

PROCEEDINGS OF THE AUSTRALIAN RANGELAND SOCIETY BIENNIAL CONFERENCE
Official publication of The Australian Rangeland Society

Copyright and Photocopying

© The Australian Rangeland Society 2014. All rights reserved.

For non-personal use, no part of this item may be reproduced, stored in a retrieval system, or transmitted in any form or by any means, electronic, mechanical, photocopying, recording, or otherwise, without prior permission of the Australian Rangeland Society and of the author (or the organisation they work or have worked for). Permission of the Australian Rangeland Society for photocopying of articles for non-personal use may be obtained from the Secretary who can be contacted at the email address, rangelands.exec@gmail.com

For personal use, temporary copies necessary to browse this site on screen may be made and a single copy of an article may be downloaded or printed for research or personal use, but no changes are to be made to any of the material. This copyright notice is not to be removed from the front of the article.

All efforts have been made by the Australian Rangeland Society to contact the authors. If you believe your copyright has been breached please notify us immediately and we will remove the offending material from our website.

Form of Reference

The reference for this article should be in this general form;

Author family name, initials (year). Title. *In*: Proceedings of the nth Australian Rangeland Society Biennial Conference. Pages. (Australian Rangeland Society: Australia).

For example:

Anderson, L., van Klinken, R. D., and Shepherd, D. (2008). Aerially surveying Mesquite (*Prosopis* spp.) in the Pilbara. *In*: 'A Climate of Change in the Rangelands. Proceedings of the 15th Australian Rangeland Society Biennial Conference'. (Ed. D. Orr) 4 pages. (Australian Rangeland Society: Australia).

Disclaimer

The Australian Rangeland Society and Editors cannot be held responsible for errors or any consequences arising from the use of information obtained in this article or in the Proceedings of the Australian Rangeland Society Biennial Conferences. The views and opinions expressed do not necessarily reflect those of the Australian Rangeland Society and Editors, neither does the publication of advertisements constitute any endorsement by the Australian Rangeland Society and Editors of the products advertised.



The Australian Rangeland Society

HOW UNIQUE IS THE CHANNEL COUNTRY?

D.G. Phelps

Department of Primary Industries & Fisheries, PO Box 519, Longreach Qld 4730

INTRODUCTION

Roberts (1996) cited the pastures of the Channel Country as the equal of any of the great flooded systems of the world – the Okavango Delta, the flooded Pampas and the Pantanal. However, anyone who has lived or worked in the Channel Country states that it is unique in the world. Is this really true? This paper compares and contrasts some features and issues of the Channel Country with areas identified by Roberts (1996) and with Red Creek, Wyoming, USA due to its similar hydrology (Schumann 1989). A Samuel and Eileen Gluyas Churchill Fellowship study tour (Phelps 2003a) is drawn upon in this précis.

THE CHANNEL COUNTRY, AUSTRALIA

The floodplains of the Channel Country comprise approximately 54,000 sq km of the Georgina and Diamantina Rivers and of Cooper Creek within arid inland Queensland and South Australia. The term 'Channel Country' was coined from the broad expanses of multiply-braided (anastomosing) channels which can flood out across plains up to 70 km in width. Native pasture growth following these irregular flood events can exceed 5,000 kg/ha of dry matter, with associated cattle liveweight gains similar to feedlot rates (Phelps 2003b). The area has been used primarily for cattle production by corporate and family operations on leasehold land since European settlement in the 1880s. A substantial proportion of cattle production is now certified organic. Areas of cropping in lakes have been attempted but generally failed to gain support. One attempt to establish an irrigation industry on Cooper Creek in the mid 1990s was stopped largely through local concerns over water extraction and chemical usage. Tourism and conservation have increased over the last 10-20 years. Perhaps the largest threat to natural integrity of the Channel Country is from altered water flows from infrastructure development at key locations, or from changes to overland flow rates e.g. large, fast, floods could down cut channels or accelerate sedimentation levels. Regionally based natural resource management plans (for both water and land) are either current or being finalised.

