Progress Report SP 2018-073

Spatial Analysis and Modelling

Remote Sensing and Spatial Analysis

Project Core Team

Supervising Scientist	Katherine Zdunic
Data Custodian	Janine Kinloch
Site Custodian	

Project status as of Sept. 18, 2018, 10:53 a.m.

Update requested

Document endorsements and approvals as of Sept. 18, 2018, 10:53 a.m.

Project Team	granted
Program Leader	granted
Directorate	required

Spatial Analysis and Modelling

J Kinloch , K Zdunic , G Pitt

Context

The Spatial analysis and modelling function within the Remote Sensing and Spatial Analysis Program develops and utilizes tools to assist in the evaluation, interpretation and prediction of conservation values, threatening processes and management actions. These tools generally integrate spatial datasets, expert knowledge and GIS modelling techniques to produce spatially explicit products that can be used to inform decision-making. Projects can be focused on species occurrence (e.g. species distribution models; habitat suitability modelling), animal movement (e.g. home range; identification of habitat linkages), landscape scale processes (e.g. assessment of habitat fragmentation) or assessments such as quantifying risk (e.g., risk presented by feral cattle to biodiversity values). Identification of areas of high conservation value for protection are also undertaken through combining numerous conservation value datasets and using software to evaluate possible conservation scenarios.

Aims

- Developing spatial models to describe ecological processes, thereby increasing the understanding and protection of biodiversity.
- Support decision and prioritisation process through spatial analysis tools to inform management.
- Collate and summarise spatial information using statistical and documented methods to inform monitoring and management practices.

Progress

- Satellite tracking of horses for the Fortescue Marsh Feral Herbivore Program continued. Undertook spatial analysis of animal movements and home range statistics were determined.
- Developed a risk assessment framework for illegal sandalwood harvesting and worked with wildlife enforcement staff to identify data requirements for the parameterisation of the model.
- 2017 report on the extent of the Nature Conservation Estate (IUCN I-IV conservation reserves and IUCN IV conservation covenants), other DBCA managed lands and Indigenous Protected Areas in each of the IBRA sub-regions was completed.
- 2017 Statewide and 2017 South West Vegetation Statistics reports completed and published on DataWA. For the South West report an expanded internal DBCA report was completed that included extent of vegetation complexes remaining on freehold and crown land not managed by the department.
- One-off vegetation complexes analyses completed for the Perth and Peel Regions to inform decision making for areas for retention across these two regions.

Management implications

- The feral horse spatial datasets and analysis have provided land managers with information on the movement of horses on the Fortescue Marsh and surrounds so effective management strategies can be formulated to minimise feral herbivore impact on the Marsh.
- Departmental officers now have access to State government sandalwood spatial datasets and have initiated the capture of data relating to legal and illegal harvesting when undertaking patrols.
- The vegetation statistics analyses provide a single-point of truth and publicly available reports that will provide up-to-date CAR statistics, required by the department, other Government agencies and non-Government organisations for reporting and informing decision making.

Future directions

- Explore utility of Urban Monitor imagery and height data to assess vegetation aspects of extent, structure and status for threatened ecological communities.
- 2018 Statewide and 2018 South West Vegetation Statistics reports produced and published.
- Spatial analysis support for ARC project Building resilience to change for mammals in a multi-use landscape.
- Reporting undertaken for the Fortescue Marsh Feral Animal Movement project.
- Modelling the habitat of Aluta quadrata in the Pilbara with Rio Tinto.
- Terrestrial lands report produced for 2018 and published on DBCA intranet.