Section 2

RESEARCH METHODS

Introduction

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'Research methods' details general operating procedures (GOPs) for a range of techniques used in Australian wildlife research. The GOPs presented in this section have been developed by people with extensive practical experience in wildlife research, including practitioners, early career researchers and post-graduate students, environmental consultants, and government and academic scientists. These GOPs can be provided to animal ethics committees (AECs) in any jurisdiction, or used as the basis for preparing detailed standard operating procedures (SOPs). Throughout this section, terms such as researchers, investigators, personnel, operators, practitioners and field workers are used interchangeably to indicate people who may use these GOPs. The intention is not to duplicate existing SOPs or guidelines, but to establish a basic set of practices deemed acceptable by experts on wildlife research practices in Australia, which may help investigators and AECs avoid confusion when faced with a range of protocols. These GOPs may be particularly useful to institutional AECs that are lacking detailed procedures for key research methods.

Wildlife research methods are diverse and constantly evolving, with increasingly low-impact methods being developed. This section provides GOPs for common and emerging techniques in Australia, including a range of low-impact methods. These GOPs are 'high-level' guides that should be reviewed in conjunction with species- or taxon-specific considerations when planning research and applying for animal ethics approvals (see Section 3). Additionally, the development of best practice procedures is valuable for ensuring consistency in implementation of methods. However, these procedures should be evaluated regularly in view of animal welfare outcomes (as best as they can be known) for study animals and non-target species that may be adversely affected.

The GOPs detailed here outline key considerations and best practice principles for techniques as they currently relate to animal welfare. Each GOP provides general procedures for undertaking the activity, specific competencies, potential alternative or complementary techniques, and workplace, health and safety (WHS) considerations. Since these GOPs are intended to be standalone documents, some repetition was unavoidable. To avoid excessive repetition, readers are sometimes referred to considerations detailed elsewhere in the chapter or book.

Importantly, contributors to these GOPs were asked to describe clearly the expected and potential effects of the method on the welfare of study animals. This information is a standard requirement of animal ethics applications and can be difficult to address, particularly where published evidence of impacts is lacking. Investigators and AECs have a requirement to consider potential impacts, even where experimental evidence is lacking. However, as pointed out by Hampton *et al.* (2016) the relationship between what is done to animals and how animals experience the method (i.e. its actual impact on them) has received little attention. This section aims to help researchers identify key potential animal welfare impacts and where available, GOPs reference published work to demonstrate the likelihood of impacts occurring. In circumstances where potential impacts have not been investigated, the GOPs note as such and infer the likelihood and consequence of the impact occurring based on the experience and knowledge of the experts who have prepared them. Investigators undertaking the described procedures may need to incorporate their own specific research parameters, requirements and limitations. These GOPs also establish likely triggers for treatment or intervention for each method.

Each GOP provides WHS considerations specific to the method. However, these considerations are general in nature and not intended to replace detailed context, project, or species-specific safe work methods

statements or job safety analyses. Considerations that are common to wildlife research, such as working in remote areas, injury from animals, and the potential for transmission of zoonoses, anthropozoonoses or parasites, and spreading of other pathogens (e.g. phytophthora and myrtle rust) should be addressed by investigators before research commences. In general, investigators should maintain a high standard of hygiene practices, review their capture and handling protocols regularly in view of potential disease risks, and be aware of the risk of transmission of infectious pathogens, including in field situations, for the health of themselves and their study species. Other resources are available to help researchers evaluate the likely biosecurity risks of their research and develop protocols to mitigate them (e.g. Wildlife Health Australia 2018).

REFERENCES

Hampton JO, Hyndman TH, Laurence M, Perry AL, Adams P, Collins T (2016) Animal welfare and the use of procedural documents: limitations and refinement. *Wildlife Research* **43**, 599–603. doi:10.1071/WR16153

Wildlife Health Australia (2018) *National Wildlife Biosecurity Guidelines*. Wildlife Health Australia, Sydney.