LAKE ARGYLE FRINGING FORESTS

by C.C. Done

BACKGROUND

With the filling of Lake Argyle in 1972/73, some 700 square kilometres of land was covered by water. Much of the land was degraded pasture land with extensive areas of tree savannah and sparse low tree savannah dominated by various species of eucalypts (e.g. Eucalyptus brevifolia, E. pruinosa and E. terminalis), several species of Terminalia and other genera.

Creeks and rivers through the area would have carried a relatively narrow belt of riverine forest largely composed of E. camaldulensis, E. microtheca, Terminalia platyphylla, Tristania grandiflora and others backed by E. papuana, E. confertiflora etc.

These trees were of course killed by the permanently risen water level and large areas of dead trees in the shallows of the lake bear testimony to this.

A foreshore at R.L. 90.53M (full storage level) of some 400 kilometres has been created and because of seasonal fluctuations from up to a couple of metres above R.L. 90.53M at the end of the wet season (around April) to possibly one or two metres below R.L. 90.53M at the end of the dry season (around December) large areas of land are subject to seasonal flooding somewhat similar to conditions which occur along rivers in the adjacent area. One consequence of this has been the colonisation of some areas by 'riverine' species.

RECONNAISSANCE SURVEYS

Only brief reconnaissance work has been done on these fringing forests by this Department.

In the first instance a ground reconnaissance was made of the Ord River backwater from Lissadell Station in April, 1981, and a reconnaissance flight was made (with the Department of Agriculture's ornithologist) in August, 1981.

THE FRINGING FORESTS

The species occurring in the fringing forests are mainly E. camaldulensis and E. microtheca and the seed source is likely to be riverine forests along rivers and major creeks flowing into the lake. Some development of Melaleuca leucadendron is also occurring but this is still small (1 to 1.5m tall) because apparently it was largely wiped out in the very dry 1979/80 season.

The most extensive development has occurred near to the mouths of the rivers and major creeks with less dense and younger stands occurring

more remotely from these areas. The major rivers are the Behn, Ord and Bow, and some of the major creeks are Stockdale and Smoke.

Fringing forests have developed in strips up to 100 metres wide near the rivers and major creeks where gently sloping land is subject to seasonal inundation, but the bands are much narrower in the more recently colonised areas.

Where seasonal inundation is occurring over heavy black clay soils, there is as yet no apparent development of fringing forests. However, it is likely that E. camaldulensis will eventually be able to colonise these areas subject to seed sources being available. Other species, such as Terminalia arostrata, could also eventually get going here.

At least some fringing forest appeared to be developing on all lighter soil types, despite being a very long distance from recognisable seed sources in some cases.

Very extensive fringing forests are developing up the Ord and Bow river backwaters and the old Lissadell homestead site is rapidly becoming a forested parkland area. Extensive development is also occurring around the Smoke Creek backwater.

Most development and potential development of fringing forests is on the southern and eastern foreshores of the lake, since the western foreshore is much more rugged and steeply sloping.

It is not possible to estimate the area on which fringing forest is developing and on which it has the potential to develop at this stage.

Behind the fringing forests, especially in the southern areas, there are very extensive bands of 'prickly wattle' (mainly Acacia farnesiana) which are virtually impenetrable to stock, man and vehicles.

THE FUTURE

With the likelihood of developing Lake Argyle as a source of hydro-electric power for the Kimberley diamond mining operation (likely to go into fullscale production in 1985) and Kununurra and Wyndham, the level of the lake will be raised probably six metres sometime prior to 1985. This will, of course, eliminate all presently developing fringing forests but will allow the development of new, even more extensive tracts.

The potential exists to manipulate the new forests before they start by introducing desired species, spacing etc., before natural development occurs.

It is likely that the new fringing forests will very quickly establish over much larger areas that those which currently occur because seed will be becoming available from the current fringing forests, especially of E. camaldulensis.