

## SUMMARY AND UPDATE – 2016/2017

### “Assessment of any impacts of scuba divers on Critically Endangered Grey Nurse Sharks at Wolf Rock and Flat Rock”

#### Project aims to:

1. Identify, obtain data and assess any impacts scuba divers have on the numbers, presence/absence and movements of grey nurse sharks within declared grey nurse shark areas at Wolf Rock (within GSMP) and Flat Rock (within MBMP).
2. Provide recommendations to mitigate any impacts that are not consistent with the purpose of a grey nurse shark area or pose a threat to the recovery of the grey nurse shark population along the east coast of Australia.
3. Base any additional management arrangements required on good science and in consultation with industry.
4. Ensure any management recommendations minimise impacts to grey nurse sharks while congregating, breeding and or gestating at these sites and do so with as little impact to divers and dive operations as possible.



**Project Managers:** *Dr Carley Kilpatrick and Amanda Delaforce, Great Barrier Reef and Marine Parks, Queensland Parks and Wildlife Service.*

**Project Partners:** [Great Barrier Reef and Marine Parks, Queensland Parks and Wildlife Service \(QPWS\)](#), [Queensland Threatened Species Unit, Environment and Heritage Protection \(EHP\)](#), [Sea Life Sunshine Coast/Sea Life Trust](#) (Sea Life), [Burnett Mary Regional Group \(BMRG\)](#) and [The University of Queensland \(UQ\)](#).

**Project Funding (Wolf Rock):** [Australian Government \(National Landcare Program Regional Investment 2015-2018 – Healthy Habitats – Regional Recovery of Threatened Species and Ecological Communities within the Burnett Mary facilitated through BMRG\)](#) and the [Sea Life Trust](#).

## **Stage 1: Range testing at Wolf Rock: 19 to 21 October 2016**

A team of QPWS marine parks staff conducted range testing to ensure:

- detailed movement patterns of tagged Grey Nurse Shark and tagged scuba divers within each of the four [VPS](#) arrays at Wolf Rock can be obtained.
- the boundary receiver array can determine when a tagged grey nurse shark leaves the protected area of Wolf Rock and returns.

The QPWS marine parks project team had a few big days preparing equipment, deploying and retrieving all the equipment which included acoustic listening stations, sync tags, ropes, buoys, chain etc. The range test data collected was subsequently analysed by [VEMCO](#) and with a few minor changes the project team were given the okay to progress to stage 2 – equipment deployment for the study.



*Thanks to all those involved in the preparation and field work for Stage 1: **QPWS:** Mike Carr, Steve Hoseck, Sam Miles, Rohan Couch, David Thomas & Carli Lovell, **University of Queensland:** Professor Mike Bennett, volunteer Michaela Rathbone, and **CSIRO:** Russ Bradford.*



## **Stage 2: Equipment Deployment at Wolf Rock: 20 to 21 December 2016**

On the day, we were fortunate to have good weather: around 8-10knots, minimal current but relatively poor visibility for the divers (around 5-7m). The team were extremely positive, looked after each other and communicated well. Stage 2 involved:

1. Hours of equipment preparation by QPWS and UQ staff and volunteers and some important advice from CSIRO's Russ Bradford.
2. Day 1 (20<sup>th</sup> December), the QPWS team headed north from Manly on their barge "Spoonbill" and anchored up at Double Island Point for some rest. However, the weather decided to challenge that idea with a wind change providing them with a not so comfortable side on rock 'n' roll with acoustics.
3. Day 2 (21<sup>st</sup> December), the Spoonbill proved itself as the perfect work platform. The deck space and crane enabled safe loading and deployment of the mountains of the equipment. The day involved:
  - a. After an at sea transfer of Amanda and Carley (and MORE equipment) from the contracted dive vessel to the Spoonbill, the QPWS team successfully deploying 13 acoustic receivers and their sync tags to pre-planned GPS positions on the sea floor (to create the four VPS receiver arrays at Wolf Rock).
  - b. Then, the deployment of five receivers with their sub-sea sonic releases, concrete mooring blocks and series of sub-surface floats around the 1.2 km marine national park zone boundary surrounding Wolf Rock. As predicted, the depths were not as planned and some fast splicing by Zac was required to ensure sub-surface floats were at the depth needed!
  - c. Finally, before the long steam home to Manly, two final receivers were deployed at nearby locations (The Pinnacles and Round Rock) and surface floats no longer needed by the contracted dive team were retrieved. Amanda and Carley were transferred back to the dive contractors vessel and the Spoonbill and QPWS crew could head home with an increasing but following sea.



## **Stage 2 continued: Equipment Deployment at Wolf Rock: 20 to 21 December 2016**

4. Also on the 21<sup>st</sup> December, commercial diving contractor 'Flag Alpha Commercial Dive/Wolf Rock Dive Centre' divers checked all 13 deployed receivers around Wolf Rock. This required 13 dives! During each dive:
  - a. the team checked one receiver, its mooring, sync tag and associated sub-surface float system was secure and upright, then
  - b. if required ran a navigation line from the receivers back to a key feature on or around Wolf Rock to enable easy equipment recovery, and
  - c. finally, the temporary surface float and rope was released and collected.

By the time the day was finished the wind and swell were up making for a very wet trip home to Rainbow Beach for an already exhausted team.

It is intended that the equipment for this component of the project will be in place until June 2017 (approx. 7 months).



