

# Forging the links

## CURRENT RESEARCH PROJECTS

### **Assessing the social values of white shark cage-diving within the sanctuary zone of the Neptune Island group (Ron and Valerie Taylor) Marine Park.**

Kirin Apps, PhD student, Southern Cross University, NSW  
Dr Charlie Huveneers, Flinders University, SA

PhD Thesis 2014-2017

The social value of a marine protected area and its corresponding wildlife is comprised of beliefs that include the intrinsic value of nature as well as values that enrich the intellectual, psychological, emotional, spiritual, cultural and/or creative aspects of human existence and well-being. Such values have been fundamental to the acknowledgment and protection of places, with natural, historic and cultural importance, by many cultures for millennia.

Social research on white shark cage-diving participants at the Neptune Island group (Ron and Valerie Taylor) Marine Park was considered as an appropriate case study to evaluate the social value of the sanctuary zone and the marine park from the perception of the white shark cage-diving tourists.

This project will explore the need for a clear, shared understanding of the social value of the Marine Park and will create links between the ecological system and the perceptions and viewpoints of white shark cage-diving tourists. This approach, is proposed to encourage long-term understanding of the socio-ecological system within the marine park. The project provides a rare opportunity to document shark tourism participant's knowledge and values of the Neptune Island group at two critical points, before and after the establishment of the sanctuary zone in October 2014. The values and knowledge of white shark cage-diving participants may indicate the extent of support for conservation issues and the establishment of the sanctuary zone. Understanding why tourists value viewing white sharks in the marine park will ultimately equip managers with an informed understanding of these spaces and influence management decisions.

### **Description of fish assemblages in key Sanctuary Zones and other protected areas prior to zoning implementation in South Australia's Marine Parks.**

Sasha Whitmarsh, PhD student, School of Biological Sciences, Flinders University SA  
Dr Charlie Huveneers, School of Biological Sciences, Flinders University SA  
Professor Peter Fairweather, School of Biological Sciences, Flinders University SA

PhD Thesis 2014-2017

South Australia's marine waters lie within the bio-geographical area of the Flindersian Province where hundreds of fishes have been recorded with many endemic to this region. Many fishes are of high social and economic value. They constitute a large proportion of the human diet, generate significant income, and provide pleasure for recreational fishers, aquarists and natural historians. Environmentally, fishes provide an array of important ecosystem functions that include nutrient recycling, regulation of food web dynamics, nutrient balances and many others.

Knowledge of fish species and assemblages in South Australian waters comes mainly from those that are commercially important. However, there are many fish species where knowledge is limited or non-existent and also little is known of these assemblages in habitats such as reef, seagrass and sand areas of the marine parks and their sanctuary zones.

This study will form the part of a broader PhD project using BRUVS to investigate South Australian fish assemblages. The study will also provide baseline information and improve our understanding of the status of fish assemblages in South Australia's marine protected areas, focussing on key habitats, such as seagrass, reef, and around shipwrecks. This information will assist in ensuring effective management and monitoring of South Australia's marine protected areas.



## **Inventory of rock types, habitats and biota on rocky seashores in the SA marine parks network**

Nathan Janetzki, Ph.D student, Biological Sciences, Flinders University SA

Professor Peter Fairweather, Biological Sciences, Flinders University SA

Associate Professor Kirsten Benkendorff, Southern Cross University, NSW

PhD 2014-2017

South Australia has long shoreline extents of all three types of intertidal habitat: rocky, sandy and muddy shorelines. Rocky shores and sandy beaches tend to dominate the open coast but muddy sandflats tend to replace them up both the Gulfs and in enclosed bays (due to less water movement).

Rocky seashores overseas are amongst the best-studied marine habitats. Within Australia, much is known about the ecological patterns and processes on rock platforms especially near Sydney and a few other metropolitan centres but comparatively very little work has been done in South Australia. Some of that is older and descriptive in nature for either all SA coasts or specific locations near Adelaide or on Kangaroo Island. Other, more remote locations have received some attention more recently but relatively little experimental work has been done in South Australia compared with elsewhere. The rock types vary enormously along the State's coastline, from soft to friable calcarenite (aeolinite) in the South East (the so-called 'Limestone Coast') to hard granites and gneiss of some offshore islands and mainland outcrops. This affects the slope of the shore, hardness of the substratum and the sorts of microhabitats (e.g. rockpools, crevices, boulder fields) found on the shore and hence their biodiversity.

This study aims to collect baseline data so an inventory can be constructed of the types of rocky intertidal habitat currently protected, and the structure and composition of assemblages living in these habitats.

The inventory will provide baseline information on rocky intertidal habitats across a number of sites inside and outside of sanctuary zones within the marine parks network. In turn, this will facilitate a greater understanding of marine parks and their zones, potentially identifying areas for management priority. Features that would provide valuable locations for inclusion in any future marine park adjustments or intertidal monitoring programs may also be identified.

## **COMPLETED RESEARCH PROJECTS**

### **Improve knowledge of the key processes driving the ecological systems protected by marine parks such as larval recruitment of particular species within sanctuary zones.**

Jordan Jones, Honours student, School of Earth and Environmental Sciences, Adelaide University

Associate Professor Ivan Nagelkerken (Fellow), School of Earth and Environmental Sciences, Adelaide University

Submitted in partial fulfilment of the degree of Bachelor of Science (Honours) in Nov 2014

The supply of larval fish and their subsequent settlement is an important driver in community population growth of any marine habitat. By protecting settlement habitat and reducing mortality due to fishing, sanctuary zones that are replenished by larval fish may enhance the population growth of some fish communities. Little is known of the larval assemblages in Gulf St Vincent: source and sink, species composition and drivers of dispersal. This project aimed to identify larval assemblages in the gulf, the potential replenishment of larvae into sanctuary zones and compare them to larval assemblages from other marine temperate studies.

This study found that larval assemblages within the gulf were significantly different to those found in other temperate Australian regions in comparable seasons. Further, differences in larval assemblages were present between the north, south and central zones of the gulf.

This study also highlights that sanctuary zones within the gulf could play a vital role for protection of settlement habitats of unique larval communities and thus may enhance potential population growth through larval supply and recruitment. The data obtained in this study has formed baseline information which is vital for assessing the efficacy of sanctuary zones in the future and for understanding the processes that drive the ecological systems in the area.

