey, J. (2008) Characterisation of *Salmonella enterica* serotype Typhimurium isolates from wild birds in northern England from 2005-2006. *BMC Veterinary Research* **4**. doi: 10.1186/1746-6148-4-4.

Lawson, B., Howard, T., Kirkwood, J.K., Macgregor, S.K., Perkins, M., Robinson, R.A., Ward, L.W., Cunningham, A.A. (2010) The epidemiology of salmonellosis in garden birds in England and Wales, 1993 to 2003. *EcoHealth* **7(3)**: 294-306. doi: 10.1007/s10393-010-0349-3.

Pennycott TW, Mather HA, Bennett G, Foster G (2010) Salmonellosis in garden birds in Scotland, 1995 to 2008: geographic region, *Salmonella enterica* phage type and bird species. *Veterinary Record* **166:** 419-421. doi: 10.1136/vr.b4761.

Lawson, B., Hughes, L.A., Peters, T., de Pinna, E., John, S.K., Macgregor, S.K. and Cunningham, A.A. (2011) Pulsed-field gel electrophoresis supports the presence of host-adapted *Salmonella enterica* subsp. *enterica* Serovar Typhimurium strains in the British garden bird population. *Applied and Environmental Microbiology* **77(22)**: 8139-8144. doi: 10.1128/AEM.00131-11.

Horton RA, Wu G, Speed K, Kidd S, Davies R, Coldham NG, Duff JP (2013) Wild birds carry similar Salmonella *enterica* serovar Typhimurium strains to those found in domestic animals and livestock. *Research in Veterinary Science* **95**(1): 45–48: 10.1016/j.rvsc.2013.02.008.

Lawson, B., de Pinna, E., Horton, R.A., Macgregor, S.K., John, S.K., Chantrey, J., Duff, J.P., Kirkwood, J.K., Simpson, V.R., Robinson, R.A., Wain, J., Cunningham, A.A. (2014) Epidemiological evidence that garden birds are a source of human salmonellosis in England and Wales. *PLoS ONE* **9**(2): e88968. doi.org/10.1371/journal.pone.0088968

Mather, A.E., Lawson, B., de Pinna, E., Wigley, P., Parkhill, J., Thomson, N.R., Page, A.J., Holmes, M.A. & Paterson, G.K. (2016) Genomic analysis of *Salmonella enterica* serovar Typhimurium from wild passerines in England and Wales. *Applied and Environmental Microbiology* doi:10.1128/AEM.01660-1

Acknowledgements

Current funding for the GWH comes in part from Defra, the Welsh Government and the Animal and Plant Agency (APHA) Diseases of Wildlife Scheme (DoWS) http://ahvla.defra.gov.uk/vet-gateway/surveillance/seg/wildlife.htm ; and from the Esmée Fairbairn Foundation and the Universities Federation for Animal Welfare.

Date of factsheet update June 2017