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The Australian Rangeland Society

Ecosystem Management Understanding (EMU)™: building landscape literacy to rehydrate the rangelands of South Australia

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Abstract:

Bringing about positive change and the wise use of rangelands is more about enabling landholders to enhance their knowledge and build their skills rather than bringing modern science to “teach”. Pastoralists across the South Australian Arid Lands (SAAL) Natural Resources Management (NRM) Region, have embraced the Ecosystem Management Understanding (EMU)™ approach because it values and blends their local knowledge with scientific expertise in a conducive environment. Through participating in the EMU™ Projects, land managers have shifted their focus from trying to resurrect dysfunctional landscapes typified by exacerbated landscape droughting to key problems jeopardising their most productive and healthy country. This is a very different approach to that conventionally used in the Decade of Landcare and promoted by administration bodies at the time. Here we present a succinct and general review of EMU™ in South Australia from 2009 to today.

What is EMU™?

The Ecosystem Management Understanding (EMU™) is a voluntary, confidential, unique and holistic land management approach for land managers. It builds on the solid foundation of local knowledge of country and combines this vital link with scientific expertise to build landscape literacy through nurturing landholder skills to read landscape processes, condition and trend.

The primary purpose of EMU™ is to introduce pastoralists to sustainable ecological management of landscape and habitats.

History of EMU™

The 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).

This process has been adapted by pastoralists in the Gascoyne Murchison catchments (WA), southern Northern Territory and more recently in the Marla-Oodnadatta, Kingoonya, Gawler Ranges and North Flinders NRM districts in South Australia.

During 2009 members of the Marla-Oodnadatta Natural Resources Management District Group were first informed of the EMU™ approach through the pilot project, the “Grass with Class” information day and later by guest speaker Ben Forsyth, an EMU™ project participant from Western Australia.

The first EMU™ pilot project was conducted during 2009, on Todmorden, Evelyn Downs and Bon Bon Stations. The interest and innovations generated by this pilot project led to the development of a complementary pilot project in other NRM districts during 2010. Whilst expanding into other NRM regions is technically not desirable for encouraging catchment scale management, it was seen to be necessary to rationalize the viability of EMU™ across the SAAL NRM region.

The EMU™ approach

The EMU™ approach is based on demonstrable key building steps and allows for a comprehensive understanding of what the landscape can offer (and what it cannot). This appreciation complements current (usually grazing) enterprises, but also recognises other opportunities and particular values of participants. The scope of EMU™ is determined by the participants (Walton & Pringle 2010).

EMU™ in the rangelands of South Australia.

Funding secured through the South Australian Biodiversity Fund and Trans-Australia Eco-Link will enable the EMU™ project to be extended to an additional two properties in the Marla Oodnadatta NRM district. This brings the total number of properties participating in EMU™ to 17, amongst them pastoral stations, mixed pastoral and tourism enterprises as well as conservation reserves, and Aboriginal-managed lands. These 17 properties cover an area of more than 4.9 million hectares and include the following bioregions: Finke, Stony Plains, Simpson Strzelecki, Flinders Lofty Block, and Gawler.

Conservation values enhanced indirectly through EMU™ include habitat repair for Nationally Threatened species like the Thick billed Grasswren (*Amytornis textilis modestus*), Slender billed Thornbill (*Acanthiza iredalei iredalei*) Plains rat (*Pseudomys australis*), Mallee fowl (*Leipoa ocellata*), Bronze-back Legless Lizard (*Ophidiocephalus taeniatus*), Yellow-footed Rock wallaby (*Petrogale xanthopus xanthopus*), Sea Heath (*Frankenia plicata*), and the Slender Bell fruit (*Condonocarpus pyramidalis*).

Nationally threatened ecological communities occurring in the South Australian EMU™ project footprint include Mulga (*Acacia aneura*) low woodland on sand plains, Bullock Bush (*Alectryon oleifolius*) tall shrub land, Coolibah (*Eucalyptus coolabah ssp arida*) & River River Red Gum (*Eucalyptus camaldulensis*) woodland on regularly inundated floodplains, Old-man Saltbush (*Atriplex nummularia*) on floodplains, Queensland Bluebush (*Chenopodium auricomum*) shrubland on cracking clay depressions subject to periodic waterlogging, GAB mound springs, Northern Myall (*Acacia calcicola*) woodland on breakaways, and *Triodia spp.* grassland on high ranges.

The number of participating properties (Figure 1) varies from the actual number of funded properties, as coverage of all properties did not require funding for various reasons.

The reduced staff capacity over last 18 months has resulted in the last two stages of the EMU™ process (Figure 1) not progressing as well as intended. However with the Department for Environment, Water and Natural Resources (DEWNR) recently committing to incorporating EMU™ into core business and to increasing the skills and knowledge of staff we hope to expand EMU™ across another 13 properties in the next 3 years.

The 13 properties which have completed on-ground works have all been seed-funded. However, they have completed more than one on-ground project without government assistance. Basic photo point and line transect monitoring has been established at all the funded project sites. The only property which has not committed to on-ground works has not been through lack of enthusiasm, rather an unfortunate run of events combined with a higher than average manager turnover.

On-ground works across participating properties to date include: the fencing and baseline flora and fauna survey of a significant swamp ecojunction; the fencing of a significant drainage confluence to slow and spread overland flow; the establishment of innovative heavy swing fencing across rivers and creeks; catchment-based weed control; best practice track maintenance; soil conservation works planned and sequenced to flip most productive systems to water harvesting as opposed to dehydration. A particular added bonus to the soil conservation works is that local earthmoving contractors as well as landholders are becoming adept at soil conservation works within a wider, ecosystem understanding.

An unexpected knowledge gap identified through EMU™, has been the widespread lack of basic understanding of landscape function across technical staff. Consequently, Dr. Hugh Pringle conducted a five day landscape literacy training course for DEWNR staff. This course was well received with several participants suggesting their colleagues would like to attend the next course. Planning is well underway for the next Landscape literacy course.

Conclusion

Fundamental to the success of EMU™ across the South Australian Arid Lands NRM Region is the level of trust, confidentiality and support from EMU™ staff combined with an attitude receptive to change. The EMU™ approach is a totally holistic approach to sustainable land management which is nurturing land managers to read landscape processes, condition and trend. Participation is voluntary; all information is confidential and remains the property of the pastoralist.

Participants have often changed their priorities with this new ecosystem perspective and have been enthusiastic to make major changes. In all cases, participants have expressed a view that they see their land differently through their involvement in the EMU™ Projects and that they would thoroughly recommend EMU™.

Figure 1. EMU™ achievements to date

EMU™ funded projects	Pilot projects EMU™ CF o C 2009 – 2010	State funded EMU™ 2010 -2012	Southern Past. EMU™ C F o C 2009 - 2012	Trans Australia Eco Link 2011 -2013
No. of properties	3	5 (8)	3	3
1: Initial meeting	3	5 (8)	3	1
2: Overlay mapping exercise	3	5 (8)	3	1
3: Aerial survey of key issues and areas mapped	3	5 (8)	3	
4: Review flight and plan ground inspections	3	5 (8)	3	
5: Major review: Reassess and identify (map) management priority areas	2	5 (8)	3	
6: Build priority project proposals	2	5 (8)	3	
7: Implement project(s)	2	5 (8)	3	
8: Install property monitoring system	1 {plus 1 installed own monitoring system}		1.5	
9: REVIEW, REVISE and REFINE	1		3	

() denotes actual number of participating properties

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