

Submission on the Vegetation Management and Other Legislation Amendment Bill 2018

My submission on the Vegetation Management and Other Legislation Amendment Bill 2018 relates mainly to the management of ecosystems in agricultural production environments.

Historical Development

Prior to pastoral settlement the rangelands were influenced by seasonal conditions and fire. The fire regime was governed by natural fires (lightning) and indigenous burning. Wildfires were one of the main factors controlling the ecosystem.

With development of the colonies and changes in demographics of the indigenous population, two important factors relating to fire governed the changes in the ecosystem:

- (1) The reduction in indigenous burning, and
 - (2) The propensity of settlements and pastoralists to limit wildfires wherever possible.
- Although lightning ignition of fires did not change, there was often limitation of their spread by fire fighting. There was a long period before the natural role of fire in the rangelands was recognised.

The change in the fire regime following pastoral settlement resulted in a major shift in the ecosystem in relation to the balance of trees-shrubs-grasses/forbs. This was most obvious in the woodlands where the woody components (trees and shrubs) increased.

The early descriptions by explorers and pioneer pastoralists described the woodland regions as very open (e.g. pastoralists used the phrase “see a cow at mile country”). (There are also anecdotal accounts of Cobb & Co coaches having to wait for significant periods while passengers found enough privacy for comfort stops in the woodland country – when a vehicle stops now, you have to be careful the passengers don’t get lost!).

In some regions, the increase in woody plants was exacerbated in the 1920-30s by ring-barking the eucalypts which had increased. This resulted in a massive increase in shrubs (often dominated by false sandalwood (*Eremophila mitchellii*)) which created an even greater reduction in ground cover.

Contemporary Situation

There has been an overwhelming increase in the density and spread of woody plants in the woodland ecosystems in Qld. This has been the result of the decline in fire frequency and spread. Research by Qld DPI demonstrated that the natural canopy cover of woody plants was approximately 10%. Complementary to this research was the finding that when the canopy cover increases above 10%, there is an exponential decline in ground cover (grasses and forbs).

In most environments, it is ground cover (particularly perennial grasses) that is the most effective in mitigating excessive overland flow. Trees and shrubs compete with ground cover plants and the area around them remains bare – this predisposes that area to accelerated water erosion. In contrast, areas that are immediately adjacent to

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clearly defined riparian areas (particularly where there are steep banks), trees are the main vegetative component contributing to the maintenance of soil stability.

One of the outcomes of the skewed/unnatural balance of the tree-shrub-grass/forb components is the reduction in biodiversity, particularly at the ground flora level. A follow-on effect of this is a decline and change in the fauna that are dependent on the natural level of biodiversity and species richness in the ground flora.

As previously described, the ecosystems in the pastoral rangelands have often been modified by historical changes. For these ecosystems to function at their optimum in the plant-soil sphere (i.e. in relation to soil stability, nutrient cycling, water use efficiency), it is essential that the natural balance of the tree-shrub-grass/forb components be the goal for management. This relates to both the functioning of the ecosystem in all environments and primary production of livestock on pastoral rangelands.

Pushing/Lopping of Mulga

The pushing/lopping of mulga for fodder is a drought management option for producers in that zone. The pushing/lopping of mulga can be used to enhance the functioning of the ecosystem by:

- (1) Thinning of those trees that are in excess of the appropriate balance for the particular ecosystem.
- (2) Pushing trees/laying branches along the contour - to act as “contour banks” and to trap soil, organic matter and seed moved by overland flow (particularly for the hard red mulga soils).
- (3) Pushing trees/branches perpendicular to the dominant wind direction – to minimise accelerated wind erosion and to trap soil, organic matter and seed moved by wind (particularly for the soft red mulga soils).

Tree Clearing in Relation to Managing Ecosystems

Tree clearing regulations must be developed in relation to managing individual ecosystems. These ecosystems need to be understood in relation to all their components – and in this context, the appropriate balance for trees-shrubs-grass/forbs in each ecosystem. The focus needs to be on the whole ecosystem and on the land use/management allocated to that land. Tree clearing is a valuable tool for primary production where it is applied with an understanding of the historical changes in the ecosystem.

References

Alchin, B.M. (1983). Run-off and Soil Loss Studies on a Duplex Soil in Semi-arid South-Western N.S.W. *J. Soil Cons. Serv. N.S.W.* 39 (2):176-187.

Alchin, B.M. (1982). Soil Conservation and Reclamation of Aeolian Soils in Western New South Wales. In “Quaternary Dust Mantles of China, New Zealand and Australia”. (Ed. R.J. Wasson). Australian National University. pp. 243-247.

Submission on the Vegetation Management and Other Legislation Amendment Bill 2018

Alchin, B.M. (1980). Clearing and Cultivation on Aeolian Soil Types in Western New South Wales. In "The Aeolian Landscapes in the Semi-Arid Zone of South-Eastern Australia". *Proc. of the Aust. Soil Sc. Soc. Conf. on the Utilisation of Mallee Lands* (ed. R.R. Storrier and M.E. Stannard). pp. 229- 230.

Alchin, B.M. and Condon, R.W. (1991). A Framework for Research and Management of Woody Weeds in Australian Rangelands. *Proc. IVth International Rangelands Congress*, Montpellier, France. pp.511.

Alchin, B.M. (1996). Quantification of Long Term Vegetation Change in Rangelands. *Aust. Rangel. Soc. 9th Biennial Conf.*, Pt Augusta, SA.

Alchin, B.M. (1990). A Framework for Research and Management of Woody Weeds in Rangelands. *Aust. Rangel. Soc. 6th Biennial Conf.*, Carnarvon, W.A.

Alchin, B.M. (1986). Holistic Resource Management. *Aust. Rangel. Soc. 4th Biennial Conf.*, Armidale, N.S.W.

Alchin, B.M. (1982). Scrub Invasion in Relation to Conservation, Erosion and Landscape. *Aust. Rangel. Soc. Range Management Newsletter No.82/3* pp.18-19.

Harrington, G.N., Wilson, A.FD. and Young, M.D. (1990). Management of Australia's Rangelands. CSIRO.

Ludwig, J., Tongway, D., Freudenberger, D., Noble, J. and Hodgkinson, K. (1997). Landscape Ecology - Function and Management – Principles from Australian Rangelands. CSIRO.

Roberts, B. and Alchin, B.M. (1995). "Practical Landcare Techniques - Principles and Application". USQ Land Use Study Centre (177 pp).

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