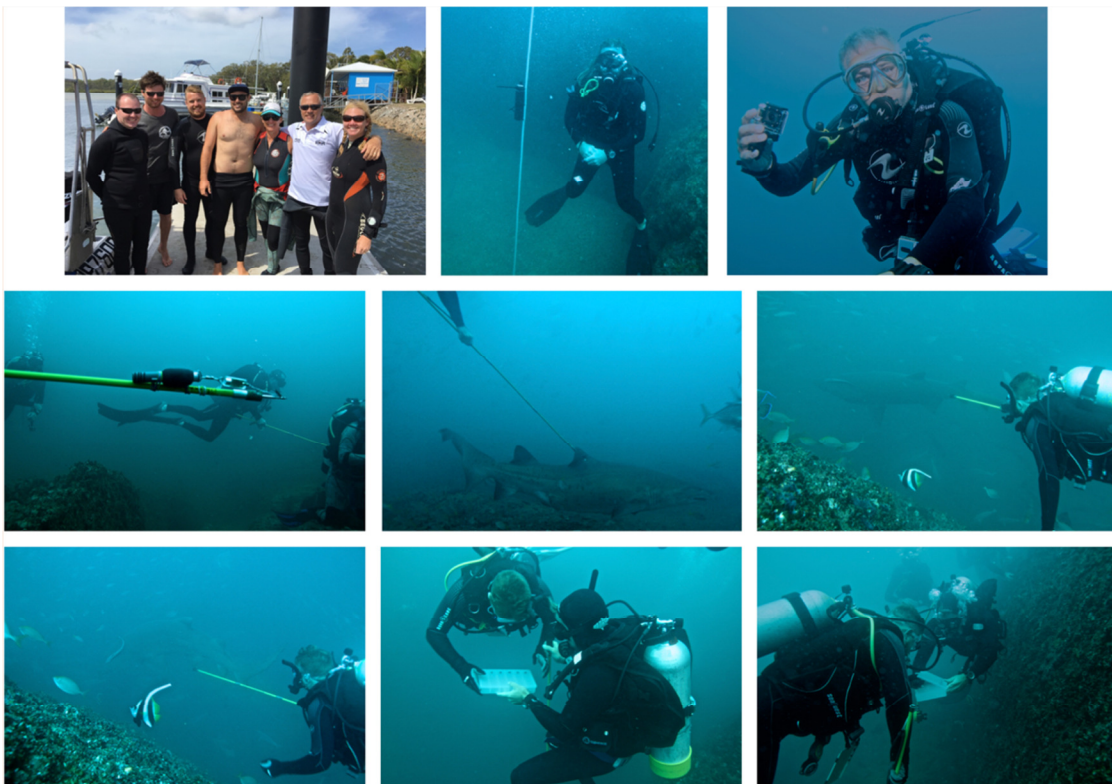
*A big thank you to all those involved in stage 2 preparation and field work, great teamwork and communication: **QPWS:** Mike Carr, Steve Hoseck, Andrew Lowe, Rohan Couch, Ben Cook & Zac Robba; **Wolf Rock Dive:** Kevin Phillips, Cheryl Maughan and Cassie Smith, **CSIRO:** Russell Babcock, **University of Queensland volunteer:** Michaela Rathbone*

### Stage 3: External tagging, genetic sampling and photo-identifying mature female grey nurse sharks at Wolf Rock: 22 December 2016.

The project team successfully tagged four grey nurse sharks, obtained genetic samples from an additional five and collected photos for individual identification of as many sharks as possible in favourable (no current, relatively calm seas) yet challenging (5-7m visibility) dive conditions.

We had a dynamic project team, everyone had their specific roles which included boat skipper, dive team supervision, shark tagging/genetic sampling, holding/transferring and keeping equipment and samples safe, photo identification and data collection – all which went effortlessly. Some details:

- Jesse Hart (Sea Life), Mike Carr and Ryan Keck (experienced volunteers) on scuba used modified Hawaiian slings to attach acoustic tags (that will communicate to receivers) to four mature female grey nurse sharks. Genetic samples from five additional grey nurse sharks were also collected to assist important next of kin genetics research being undertaken by CSIRO.
- Ade Lynch (Sea Life Mooloolaba) is in training and listened closely to briefings/advice from Ryan and Mike who have substantial experience tagging/collecting genetic samples from grey nurse sharks. Ade also assisted greatly by carrying/handling the valuable tags and genetic samples during the dives and simultaneously managed to capture some GO PRO footage.
- Alex Heathcote (Wolf Rock Dive) kept the dive team safe, monitored our air and ensured we were together. Alex also relocated a receiver to its correct position from the 'deep' end to the 'shallow' end of shark pit. James Nelson (Wolf Rock Dive) was our captain, keeping a close eye always.
- Carley Kilpatrick (UQ volunteer) advised the tagging/genetics team which sharks to tag/collect genetic samples from and collected photos to identify individual sharks. Amanda Delaforce (experienced volunteer) recorded crucial data and captured still and video footage.



*A big thank you to all those involved in this stage, great teamwork and communication: **Wolf Rock Dive:** James Nelson, Alex Heathcote and Fiona Nelson; **Sea Life Sunshine Coast:** Aaron Sprowl, Jesse Hart, Ade Lynch, **Independent longstanding GNS research volunteers:** Mike Carr and Ryan Keck. **CSIRO:** Russell Babcock*

### **Some exciting news:**

The first picture below, this GNS (ID number 1207) was photographed at Broughton Island, Port Stephens, NSW on 19 February 2008 as a juvenile, and from our recent tagging trip on 22 December 2016 the same shark, which is now a mature female adult with mating scars will carry the acoustic tag from this project.



### **Where to from here:**

- We hope to get out undertake some more tagging/collection of genetic samples over the coming weeks with the Project Team and Sea Life Mooloolaba. We also hope to change out some of the receivers within the shallow gestation gutters and boulder country to enable mid-study checks by VEMCO and conduct further photo-identification surveys during the study.
- Pending success with funding attempts we hope to repeat this project at Flat Rock within Moreton Bay Marine Park beginning in June 2017.