



Salmonella Infection in Reptiles

Agent

There are many different species of *Salmonella* bacteria, some of which can be carried by, or cause ill health in, wild and captive (e.g. pet) reptiles. Salmonellosis is a disease caused by bacteria from the *Salmonella* genus and is a recognised zoonosis (*i.e.* it can be transmitted from animals to people).

Species affected

Salmonella bacteria are naturally found in the gastrointestinal tract of wild and captive reptiles, including snakes, lizards, tortoises and turtles. The types of *Salmonella* most commonly isolated from reptiles are not often found in humans or other animals, and belong to *S. enterica* subspecies *salamae*, *arizonae*, *diarizonae*, and *houtenae*.

Whilst there has been little study into how frequently wild reptiles carry *Salmonella* in Great Britain (GB) and elsewhere around the world, Garden Wildlife Health has detected *S. enterica* subspecies *arizonae* and *diarizonae* in wild adders (*Vipera berus*) from Great Britain. *Salmonella enterica* subspecies *diarizonae* has also been isolated from wild adders in Germany.

Signs of disease

Although the clinical significance of *Salmonella* infections in wild and captive reptiles is poorly understood, it is thought that the majority of infections lead to an asymptomatic carrier state and do not result in disease (*i.e.* the animal does not become unwell, but may be able to transmit the bacteria to other animals and/or humans). When illness does occur in reptiles, the clinical signs are variable but can include reduced appetite, skin inflammation, breathing difficulties and abscesses.

Disease transmission

Most *Salmonella* infections in wild and captive reptiles are carried in the animal's gastrointestinal tract and shed in the droppings. Shedding may be intermittent or constant and can be influenced by factors such as concurrent disease and stress.

As a result of this shedding, *Salmonella* is most commonly transmitted through contact with the droppings of an infected reptile. Reptile droppings can contaminate the animal's skin, and enclosure if held in captivity, so these can also become a source of infection. *Salmonella* bacteria are able to persist in the environment for extended periods of time. For example, they have been found to survive for up to four months in pond water and soil and for more than two years in dried faeces.

Distribution

The distribution of *Salmonella* infections in wild reptiles in Great Britain is not currently known, but in general *Salmonella* bacteria have a widespread distribution and infections have been described globally in animals and people.

Risk to human health

Salmonellosis is an important cause of illness amongst people in Great Britain; however, most human infections are contracted by eating contaminated food. The types of *Salmonella* obtained from food are different from those commonly found in wild and captive reptiles.

Although reptile-associated human salmonellosis only accounts for a very small proportion (approximately 0.9% in England) of human salmonellosis cases, it is thought that this is increasing, most probably due to the rise in popularity of keeping reptiles as pets rather than due to contact with wild reptiles.

Whilst the risks are low, infection is most likely to occur through contact with an infected reptile's skin, or any other object/material contaminated with reptile droppings (including the tank and water of captive aquatic reptiles such as terrapins). Even apparently healthy reptiles should be considered as a risk for infection as they may be carrying *Salmonella* asymptomatically. Sensible hygiene precautions are therefore advised as a routine measure when handling these animals or associated material (see *Prevention* below).

People with salmonellosis most commonly develop signs of gastroenteritis, although more severe disease can occur, with young children and babies considered particularly susceptible to serious illness. If you suspect you might have contracted a *Salmonella* infection, you should seek medical advice.

Risk to domestic animal health

As with humans, domestic animals are also at risk of *Salmonella* infection through contact with the droppings of an infected reptile. We recommend avoiding contact between reptiles, or their droppings, and other pet animals. If you suspect your pet might have contracted a *Salmonella* infection, you should seek veterinary advice.

Diagnosis

Salmonella infections in live reptiles can only be diagnosed by specialist laboratory testing of droppings, or swabs (taken from the animal's skin or cloaca) for the presence of the bacteria. On post-mortem examination, the signs of *Salmonella* infection are variable and additional laboratory tests are required to confirm the diagnosis.

If you wish to report a sick or dead wild reptile, 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**.

Prevention of disease in humans

We recommend the following hygiene precautions for anyone coming into contact with captive or wild reptiles:

- Thoroughly wash hands with soap and water after touching a reptile, enclosure, or any other object that a reptile has made contact with. Avoid touching your face/mouth or eating until hands have been washed.
- If you own a pet reptile, be aware that food items such as frozen mice or chicks can also be a source of *Salmonella* infection to your reptile or yourself. Thoroughly wash your hands with soap and water after making contact with such items.
- Keep reptiles out of rooms where food for human consumption is handled and/or eaten.
- All children coming into contact with a reptile, its enclosure, or any other object that a reptile has made contact with should be closely supervised, and their hands should be thoroughly washed with soap and water after any contact is made.

For more information and advice on reducing the risks of salmonella infection from reptiles, please visit:

- 'Reducing the risks of *Salmonella* infection from reptiles':
https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/377731/Salmonella_in_reptiles_factsheet_2.pdf
- 'Reptiles pose a risk of salmonella infection':
<https://www.gov.uk/government/news/reptiles-pose-a-risk-of-salmonella-infection>

Prevention and control in wild reptiles

There are no effective measures known for the treatment or control of *Salmonella* in wild reptiles. Further work is required to investigate the distribution of *Salmonella* in wild GB reptiles and its significance for their health.

Ecological consultants and herpetologists working with wild reptiles should consider biosecurity protocols as routine, such as wearing disposable gloves, cleaning and disinfection of equipment, especially storage buckets, boots and artificial refugia, particularly between sites.

A disease risk analysis should be incorporated into the planning of wild-to-wild reptile translocations and disease risk management should be implemented.

Further information

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