

**Concept Plan SP 2020-004**

**Mammal Monitoring in the Upper Warren Region**

**Animal Science**

**Project Core Team**

|                              |              |
|------------------------------|--------------|
| <b>Supervising Scientist</b> | Adrian Wayne |
| <b>Data Custodian</b>        | Adrian Wayne |
| <b>Site Custodian</b>        |              |

**Project status as of Feb. 12, 2020, 3:21 p.m.**

New project, pending concept plan approval

**Document endorsements and approvals as of Feb. 12, 2020, 3:21 p.m.**

|                       |          |
|-----------------------|----------|
| <b>Project Team</b>   | required |
| <b>Program Leader</b> | required |
| <b>Directorate</b>    | required |

# Mammal Monitoring in the Upper Warren Region

## Biodiversity and Conservation Science Program

Animal Science

### Departmental Service

Service 6: Conserving Habitats, Species and Communities

### Background

- The Upper Warren Region is one of the most important areas for native mammal conservation in Western Australia. It supports some of the largest natural populations of 9 threatened and conservation priority native mammals (woylie, western ringtail possum, numbat, chuditch, quokka, quenda, wambenger, tammar, western brush wallaby). Twenty other terrestrial mammals and nine bat species have been recorded in the UWR.
- The substantial recent declines of many native mammals in the Upper Warren remains to be adequately addressed.
- Current fauna monitoring is inadequate for tracking population changes and quantifying population sizes necessary for informing and demonstrating the effectiveness of management activities (e.g. introduced predator control, fire, dieback hygiene), assessing conservation status, identifying factors related to species distributions and abundances, and identifying the causes of significant population declines.
- Fox and cat predation remain by far the greatest conservation threat to the priority mammal species in the region. Introduced predators are not currently being monitored.

### Aims

Aim: Establish an efficient, effective and integrated monitoring program for native and introduced mammals at the landscape scale across the Upper Warren Region (UWR) to better inform conservation and management.

Objectives:

- Integrate what is currently isolated site-level monitoring activities into one cohesive, well-designed, more comprehensive, whole monitoring program at the landscape scale - i.e. a smarter more efficient design that provides more and better information without necessarily requiring any more resources.
- Use a complementary integration of field methods (e.g. spotlighting, remote sensor cameras (RSC) trapping and cage trapping), to monitor a wide range of priority mammals (particularly priority threatened and introduced predators), in a way that can powerfully inform management on population changes and responses to activities such as fire, timber harvesting, introduced predator control, dieback, climate change, etc
- Use the Strategic and Adaptive Monitoring (SAM) approach (Wayne 2018), whereby monitoring may vary over space and time in a deliberate and planned manner and in response to conservation and management issues as they emerge
- Develop a close working partnership between Regional and Fire Management Services and Biodiversity Conservation Science, whereby our combined forces deliver so much more.

### Expected outcome

- More efficient and effective use of resources to produce higher quality and quantity of data and information directly relevant to species conservation and DBCA estate management.
- Better integration and collaboration between science and operations.
- Better conservation and management outcomes based on better information, translation and adoption by practitioners.
- Demonstration case of how monitoring can be done better elsewhere.
- Greater scientific understanding of the ecology of fauna directly relevant to their conservation and management.

## Strategic context

The project falls within the following strategic goals within Biodiversity and Conservation Science, and contributes to the key deliverables of the Animal Science Program Plan including:

1. Adequate knowledge of biodiversity is available to support the department's conservation and management of terrestrial, estuarine and marine ecosystems. - Recommendations regarding translocation source sites, founder numbers, and measuring translocation success for targeted species.
2. Biodiversity conservation and recovery programs are based on scientific knowledge - Recommendations regarding conservation actions necessary to maintain sustainable populations, or recovery of, targeted species including management of threatening processes; Recommendations regarding the conservation status of targeted species; Purpose-specific optimal monitoring strategies.
3. Invasive species and pathogen management methods are evidence based and effective - Optimal monitoring strategies for introduced predators in response to management interventions.
4. Understanding of the effects and opportunities for mitigation of pressures and threats to terrestrial ecosystems - Recommended strategies to enhance the resilience of native fauna to habitat disturbance.
5. Scientific knowledge is available to inform adaptive management and decision making. Conservation advice is based on scientific information. - Translation of research outputs in formats appropriate to the target audience to encourage adoption.
6. Science is innovative and agile in assessing and adopting new technologies and methodologies, where appropriate. - Recommendations regarding the utility and use of new technologies for fauna research applications.
7. Data is effectively captured, curated and accessible to support conservation, management and decision-making. - Archived and curated research and monitoring data is available in a consistent, secure and searchable format with appropriate meta-data.
8. Effective science partnerships enhance provision of biodiversity and conservation science. - Identification of external collaborative fauna conservation research opportunities to deliver on shared goals.

## Expected collaborations

- This project will be a very close partnership between BCS staff based in Manjimup and the PWS (Nature Conservation) staff based in the Warren Region and Donnelly District.
- Roy Teale (Biota Environmental Sciences) - leader of the arboreal spotlight surveys conducted in the Upper Warren in 2019, which provide a baseline.
- Sian Thorn (PhD Candidate, UWA) - developing an effective monitoring method for numbats in UWR.
- Melissa Taylor (PhD Candidate, Murdoch University) - developing an effective monitoring method for chuditch
- Matthew Williams - design and analysis advice
- Joanne Potts (The Analytical Edge), specialist statistician - design and analysis advice
- Michelle Drew, Western Shield - integration and development of improved fauna monitoring methods

## Proposed period of the project

Feb. 11, 2020 – Feb. 11, 2020

## Staff time allocation

| Role         | Year 1 | Year 2 | Year 3 |
|--------------|--------|--------|--------|
| Scientist    | .2     | .2     | .2     |
| Technical    | .3     | .5     | .5     |
| Volunteer    | .4     | .5     | .5     |
| Collaborator | .05    | .1     | .1     |

## Indicative operating budget

| Source                    | Year 1 | Year 2 | Year 3 |
|---------------------------|--------|--------|--------|
| Consolidated Funds (DBCA) | 10k    | 20k    | 20k    |
| External Funding          |        |        |        |