

Fringing Vegetation, Components in the Riverine Landscape

Speaker: Mr. L Penn

Background

Luke Penn is a professional officer at the School of Biological and Environmental Sciences, Murdoch University. He is interested in all aspects of riverine ecology, especially in relation to environmental management. His Honours studies were on the fringing vegetation of the Swan and Canning Rivers, and he subsequently studied the ecology of the Canning River wetlands in detail. His present work involves a series of investigations into the biologies of freshwater fish of south-western Australia and he has authored or co-authored bulletins, reports and scientific papers on fringing vegetation in south-western Australia. He is currently in the last stages of his Ph D studies.

Introduction

Much of the natural landscape of the Swan and Canning Rivers consists of the peripheral vegetation remaining along the foreshore and flood plains of these rivers. This vegetation does not comprise one plant community contributing a single landscape form, but rather it consists of a number of plant communities, each contributing a very different landscape component to different regions of the rivers. Detailed descriptions of this vegetation have been given by Penn (1983) and Brock and Penn (1984). For this document only the major plant communities, known as complexes or communities (Penn 1981, 1983), together with their dominant and therefore characteristic species, will be used to describe the different landscape components of the Swan and Canning Rivers.

The fringing forest landscape

In estuarine areas fringing forest is mostly low (<15 m), dense and often of uniform appearance. In the freshwater sections of the rivers the forest is taller, sometimes reaching over 30 m, and is more open and variable in appearance.

The estuarine forest

In highly saline sections of the Swan estuary (below Guildford on the Swan and below the Kent St. Weir on the Canning) the Casuarina-Melaleuca Complex, dominated by the small trees *Casuarina obesa* (swamp she oak) and *Melaleuca raphiophylla* (swamp paperbark) are to be found, either fringing saltmarshes or estuarine waters. When salinity is reduced by natural freshwater flushing, the Melaleuca-Juncus Complex thrives. Here *Casuarina obesa* is absent and the understorey is dominated by rush, *Juncus kraussii* (shore rush). In peripheral zones receiving large volumes of water via creeks or more commonly man made drainage systems, *Juncus kraussii* is replaced by a variety of other native plants, and recently by numerous weeds, associated with freshwater conditions. This gives rise to the Melaleuca (Swamp) Complex.

The upstream freshwater forests and woodlands

In more freshwater upstream sections of the river estuaries and further upstream along the rivers themselves, the fringing forest of the the rivers forms, with *Melaleuca raphiophylla* the Eucalyptus-Melaleuca (Riverbank) Complex. Although it is abundant on the adjacent flood plains, clearing and livestock damage have removed all the native understorey species in most areas. A small representative stand of this floodplain vegetation remains today on the Canning River near Ferndale (Brock and Penn 1984). However, in most areas it

remains only as a grassy woodland of *Eucalyptus rudis* and is mainly used for parkland or for the grazing of livestock. It is the large relic eucalypts of these woodlands which form the dominant landscape component of the upper Swan River.

Saltmarsh

Where a flood plain becomes inundated regularly by saline water causing the deposition of salt by evaporation, saltmarshes develop. Typical saltmarsh vegetation is low and flat, consisting of either decumbent shrubs of no more than 0.50 m in height or shrubs or rushes mostly less than 2 m in height. The vegetation is often dark in colour and highly uniform in appearance.

There are three complexes and three communities comprising saltmarsh vegetation.

In the most saline zones of saltmarshes, the vegetation is characterised by succulent plants known as samphires. The Halosarcia Complex is dominated by the shrub-form samphires *Halosarcia halocnemoides* and *H. indica bidens* and the Sarcocornia Complex by the decumbent shrub *Sarcocornis quinqueflora* (samphire). Rarely found along the estuary is the *Sarcocornia blackiana* Community. Where tidal inundation is more frequent, causing lower salinities, the *Juncus kraussii* Complex occurs, forming quite extensive rush stands.

Recently, the two introduced species, *Typha orientalis* (bulrush) and *Bolboschoenus caldwellii* (clubrush), have invaded saltmarshes. They exploit reduced salinities over the winter to summer period brought about by stormwater runoff, while remaining dormant over the high salinity period of late summer and autumn. *Typha orientalis* is less tolerant of high salinity than *B. caldwellii* enabling them to co-exist separately on the same saltmarsh. Such is the success of these two species that they characterise their own communities, totally displacing the native species.

Fringing vegetation

The tall sedge *Schoenoplectus validus* and the bulrush *Typha orientalis* both form fringing communities along the upstream sections of the estuary. In more saline areas their occurrence is often associated with stormwater outlets. *Schoenoplectus validus* forms a single species community, mostly occurring as a narrow band one to three metres wide, about one to two metres from the river bank, and is virtually absent along the Canning River.

Conservation

Issues relevant to the conservation of the various plant communities of the peripheral vegetation of the Swan and Canning Rivers have been discussed elsewhere (Penn 1983, 1987; Brock and Penn 1984). It is necessary here only to mention that while examples of all the plant communities of the estuarine and riverine peripheral vegetation remain today the representation of some of them is perilously small (Penn 1983, 1987). Therefore, landscape projects, utilising the local native species, would be very useful in increasing the representation of some of the more threatened communities.

References

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