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# The Ecosystem Management Understanding (EMU) pilot project: building landscape literacy using local knowledge to improve rangeland health in the Neales River Catchment of South Australia

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## Abstract

Despite their vast size and a declining workforce it is possible to manage pastoral leases effectively by focusing on landscape function to identify key critical areas. Natural and human-induced processes drive changes to landscapes, vegetation structure and composition, due in part to changes in soil moisture balance. Identifying these processes and their impacts (e.g. the fate and impact of raindrops) assists with the development of ‘best practice’ ecological and cost-effective pastoral management. The Ecosystem Management Understanding (EMU) Project™ is a holistic land management approach, which is being trialled by the South Australian Arid Lands Natural Resources Management Board (SAALNRMB). Community support for an EMU pilot project in the district was articulated through the Marla-Oodnadatta Natural Resources Management District Group. The Group liked the EMU approach as it incorporates pastoralist experience and knowledge with scientific expertise; it nurtures pastoralists’ skills to read landscape processes, condition and trend so they can easily apply this information to daily management practices. It is a way of working with natural processes rather than against them (“fitting in with”, rather than “fighting” them). It was these attributes which attracted four pastoralists to be involved in the EMU pilot project in the Neales River catchment of South Australia. Through an enhanced understanding of landscape processes and function, these pastoralists are working

towards restoring the natural landscape function to improve sustainable productivity and biodiversity across a total area of over two million hectares in the arid lands of South Australia. The EMU pilot project in the Neales River catchment of South Australia has been funded by the Commonwealth's Caring for Our Country program through the South Australian Arid Lands Natural Resources Board (SAALNRMB) and the Centralian Land Management Association (CLMA).

## **Introduction**

### *History of EMU*

The Ecosystem Management Understanding (EMU) approach was initially developed by landscape ecologists Drs Ken Tinley and Hugh Pringle to facilitate ecologically sustainable rangeland management. Much of it is built on the ethno-ecological work of Dr Ken Tinley in southern Africa where he used local indigenous ecological knowledge to help him build conservation management strategies and plans for iconic National Parks across southern Africa (Tinley and Pringle 2002). It has been adopted by pastoralists in the Gascoyne Murchison catchments (WA), far western Queensland, southern Northern Territory and more recently in the Marla-Oodnadatta NRM district of South Australia.

Members of the Marla-Oodnadatta Natural Resources Management District Group were informed of the EMU approach through a "Grass with Class" information day and guest speaker Ben Forsyth, an EMU project participant from Western Australia. The Group approached the SAALNRMB to pilot an EMU project in the Marla Oodnadatta district and as a result a project proposal for the Neales River Catchment Pilot Project was developed, successfully funded & is now being implemented.

## **How it works**

The strength of EMU is that it builds on the solid foundations of local knowledge. EMU is a partnership of knowledge systems within an ethical, nurturing framework that supports land managers to act on what they know needs attention. All information is confidential and remains the property of the pastoralist.

EMU involves reading and recognising landscapes (the terrain elements), internal and linking processes (function), condition and trend. This is achieved through working with pastoralists to record their station knowledge in a baseline mapping exercise, followed by ground and air traverses of key areas. A simple landscape and habitat monitoring technique is demonstrated during ground traverses augmented by ground and aerial photographs. This is summarised on clear overlays on the station map and updated annually as a permanent record. These activities provide a way of tracking change and making timely, strategic and relatively simple management interventions in specific areas or sites that can have far-reaching positive consequences.

The EMU Project allows for a comprehensive understanding of what the landscape can offer (and what it cannot). This appreciation enhances current (usually grazing) enterprises, but also recognises other opportunities and particular values of participants. The scope of EMU is determined by the participants.

## **The Neales River Catchment**

The Neales River catchment is located in the South Australian Arid Lands, north east of Coober Pedy. The headwaters originate in the Stony plains bioregion to the east of the Stuart Highway with the catchment extending through 10 pastoral properties to the north western shore of Lake Eyre. This EMU pilot project is focused on properties within the Neales River catchment. Mesas, plateaux, hills, gibber tablelands, creek lines and floodplains are all prominent features of the catchment with an elevation ranging from 421m to as much as 15m below sea level in parts of Lake Eyre. The arid climate ensures the region experiences prolonged dry periods and unpredictable flooding summer rains. The average annual rainfall ranges from 150mm in the southeast to 225mm in the North West.

Land use throughout the catchment includes pastoralism, mining exploration and tourism with pastoralism being the most extensive land use. Most pastoralists aim to turn off younger cattle, rather than growing fat cattle, which fits the climatic vagaries.

### *The Neales River Catchment Pilot Project objectives and strategy*

This pilot project aims to enhance landscape literacy amongst landholders, starting with the strong foundations of their existing knowledge. Utilising this consolidated knowledge and

new shared experiences we hope to plan how landscape functioning and the many values it supports can be protected, enhanced and repaired (in that general priority).

We seek to enhance existing pastoral enterprises and the quality of habitat for wildlife.

Where pastoralism and key biodiversity or cultural values and management are clearly conflicting, we try to raise these issues and achieve locally derived, creative and practical solutions (“win-wins”). By choosing this voluntary and confidential approach, we believe we will achieve far greater participation in “public good” management - that will be effective and enduring -than by using a more conventional, bureaucratic approach.

The point of entry has been the grazing enterprise and how it fits the landscape patterns and processes. We have focused on landscape diversity as opportunity to manage stock better through various seasons, their quality and sequences. We explore infrastructure issues to help “fit”, rather than “fight” landscape functioning. If pastoralists then want to discuss diversification options or management of natural and cultural heritage values, then we support this too (and bring in expertise as required, but under strict “EMU rules” regarding ethical engagement and confidentiality).

### **Achievements to date**

The EMU project has engaged with four Stations in the Marla Oodnadatta Natural Resources Management district and generated considerable interest throughout the South Australian Arid Lands region. This community support has resulted in a similar program being developed for three properties south of the dog fence.

The properties engaged in the Neales River Pilot Project have all identified key landscape management issues and priority areas for significant management changes. Each property is at a different stage of progression through the “EMU Process” due to droughts and floods altering their predicted workloads.

On Todmorden Station, Douglas Lillecrapp has obtained funding to initiate a pilot catchment project for the Wooldridge Creek that includes a series of ground works e.g. ongoing fencing plans. This will act as a demonstration of strategic landscape repair within a sustainable

holistic framework, see Lillecrapp (2010). It will show how we planned cost-effective interventions, the mistakes we made and what worked really well and why.

The three other properties have requested ongoing support. The requests vary from building landscape repair programmes to reviewing their whole enterprise system. We look forward to helping them solve their identified issues and for us to become redundant so we can work with more participants and the “guinea pigs” can be the hub of a local and connected knowledge system, with our support as requested.

In all cases, participants have expressed a view that they see their land differently through involvement in the EMU Project.

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