



Salamander Chytrid Disease

Other names: *Bsal*, Chytridiomycosis

- ◆ Salamander Chytridiomycosis, which is caused by the pathogen *Batrachochytrium salamandrivorans* (*Bsal*), has spread from Asia to Europe where it has caused mass declines in salamander and newt populations.
- ◆ The international trade of amphibians and ornamental fish could facilitate the spread of the fungus to North America which is a biodiversity hotspot for salamanders and newts.

What is *Batrachochytrium salamandrivorans* (*Bsal*)?

- ◆ *Bsal* is a fungus that infects salamanders and newts (*Caudata*).
- ◆ The disease is similar to *B. dendrobatidis* (*Bd*), a fungus which mostly infects frogs (*Anura*).
- ◆ *Bsal* has aquatic zoospores that infect the skin layers of an animal and can lead to skin lesions, anorexia, lethargy, ataxia and death.
- ◆ Common skin symptoms are similar to a bacterial infection: reddening, ulceration, and major skin shedding.
- ◆ Once introduced, the fungi can be spread through organic materials: mud, water, leaf litter, etc.
- ◆ The expectation is that *Bsal* is likely to survive and persist in most of Canada and will be impossible to eradicate.

What can you do to protect wild amphibians?

Observe and report

- ◆ Consider carrying a small jar of 70% ethanol in the field with your equipment.
- ◆ If you find dead salamanders or newts, consider collecting any fresh carcasses.
- ◆ Record the date and location of the finding and contact the **Canadian Wildlife Health Cooperative National Office [1(306) 966-5099]**.
- ◆ Do not freeze the specimens. Preserving them in ethanol is best; if not available, storing them in the fridge is acceptable over short term.
- ◆ Take close-up photographs of the amphibians and send your pictures to the **CWHC (national@cwhc-rcsf.ca)**.

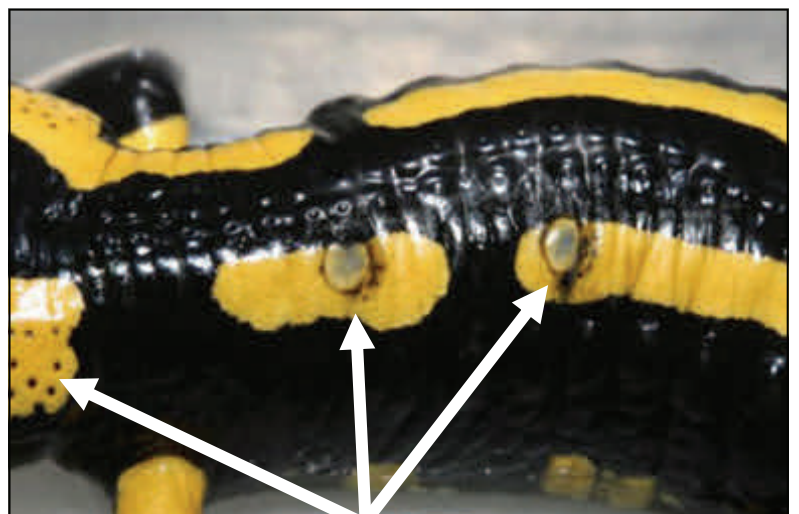
Take preventative measures

- ◆ Always follow a disinfection protocol to clean your field gear, whether you've worked at one or multiple sites (see page 2 for details).
- ◆ Do not move salamanders, newts or any other animals between sites.
- ◆ Captive salamanders, newts or other animals should never be released into the wild.
- ◆ Take appropriate steps to prevent disease spread with your captive salamanders. Follow good hygiene practices and quarantine abnormal-looking amphibians.

Have a look...



Fire salamander with ulcers on its face. Photo by: Sabino, in Pinto et al. (2015)



Fire salamander with ulcers on its back. Photo by: Mark Blooi (2016)



Have a basic disinfection protocol ready!

Before leaving for the field, stock up on the following items:

- ◆ Brushes for scrubbing, antiseptic alcohol wipes, and bleach to disinfect.
- ◆ Handheld spray bottles and/or pump sprayers.
- ◆ Gloves for handling the animals. You should use a new pair for each new amphibian you manipulate.
- ◆ Plastic resealable bags of different sizes if you are collecting amphibians. Use a new bag for each new amphibian. Bring trash bags for your dirty equipment.
- ◆ Bring additional sets of equipment if sampling in multiple locations (ideally one set per site).

After each sampling event and before moving on to the next site:

- ◆ Field gear (boots, clothes, boats, tires, etc.) should all be cleaned with soapy water and a brush to remove any excess organic material. Rinse the equipment with water (preferably hot tap water, if available). After washing and rinsing, apply a 5% bleach solution by spraying or immersing the gear: use 1½ cup of bleach for 9½ cups of water. Do this at least 50m from a water body.
- ◆ Rinse the bleached items with water (hot tap water, if available) to minimize damage to the equipment and to prevent exposing the next wetland to residual bleach. If in the field, rinse with water from the next sampling site. Allow the equipment to dry completely if you are done for the day.
- ◆ Use alcohol wipes to disinfect calipers, measuring boards, and other sensitive equipment.

1.



2.



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Images from: Northeastern Parc Partners in Amphibian and Reptile Conservation (2016) - Disinfection protocol.

For more information

- ◆ **Canadian Wildlife Health Cooperative:**
www.cwhc-rscf.ca
- ◆ **The Amphibian Survival Alliance and Amphibian Specialist Group:**
www.amphibians.org
- ◆ **Documentary: The Origins of the Salamander Eater**
www.amphibians.org/news/watching-extinction-happen-origins-of-the-salamander-eater
- ◆ **The Chytrid disease website:**
www.salamanderfungus.org/about-bsal
- ◆ **The Chytrid disease Facebook Page:**
www.facebook.com/salamanderfungus



Top border photos courtesy of Crowley (2016): Northern Two-lined Salamander, Spotted Salamander, Red-spotted Newt, Blue-spotted Salamander, Northern Dusky Salamander, Eastern Red-backed Salamander, Four-toed Salamander, Northern Long-toed Salamander, Red-spotted Newt (aquatic). Bottom photo courtesy of Ovaska (2016).