

A course developed by ...



RANGELANDS AUSTRALIA

# RANGELAND MONITORING AND ADAPTIVE MANAGEMENT

**Postgraduate Course – AGRC7028**

Available Semester 1, biennially (odd years)

In External or Intensive Mode  
(Subject to minimum numbers)

## OVERVIEW

This course is designed to instil and implement a management philosophy of continuous learning, and “learning by doing”, into rangeland management. The key difference between this approach and others that are common in rangeland areas is the focus on learning, modifying practice in response to the learning, and regularly monitoring and reviewing the results of the changes. A ‘trial and error’ approach to new ideas has been the main method of implementing changes in management practices and procedures in the rangelands in the past. This has often resulted in unintended consequences or even failure because of poor planning, and inadequate consideration of what a change in management really means socially, economically, culturally and environmentally to the rangeland enterprise. Adaptive management and monitoring of management outputs and outcomes are ways of ensuring that the best management option is implemented, that the outcomes are as intended and measurable, and the lessons learnt are used in designing future approaches to rangeland management. In this course, the adaptive management approach is applied to the management of natural resources, and to environmental, economic and social assets.

## LEARNING OBJECTIVES

On completion of this course you will be able to:

- Apply the concept and basic principles of adaptive management within a systems approach, incorporating social, economic and biological aspects.
- Identify various adaptive management approaches and models and assess their suitability for application within a particular holistic management context.
- Analyse a management situation, identifying causal pressures, processes and structures giving rise to the current status, and define a desirable alternative endstate.
- Design one or more models for management improvement, contextualising objectives, methods and techniques to the desired solution.
- Develop a monitoring and testing regime to collect information and data within a specific improvement model.
- Use evaluation principles and methodologies to analyse information and data derived from adaptive management models, experiments and monitoring regimes.
- Utilise knowledge captured within monitoring and testing phases of the Adaptive Management cycle to refine and develop the extant management system, including adjusting property policies, plans and management parameters.
- Recognise and allow for the impact of relevant regulatory frameworks, and social and personal paradigms, within Adaptive Management programs.

## COURSE STRUCTURE

This course is divided into seven modules:

- Adaptive Management in the rangelands: A process of continuous improvement
- The Adaptive Management cycle: Theory, models and paradigms
- Situation awareness within the context of Adaptive Management, Part 1: Environmental, economic, social and cultural issues influencing resource condition
- Situation awareness within the context of Adaptive Management, Part 2: Resource condition and trend
- Identification of issues, goals and objectives
- Models for improvement: Designing, implementing analysing and interpreting
- Monitoring in the rangelands: Connecting with the Land

## LEARNING FACILITATORS

**Dr Tony Pressland** (B.Agric Sc., M.Sc, PhD, PSM). Tony has a long professional interest in the rangelands and in adaptive management and planning from the dual viewpoints of sustainable natural resource management and involvement of local people. He has led research into the impacts of changes in land use on catchment hydrology and productivity; studied rainfall-runoff-pasture-erosion relationships under livestock production; and has been involved in woody - weed management research including the use of fire in rangelands.

Prior to developing his consultancy business, Tony had responsibility for Queensland government programs in weed and animal pest management, for vegetation management for sustainable production and maintenance of biodiversity and landscape health, and for sustainable land and regional planning. He is a past Co-Chair of the Australian and Queensland Government Joint Steering Committee for Natural Resource Management which from 2001 to 2008 administered the National Action Plan for Salinity and Water Quality, and the Natural Heritage Trust in Queensland. Tony was awarded the Public Service Medal in 2007 for his contribution to the sustainable management of natural resources in Queensland.

**Ms Denzil Mills** (B.Com, M.Agric Sc.) Denzil has been associated with rangelands for more than 40 years in the Border Rivers and Western areas of Queensland, as a regional economist with the Queensland DPI and as a wool producer in far south-west Queensland and in the Traprock region. She has been actively involved in developing vegetation management guidelines with Inglewood Landcare and has assisted in developing a total quality management scheme with Traprock Wool, a group of 70 producers of fine wool. She has also been involved in a tourism business based near Carnarvon Gorge with a small group of wool producers. She is a past president of the Australian Rangeland Society, and maintains a strong interest in rangeland issues.

