FLORA

WETLAND RUSHES AND SEDGES

By Kathy Meney

MOST people probably associate wetlands with tall, soft-grey flooded gums, mystical paperbarks, and perhaps a host of colourful flowering wet heath shrubs such as *Astarteas, Kunzeas, Pericalymmas*, all of which we usually know to generic level. Then we usually have a leftover bag of rushes, sedges, or 'reedy things', which have an ugly duckling reputation, a mysterious ecology and a downright unforgiving taxonomy. We usually can't even pick the families in many cases.

Well, lets take a different perspective on these super-subtle plants. This difficult group of emergent macrophytes are among the best indicators of microsite variation in a wetland, with changes in dominance reflecting soil type boundaries, hydrological variations, nutrient levels, organic matter content, pH changes, salinity, light penetration and many other ecological variables. The zonation of individual species often reflects spatial changes on the scale of centimetres, which are closely linked to rooting depth, hydroperiod and waterlogging/drought stress tolerances. Once you strike up a relationship with these plants, you should be able to pick a eutrophic wetland from a nutrient-poor one, a mineral-based wetland from an organic one, and pretty well mark the true wetland boundary by their distribution. You can't get that from a paperbark!

The wetland rushes, sedges and reeds fall into four main families, Typhaceae, Juncaceae, Cyperaceae and Restionaceae. Most will be familiar with Typhaceae, which comprises the introduced and highly invasive species, *Typha orientalis* alongside our native species, *Typha domingensis*. These bulrushes or 'cumbungi' are true reeds, distinctive by their large chocolate brown inflorescences and strap-shaped leaves. They are classic indicators of nurient-enriched environments, resprout rapidly after fire, have high seed viability (usually 80 - 90% in *T. orientalis*) and an extraordinary high growth rate. *Typha orientalis* is the supreme weed in the wetland of the south-west, limited only by salt, phosphorus and permanent water.

Leptocarpus scainosus
Photos courtesy of Kathy Meney.

The Juncaceae are a diverse group of rushes, which are characterised by terminal usually compound inflorescences, comprising massive amounts of small seeds within papery capsules. The shore rush, *Juncus kraussii*, and pale rush, *J. pallidus*, are among the most common species in the south-west. These plants rarely occur in permanent water, but range from permanently moist to seasonally wet habitats. Many are salt-tolerant, and all flourish in nutrient-enriched conditions. They are usually dominant in organic-based wetlands.

Baumea articulator

The Cyperaceae are the sedges, which are a large and complex cosmopolitan group. Many wetland species are serious weeds in WA. The most common genera in wetland habitats are *Baumea, Lepidosperma, Schoenoplectus, Carex* and *Cyperus*. The sedges are an interesting group because of their diverse biology and habitat requirements. The genera *Baumea*, *Lepidosperma* and *Schoenus* are infamous for their

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difficulty to propagate, due to extremely low viable seed production rates (sometimes no more than 10-20 seeds per plant), and low germinability (10-30%). These species can now be grown well via tissue culture, using extracted embryos.

In contrast, *Carex*, *Schoenoplectus* and *Cyperus* species generally produce abundant seed, as well as maintaining a strong clonal growth ability, which will germinate readily if sown in high temperature conditions. It is of interest that the poor seed producers are generally associated with more nutrient-poor habitats and may reflect a preferential shuffling of scarce resources to rhizomes, which ensures perpetual growth, rather than to seeds. However, there are certainly some species which have suffered genetic bottlenecks due to isolation and fragmentation of wetland habitats, which has reduced the ability of these wind-pollinated species to cross-pollinate.

A final and most remarkable group are the Restionaceae, also commonly referred to as rushes. They are often confused with the Cyperaceae, but are readily distinguished by a divided leaf sheath (sedges are tubular), and most have nodes along the culm. They are invariably associated with nutrient-poor, mineral-based wetlands, and are widespread along the south-coast. Most species are confined to the seasonally wet zone of basin wetlands, tolerating temporary flooding (usually 3 months) and summer drought. Other riparian species, such as *Meeboldina coangustatus*, occur in the bed of permanent or seasonal streams and rivers. Some are resprouters, but most of the wetland species are seeders. Because this group occurs in an environmentally extreme wetland zone, the species diversity is higher than within the permanently wet zone, where only a few species dominate over large areas. Unfortunately, this wetland zone is also frequently cleared, and many Restionaceae have virtually disappeared from urban wetlands.

The trick to identifying the Restionaceae is to buy the identification guide, due to be released in September this year. Until then, don't ignore the rushes and sedges in your wetland vegetation surveys, and have a second go at identifying them. If you want some of the elegant species for your garden or for wetland rehabilitation phone Regeneration Technology on 9451 0830 for a copy of our species list.

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