

Research Briefing Note

Desert Knowledge Co operative Rresearch Centre (DK CRC)
Project: The dispersal, impact and management of buffel grass
(*Cenchrus ciliaris*) in desert Australia

Partners: CSIRO CSE, NT Parks & Wildlife Commission
Threatened Species Network, James Cook University

BACKGROUND

The introduction of the exotic grass *Cenchrus ciliaris* (buffel grass) into arid and semi-arid Australia was actively promoted by State and Territory agencies over several decades for soil conservation and livestock forage production. Cultivars of buffel grass are now widely established in Queensland, South Australia, the Northern Territory and Western Australia, and predictive modeling has indicated that buffel grass could establish across 58% of the mainland. Such an extensive distribution would make it the single most important grass in desert Australia, in both ecological and economic senses. In the substantial areas where buffel grass has already become established it is highly visible, and divergent perceptions of buffel grass have developed within communities. It is variously viewed as a highly threatening environmental weed, a boon to pastoralism, a protector of soil resources, a mixed blessing or a matter of little importance.

This project aims to document important aspects its ecology, including dispersal and biodiversity impacts, and to investigate approaches to early-detecting of range expansion into high conservation value areas, as a basis for improved management of the species for a variety of land uses.

AIM

Within areas of inland Australia with different land uses, to:

- (1) identify buffel throughout grass dispersal patterns and mechanisms,
- (2) evaluate some potential impacts of buffel grass on biodiversity and key ecological attributes such as soil nutrient status and fire regime, and
- (3) develop and assess aerial survey techniques for the early detection of buffel grass invasion of high conservation value areas.

IMPLICATIONS

Building a sound understanding of the ecology of buffel grass in inland Australia will foster more explicit and precise evaluation of the costs and benefits of buffel grass for various stakeholders, and provide a framework of shared knowledge for better communication between stakeholder groups.

Specific foreseeable benefits include:

- 1. Improved basis for evaluating the ecological and economic costs and benefits of buffel grass.** This may include factors such as fire regime, long term impacts on soil fertility, the balance between increased biomass and species diversity of forage sources, and likelihood of buffel grass spread beyond areas of intended use. This improved evaluation will be relevant to established activities, such as pastoralism and ecotourism, and to opportunities for new or developing activities, such as bush produce.
- 2. Improved efficiency in the detection of buffel grass incursions into conservation areas.** Monitoring programs based on an understanding of dispersal patterns and using cost effective survey techniques have lower operating costs, and earlier detection will reduce the costs of remediation.
- 3. Improved management of buffel grass dispersal.** Identifying dispersal mechanisms may allow inexpensive modification of routine practices, e.g. in road reserve management, to reduce rate of spread beyond areas of beneficial use and subsequent costs of control actions or direct impacts. The potential to retard Buffel grass spread into conservation areas could also be enhanced, e.g. by improved park design and access control, thereby reducing remediation costs. Conservation area managers will be better equipped to prioritise areas for control action e.g. by identifying areas of greatest vulnerability, or areas likely to serve as sources for continued spread.
- 4. Protection of biodiversity values, and the current and future economic activities they support.** There are both general and specific biodiversity issues associated with buffel grass that this project can help to address. Better control of the spread of buffel grass beyond areas of intended use can protect landscapes from 'visual degradation' or increased fire hazard. Detailed studies of dispersal processes and habitat impacts can also enhance management of populations of species such as Slater's skink (*Egernia slateri*) and a number of floodplain forbs and grasses (e.g. *Minuria tridens*), which are thought to be particularly threatened by buffel grass expansion.

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