

The **Botany group** was treated to a great talk by **Dr Josh Dorrough** of the Flora Ecology Research Group, DSE, ARI-Heidelberg on Thursday 21st April. Josh shared his knowledge of the research undertaken to develop, **Principles for the Maintenance of Native Grassland Species Diversity on Private Land**.

Trial design

Six grazing management treatments: never grazed, always grazed, winter rest, early spring rest, summer rest, and a combined spring/summer rest. Sheep were excluded from the plots being rested through the closure of gates at the appropriate time. Herbage availability, species richness (native and exotic) and sward structure were compared.

The results show

The survival of many of grassland species is dependant on the complex interactions between the following key factors:

- **Evolution of the area**, soil type, past climate, temperature, gaseous environment, e.g. vegetation of the basalt Monaro tablelands has been influenced by glacial activity and a long period lacking disturbance.
- **Grazing regime** its: intensity, frequency, duration, timing (summer/spring) e.g. overgrazing by stock and rabbits in the 1830's drastically reduced the survival of trees.
- **Management activities** like fertilizer application and sowing pasture species e.g. The use of superphosphate reduced native grasses.
 - Use of legumes increased soil nitrogen levels reduced kangaroo grass, replacing it with *Stipa* and then less palatable *Poa* tussocks.
 - Increased grazing in pressure in summer, as there is less grass around.
- **Stock** has selective grazing **preferences** for some species (ice-cream plants) e.g. the broad leaves of *Leptorhynchos elongatus*.
- **Competitive interactions**, e.g. an ideal grazing regime increases species diversity as it reduces the competitive advantage of grasses.
- **Recruitment dynamics**
e.g. *Leptorhynchos elongatus* plants can survive for twenty years without successful sexual reproduction as the flowers are eaten.
 - Perennials flower and die before summer grazing.
 - Disturbance favors annuals.
 - Scaly Buttons *Leptorhynchos squamatus* are short lived so its survival is dependant on the presence of gaps.
 - Yam daisy is long lived.
- **Dispersal**, animal dispersed species have increases abundance when grazed.
- **Growth** period, e.g. *Cullen parvum* is a summer active native pea so spring grazing is OK as summer rest allows it to complete flowering.

Indicator species

The results helped chose a set of species that can help land-holders monitor diversity and fine tune the timing of grazing. The species were chosen as they do well in one of the following conditions:

- Not grazed
- Rested in spring
- Rested in summer.

General outcomes

The comprehensive data set produced from these studies has shown that:

- Spring rest gives better species diversity
- Intensive rotational grazing favors exotic grasses
- Summer rest reduces invasion by exotic annuals
- Fertilizers increase nodulation by legumes and reduces species diversity
- No grazing reduces diversity as grasses dominate
- No grazing created more structural diversity and increases the habitat value of the grassland for local fauna
- Intermittent grazing is better to maintain general species diversity.
- By choosing the timing of grazing (summer or spring) a manager can influence the reproduction success of specific species.
- Very few areas are managed to maintain grazing sensitive species so we will probably lose them.

Most of grasslands occur on private land so the implementation of these principles is motivated by on the owner's good will and generosity, not profit.

Further information/articles can be seen/downloaded from

http://www.dpi.vic.gov.au/dpi/vro/vrosite.nsf/pages/ecorich_publications

Jenny Porter

Randal Robinson Wildflowers

Search DPI for

Native grasslands of the basalt plain

Stephen Platt, 1999