



## **Deeper Water Fish and Benthic Surveys in the Lord Howe Island Marine Park (Commonwealth Waters): February 2004**

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**Cover Image:** *Lord Howe Island looking south from Malabar Ridge to Mt Gower and composite images of the benthic habitats in the deeper waters of the Marine Park (Photos by Peter Speare).*

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## EXECUTIVE SUMMARY

The Lord Howe Island and Balls Pyramid rises, 770 km ENE of Sydney (31°30'S, 159°05'E), are the most southerly of a chain of volcanic seamounts and are remarkable for supporting the highest latitude coral reefs in the world. The World Heritage listing, encompassing Lord Howe Island, the Admiralty group and Balls Pyramid, overlaps sections of the NSW State Marine Park to 3nm offshore and the Commonwealth Marine Park to 12nm offshore. The Commonwealth Marine Park has two sanctuary zones, one to the east of the island and the other across the rise south of Balls Pyramid. The primary objective of the Parks is to protect the conservation values of the seamount system associated with marine biodiversity, seafloor habitats and ecological processes.

In February/March 2004, the Australian Institute of Marine Science undertook surveys of benthic habitats and fish faunas in the deeper waters, below the depth limits of SCUBA observations (30 – 200m) where little information was previously available. These surveys were carried out predominantly in the Commonwealth waters of the Lord Howe and Balls Pyramid rises. A towed underwater camera array was used to obtain video and still images of habitats and epibenthos, and baited remote underwater video stations (BRUVS) were used as a non-extractive method to sample the fish and shark fauna. This preliminary, rapid ecological assessment aimed to describe habitats and fish-habitat associations in these deeper waters.

The surveys identified a fossil coral reef surrounding Lord Howe Island as a significant and extensive habitat type supporting low, sparse stands of brown and green algae. This hard limestone substratum extended to around 45m depth and onto a sandy seafloor devoid of epibenthic structure. Sand, and in the deeper waters of the shelf slope, low profile sand waves extended between the fossil reef and the shelf break. The deeper waters of the outer shelf, in depths of 60–100m and below, were predominantly unconsolidated sandy seafloors which supported communities dominated by gorgonians where rubble, stone or bedrock was exposed and allowed their attachment. These communities continued beyond the shelf break and onto the steeper slopes.

The steep shelf slopes had finer silty sediments flowing down between bedrock outcroppings and comprised the most topographically complex habitat seen in the study. The outcrops, walls and overhangs extended down to 200m and were inhabited by numerous fish. Of all the video tows, the surveys in this habitat, below the limits of sunlight penetration, produced the most sightings of fish – most notably large kingfish, *Seriola lalandi*, redfish, *Centroberyx* sp., rosy jobfish, *Pristipomoides multidens*, and large unidentified groupers, Epinephelinae. These species are fished by islanders with droplines and jigs in this habitat.

Hard seafloors with attached algal communities were recorded on the shelf south of Balls Pyramid to a depth of 42m. Hard corals were relatively common in this area with 44% of all the solitary corals recorded on the one video tow.

Three new fish records were made for the island in the baited video surveys. These were the smooth hammerhead shark, *Sphyrna zygaena*, the lancer *Lethrinus genivittatus*, and the