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A FUNGUS AS THE CAUSE OF FROG DECLINES

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In recent decades it has been observed that populations of frogs and other amphibians have declined dramatically in parts of Australia, North America and Europe. Numerous causes for this phenomenon have been suggested including increased solar radiation resulting from destruction of the ozone layer and invasion of rainforests in Australia by camphor laurel trees. None of those claims has been substantiated.

Recently a new species of Chytridiales has been found on sick and dying amphibians in Queensland, Panama and the United States of America (Berger *et al.* 1998, Pessier *et al.* 1999). Under experimental conditions the fungus has been observed to be a virulent pathogen able to infect and cause thickening of the keratised epidermis of living adult anurans (Berger *et al.* 1998). This can impair cutaneous respiration and osmoregulation; the disease is often fatal (Berger *et al.* 1998). The fungus can infect tadpoles but does not cause mortality because tadpoles have only localised areas of keratised epidermis. This is apparently the first report of parasitism of a vertebrate by a species of Chytridiomycota.

In early conference reports it was suggested the amphibian parasite was a species of *Perkinsus* (Protoctista) but ultrastructural and DNA sequence data have shown this to be not the case (Berger *et al.* 1998). The frog chytrid, which in some respects resembles a species of *Rhizophyidium*, is to be described as a new species and genus (Longcore 1998).

The geographic origin of the frog chytrid and the mode of international dispersal are not yet known. Berger *et al.* (1998) suggested it could be an introduced pathogen spreading through naive populations or it could be a widespread organism that has become more virulent because of unidentified amphibian stress factors. If the frog chytrid is an exotic to Australia it will be interesting to see if it was introduced on imported amphibians for the aquarium trade or if it came in on the collecting gear of students of amphibians. This has the attributes to be a challenging case for those interested in quarantine risk analysis.

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