

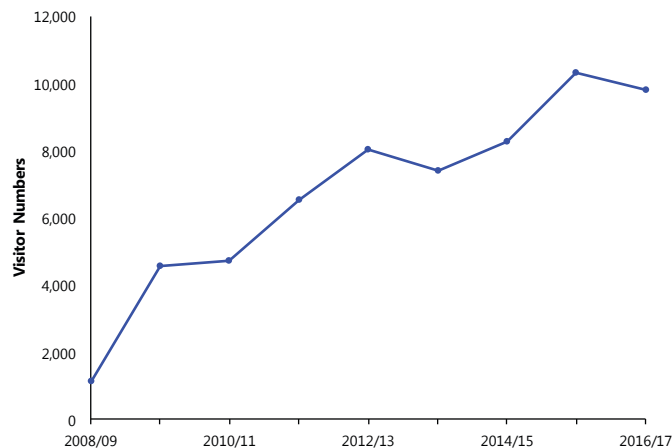
# Case study 10: White sharks in the Neptune Islands Sanctuary Zone



## Background

The Neptune Islands, which lie about 60 km south of Port Lincoln on Eyre Peninsula, South Australia, is a known aggregation site for the endangered and protected white shark (*Carcharodon carcharius*). White shark cage diving has taken place at the Neptune Islands since the late 1970s. The South Australian government permits three commercial shark cage diving tour operators that are permitted to utilise the Neptune Islands.

In 2009 the Neptune Islands were included within the Neptune Islands Group (Ron and Valerie Taylor) Marine Park (NIGMP). The North Neptune Islands Sanctuary Zone (NNISZ) which surrounds North Neptune Island was proclaimed in November 2012 with full protection commencing on 1 October 2014 when fishing restrictions commenced. Importantly these restrictions have prevented commercial shark fishing within the NISZ which can result in accidental capture of white sharks.



## Research and monitoring

Since 2012, about 32 research permits for 10 different projects have been granted for white shark research within the NISZ under the NPWS Act and/or MP Act. Research in the NISZ is primarily aimed at tracking the movement and residency patterns of white sharks. This helps us understand the population size and site fidelity of white sharks as well as any potential impacts of the cage diving industry on shark behaviour (e.g. Rogers et al. 2014). More recently DEWNR has engaged with researchers to monitor the movement of acoustically tagged sharks between marine parks and assess connectivity between these parks.

Monitoring of the shark cage tourism industry also occurs to track the number of visitors, and calculate benefits to the local community in terms of jobs created and economic contribution. Visitor numbers have steadily increased, with the rise continuing after the full implementation of the North Neptune Island Sanctuary Zone in October 2014 (see graph). In 2016/17 the total number of visitors was 9807. Estimates from the Regional Industry Structure and Employment (RisE) model value the shark cage industry at A\$12.8 million annually and 80 FTE jobs in the region.

Apps and Huveneers (2016) undertook some social research on the shark cage diving at the NIGMP. One outcome was that nature-based tourism such as shark cage diving is an effective means of educating the public about the marine animals that live in marine parks and sanctuary zones.

## Management plan strategies

Activities associated with white sharks have addressed multiple strategies of the NIGMP management plan:

Strategies addressed										
1	4	5	6	7	8	10	11	12	13	15
✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓

Strategies 1 and 4: The NIGMP management plan is being implemented through the marine parks program and a permitting system is in place to manage shark cage diving and research activities.



A white shark with acoustic tag attached. Photo credit Andrew Fox



Strategies 5, 6 and 7: Shark cage diving is actively promoted by DEWNR. Cage diving participants are provided with information on marine parks and marine biodiversity that has been supplied by DEWNR.

Strategies 8, 10, 11, 13 and 15: White shark tourism operators have collaborated with various government agencies and universities in research activities, further increasing our knowledge of biodiversity within the NIGMP, and assisting with the MER Program. The presence of tourism operators in the NISZ also engages them in the monitoring of marine parks from a compliance perspective, as the high presence of tour operators (with a maximum of 260 days visitation per year) is likely to be a deterrent to illegal activities.

Strategy 12: Results of the MER Program have been released in the publically-available NIGPMP baseline report (Bryars et al. 2016g) and in this Status Report.

## Ecological outcomes

Specific evaluation questions addressed:

- ✓ Have sanctuary zones maintained or enhanced biodiversity and habitats?

The North Neptune Islands Sanctuary Zone provides additional protection for white sharks from accidental capture by commercial shark fishers while the sharks are resident within the zone. Since implementation of the NIGMP management plan there has been closer scrutiny on operators to comply with regulations and a policy framework has been developed to mitigate potential negative impacts on the white shark population. These are positives for the white shark population.

The presence of tour operators at the NNISZ provides a compliance presence for illegal fishing activities which should help to ensure predicted ecological outcomes for the sanctuary zone are realised. For example, it is hoped that rock lobster populations have responded positively within the zone due to the removal of commercial fishing, as has been observed in the Cape du Couedic Sanctuary Zone on Kangaroo Island since October 2014 (see Case study 8).

## Socio-economic outcomes

Specific evaluation questions addressed:

- ✓ Have local businesses and communities changed due to marine park management plans?
- ✓ Has tourism changed due to marine park management plans?

The North Neptune Islands Sanctuary Zone has provided long-term viability for the shark cage diving industry by protecting the local environment and the sharks while they are inside the zone. The shark cage industry has continued to thrive since the NIGMP management plan was implemented and provides significant economic benefit to the state and region. Research has shown that tourists become more educated about marine parks and the marine environment by going on a shark cage trip.

## References

Apps K and Huveneers C (2016) Assessing the knowledge, social values and stewardship of white shark cage-diving participants within the Sanctuary Zone of the Neptune Island group (Ron and Valerie Taylor) Marine Park. Final Report to the Department of Environment, Water and Natural Resources

Bryars, S., Brook, J., Meakin, C., McSkimming, C., Eglinton, Y., Morcom, R., Wright, A. and Page, B. (2016g), *Baseline and predicted changes for the Neptune Islands Group (Ron and Valerie Taylor) Marine Park*, DEWNR Technical report 2016/17, Government of South Australia, through Department of Environment, Water and Natural Resources, Adelaide.

Rogers, P. J., Huveneers, C and Beckmann, C.L. (2014). Monitoring residency of white sharks (*Carcharodon carcharias*) in relation to the cage-diving industry in the Neptune Islands Group Marine Park. Report to the Department of Environment, Water and Natural Resources, South Australian Research and Development Institute (Aquatic Sciences), Adelaide. SARDI publication No. F2014/000801-1. SARDI Research Report Series No. 818. 69pp.



Shark cage diving in the North Neptune Islands Sanctuary Zone