Context Summary

The use of camera traps is often regarded as an effective tool for fauna survey and monitoring with the assumption that they provide high quality, cost effective data. However, our understanding of appropriate methods for general survey and species detection, particularly in the small to medium sized range of mammals, remains poorly understood. Within Parks and Wildlife use of camera traps to date has usually been restricted to simple species inventories or behavioural studies and beyond this there has been little assessment of deployment methods or appropriate analytical techniques. This has sometimes led to erroneous conclusions being derived from captured images. Camera traps have the potential to offer a comparatively reliable and relatively unbiased method for monitoring medium to large native and introduced mammal species throughout the state, including a number of significant cryptic species that are currently not incorporated under the Western Shield fauna monitoring program. However, research is required to validate and test different survey designs (temporal and spatial components) and methods of deploying camera traps, and to interpret the results in a meaningful way. In particular, work is needed to determine how best to use remote cameras to provide rigorous data on species detectability, and species richness and density.

Aims Summary

- Establish suitable methodology for use of camera traps to estimate the presence and relative abundances of native and introduced mammals species in the south-west of Western Australia.
- Investigate the effectiveness of baited (active) and un-baited (passive) cameras sets to inventory targeted species.
- Investigate and assess the most appropriate methods of image analysis and data storage.

Progress

- Completed two camera trap trials in Dryandra Woodland and one in Tutanning. Results indicate that camera trapping provides consistent, reliable and comparable species accumulation and detection rates.
- Tutanning camera trap trial confirmed that woylies are no longer at detectable levels in the reserve.
- Further analysis of bait verses un-baited trial data indicates decline in detection rates at baited cameras over time.
- Completed analysis of species relative abundance from cameras deployed during a known removal event (translocation of woylies to Perup), which showed the method is sensitive enough to detect changes in relative abundance of a species.
- Quantified required effort to detect all species (mammals) within Dryandra, which can be extrapolated to other reserves.
- Provided advice and methodologies to other sections within Parks and Wildlife, and other Tertiary institutions and NGO's.

Management implications

- Camera traps appear to be an effective tool in detecting a suite of species currently not adequately monitored by the Western Shield monitoring program. Their use should be considered in the Western Shield monitoring program, either to complement the trapping program, or as a separate fauna monitoring tool.
- Recommend that the Reconyx HC600 series cameras are adopted as the minimum standard of camera to be used across the department, but preference should be for the PC900 camera due to its reliability and greater functionality, including its operation over a wider temperature range.

- The open source Access database, Camera Base 1.6 (http://www.atrium-biodiversity.org/tools/camerabase/), be adopted (with some minor modifications) as the standard method of capturing and storing camera trap data. Camera Base 1.6 to be used in conjunction with an image processing software such as Faststone Image Viewer.
- A standardised mounting method that is cohesive and repeatable between sites should be adopted for monitoring purposes.
- Camera traps consistently detect species that are not currently censused using most other standard detection/monitoring methods, and provide an effective mounting method for these species.

Future directions

- Develop a number of standard Access queries to better analyse outputs from Camera Base, and provide this to Regional staff using Camera Base.
- Validate camera traps against other traditional methods of fauna monitoring, such as cage trapping or sand plots.
- Investigate methods to use camera traps to qualitatively and quantitatively monitor invasive species.
- Investigate the sensitivity of camera-trap data to detect changes in relative abundance and occupancy of targeted species over time and season.