2011 Nature Conservation Leaders' Trip

Artemis Team Report

Great Western Woodlands
Potential partnership projects

Department of
Environment and Conservation

Our environment, our future

Great Western Woodlands
Potential Partnership Projects

Background

The Government has allocated $3.8 million over three financial years to the initial implementation of *A Biodiversity and Cultural Conservation Strategy for the Great Western Woodlands* which was released in November 2010.

The strategic planning process identified partnerships as a key mechanism to achieve the objectives outlined in the conservation strategy. $150,000 has been allocated to "partnership projects" which are yet to be specified. The aim will be to achieve significant leverage of these funds.

Projects with a natural resource focus that are aimed at improving our understanding of the GWW are a potential use for this money. Three such projects are already being funded:

- *Fire research (Colin Yates - $70,000)*: This project will use space-for-time surveys and fire history databases, to investigate the effects of time since fire and fire interval on the assembly and recovery of woodland community composition, development of ecosystem structure, and fuel dynamics.
- *Monitoring of planned and unplanned fire impacts (Lachie McCaw - $50,000)*: This project will provide information to managers about the effects of planned and unplanned fires on ecological and environmental values of the Great Western Woodlands. This will provide a basis for adaptive management to improve policies and practices relating to fire management.
- *Pathways to weed invasion (Colin Yates - $50,000)*: The project will enable implementation of regional-scale preventative weed management in the Great Western Woodlands, through identification of pathways to weed invasion and establishment of a weeds atlas.

Many questions remain unanswered about the ecosystems and processes in the GWW. The group considered the following:

1. What are the major unanswered questions about the ecosystems of the GWW?
2. With whom might DEC be able to partner to seek answers to each of these questions?

Project ideas were ranked high, medium or low according to the following criteria:

1. Likely budget required (more expensive projects received a lower rank);
2. Ability of the project to deliver at least preliminary results by December 2012; and
3. Availability of suitable potential partners.

Artemis team members were:

Karl Brennan

Sarah Comer

Neil Gibson

Ian Herford (team leader)

Norm McKenzie

David Pearson

Stephen van Leeuwen

Potential partnership projects

A full list of potential partnership projects is at Attachment 1.

Four projects received a “high” rank. These are as follows:

How variable are sandplains and how do they interact with fire?

The project

- Detailed look at a small number of sites on different sand sheets and with varying ages and timing of fire.
- Particularly important as low fuel areas designed to protect woodlands will be concentrated in this vegetation type.

The potential partners

- FESA.
- CSIRO.
- Mining sector (possibly through the Goldfields Environmental Management Group).
- Integrate with vegetation projects involving Curtin University.

Floristic composition and structure of salmon gum woodlands

The project

- Will provide a better understanding of the composition, distribution and functioning of salmon gum woodlands to inform management of fire response and management, restoration processes, indigenous collaborations and tourism activities.
- Selection of sites based on compilation of existing knowledge.
- Co-ordinates a network of interested botanists and trained individuals to undertake site based surveys of salmon gum woodland communities across the GWW.
- Ascertains regional variations in composition, structure and function.
- Determines what environmental gradients and conditions are driving woodland patterns.
- Will also develop vegetation mapping tools.
- MSc project to be conducted Judith Harvey.

The partners (already confirmed)

- Curtin Institute of Biodiversity and Climate at Curtin University.
- CSIRO Sustainable Ecosystems.
- Wildflower Society of WA survey team.
- DEC Science Division (through stipend and access to DEC facilities).
- Dahl Trust.

Consistent geology maps for GWW

The project

- There are significant differences among the 1:250,000 geology maps sheets covering the GWW.
- These maps are an important tool in characterising vegetation communities.
- Standardised maps would assist in our understanding of the variation in geology, regolith and thus vegetation across the GWW.

The potential partners

- Department of Mines and Petroleum - Geological Survey of Western Australia (which may have already done work in this area).

Predictive analysis of key fauna species

The project

- Collate existing data on reptiles and fauna of special significance including short-range endemics and threatened species.
- Relate fauna records to habitat types and vegetation structure in the GWW.
- Develop a model to enable the prediction of further occurrences of fauna of special significance.
- Project provides scope for improved understanding of resource partitioning which will be valuable information for fire and other management planning.

The potential partners

- Mining sector.
- DEC Science Division (staff only)

Recommendations

1. The four highest-ranked projects should be forward to the Deputy Director General Parks and Conservation and the Director General for approval to approach partner organisations. Full project proposals will be provided once partner in put has been received.
2. The remaining project concepts should be adopted as a five-year research program for the Great Western Woodlands.

Appendix 1

Complete Project List

Project	Priority	Potential partners	Comments
Collation of existing data			
Composition and structure of GWW vegetation.	L	DEC internal	Integrate with vegetation projects involving Curtin University. Required for CAR reserve selection and assessments.
Troglofauna in the GWW targeting resource prospective geologies (e.g. BIF ranges).	L	DEC internal	Collate existing data. Consultants each use their own system. Requires highly specialised consultants and corporate database system for retention of data. (Database system in planning with Offset funding from Marillana Project in the Pilbara.
Database of Museum invertebrate data.	L	DEC internal	Collate and input Museum data. ANHAT is collating a subset of the data already.
Identification of key biodiversity assets.	L	DEC internal	Extract data from existing records on endangered and priority species and communities, endemics and other species and ecosystems of special significance in the GWW. Include ground truthing and characterisation.
Predictive analysis of key fauna species.	H	Mining sector	Conducted as part of EIA processes.
Database of endemic reptiles.	L	DEC internal	Using existing data from previous surveys, Museum, mining sector etc.
Environmental analysis of GWW species and communities.	M	DEC internal	Analyse data from the Eastern Goldfields surveys across cells. Include individual species modelling.
Modelling vertebrate compositional patterns.	L	DEC Science (staff) Museum (staff) Mining sector Soc. of Herpetologists Naturalists Club	Use existing data to develop predictive models. Insufficient data to develop flora models at present.
Fire			
How variable are sandplains and how do they interact with fire?	H	FESA CSIRO Mining sector	Integrate with vegetation projects involving Curtin University.
How does fire impact malleefowl and how do they recover?	L	Cliffs via Malleefowl Preservation Group	

Project	Priority	Potential partners	Comments
Fire behaviour tables for the GWW.	L		Use GWW fire funds
Interactions among species			
Do malleefowl benefit from cat baiting?	M	Mining sector	
Trophic role of predators through analysis of scats and prey.	M	Mining sector	Collect predator scats to determine dietary components and develop a trophic model. Add prey records to species databases. Work already being done in Queensland. Some work already being undertaken by DEC Science (Russell Palmer)
Survey			
Floristic composition and structure of salmon gum woodlands.	H	Curtin Uni CSIRO Dahl Trust	Project ready to commence with partner funds locked in. Also develops vegetation mapping tools.
Priority flora and fauna surveys and status resolution.	M	Mining sector	Can be combined with other projects.
Credo vegetation as exemplar of GWW.	L	DEC internal	Develop a detailed approach to GWW vegetation mapping using 150 plots on Credo station. Would require Departmental endorsement of Credo Station as “GWW exemplar”.
Physical			
Where do the big trees get their water in the GWW?	L	CSIRO UWA - Plant Sciences	Water balance in woodlands will be researched through the TERN process.
Consistent geology maps for GWW.	H	DMP	Need to confirm whether this has been done and at what resolution
Other			
Training of DEC and mining company operations staff in implications of fire regimes.	M	Mining sector	
Offset target areas.	L		Identify a “bank” of suitable offset areas. List could affect the price of subject land. Would need to be informed by good asset maps and vegetation information