

**SELECTION OF PRIORITY AREAS FOR THE
CONSERVATION OF WESTERN AUSTRALIAN
COASTAL FISHES**

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degree of Bachelor of Science (Honours) in Marine Science

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ABSTRACT

Along the extensive coastline of Western Australia, there are only seven multiple use marine parks and one marine nature reserve. In 1994, a further 70 candidate areas suitable for protection were identified and form the basis of ongoing efforts by the Department of Conservation and Land Management to establish marine protected areas. These areas were selected using a 'delphic' approach, based on their conservation, scientific and recreational value. With the emerging science of marine reserves and the controversy surrounding the selection methods, it was appropriate to revisit the Western Australian scenario and test the effectiveness and efficiency of a range of selection methods with the aim of identifying areas of conservation importance for neritic fishes. Fishes were used as there was relatively complete distribution data available and because previous studies have shown that fishes are a reliable surrogate for general biodiversity in marine systems.

A database of all known Western Australian neritic fishes was developed and was subjected to a range of analyses. Initially patterns of species richness, endemism and biogeography were determined. These were used to select areas of conservation importance using species richness 'hotspots', endemism 'hotspots' and biogeographic selection. Complementarity analysis was also performed and the four methods were compared to determine the most efficient.

Complementarity analysis was the most efficient selection method of those tested. This method was further developed to consider only endemic species and to test the efficiency of the current and proposed system of marine protected areas in Western Australia. Overall, this project identified that broad areas of conservation importance for Western Australian neritic fishes occur on the north, west and south coasts and the main gaps in the current and proposed system of MPAs are on the north and south coasts.