

## **Sydney reef study finds partial protection zones failing to protect fish**

A 2015 survey of marine life on Sydney's rocky reefs has revealed that partially protected aquatic reserves are failing to protect fish. Fully protected no-take zones, like the reserve at Cabbage Tree Bay in Manly, had a greater abundance and diversity of large fish. The survey found that aquatic reserves with only partial protection were no better than unprotected areas in terms of both the number of fish species and number of large fish (sized 25cm or more).

In March this year, 12 volunteers including several marine scientists conducted extensive marine life surveys in the Sydney region using the Eureka prize winning Reef Life Survey method. The divers completed over 40 surveys across 25 sites sponsored by Sydney Institute of Marine Science (SIMS) and managed by Underwater Research Group (URG) of NSW.

"The survey confirmed that the Sydney region has incredibly high fish biodiversity," Professor Emma Johnston, Director of the Sydney Harbour Research Program, said. "Almost 600 species of fish have been recorded from Sydney Harbour alone, which is more than for the whole UK coastline."

Two separate analyses of the survey results by the Sydney Institute of Marine Science (SIMS) and the Coastal and Marine Ecosystems Group (CMEG) at the University of Sydney found interesting trends in the data. CMEG looked at the difference in overall fish diversity and abundance of targeted fish across fully protected, partially protected and unprotected areas in the nearshore waters of the Hawkesbury shelf bioregion.

"It's not only large fish that are affected by fishing," explained Dr Renata Ferrari from Sydney University, "Fully protected reserves had 50% more species than partially or unprotected sites. The difference was striking when we looked at the abundance of fish targeted by fishers, we found twice as many inside fully protected areas as compared to both partially and unprotected sites, especially for species like yellow-tail scad, luderick and red morwong. "

"Interestingly, the number and size of blue groppers, a species partially protected regardless of where it is found, was not different across levels of protection, suggesting that directly protecting a species can also be effective," Dr. Ferrari added.

"The only reserve near Sydney that has full protection from all forms of fishing had seven times the abundance of large fish and three times the number of large fish species compared to unprotected or partially protected areas," Professor Johnston said.

"Large fish are great to look at but they are also important for ecosystem health. With so few fully-protected areas it is difficult to draw strong conclusions for the Sydney region but global assessments have found that no-take sanctuary zones are an effective method of increasing the abundance of large fish" Professor Johnston said. "This new data suggests that to increase fish species richness and size, more fully protected aquatic reserves should be trialled in the area."

**For further comment contact:**

- **Professor Emma Johnston, Director of the Sydney Harbour Research Project, Sydney Institute of Marine Science on 0423 236 411**
- **Renata Ferrari, Postdoctoral Research Fellow Spatial and Quantitative Ecology, Coastal and Marine Ecosystems Group, School of Biological Sciences, The University of Sydney on 0425 676 050**