

Beak and feather

disease (psittacine circoviral disease)

Psittacine circoviral disease (PCD) affects parrots and related species and is often fatal to birds that contract it. The virus that causes the disease has been identified from many wild populations and is believed to occur naturally. However, where bird populations are low, the disease may have the potential to cause catastrophic losses. PCD has caused a number of deaths of threatened parrots in captive breeding programs.

History

Psittacine circoviral disease (PCD), commonly known as 'beak and feather' or 'bald cocky' disease, affects psittacines — parrots and related species. The symptoms of balding, feather distortion and beak deformities have been recognised in captive birds for many years, but their cause was unknown. The disease was first positively diagnosed and shown to be caused by a virus in 1987, after it caused a significant number of deaths among threatened orange-bellied parrots in a captive breeding program.

Ecology

The psittacine circovirus occurs naturally in the wild. The disease it causes, PCD, is widespread and has been reported in more than 61 psittacine species, including the threatened swift parrot, the Norfolk Island green parrot and many common species such as the sulphur-crested cockatoo and the galah. The virus can affect birds of all ages, but particularly juveniles or young adults.



*Changing colours in these feathers, of a princess parrot *Polytelis alexandrae*, are a sign of infection by psittacine circovirus.*
Photo: Murdoch University



*Psittacine circoviral disease was first diagnosed, in threatened orange-bellied parrots *Neophema chrysogaster* in a captive breeding program, by researchers at Murdoch University, Western Australia. They also showed that the disease is caused by a virus.*
Photo: Dave Watts

The virus kills feather and beak cells. Symptoms of the acute form of PCD include diarrhoea and feather abnormalities, and death may occur suddenly within one to two weeks of the first symptoms. The chronic form results in feather, beak and skin abnormalities, with most birds eventually dying. Some birds recover from the acute form of PCD, but birds with the chronic form seldom respond to treatment.

The distribution of the disease and the factors involved in its spread are not well understood. The virus multiplies in the liver and can be transmitted orally or in faeces or feathers. It is one of the smallest and most resistant disease-causing viruses and probably remains alive for many years in tree hollows and other nest sites.

Impact

PCD is often fatal to birds that contract it and many infected birds do not respond to treatment. However, the disease does not seem to be a threat to the survival of psittacine species that are not endangered. Larger populations can sustain losses to the disease, and those individuals that survive the infection develop immunity. As the disease has been in Australia for a long time, a major epidemic is unlikely.



Sulphur-crested cockatoos *Cacatua galerita* are among the more common species that can be infected by psittacine circoviral disease. Photos: Murdoch University

The disease can have a significant impact on a species when the number of individuals is already low. If a captive breeding program is used to increase the number of birds, the virus can spread easily, as it did among captive-bred orange-bellied parrots. Any death is then a significant loss and infected birds that survive may spread the disease when released to the wild. Captive breeding programs of other threatened parrot species need to take into account the impact of PCD.

Control

As PCD is widespread and occurs naturally in Australia, eradication is not feasible. Control of the disease in threatened species will involve effective diagnosis, monitoring, quarantine and vaccination.

Techniques for maintaining the health of birds in captivity include disinfecting nest boxes, using appropriately designed aviaries and nest boxes, and controlling how the birds are grouped, their nutrition and hygiene, and the temperature of their surroundings.

Although vaccination would greatly enhance any efforts to control the disease, a vaccine suitable for widespread use has yet to be developed, and is unlikely to be available in the short term.

It is also important to identify and manage the environmental factors that make species more likely to develop PCD. Good quality habitat with ample foraging, roosting, and breeding opportunities is essential to the survival of threatened parrots.

There are many gaps in our current knowledge of PCD. Research is needed on the current status of the disease, including its prevalence in wild populations, its geographic distribution, and the effectiveness of monitoring. Research is also needed on how the disease spreads and how best to diagnose it, on possible control methods such as disinfectants, vaccines and immunity, and on whether vaccination is practical given the wide spread of the disease.

How the Australian Government is dealing with a national problem

PCD affecting threatened psittacine species is listed as a key threatening process under the *Environment Protection and Biodiversity Conservation Act 1999* (the EPBC Act). Under the EPBC Act, the Australian Government in consultation with the states and territories is preparing a *Threat Abatement Plan for Psittacine Circoviral (beak and feather) Disease Affecting Endangered Psittacine Species* for managing and reducing the impacts of PCD on endangered bird species.

The threat abatement plan aims to:

- protect threatened native species and communities from beak and feather disease
- prevent further species and communities from becoming endangered by reducing the chance of exposure to the disease.

This will be achieved by:

- implementing already available techniques to promote the recovery of threatened species affected by the disease, and coordinating management activities
- encouraging the development of new control and recovery techniques
- educating relevant groups about the disease and how to control it
- collecting and providing information to improve our understanding of the disease and its effects.

The threat abatement plan will identify research priorities and provide a framework that will enable the best use of the resources available for PCD management. The Australian Government will continue to work with the states and territories in dealing with this national problem.

More information about the threat abatement plan can be found at <http://www.ea.gov.au/biodiversity/threatened/tap/beakandfeather/>

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