

Australian Government

Department of the Environment and Heritage Supervising Scientist

inter nal report





Landscape scale analysis of the value of waterbirds in the Alligator Rivers Region, northern Australia

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Abstract

The coastal and alluvial floodplains of the Alligator Rivers Region (ARR) support an outstanding diversity and abundance of flora and fauna, and encompasses Kakadu National Park. The region is extremely important to Aboriginal people, and many communities still use the floodplains as a source of traditional food, in particular geese and ducks. Kakadu National Park is inscribed on the World Heritage List because of its outstanding cultural and natural universal values, and its wetlands are listed under the Ramsar Convention on Wetlands of International Importance.

In 1999 the World Heritage Committee recommended that landscape and ecosystem analyses of the entire region be undertaken to help protect the ecological and cultural integrity of Kakadu. In response to this recommendation the Supervising Scientist Division of Environment Australia has commenced a number of landscape-wide projects that link various threats and pressures to ecosystems of the ARR (e.g. mining, invasive species, climate change & salinisation), in particular wetlands, in order to outline risk management strategies. Waterbirds are a key component of tropical wetlands and occupy several trophic levels. They are also potential indicators of ecological condition and have high cultural and natural significance. We are developing a conceptual model which directly links waterbird dynamics to the quality of their wetland habitats, both in terms of the availability of food and nesting resources. Being able to use the abundance and diversity of waterbirds as key indicators of "wetland health" and determining the efficacy of this approach is a key issue.

Key words: waterbirds, world heritage values, landscape analysis, cultural and natural resource management







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What we need to assess

- When they occur (seasonal patterns)
- Identify vulnerability at each time of the year
- Identify ecological drivers (individual sp. guilds)
- Identify habitat usage (individual sp.- guilds)
- Predictive aspect how species respond to environmental perturbations (natural or human induced)
- How we maintain the ecological value of those areas (World Heritage Values)



Developing Conceptual models

Developing conceptual models incorporating the basic ecological factors affecting the functioning of the wetlands, and dynamics upon which these ecosystems are regulated.















Investigating population dynamics –												
Inductive approach												
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Invertebrates	\checkmark		\checkmark							\checkmark	\checkmark	\checkmark
Body condition	n √	\checkmark	\checkmark							\checkmark	\checkmark	\checkmark
Gonads dev.					\checkmark	\checkmark						
Ducklings								\checkmark	\checkmark	\checkmark		
Aug Sep Oct	Nov		Fe	b Ma	ar Ap	r May Jun Jul						
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Poor wet season= less food , stress for survival, low recruitment ?												











Habitat Features

The Alligator River Region encompasses diverse waterbirds habitat. Some of the areas are very remote and difficult to access.



Identify Habitat Features

- Investigate potential of remote sensing to map and to monitor waterbird habitats
- Develop indexes of habitat suitability
- Investigate patterns of distribution and abundance in relation to habitat suitability
- Assess threats to these habitat
- Management needs to maintain the ecological values of these habitats





Relating distribution to environmental data

- Investigate the use of GIS to correlate environmental data from a number of sources to bird distribution data
- Use of multivariate statistic to identify groups of species that are likely to respond in similar ways to environmental perturbations

Where from now

- Collate historical information and undertake gap analysis in knowledge
- Developing conceptual models to link ecological drivers to patterns of distribution
- Investigate the use of remote sensing to map habitat and assess and monitor threats to habitat
- Investigate the use of GIS to relate distribution to environmental data



Communication Strategy

- Project in collaboration with Traditional Owners (TO)
- Parks Australia North
- PWCNT
- Other NGO Universities and Institutions interesting in sharing information
- Raise awareness and provide information at a Local, National and International level

