

# THE SCIENCE BEHIND MARINE PARKS

by John Turnbull\*

Australians love our coast. Almost 90% of us live within an hour's drive of the ocean. Once there, we swim, surf, boat, fish, snorkel, dive or just play on the beach. Our coastal lifestyle is deeply ingrained in our culture, even in our National anthem, and is something we want to preserve for generations to come.

Protecting our coastal lifestyle means ensuring our seas are clean and healthy, and conserving our wonderful marine life. Marine Parks are one of the best conservation tools available to us. By developing management plans and putting aside areas specifically for biodiversity conservation, we can restore the natural balance of our marine ecosystems.

The science that supports Marine Parks, and particularly sanctuary zones, is overwhelming. There are too many supporting scientific papers to quote here, but a few recent ones are:

NSW, October 2015; sanctuary zones increase abundance of target species; large zones do this more quickly than smaller ones.

Sydney, July 2015; two studies show local fully protected areas have seven times the abundance of large fish, three times the diversity of large fish and 50% more diversity in target species (Ferrari and Johnston, in preparation for publication).

NSW, June 2015; snapper in marine sanctuaries are larger and more abundant, with 58% more fish of legal size.

Photo by John Turnbull



*Eastern blue groper are our NSW state emblem and are famous for their curiosity. But we have another bluey in our waters; smaller, more shy but with a beautiful blue translucence. Blue morwong have become increasingly rare and are classed as overfished by DPI, but you can still find them in small numbers, particularly in sanctuary zones like this big one in Fairy Bower.*



Photo by John Turnbull

A researcher records fish species at Cabbage Tree Bay.

Worldwide 2014; study of almost 2,000 sites shows sanctuary zones have an average of five times the biomass and twice the diversity of large fish.

In 2014, 222 marine scientists signed a public statement in NSW emphasizing "sanctuary zones ... must be the corner stone of marine conservation ... to help reverse the decline in marine health, build resilience of marine life to climate change and serve as buffers against overharvest which often occurs under conventional fisheries management."

Today, NSW has six Marine Parks: Lord Howe Is, Byron Bay, Solitary Islands, Port Stephens, Jervis Bay and Batemans Bay.

There is, however, one marine bioregion wholly in NSW which does not have a Marine Park; Hawkesbury, including Sydney. In 2012, the Independent Scientific Review of NSW's Marine Parks recommended that this gap in marine protection be addressed as a matter of priority. The NSW Government is currently conducting an assessment to determine how and where to situate a Marine Park in the region.

Marine Parks balance recreation with conservation. They are "multi-use" which means that recreational activities are permitted throughout most of each park. A well-designed management plan balances the conservation of marine biodiversity with the various activities such as boating, diving, fishing and research. Our existing Marine Parks have some of the best marine life and recreational opportunities available in NSW.

Marine Parks are like money in the bank; the increases in biodiversity and biomass are investments that preserve marine species and build resilience. The science supporting Marine Parks, and particularly sanctuary zones, has never been stronger.

As more of us live along our coasts, it is increasingly important that we manage our fragile marine ecosystems properly. We owe this to each other, to share fairly our incredible marine life. And we owe it to future generations, who will inherit the legacy of the decisions we make today.

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*This mixed school of four species (two kingies, old wives, trevally and a 3-bar puffer) has been stable in this composition and location for several months at Cabbage Tree Bay in Sydney.*

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