Concept Plan SP 2014-002

Saltwater crocodiles (*Crocodylus porosus*) in the north-west Kimberley

Marine Science

Project Core Team

Supervising Scientist	Andrew Halford
Data Custodian	Andrew Halford
Site Custodian	Kim Friedman

Project status as of Nov. 15, 2018, 12:37 p.m.

Pending project plan approval

Document endorsements and approvals as of Nov. 15, 2018, 12:37 p.m.

Project Team	granted
Program Leader	granted
Directorate	granted

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Biodiversity and Conservation Science Program

Marine Science

Departmental Service

Service 6: Conserving Habitats, Species and Communities

Aims

Considerable research has been conducted on crocodile biology, population dynamics and recovery over the past 30 years (DEC 2009). However, this research has been focused in the Northern Territory (NT) with little complementary work in Western Australia, with the exception of the Cambridge Gulf region, close to the NT border. The last broad scale surveys conducted on saltwater crocodile (Crocodylus porosus) populations in the greater West Kimberley region were done over 20 years ago by Messel et al. (1987).

With respect to C. porosus habitat, the Kimberley region differs from the NT in that it has far less appropriate habitat for nesting/breeding (Semeniuk et al. 2011), however initial studies indicate that the rivers draining into the Cambridge Gulf and along the Prince Regent and Roe River systems (Semeniuk et al. 2011) arer areas where appropriate nesting habitat is most abundant.

Surveys of saltwater crocodile across the entire Kimberley Region are not viable for a number of reasons, so it is intended to build a predictive capacity through modelling of abundance data collected from new targeted surveys. This combination will provide a significant update to our understanding of current baseline conditions of C. porosus populations, enabling managers to formulate plans based on current rather than historic data.

Whilst historical assessments of C. porosus abundance have been undertaken in the Kimberley region (Messel et al. 1987), these datasets are now almost 30 years old. Anecdotal reports suggest increases in the abundance of saltwater crocodiles at the southern end of the Kimberley and the presence of animals much further south from their recognised range e.g. the Pilbara and Exmouth areas.

Given the remote nature of the Kimberley and large expanse of area which saltwater crocodiles inhabit, finding cost effective alternatives for baseline estimates and on-going long-term monitoring that will provide robust information within the limited management resources available will be very important. This need for quantitative information on saltwater crocodile abundance is matched by a need for development of local capacity to measure and manage the species across the Kimberley.

Expected outcome

The project will provide better estimates of the distribution, abundance and dynamics of C. porosus in the Kimberley allowing the Department of Parks and Wildlife and Aboriginal Corporations to measure the effectiveness of saltwater crocodile conservation and management. Predictive models of suitable habitat for crocodiles on the Kimberley coastline will also help to ensure that key areas for crocodile breeding are adequately managed within a network of protected area reserves and help identify places where the risk of interactions between crocodiles and humans is likely to be highest.

Through collaborative delivery of this research (especially use of cultural knowledge beside western knowledge), the project will build greater cohesion between the Department of Parks and Wildlife, Traditional Elders and Aboriginal Rangers for an ecological asset of special cultural significance to Traditional Owners.

Examples of the management implications of this research (and beneficiaries) include:

- Identification of likely saltwater crocodile breeding areas that will allow for consideration of enhanced levels of protection through park zoning (DPaW and Traditional Owners - Joint management);
- Identification of likely areas where there is a higher risk of negative interactions with crocodiles to allow for development of a targeted community awareness program (Tourism operators, local communities, DPaW and Traditional owners - Joint management.
- Improved capability of local rangers to assist in workforce requirements for ongoing monitoring and research (DPaW and Traditional owners - Joint management); and

- Areas of crocodile activity better defined improving efficiency and effectiveness of future research and monitoring spend (DPaW and Traditional Owners - Joint management)

Strategic context

Parks and Wildlife Strategic Directions (2013-2014). 4, 7.
Corporate plan (2007-2009): 1.12, 1.3, 1.4, 1.5, 4.2, 4.4, 8.1, 8.2, 8.3, 8.4, 8.5, 8.8.
A strategic plan for biodiversity conservation research (2008-2017): 1.2, 1.21, 2.1, 2.11, 2.35, 3.1, 3.2, 3.7, 3.8, 3.9, 4.5, 4.8, 4.9, 4.10, 5.2, 5.3, 6.6.
Lalang-garram Camden Sound Marine Park Plan: 2.3.1, 3.5.6, 3.5.7.
Marine Science Strategy: 6.2.3, 6. 6.3, 6.3.2.

Expected collaborations

Science and Conservation (Marine Science Program & Winston Kay), Regional Department Offices (West and East Kimberley) and Aboriginal Corporations, especially the Dambimangari Aboriginal Corporation (under joint management operations for the Lalang-garram Camden Sound Marine Park).

This is a Western Australian Marine Science part funded project, and is part of a Kimberley Marine Research Program collaboration. Close collaboration across KMRP projects (including WAMSI Project 1.5 Collating and integrating Indigenous Coastal knowledge for Marine Conservation and Management and Project 1.1.1 Distribution, species and environmental surrogates of biodiversity.

Proposed period of the project

None – None

Staff time allocation

Role	Year 1	Year 2	Year 3
Scientist			
	Year 1	Year 2	Year 3
Scientist	0.2	0.05	
Technical	0.3	0.01	

Indicative operating budget

	Year 1	Year 2	Year 3
Consolidated Funds (Dept of Parks and Wildlife)	109,000	18,800	
External Funds	26,500	3,500	