Concept Plan SP 2019-029

Investigation into the decline of Chuditch (*Dasyurus geoffroii*) in the south-west of Western Australia

Animal Science

Project Core Team

Supervising Scientist	Adrian Wayne
Data Custodian	Michelle Drew

Project status as of May 18, 2022, 4:33 p.m.

New project, pending concept plan approval

Document endorsements and approvals as of May 18, 2022, 4:33 p.m.

Project Team	granted
Program Leader	granted
Directorate	required

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Biodiversity and Conservation Science Program

Animal Science

Departmental Service

Service 6: Conserving Habitats, Species and Communities

Background

The 2016 review of the conservation status of the chuditch, *Dasyurus geoffroii*, identified that there was insufficient information to determine if its conservation status required reassessment.

The key issues identified were:

1. Insufficient individuals captured in any single trapping session to enable an effective estimate of population abundance or density (relative or absolute) using mark-recapture analyses.
2. An inability to accurately assess local population trends due to large variability in sampling efficiency. This has limited the usefulness of descriptive statistical approaches to determine if the variability between trapping events at sites is due to sampling inconsistencies or true changes in population abundance/densities.

In response, the Chuditch Recovery Team requested a review to determine the limitations of the current data, and what data would be required to amend these issues. It became apparent that, at the state-level, the relative abundance of chuditch had declined significantly in the last five years (2013-17). However, the analyses conducted were not designed to identify causal processes. Additionally, the information currently collected from Western Shield only provides information on population trends along road transects within Western Shield managed areas, thereby limiting our understanding of what is happening at a wider population level.

An investigation examining chuditch populations across the broader landscape, which also identifies the relationship between road based transect monitoring and population trends away from roads, both in and out of Western Shield managed areas, is proposed. This project will provide insight into the processes that may be negatively influencing chuditch populations. It will also be important in determining if management can be implemented to mitigate the impact of any threatening processes and identify improved monitoring methods to measure population changes.

Aims

1) Interrogate existing data sets to identify potential processes influencing population change in chuditch in the southwest of Western Australia by:

- Integrating multiple data sources to determine the spatial, temporal and demographic characteristics of population change
- Defining covariates that are likely to influence chuditch population dynamics for inclusion in a hierarchical modelling approach
- Based on these analyses, identify the most likely risk factors influencing population decline

2) Evaluate monitoring methods to improve assessments of population change in chuditch by:

- Assessing the relationship of track based monitoring to population trends in the broader landscape
- Testing meat-based lures
- Assessing two further years of monitoring data comparing baited (fox) versus non-baited sites

3) Synthesise all of the above to identify potential management actions to mitigate impacts of threatening processes, and monitoring methods that optimise assessments of population change.

Expected outcome

- Identification of the processes likely to be responsible for the decline in chuditch populations, and potentially to other vulnerable species in similar habitats.
- Recommendations regarding management actions to minimise the impact of these processes on native fauna species; hence inform recovery teams and potentially improve management within the Western Shield program.
- Improved understanding of effective chuditch monitoring protocols.
- Provision of information to meet the requirements of the TSSC review of chuditch conservation status scheduled for 2021.
- Improvements in knowledge may enable more effective management of the species both within its current range, and to facilitate its expansion to areas of its former range.
- Information from the project will be disseminated in annual reports and a final publication submitted at the completion of the research.

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. 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.
2. Invasive species and pathogen management methods are evidence based and effective - Optimal monitoring strategies for introduced predators in response to management interventions.
3. 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.
4. Conservation advice is based on scientific information - translation of research outputs in formats appropriate to the target audience to encourage adoption.

This species is currently listed as vulnerable. The 2016 review of its status indicated that the species should continue to be considered vulnerable. The review indicated that further information was required on the species population size across its range and to further understand its vulnerability to feral cat predation.

A discussion document was presented to the Chuditch Recovery Team in December 2018 outlining more detailed analyses and possible options to improve knowledge of the species. The recovery team endorsed the recommendations in the discussion document pending the availability of funding to proceed.

The recovery team identified that it was extremely important that the processes involved in the apparent decline of the chuditch be identified quickly to ensure management actions are implemented to mitigate this decline.

Expected collaborations

Murdoch University PhD student

Proposed period of the project

March 4, 2019 – June 30, 2022

Staff time allocation

Role	Year 1	Year 2	Year 3
Scientist	0.3	0.3	0.3
Technical	0.1	0.1	0.1
Volunteer			
Collaborator	0.05	0.05	0.05

Indicative operating budget

Source	Year 1	Year 2	Year 3
Consolidated Funds (DBCA)	8000	10000	10000
External Funding			