

## Use of DNA and sniffer dogs to estimate predator abundance

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Sniffer dogs are highly effective at detecting other carnivores and/or their droppings. When combined with genetic analysis of scats, this provides a fast, reliable and inexpensive way to survey for cryptic species (Long et al. 2007). In Tasmania, trained dogs detected 80% of fox scats, even after 63 days. After 91 days in the field, 99% of fox scats were genetically identifiable to species (Brown et al. 2011).

Identifying scats to species may allow population density estimates through occupancy modelling, whereas identifying individual animals allows mark-recapture analysis (e.g. Marks et al. 2009; Gleeson et al. 2010). Identifying individuals can also tell us about their movements and behaviour. However, identifying individuals from scat DNA is more expensive and requires fresher samples than identifying species. Thus, there may be a trade-off between cost and rigour of different techniques.

Questions for further research include: 1) how effective are dogs at detecting various native and introduced carnivores?; 2) is it more efficient for dogs to specialise in detecting one species, or to search for all scats, then use DNA to assign them to species?; 3) how best to overcome challenges with DNA mark-recapture analysis such as degradation of DNA and allelic dropout, and; 4) how does the use of sniffer dogs and scat DNA compare with other non-invasive techniques such as camera trapping?

### References

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