

BASICS

Ranaviruses are a group of viruses that belong to the *Iridoviridae* family, which is characterized by relatively large, double stranded DNA viruses.

Mass die-offs attributed to ranavirus have affected several species of amphibians and turtles, and the virus can also have fatal consequences for fish and reptiles. All life stages are potentially susceptible.

Strains of ranavirus that infect amphibians may produce **90%–100% MORTALITY** in tadpoles and adults, and while some outbreaks may only involve a single species, others can affect multiple species. Infection rates are high in spring and summer, when larval amphibians are undergoing **METAMORPHOSIS**.

CLINICAL SIGNS in amphibians can include abnormal behavior/swimming, lethargy, swelling of the limbs or body, fluid accumulation in the body, skin hemorrhage (especially towards the hind area), and sometimes skin ulcers.

This is also the case for **FISH AND REPTILES**, though lesions can also sometimes be seen inside the mouth of affected individuals, as well as swollen eyelids and discharge from the nose and mouth. Affected animals die due to the failure of multiple organs, and often within 1-5 days.

Ranaviruses are **TRANSMITTED** through several routes: contaminated water, physical contact and ingestion of infected tissues.

DIAGNOSIS is made using PCR, cell culture, and/or microscopy of infected tissues.

There are currently **NO TREATMENTS** or preventative vaccines available for ranavirus. Ranavirus tends to persist in aquatic environments; it can last for weeks regardless of the presence of a host. **BIOSECURITY IS PARAMOUNT**; bleach (1%) and chlorhexidine (0.75%) are effective options for disinfection of equipment and boots when handling amphibians.



DETAILS

A few types of amphibian ranaviruses have been named, such as Frog Virus-3 (FV-3), but in reality it has proven rather difficult to define the differences between different isolates.

It is helpful to think of ranavirus as a disease that infects an environment more so than an individual animal; once it's in a pond, it can spread through not only the frogs, but other potentially susceptible species like salamanders and turtles. Aside from the potential for mass mortality, there is another concern; while many of the species in die-offs are fairly common and widespread, some die-offs affect species that are either declining in number or are already endangered.

TRANSMISSION In turtles/tortoises it is not as well understood. Ranavirus thrives best in fresh water. The presence of stressors, such as pesticides, can affect

how susceptible an individual is to ranavirus.

TEMPERATURE AND METAMORPHOSIS also profoundly affect transmission. Amphibian larvae going through metamorphosis or juveniles that just finished metamorphosis seem to be most susceptible to infection.

For this reason, most infections occur in the spring and summer, when the majority of amphibians are undergoing this process. However, individuals that do manage to survive an infection seem to build an immunity to future infections. For example, box turtles that survived a die off were able to be reinfected with ranavirus and shed virus in an experimental challenge, but the disease was generally less severe.