THE OKAVANGO DELTA, BOTSWANA

The Okavango Delta consists of multiple swamps, flood-outs and channels overlaying deep sands of the Kalahari Basin in northern, arid, Botswana. It is approximately 28,000 sq km in area (Ringrose *et al.* 1988) and is at similar latitude to Camooweal on the upper reaches of the Georgina River. Most of the water originates in Angola and flows into the Okavango Delta via the Okavango, Cubango and Cuito Rivers. Cattle grazing and limited cropping on communal land has dominated land use around the edges of the Okavango, but the prevalence of sleeping sickness carried by the Tze Tze fly has reduced human occupation within the delta until recent times. Tourism, hunting, fishing, conservation and the harvesting of native plants (e.g. palm leaves for basket weaving) are becoming large industries within the Okavango Delta, placing pressures on the natural resource base. Regional and international planning is now addressing these pressures. Perhaps the largest potential threat is reduction in water access as Angola embarks on large-scale irrigation. Changes to the structure and distribution of vegetation is also important to regulating flows, from slowing the passage of water over land in the upper catchments to filtering sediments and potentially diverting flows within streams themselves.

THE SOUTHERN PANTANAL, BRAZIL

The Pantanal is formed within the catchment of the Paraguay River, which drains into large areas of swamp and floodplain before continuing into the country of Paraguay and finally into the Paraná River in Argentina and the Atlantic. The southern Pantanal is sub-tropical, located at a similar latitude to

Camooweal. The Brazilian section of the Pantanal is approximately 130,000 sq km in size, stretching from Poconé in the north to Miranda in the south and hugging the Bolivian border to the west. The major land-use is cattle grazing on freehold land, although clearing for cropping and introduced pastures is occurring on higher ground, with cattle production becoming integrated to include feed lotting. Research is focusing more towards sustainable natural resource management.

THE FLOODED PAMPAS, ARGENTINA

The flooded pampas stretches inland for some 600 km from the central eastern seaboard of Argentina, occupying up to 550,000 sq km. It is mostly temperate, with annual flooding due to poorly defined river systems. The major land-use is cattle grazing on freehold land, with introduced grass, legume and tree species (such as *Lotus* spp. and *Eucalyptus* spp.) greatly increasing productivity over native tussock grass pastures. Cropping on the higher areas is becoming prevalent, reducing the area available for cattle grazing during the flooded months. There is also a push for increased productivity within the Pampas, with no resource management planning currently underway.

RED CREEK, WYOMING USA

Red Creek is a small (approximately 9 sq km) anastomosing stream within the Red Desert area of the Rocky Mountains inter-mountain basin. It is an endoreic (internally draining) system within high (cold) desert that floods annually to promote perennial shrubs on small floodplain areas adjacent to the main channel and anabranches. It is public land managed by the Bureau of Land Management for sheep grazing and hunting access. Mining for gas is becoming prevalent, and is likely to increase. Unlike many streams within North America, Red Creek is intact, with little evidence of down cutting. Many other flooded systems in the USA are now dysfunctional, with streambeds up to tens of meters lower than their original levels. Much of the down cutting is reported to have resulted from changed rates of overland flow, as well as grazing removing stabilising vegetation from the banks and within stream benches. In many cases, former naturally flooded meadows now have no possibility of streams flooding out again, floodplains having formed on shelves within the defined streambed instead.

CONCLUSIONS

The floodplains of the Channel Country have many similar resource management issues to other flooded systems of the world, including the potential for water diversion and the interruption to natural flood levels and distributions. The area subject to inundation is not the largest in the world, nor is the level of productivity the highest. However, it is unique in its combination of extensive and fertile clay soil floodplains with intermittent inundation within an arid environment. The desire and the ability for the community of the Channel Country to maintain relatively unaltered natural systems for cattle grazing, resisting both cropping and extensive areas of introduced pasture, also sets the area apart from the other great flooded systems of the world.

REFERENCES

- Phelps, D.G. (2003a). The Samuel and Eileen Gluyas Churchill Fellowship to study international floodplain pastures with similarities to the channel country of inland Australia. Report to the Winston Churchill Memorial Trust of Australia.
- Phelps, D.G. (2003b). Sustainable Grazing In The Channel Country Floodplains. A Technical Report on Findings Between June 1999 And August 2002. Report to Meat and Livestock Australia.
- Ringrose, S., Matheson, W. and Boyle, T. (1988). Differentiation of ecological zones in the Okavango Delta, Botswana by classification and contextural analyses of Landsat MSS data. *Photogrammetric Engineering and Remote Sensing* 54: 601-8.
- Roberts, B. (1996). The Value and Dynamics of Native Pastures of the Cooper Creek area (Chpt 4.12). In "An Ecological Perspective on Cooper's Creek: Summary Proceedings, Windorah Scientific Workshop". Noonan, D. Adelaide, Australian Conservation Foundation: 1-15.
- Schumann, R.R. (1989). Morphology of Red Creek, Wyoming, an arid-region anastomosing channel system. *Earth Surface Processes and Landforms* 14: 277-88.