

Fatal fungus linked to frog declines

The chytrid fungus has been found two populations of the Fleay's barred frog (*Mixophyes fleayi*) an endangered species in New South Wales and Queensland.



Neville Coleman's World of Water

An international team of scientists has found evidence that a new fungal disease is responsible for mass frog deaths in Australia and Panama.

The fungus was first discovered in Australia in 1993, at the Melbourne Zoo and in forests near Cooktown in northern Queensland. It has since been identified in 10 frog species and shown to kill frogs in laboratory trials. A similar fungus was found on amphibians in Panama last year.

In the past two decades there have been many reports of declining frog populations worldwide. Some are clearly due to pollution and other environmental changes. This has fostered the belief that frog disappearances are an early indication of environmental degradation.

But sudden population declines have been observed in relatively pristine tropical Queensland rainforest, and in protected mountainous rainforest of Central and South America.

Australian scientists have been working with researchers in the United Kingdom and the United States to find the cause of these mysterious declines.

Dr Rick Speare from Townsville's James Cook University began investigating the issue of frog disease in 1993. He was joined in 1995 by Dr Lee Berger and Dr Alex Hyatt from CSIRO's Australian Animal Health Laboratory in Geelong.

Sick or dead frogs from New South Wales, South Australia and Queensland were collected by field researchers and sent to the the laboratory for autopsy by Berger. 'We found that the fungus invades the superficial layers of the skin, causing damage to the keratin layer on the skin surface,' Berger says.

The fungus is a new species of aquatic chytrid fungi and is yet to be named. Chytrid fungi have not previously been found to parasitise vertebrates. Other types of chytrid fungi can live freely in the water or soil, and some are parasites of plants and insects.

Dr Peter Daszak of Kingston University at Surrey in the UK and Dr Louise Goggin of CSIRO Marine Research identified the fungus using electron microscopy and molecular biology. Berger and Hyatt then demonstrated that it could infect and kill frogs.

Strangely, tadpoles do not succumb to the fungal disease. This fits with field reports in which tadpoles have been seen in areas after the adults have disappeared. About two to three weeks after metamorphosing, young frogs have been found dying.

US researchers have found the same fungus in frogs in many zoos and have retrospectively shown it was present in one zoo as early as 1988.

Continuing investigations will aim to confirm the effects of the fungus, and understand the factors influencing its behaviour. It may have been introduced to particular areas, or environmental changes may have increased the frogs' susceptibility to it. Further studies are also needed to determine the relatedness of fungi from different areas.

Contact: Ian McTaggart, CSIRO Animal Health, (03) 5227 5426, fax, (02) 5227 5555, email ian.mctaggart@dah.csiro.au. A scientific account of the investigation will be published during July in the US scientific journal, *Proceedings of the National Academy of Sciences*.

Your chance to find birds in the bush

If the words black bittern, garganey, flock bronzewing and large-tailed nightjar hold special meaning for you, *Finding birds in Australia's Northern Territory* could be up your alley.

The book is written by dedicated birdwatchers Lesley Alford, David Donato and Gregory Smith, and has been described as the essential birdwatchers companion for the Northern Territory. It contains a series of maps to help find the Northern Territory's 384 terrestrial birds and regular migrants, and describes in detail the best birdwatching sites in 13 areas, including notes on access and accommodation.

Examples are small parks such as Fogg Dam near Humpty Doo, described by the authors as birdwatcher's paradise; Kakadu National Park, which has an extensive

checklist of 288 species; and the remote South East Desert Loop, south of Alice Springs.

Finding birds in Australia's Northern Territory is designed to be used in conjunction with one of the Australian field identification guides. It points out interesting species at each site, rather than discussing all birds likely to be found in each area. Tables covering bird status, habitat and location, and a selection of colour photographs are included.

The 194-page book sells for \$19.95 and is being offered post free to Ecos readers. Free call 1800 645 051, or email: sales@publish.csiro.au and quote Ecos 798.

