Ophidiomycosis

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CAUSE

Ophidiomycosis, also known as snake fungal disease (SFD), is caused by the fungus *Ophidiomyces ophidiicola*. This is a keratin-consuming fungus that normally lives in the soil and opportunistically infects snakes.

DISEASE SIGNIFICANCE

Ophidiomycosis is a significant concern for wild North American snakes. All species appear to be susceptible and it impacts species of conservation concern, including indigo snakes, pygmy rattlesnakes, and eastern Massasauga rattlesnakes. While the disease does not appear to cause large-scale snake die-offs, it is one of many threats to snake health, in addition to other infectious diseases, habitat destruction, climate change, invasive species, and human persecution of snakes.

HOST SPECIES

Ophidiomycosis only impacts snakes, but all species appear to be susceptible. Over 50 species worldwide have been reported with the disease, including both wild snakes and those in managed collections, such as zoos and private collections. Both venomous and non-venomous species are affected, as well as both aquatic and terrestrial species.

GEOGRAPHICAL DISTRIBUTION

In North America, ophidiomycosis has been reported in 26 US states, as well as Puerto Rico and the US Virgin Islands, and in the province of Ontario, Canada. Worldwide, the disease also has been reported in Europe, Asia, Australia, and Russia.

TRANSMISSION

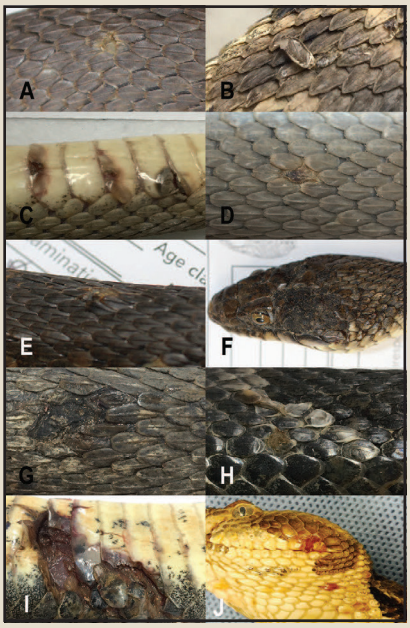
Exact modes of transmission are unclear, but the fungus likely is spread by snake-to-snake contact, as well as through contact with soil that contains the fungus. Additionally, some evidence suggests that vertical transmission occurs from mother to offspring. Snakes may be more likely to become infected if they have abrasions or defects in their skin.

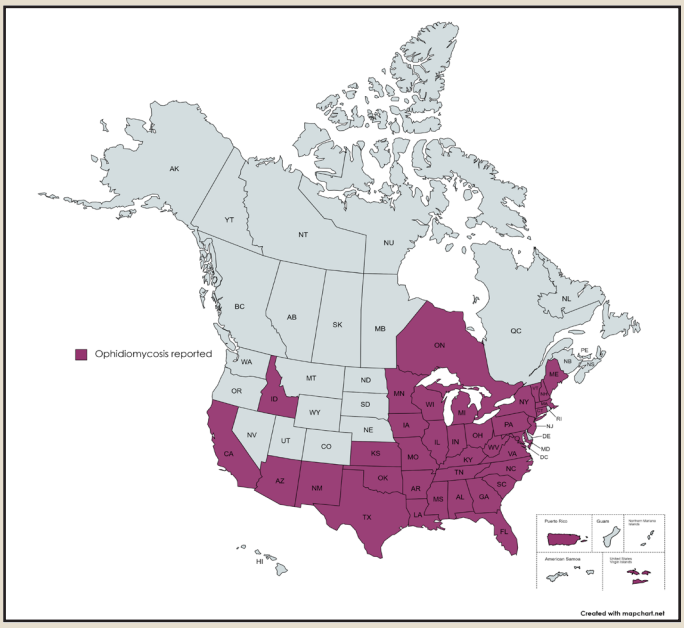
FIELD SIGNS

Skin abnormalities (lesions) are the hallmark of ophidiomycosis and can be anywhere on the body, including the head, belly, and tail. Lesions range from a single raised or discolored scale, to raised swellings, to larger scabs and ulcers. In some cases, the fungus invades into deeper tissues, such as muscle and bone, and can result in facial disfiguration. Lesions may disappear after shedding, but can return if the snake still has fungus on its body. Some snakes show more general signs such as decreased movement or difficulty shedding. Snakes may be more severely impacted by lesions on their head that interfere with sight or prey consumption, or by lesions on their cloaca that interfere with defecation or reproduction.

Left: Typical lesions seen with ophidiomycosis From Baker et al, 2019.

Right: Map of North America highlighting the 26 US states, two US territories, and one Canadian province with ophidiomycois reported.





RISK TO HUMANS & DOMESTIC ANIMALS

Ophidiomyces ophidiicola infection has not been reported in humans or domestic mammals. However, snakes in managed collections exposed to *O. ophidiicola* may develop clinical disease, which is challenging to fully treat.

PREVENTION & MANAGEMENT

Care needs to be taken when working with snakes to prevent spreading the fungus between individuals and environments. Any equipment used needs to be carefully disinfected, especially if contact with a potentially infected individual or contaminated soil has occurred. Equipment should be washed to remove organic debris, then soaked in a 3% bleach solution for at least two minutes. Treatment of ophidiomycosis is complicated because of the long treatment time needed for clinical signs to resolve in reptiles with fungal disease. Environmental management strategies may be useful to control the amount of fungus in the environment to which snakes are exposed.

REFERENCES

Partners in Amphibian and Reptile Conservation Disease Task Team: https://parcplace.org/resources/parc-disease-task-team/

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