

## RESEARCH PROJECT BRIEF

### Focused study:

“Environmental lead exposure in raptors from mainland Australia”

### Over-arching study:

“Lead ammunition in the Australian environment: assessing the risks to people and wildlife”

<https://findanexpert.unimelb.edu.au/project/503117-lead-ammunition-in-the-australian-environment--assessing-the-risks-to-people-and-wildlife>.

### Investigators:

Lead investigator: Jordan Hampton (University of Melbourne)

Co-investigators: Jasmin Hufschmid (University of Melbourne), James Pay (University of Tasmania), Michael Lohr (Edith Cowan University)

### Background:

There is growing worldwide recognition of the threat posed by toxic lead (Pb)-based ammunition for wildlife and humans. This has led to active research examining impacts on at-risk wildlife species in much of the world. Resultant findings indicate that lead poisoning is a leading mortality cause for some threatened raptor (birds of prey) species (Church *et al.* 2006). Debilitating non-lethal effects have also been observed (Ecke *et al.* 2017) and these long-term deleterious effects on individuals can have negative effect on wildlife populations. Less attention has been devoted to this issue in Australia (Hampton *et al.* 2018). However, recent studies have demonstrated that harmful lead exposure is occurring in Tasmanian species, namely Tasmanian devils (*Sarcophilus harrisii*) (Hivert *et al.* 2018) and Tasmanian wedge-tailed eagles (*Aquila audax fleayi*) (Pay *et al.* 2021). There is an urgent need to apply these approaches to mainland Australia.

This project will utilise a passive surveillance approach to examine lead exposure from dead animal tissues solicited from six raptor species known to scavenge in mainland Australia:

1. Wedge-tailed eagles (*Aquila audax*)
2. Little eagles (*Hieraaetus morphnoides*)
3. Whistling kites (*Haliastur sphenurus*)
4. Black kites (*Milvus migrans*)
5. Black-breasted buzzards (*Hamirostra melanosternon*)
6. Brown goshawks (*Accipiter fasciatus*).

Lead analysis will be performed in an accredited laboratory from **bone** and **liver** samples, as per Pay *et al.* (2021). Bone is indicative of long-term exposure while liver is indicative of medium-term exposure. The central hypothesis is that lead levels will be comparable to those derived from other raptors species from around the world (Pain *et al.* 2019). Flight feathers will also be sought as an alternative marker of long-term exposure.

### Methods:

Dead birds are being solicited from a network of museums, wind farms, zoos, wildlife rehabilitation centres, veterinary hospitals, and government departments across eastern mainland Australia, as per Lohr and Davis (2018). Birds found dead, that die in care, or are euthanased by veterinarians and wildlife rehabilitators due to disease or injury will be included. Birds will be opportunistically collected from across eastern mainland Australia: South Australia, Victoria, NSW, Queensland and the ACT, from Feb 2021–Feb 2023.

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