Nurseries and movement patterns of rays at Ningaloo Reef, Western Australia

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Little information is available on the movements and behaviour of rays despite their important ecological role and economic significance both as a fishery and a tourism resource. Our study provides the first description of the movement patterns and site fidelity of rays within a coral reef environment in the lagoon of Mangrove Bay at Ningaloo Reef, WA. We focused on the use of nursery areas and contrasted movement patterns of juveniles with those of adults. We used acoustic telemetry to describe movement patterns of 22 individuals of eight species that were monitored for 1-21 months. We found that juveniles utilized a small shallow area (< 1 km^2) within Mangrove Bay that was the focus of 60-80% of total activity, although all species and size classes moved throughout the array and beyond the lagoon to the open reef front. All were present within the array throughout the period of the study. Adult rays showed larger ranges of movement and primary sites outside the lagoon. Long-term use of coastal lagoons by juvenile rays suggests that they provide an important habitat for this portion of the life history.

Investigation of nutrient thresholds for ecological regime change in the Vasse-Wonnerup Estuary in south-Western Australia

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Recent literature suggests that the initial concept of two contrasting ecological regimes (macrophyte or phytoplankton-dominated) in nutrient-enriched shallow lakes should be extended, based on observations that such systems may be dominated by free-floating plants, submerged charophytes, submerged angiosperms, green algae or cyanobacteria at different points along a gradient of eutrophication. The implications of this for management and restoration are that different levels or thresholds of a controlling variable (such as nutrients) may be necessary to cause a shift in dominance depending on the characteristics of the dominant taxa. Each of the plant types listed above occur simultaneously in spring in different locations in the Vasse Wonnerup Estuary. This paper explores the drivers for dominance of different plant communities in these shallow waterbodies, focussing on potential thresholds (particularly total phosphorus concentrations and N:P ratios), that might explain the efficacy of nutrient reduction measures, the likelihood of catastrophic loss of macrophytes from the wetlands or guide restoration of macrophytes in currently phytoplankton-dominated systems.

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