A unique flora

The seagrass flora of Australian marine waters has a particularly diverse and magnificent range of species; 36 species out of 72 species worldwide, and all but one of the genera. The presence of so many species is partly due to Australia spanning both tropical and temperate bioregions but also because of the abundance of endemic species. These endemics include the Australian *Posidonia* species and both *Amphibolis* species. This level of endemism is unusual as most seagrass species have broad geographic ranges; *Zostera marina*, arguably the best known seagrass around the world, grows across virtually the whole of the Northern Hemisphere in temperate waters.

Amphibolis is the only genus endemic to a single continent, and represents a remarkable adaptation to the cooler water, higher energy (i.e. waves) environments of southern Australia. The closest relatives of *Amphibolis* are predominantly tropical: *Thalassodendron*, *Cymodocea* and *Syringodium*. The Australian *Posidonia* species are all endemic and include a group, the *Posidonia ostenfeldii* 'complex', adapted to survive in southern ocean waters exposed to highly mobile sands and waves.

This diversity has likely evolved through the geographic isolation of the Australian continent. Australia was part of the supercontinent Gondwana during the time of the dinosaurs, but 60 million years ago continental drift moved it away from the other 'southern continents'. Like kangaroos and koalas on the land, new species of seagrasses are likely to have evolved during this long period of isolation. In addition, new species may have evolved through adaptation to a particular environment. Both *Amphibolis* species and members of the *Posidonia ostenfeldii* 'complex' show adaptations to survive in high-energy environments.