



## Reducing disease risks in captive amphibians and protecting our wild native amphibians from invasive disease

The amphibian trade has contributed to the spread of amphibian disease. Those maintaining colonies of captive amphibians should ensure that their collections do not pose a risk to native amphibians. A number of amphibian pathogens are a cause for concern including amphibian chytrid fungi and ranaviruses and there are of course the great unknowns; the diseases that we do not yet know about.

**Chytrid fungi.** There are two types of chytrid fungi known to infect amphibians: *Batrachochytrium dendrobatidis* (Bd for short) and *Batrachochytrium salamandrivorans* (Bsal for short). Chytrid fungi can be spread by direct contact between animals but can also persist for short periods of time (weeks) in the environment (e.g. equipment, water and substrate) without an amphibian host and can be transferred by fomites (e.g. equipment, substrate, aquatic plants etc.). Bd affects a wide range of amphibian hosts including frogs and toads, newts and salamanders and caecilians, and has caused widespread amphibian population declines and extinctions. Bsal was recently described and is only known to cause disease in newts and salamanders. The pathogen is believed to have originated in Asia and spread to Europe via the amphibian trade and it is currently causing catastrophic declines of wild salamanders in western Europe. Bsal is known to be present in captive amphibians in the UK but the disease has not yet been detected in our native wild amphibians; all efforts must be made to reduce disease risks to these free-living populations.

**Ranaviruses.** There are several strains of ranavirus and they have been linked to amphibian mass mortalities around the world. In the UK, ranavirus causes mortality of a range of wild amphibians and is known to be causing long-term declines of the common frog (*Rana temporaria*). There is currently no reliable diagnostic test or treatment for ranavirus infection. Ranaviruses are spread through direct contact between animals and can persist for long periods of time (months or years) in water and pond sediment.

### Signs of disease

Amphibians sick with Bd infection may have reddening or excessive shedding of their skin, ulceration of their toes, or unusual behaviours such as terrestrial animals sitting in water for longer periods than normal. In many cases, however, “apparently healthy” animals are simply found dead.

Newts or salamanders sick with Bsal develop ulcers over their skin and they may become listless and incoordinated.

Amphibians sick with ranavirus may develop skin ulcers (especially over the feet and the underside of the hind legs and body) and, reddening of the skin. In acute cases, affected animals might vomit bloody mucus or pass blood from the vent, or “apparently healthy” animals can be found dead.

More information on the signs of amphibian disease can be found here  
<https://www.gardenwildlifehealth.org/garden-wildlife/>

### *What should you be doing?*

Following the advice below will help minimise the risk of inadvertently spreading amphibian diseases within captive populations and also to wild populations

- Do not assume that a healthy looking animal is pathogen-free; some species may act as vectors (carriers) of disease and not exhibit clinical symptoms of disease; adopt the precautionary principle and manage all amphibians as if they have infectious disease.
- Know the health status of your collection, screen your collection routinely and ensure any dead amphibians are submitted for post mortem examination.
- Quarantine any new arrivals and screen for chytrids during the quarantine period; treating animals positive for chytrids (following veterinary advice) before adding them to your existing collection.
- Do not release any amphibians from your collection into the wild (either native or exotic).
- Never transfer amphibians between sites e.g. do not stock newly created wildlife ponds with spawn / tadpoles / adult amphibians – they will colonise new ponds naturally (and often surprisingly quickly).
- Avoid keeping exotic species or native species that have come into contact with exotic species in outdoor enclosures (even if the animals appear healthy), as they may potentially come into contact with native amphibians and infect them with disease.
- All waste water from amphibian enclosures should be disinfected. Bleach, Virkon, F10 and Anigene are the names of disinfectants that will kill the majority of amphibian pathogens provided the manufacturers guidelines are followed. Once the water is disinfected it should only be discharged in municipal waste.
- Equipment and furnishings should also be disinfected where possible or at least dried out thoroughly before being cleaned in a sink. This will reduce the chance of disease being spread via equipment.
- Substrates should also be discarded with care. Ideally these should be incinerated, baked or microwaved prior to disposal as municipal waste (do not use microwaves or ovens that are used to prepare food).
- Register with a veterinary surgeon who has an interest and knowledge of amphibians (see the speciality list on [www.bvzs.org](http://www.bvzs.org)) and seek advice on keeping your collection healthy or if disease occurs in your animals.

Please report any sick or dead amphibians observed in the wild to Garden Wildlife Health  
<http://www.gardenwildlifehealth.org/>

You or your veterinary surgeon should contact Matthew Perkins [matthew.perkins@ioz.ac.uk](mailto:matthew.perkins@ioz.ac.uk) if there are any suspect cases of sickness / mortalities in captive amphibians if you wish to arrange for these to be tested for Bd, Bsal or ranavirus infection or if you wish quarantined animals to be tested prior to adding to your collection. (Please note, there will be a charge for this service.)