



SPATIAL INFORMATION DAY 2011

and the

SOUTH AUSTRALIAN SPATIAL EXCELLENCE AWARDS

Adelaide Convention Centre | FRIDAY 5 AUGUST 2011

Spatial Information Day 2011 Abstract

Title: Ultra-high resolution ecological habitat assessment of broad regions – fauna surveys in the North Kimberley region

Session: 1 – Environmental Monitoring

Author: Bertram Ostendorf, David Taggart, Dorothy Turner, Liberty Olds

Presenter: Bertram Ostendorf – University of Adelaide

Abstract:

The environmental challenges faced by remote Australia are immense. This is particularly true of the Kimberley region with its outstanding biodiversity values and high number of endemic fauna. Currently the exceptional natural values of the Kimberly are facing an impending environmental disaster fuelled by (i) the wide spread over grazing of cattle, (ii) uncontrolled massive wildfires, (iii) expanding pest species populations (cats, pigs, donkeys, horses), (iv) imminent arrival of the cane toad (30km off Kimberley border), (v) bauxite / gas mining (vi) introduced disease and (vi) climate change.

Management issues are exacerbated by the significant lack of baseline data for this region. Most of these threats have already impacted on the remainder of Australia and account for most of the biodiversity losses seen elsewhere on this continent. Addressing these threatening processes now is essential if we are to preserve the unique biodiversity of this region.

This project focuses on 2 million acres of pastoral lease bridging 5 national and conservation parks (land linking the Drysdale River NP, Prince Regent NP, Lawley River NP, Camp Creek Conservation Park and the Mitchell River NP. The large extent and the naturally highly fragmented land surface limits the use of LANDSAT satellite imagery for biodiversity studies. Spectral reflectance varies substantially between neighbouring pixels because of the uniqueness of the landscape mosaic at below pixel scale. High resolution satellite imagery is prohibitively expensive for the vast extent of the study area. Image resolution still limits interpretation of ground surface and canopy structure for assessment of key ecosystem parameters such as canopy density and structure, presence of dead wood or soil rockiness.

We developed a surveying methodology using true colour air photo transects over 300km with a pixel resolution of 10 cm. This allows visual interpretation of a large number of ecological site characteristics and with this the development of habitat characteristics that directly complement on-ground fauna surveys. Photos are mosaiced and registered to national LANDSAT imagery.

Initial conclusions are a lack of representativeness of biological survey data for regional management (these have largely targeted rare habitats in the past), the highly fragmented nature of vegetation patches and the importance of the spatial context for ground-based fauna surveys. The work illustrates the importance of linking spatial information at multiple temporal and spatial scales to ground-based data for effective use of field data in management.

