DYNAMICS OF SPINIFEX COMMUNITIES (Group 1)

Leader - Julian Reid; Reporter - Peter Latz.

Q1 - What are the major determinants of change in spinifex communities?

1a. Climate (Rain mainly).
- extremely variable and often patchy;
- unpredictable and can't be controlled;
- where rain finishes up is important i.e. rainfall, transport (above or below ground), to site of collection (often will be a "hot spot");
- absence of rain (drought) also important.

1b. Fire. Manageable.
- can be used to direct change;
- scale of fire is all important (landscape phenomenom, therefore landscape scale);
- timing (intensity), frequency (history) and area burnt also important.

1c. Human Impact. Manageable.
- traditional Aboriginal practices (past and present and how have they changed with European contact?);
- modern practices e.g. exotic biota (pastoralism and ferals), tourism, mining.

Q2 - Do we know enough about the dynamics of the entire range of spinifex formations?

NO! - We do not know enough.

We need to base future research on the needs of spinifex management. Because spinifex communities are so (beguilingly) diverse (in terms of structure and processes), we need to look for unifying principles, especially at the larger scales. We want to know what will be the community response to a management practice within different regions (is the functional group concept useful?).

There is a critical need to identify and locate the most important areas ("key sites", "hot spots") for biological conservation and management, with respect to rare or threatened species and otherwise significant (e.g. rich, localized, threatened) communities. We recognize a need, therefore, to compile and adopt uniform listings of rare and threatened taxa occurring in spinifex - with priorities indicated, and compiled on a national, state and regional basis.

Heterogeneity across spinifex communities, independent of recent fire and rain history, arises from:
- geographical position (lat/long) and landform type (sandridge, sandplain, laterite surface, rocky) i.e. broad-scale attributes;
- local community composition, local topography/ hydrology, and proximity to adjacent or inlying non-spinifex environments (finer scale).

We need to get a handle on this heterogeneity.

Q3 - On what gaps in knowledge of dynamics should management-oriented research now focus?

1. Prior to investigating dynamics, we need to identify and document "hot spots", by a combination of remote sensing techniques and then focused ecological survey. Also, but with lesser priority, there is a need for more broad-scale biological survey across spinifex landscapes in representative areas (inventories).

Critical areas will mostly be associated with moisture- and nutrient-rich conditions, and so research should focus on:

- active drainage channels and floodouts;
- paleodrainage systems;
- uplands within spinifex landscapes.

2. Focus ecological research on these critical (hot spot) communities, in relation to, or impacts of:

- fire ecology;
- mammalian extinctions;
- feral biota;
- pastoralism;
- mining and tourism;
- Aboriginal land-use;
- climatic, landform and edaphic controls.

3. There is an urgent need to gather ethno-ecological knowledge, particularly from older Aborigines. We also recognize the need to involve land managers and (traditional) owners in the design and implementation of research and management.

Q4 - What is the minimum data set required for achievable management of spinifex areas?

The group did not address this topic specifically, but the information presented above contains relevant indications. To summarise the above, important factors to be considered are:

- patchiness and variability of rainfall, and drought (more extreme than in temperate and island situations);
- fire, with effort to be focused on protecting sensitive communities and manipulating habitats for rare species;
- redistribution of water and nutrients, with areas of higher water and nutrient availability likely to be critical habitats;
- the role of landscape heterogeneity in promoting biological diversity;
- assessment of human impacts;
- establishment of effective monitoring programs.