



Contact: David Read

26 March 2010

Felicity Calvert
Natural Resource Analyst
Natural Resources Commission
Level 10, 15 Castlereagh Street
SYDNEY NSW 2000

Dear Ms Calvert

CALL FOR SUBMISSIONS ON CYPRESS FORESTS

Thank you for your e-mail of 1 March 2010 inviting a written submission on the Regional Forest Assessment of the South-Western Cypress State Forests and the "*Summary of Available Information*".

Attached are comments and considerations on this regional assessment by the Natural Resources Commission. These comments are based on many years of conducting flora and fauna surveys in these cypress forests by David Read and are directed towards improving the overall assessment process.

Please contact council staff on 1300 292 442 should you require additional information.

Yours sincerely

A handwritten signature in black ink, appearing to read 'Mark Gardiner'.

Mark Gardiner
Manager Environmental Sustainability & Regulatory Services

dr/ab

Regional Forest Assessment:

SOUTH-WESTERN CYPRESS STATE FORESTS

With regard to the above Cypress forest assessments by the Natural Resources Commission Council staff have read through the document titled: “Summary of Available Information and Call for Submissions, February 2010” and the following pages are their considered suggestions to be considered in this assessment.

- Page 12, 2.2.1, Key issues for submissions.** There is a fourth key issue that is not incorporated in the three stated issues. This issue is the fact that cypress forests are naturally successional forests progressing through five recognisable growth phases. These phases are:
1. A lack of any regular or annual seedling recruitment. Natural recruitment is characterised by major recruitment events that can be years or decades apart and can be very localised in area from only a few hectares to several hundred hectares. The trigger for these recruitment events tends to be major rainfall events that can be a single storm or more general rain over an extended period.
 2. The seedling recruitment is characteristically very dense and leads to a condition referred to as “lock-up” in which the seedlings do not grow and remain at a static height and density. This “lock-up” can be found in trees less than 2m high. The density is such that the ground underneath these seedlings has very little ground cover species resulting in very low biological diversity in these areas. Seedling “lock-up” is broken by mechanical disturbance such as from fire and wind storms. Seedlings not damaged or broken grow above the broken individuals in a more open canopy.
 3. This stage is a repeat of the “lock-up” but at a larger size. Likewise individuals stop growing and the closed canopy prevents grasses and other ground cover species from establishing a diverse ground cover. This stage can be repeated several times in the life of the forest and in each successive event the tree density is slightly less and the individual trees are larger.
 4. Fire. Fire in a cypress forest typically causes very high mortality and only a low proportion of trees survive at low densities.
 5. This is a forest with regrowth after devastation by fire or less frequently by severe wind storms and with dispersed “old grey” trees that are the survivors from the earlier recruitment.

Understanding this successional nature of cypress forests is essential to maintaining biodiversity across the landscape and across all land tenures.

Page 13, Table 2. Additional references to include here are:

- David Goldney has additional information on biodiversity in the Central West of New South Wales based on surveys done in 1990-1991;
- Jones, N., Sheahan, M., and Parker, D (2009). “Identification of priority local landscapes for conservation planning in the South west slopes bio-region”. Nature Conservation Trust of NSW (Albury) and Department of Environment and Climate Change (Queanbeyan); and
- Mapping work done by Marilyn Fox and published in *Cunninghamia*. This mapping work covers the southern Riverina.

Page 19, Key issues for submissions. The six key issues listed here are compartmental in structure and do not consider the forests at the landscape scale across the entire region. A seventh key issue in this section is the regional landscape context of biological diversity and forest management. White Cypress Pine forests are a mosaic of differing tree densities, age structure, and species composition. This is the case within State forests, National Parks, and on private properties. It is this patchiness that provides the foundation for the great diversity of flora and fauna species found within cypress forests.

Page 19, Table 3. Additional references to include here are:

- Journal articles dating from the early 1970s that investigate the integration of white cypress pine production into farming practices. Examples are by O. Kingma among other authors.

Pages 22, 29, 31, (Sections 4, 5 and 6). The patchiness of cypress forests is applicable to each of these sections and it needs to be considered at the landscape scale across all land tenures. Cypress forests must be managed so that they can successfully maintain and enhance biological diversity over the entire landscape and to achieve this it is critical that the mosaic of patchiness is also maintained and enhanced.

To maintain a successional mosaic across the landscape it is essential that the flora and fauna species associated with each successional stage are able to exchange genes with another patch of similar successional stage. This interchange of genes has to be possible throughout the landscape, particularly for species to survive the uncertainties of climate change. The cypress forests in New South Wales extend from the summer rainfall dominant region in the north to the winter rainfall dominant region in the south and, also, there is the west to east increasing rainfall gradient. For species to adapt and survive climate change it is essential that individuals or their genes are able to translocate through breeding or migration, from patches of diminishing suitability to patches of more favourable environments.

Page 30, Table 5. An additional reference to include here is:

- Aleksandra Rančić, Gabriel Salas, Amrit Kathuria, Ian Acworth, William Johnston, Ann Smithson and Geoffrey Beale, R.I. (2009). *Climatic influence on shallow fractured-rock groundwater systems in the Murray–Darling Basin, NSW*. Department of Environment and Climate Change NSW, Sydney.

This document contains detailed analyses of rainfall patterns across most of the eastern distribution of cypress forests during the period from the late 19th century until the present.

Monitoring

The attached image, labelled **Figure 1.3**) shows the earth's shrinking biosphere land area in (ha)/capita (Lund and Iremonger 2000, cited in United Nations Environmental Program (2005), *One Planet, Many People: Atlas of Our Changing World*. DEWA, UNEP: Nairobi.). Figure 3.1 illustrates the land area available to each person for the production of food and other resources that a person requires. During the 20th Century the world's increasing population has reduced this area from 7.91ha in 1900 to only 2.15ha in 2000. This small area is getting even smaller as the world's population, and Australia's in particular, continue to rapidly expand. The Figure underscores the critical need for careful management of our biological resources for future generations.

No one can predict the long-term future. All we can do is plan and manage for a range of plausible outcomes. However, only with the passage of time will it be possible to determine which of the plausible management strategies provided the most satisfactory outcomes for the environmental, social and economic objectives. In cypress forests it may take 40-60 years before it becomes evident as to which management strategy is the most successful.

An imperative of this Natural Resources Commission Assessment of south-western cypress state forests is to establish a long-term monitoring programme at the landscape scale that would provide an evaluation of several different management strategies. This monitoring programme would be applied across all land tenures and would compare at least four different management strategies. Variables to be considered in this mix of strategies would include patch size, variation in patch size, distance between similar patches, tree density within patches, vegetation structure within patches, biological diversity within patches and management history of patches. Some of the relevant management techniques to include in the monitoring programme would be thinning practices, fire frequency and seasonal timing of fires, tree density after harvesting, techniques and frequency of harvesting, and natural or planted regeneration after harvest. Other relevant variables to include are rainfall intensity, frequency and total amount and soil type.

This monitoring programme will guide future generations on the best way to manage the cypress forests. Should outcomes of this Assessment process be recommendations of various management strategies without a monitoring programme, and at some time in the future these strategies fail, then the people living then would not have the information necessary to understand the reasons for the failure. Also, the failure would occur at a time when the increased population would be having far greater demands on natural resources than today's requirements.

