

## Bat Conservation and Diseases including Whitenose Syndrome

### Conservation

Conservation of cave dwelling bats is fundamental to the ethos of caving. The ASF Code of Ethics requests cavers to cause minimal disturbance to bats and in particular to not disturb over-wintering bats or bat maternity populations. However, cavers need to be aware of risks involved in interaction with bats.

The population numbers of cave dwelling bats in South East Australia are smaller than in the 1960's. Whether this is from reduced food supplies due to drought or from clearing or other agricultural practices is not clear. Ghost bat populations have declined in numbers particularly at Mt Etna but there is evidence that the spread of cane toads from North Queensland across the Northern Territory to Western Australia is also killing ghost bats but there are populations that have had cane toads present for decades.

The Southern bent-wing bat, *Miniopterus bassani*, is listed as critically endangered under the Federal EPBC Act. The Common Bent-wing bat *Miniopterus oceanis* is listed as vulnerable in NSW. The other cave dwelling bat of southeastern Australia is the Eastern Horseshoe Bat, *Rhinolophus megaphyllus*. These three cave dwelling bat species hibernate in caves with low temperature chambers during winter. **Introduction of the White nose fungus could devastate these bat populations** (see below).

### Bat diseases

Bats have a bad press, but for cavers they are treasured and protected. This bad press is associated with mythology related to the night as well as harboring diseases such as rabies. Many newer diseases have a bat origin. These newer diseases have been associated with human incursions into the natural habitats of the bats. Only some of the bad press relates to cave dwelling bats. Flying foxes are responsible for many of the diseases of bats overflowing into domestic animals and humans. Such diseases are referred to as zoonotic diseases. Many of the newer diseases being seen in humans are due to disturbances to ecosystems as more humans encroach wild areas.

### Australian Bat Lyssavirus

Flying foxes (4 species), the Eastern blossom bat, *Syconycteris australis* and at least one microbat species have been shown to be positive for Australian Bat Lyssavirus (ABLV). ABLV has been isolated from the yellow-bellied sheath-tailed bat (*Saccolaimus flaviventris*), which normally roosts singly or in small groups in tree hollows. It is still uncertain whether ABLV is present in cave dwelling bats in Australia. ABLV is related to rabies and bat workers should be immunized with rabies vaccine and cavers should avoid handling bats particularly any with signs of sickness. The only human cases of ABLV have been associated with handling of flying foxes.

### Hendravirus

Flying foxes have been shown to carry Hendravirus but passage to humans to date has only occurred in people handling infected horses. There have been a number of horse handlers and veterinary workers infected with the virus, which is severe with a high proportion of cases fatal. There is no evidence of the virus in any cave dwelling bats or other microbats.

### **Histoplasma capsulatum**

Histoplasmosis is caused by a fungus and human exposure may occur in animal husbandry workers exposed to dry and dusty conditions in handling yards. For cavers, exposure may be in caves with bat guano particularly if conditions are dry and dusty. It causes a chest infection or pneumonia that can be quite serious in some individuals. There have been cases of infection exhibiting as chest infection or pneumonia in cavers a short time after caving in such caves. See Garry Smith Are You Exposing Yourself to Histoplasmosis?

<http://nhvss.org.au/wp-content/publications/histoplasmosis.htm>

### **Whitenose Syndrome Fungus (Pseudogymnoascus destructans)**

This fungus infects bats and has been shown to cause White Nose Syndrome. Humans are not known to be susceptible to the fungus. There are serious concerns as to whether some species of bats might become extinct because of the devastation that the disease is causing in the USA and Canada. The fungus has been shown to occur in Europe but it does not appear to be as severe as in the North American bats. It is now believed that the fungus was transported and introduced to the USA by cave visitors on contaminated clothing, footwear or equipment! The fungus has not been found in Australia to date and the concern is one of quarantine i.e. keeping it out of Australia.

In particular, the risk to all Australian bat populations from the introduction of the fungus is very real. It can spread from bat to bat by infection with spores. Once the fungus is present in a cave, wherever in Australia, visiting cavers as well as bats could transport it to other cave areas. The fungus grows best at low temperatures. The fungus has devastated the cave bat populations of Northeastern USA and Canada and has been spreading westwards. Infection with the fungus disturbs the bats during hibernation which results in them using up their fat reserves and dying. It is believed the low temperatures needed for bats to become sick are between 2 to 14°C. At these temperatures when the bats are torpid and due to reduced body temperature normal immune mechanisms do not operate and disease severity is enhanced.

Over-wintering bat populations, in SE Australia, seek out cool chambers where they become torpid. In instances, the temperatures have been shown to be below 14°C. Such temperatures occur from the lower southeast South Australia across Victoria and through to Jenolan. So there are vulnerable cave bat populations in parts of Australia but returning or international visiting cavers and cave scientists should treat the whole of Australia at risk of a

quarantine breach. The fungus once introduced into any Australian cave could be the source for infection of bats that could then be spread to other Australian caves either by infected bats or by cavers.

**Any introduction of the fungus into a cave environment by Australian cavers or karst scientists returning from overseas, by visiting international cavers or karst scientists visiting Australian caves across the whole of Australia could put our bats at risk of extinction as is happening in North America now. This is the reason for the quarantine concerns and the instructions that returning or visiting cavers and scientists should decontaminate all cave clothing and equipment before use in Australian caves.**

In particular, cavers are asked to:

- Report sick bats
- When returning from caving overseas, decontaminate all equipment used and certainly before resuming caving in Australia
- International cavers coming to Australia should decontaminate all caving clothing and equipment before departure.
- The following article is based on the concern of Chief Veterinary Officer, Australia. It gives more information on the quarantine issues and concern that Australian cavers, or visiting International cavers or cave scientists could introduce the fungus with contaminating clothing, footwear or equipment.

attach an article “White Nose Syndrome in Bats” sent to us by the Chief Veterinary Officer Dr Mark Schipp in May 2014 which covers the Australian context should the fungus get into Australia.

(<http://www.caves.org.au/resources/internal-resources/finish/9/215> )

An Australian fact sheet on white nose syndrome can be found at:

[https://wildlifehealthaustralia.com.au/Portals/0/Documents/FactSheets/EXOTIC%20-%20White-nose%20Syndrome%2013%20Nov%202014%20\(2.8\).pdf](https://wildlifehealthaustralia.com.au/Portals/0/Documents/FactSheets/EXOTIC%20-%20White-nose%20Syndrome%2013%20Nov%202014%20(2.8).pdf)

Full decontamination procedures for clothing, equipment and scientific gear are in the document: “Decontamination protocols for whitenose syndrome: national wns revise final 6.25.12.pdf”

Which is found at:

[https://www.whitenosesyndrome.org/sites/default/files/resource/national\\_wns\\_revise\\_final\\_6.25.12.pdf](https://www.whitenosesyndrome.org/sites/default/files/resource/national_wns_revise_final_6.25.12.pdf)