



Patuxent Wildlife Research Center Science Brief for Resource Managers

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Incidence and distribution of chytridiomycosis in road-killed amphibians at National Wildlife Refuges in the Northeast and on Maine routes of the NAAMP

Description:

Within recent decades many populations of amphibians have declined and some species are probably extinct. Deaths of *Dendrobates* sp. frogs at the National Zoo were diagnosed as caused by cutaneous chytridiomycosis (Pessier et al. 1999) and the chytrid associated with the dead frogs was isolated and named *Batrachochytrium dendrobatidis* (Longcore et al. 1999). The chytrid fungus has been confirmed as causing death of poison dart frogs (*Dendrobates tinctorius*) by Kochs postulates (i.e., isolation of the fungus from infected frogs, experimental exposure of non-infected frogs to spores of the fungus, then re-isolation of the fungus from dosed frogs that died, while maintaining control frogs that lived (Longcore et al. 1999). Simultaneously and independently a group of researchers in Australia U.K., and the United States determined that a chytrid fungus was associated with die-offs in Central America and Australia (Berger et al. 1998, Longcore et al. 1999, Nichols et al. 1998, Pessier et al. 1999). Although chytridiomycosis is not the only cause of amphibian mortality, it is an important cause of population declines, as exemplified by its recent effect on the endangered boreal toad (*Bufo boreas*) in Colorado (Pollack and Blanchard 1999). In this pilot survey we propose to identify the geographical distribution of the fungal pathogen in Maine amphibian species, primarily frogs.

Progress to Date:

In 2000 for the 220 *Ranidae* specimens (of 6 species) collected revealed that of 141 examined 61 were infected (28%). For species with sample sizes >10 infection rates were 31% for green frog, 36% for pickerel frog, and 40% for northern leopard frog. Wood frog and bullfrog were infected at a 15%-20% rate. The American toad, the only member of the

Bufoinae, was infected at an 8% rate. For the gray treefrog (n=39) and spring peeper (n=25) in the Hylidae family no positive identification has been made of the fungus in these species. None of the few (n=15) samples of salamanders was verified as infected. About 330 specimens were collected, most from wetlands with the assistance of collaborators, during 2001. In 2002 specimens were collected from three focused sites. Sampling in 2003 was focused on monitoring Crocker Pond in western Maine where a die-off of amphibians was reported to have occurred. All these samples have been examined. Incidence of chytrid fungus infections appears to be widespread in amphibians through the Northeast.

Management Implications:

This fungus has been implicated in the extinction of some species of amphibians and is commonly associated with massive die-offs of amphibian species worldwide. Because of this it seems prudent to continue to monitor annual changes in numbers of calling amphibians recorded on national and state survey routes and to be vigilant about the status of amphibian populations.

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