## REQUIRED TEXT BOOKS

There are no required textbooks for this course. Students are supplied with a book of readings that includes articles and other materials required for completion of learning activities and assessment items.

## ASSESSMENT

There are no 'examinations', just four (4) assessment items for this course.

### Assessment 1: Participation in online activities - 25%

Throughout the course you will be expected to complete three learning activities online. These will include developing your own wiki, responding to readings and other stimuli, an on-line and real-time tutorial, reading and responding to the postings of other students, and reflecting on your experiences in adaptive management.

### Assessment 2: Resource condition analysis – 20%

You will be asked to consider a rangeland property, enterprise or management situation with which you are familiar or in which you are interested. You will then make a condition assessment of its social/cultural, economic, and environmental resources or features, and identify the pressures and stresses on the management system.

### Assessment 3: Scenario for improvement - 30%

Using the resource condition assessment which you developed for Assessment Item 2, you will select one of the system problems and stresses which you identified on the enterprise system. You will then design a *scenario for improvement* for that stress, by developing several improvement options, and a testing regime to evaluate the management approaches.

### Assessment 4: Monitoring Plan - 25%

You will be asked to develop a monitoring plan for a program to support and test the options for improvement which you developed in the Assessment Activity 3. You will focus on key, practical matters, but consider social, economic and environmental issues.

## BACKGROUND TO THIS COURSE

The need for this course was identified by a national survey of education and skills needs for success in the rangelands. The course was developed by Rangelands Australia to provide a unique, rangeland-specific view of the need for adaptive management at all levels. The development of the course was funded by the Australian Department of Agriculture, Fisheries and Forestry through the National Landcare Program.

The structure, content and resources used in this course were influenced by producers from across Australia; consultants; policy makers at Local and State government levels; regional managers from state departments; and researchers from CSIRO Sustainable Ecosystems and The University of Queensland.

A draft of the course was reviewed by experienced rangelands professionals, including consultants, officers of the NSW Department of Primary Industries, members of the Centralian Land Management Assoc, CSIRO and University researchers.

## REVIEWERS' COMMENTS

External reviewers have provided the following general comments on a draft of this course:

*"The future of Australia and the sustainability of the rangelands are dependent on learning from practice and adapting management accordingly. The use of both expert academic and expert practitioner insights in the development of this course has ensured it reflects best practice in adaptive management. In combination, the course materials and assignments will provide rangeland managers with a solid grounding in adaptive management and its application in practice."* Post-doctoral Researcher, University of Queensland

*"This course is the first to comprehensively draw on 40 years of scientific research of Australia's rangelands and connect this with the recently developed 'adaptive management approach', to form a high quality, learning opportunity. It has high potential value to improve the living of outback people and to raise the profitability of rangeland businesses. It is highly recommended."* Senior scientist, CSIRO

*"The strength of this course is that it provides the know-how for people to manage all their resources in a more business-like way. It also helps different rangeland managers to understand why monitoring activities are done the way they are by different people and that there's no "right way".. This is a generally well produced, well written and comprehensive view of monitoring and adaptive management in rangelands."* Agricultural Management Consultant, Northern Territory

## COURSE EVALUATIONS

Students completing this course in 2009 were asked to evaluate the perceived relevance, practicality and quality of the course and its delivery (on 1-5 scale, with 1=strongly disagree and 5=strongly agree). The following average ratings were received:

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|--|---------|
| • Clear and relevant learning objectives                             | 5.0/5.0 |
| • Satisfied with the course content                                  | 4.5/5.0 |
| • Satisfied with the amount of contact with the Learning facilitator | 4.5/5.0 |
| • I gained new skills and knowledge                                  | 5.0/5.0 |
| • Learning and assessment activities challenged me to think          | 4.0/5.0 |
| • Course is well structured and components well integrated           | 4.5/5.0 |
| • Course is relevant to my workplace/business                        | 4.0/5.0 |
| • Course is relevant to my future in the rangelands                  | 4.5/5.0 |
| • Overall, I'm satisfied with this course                            | 4.5/5.0 |

Students have also provided the following general comments on this course:

- *"A thorough examination of the use of monitoring and adaptive management in rangelands, I was encouraged to think laterally, creatively and critically"*
- *"Highly relevant and practical approach to building rangeland body of knowledge. Should be compulsory for dept personnel working in natural resource management."*