Pioneering Conservation of Aquatic Ecosystems under Australian Law

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Abstract : Australia's Environment Protection and Biodiversity Conservation Act (EPBC Act) is the premiere, national law under which species and 'ecological communities' (i.e., like ecosystems) can be formally recognised and 'listed' as threatened across all jurisdictions. The listing process involves assessment against a range of criteria (similar to the IUCN process) to demonstrate conservation status (i.e., vulnerable, endangered, critically endangered, etc.) based on the best available science. Over the past decade in Australia, there's been a transition from almost solely terrestrial to the first aquatic threatened ecological community (TEC or ecosystem) listings (e.g., River Murray, Macquarie Marshes, Coastal Saltmarsh, Salt-wedge Estuaries). All constitute large areas, with some including multiple state jurisdictions. Development of these conservation and listing advices has enabled, for the first time, a more forensic analysis of three key factors across a range of aquatic and coastal ecosystems: -the contribution of invasive species to conservation status, -how to demonstrate and attribute decline in 'ecological integrity' to conservation status, and, -identification of related priority conservation actions for management. There is increasing global recognition of the disproportionate degree of biodiversity loss within aquatic ecosystems. In Australia, legislative protection at Commonwealth or State levels remains one of the strongest conservation measures. Such laws have associated compliance mechanisms for breaches to the protected status. They also trigger the need for environment impact statements during applications for major developments (which may be denied). However, not all jurisdictions have such laws in place. There remains much opposition to the listing of freshwater systems - for example, the River Murray (Australia's largest river) and Macquarie Marshes (an internationally significant wetland) were both disallowed by parliament four months after formal listing. This was mainly due to a change of government, dissent from a major industry sector, and a 'loophole' in the law. In Australia, at least in the immediate to medium-term time frames, invasive species (aliens, native pests, pathogens, etc.) appear to be the number one biotic threat to the biodiversity and ecological function and integrity of our aquatic ecosystems. Consequently, this should be considered a current priority for research, conservation, and management actions. Another key outcome from this analysis was the recognition that drawing together multiple lines of evidence to form a 'conservation narrative' is a more useful approach to assigning conservation status. This also helps to addresses a glaring gap in long-term ecological data sets in Australia, which often precludes a more empirical data-driven approach. An important lesson also emerged - the recognition that while conservation must be underpinned by the best available scientific evidence, it remains a 'social and policy' goal rather than a 'scientific' goal. Communication, engagement, and 'politics' necessarily play a significant role in achieving conservation goals and need to be managed and resourced accordingly.

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