

# Thevenard Island: Turtle stronghold



The North West Shelf Flatback Turtle Conservation Program is providing invaluable insight into the lives and breeding habits of flatback turtles in Western Australian waters. For the staff and volunteers who are taking part in the project, it's providing a chance to work in some of the State's most beautiful and remote places and experience these enigmatic and amazing creatures.

by Rhianna King



It's their last day on Thevenard Island so there are no more chances for volunteers James Gee and Anna Vittenbergs to locate the flatback turtle (*Natator depressus*) nest they're searching for. Flatback nests are usually about 50 centimetres deep in the sand and are therefore hard to locate. Anna and James are tired and frustrated as they use a metre-long probe to look for the nest in the area indicated by markers installed two months ago, when the female turtle was observed here laying her clutch. It's the fourth time this nest has been probed on this trip but no-one has been able to locate it. They check and double check the location on the map and are forced to concede that this nest – the last they have to find – might end up being the 'one that got away'. Then, finally, Anna feels the tell-tale 'give' as the probe enters the egg chamber, a cavern under the sand. Eureka! They've found it.

## NATURE OF THE PROGRAM

James and Anna were two of 20 volunteers who spent time on Thevenard Island with two Parks and Wildlife marine scientists in November and December of 2016 and February 2017 as part of a pilot flatback turtle monitoring program. The program was aimed at determining Thevenard Island's suitability as a long-term monitoring site for the North West Shelf Flatback Turtle Conservation Program (NWSFTCP).

### *Island paradise*

Thevenard Island is a 550-hectare class 'C' nature reserve. At approximately six kilometres in length, it is the largest of the Mackerel Islands – a group of 10 islands about 1,400 kilometres north of Perth. It is located about 22 kilometres off the coast from Onslow. The island is surrounded by limestone reefs and platforms, with diverse coral assemblages on the northern side.

The island is also an important nesting site for flatback, green and hawksbill turtles. Humpback whales are users of the surrounding waters from June to October, while dugongs can be spotted from September to April. Bottlenose, common, humpback and spinner dolphins are found year-round.

Meanwhile, the island supports a resident population of raptors, including ospreys, nankeen kestrels and white-bellied sea eagles. Brahminy kites, black-shouldered kites and goshawks are regular visitors. A substantial population of short-tailed mice, endemic to the island, also occurs there.



The NWSFTCP is a \$32.5 million, 30-year undertaking, funded by the Chevron-operated Gorgon Gas Project and administered by Parks and Wildlife. The program's fundamental objective is to increase the conservation of flatback turtles across the North West Shelf genetic stock. It has been running since 2011 and has developed a prioritised strategic plan that is establishing operational systems and projects to understanding flatback biology, and ecology and addressing the highest

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**Main** Beautiful sunsets were one of Thevenard Island's charms.

*Photo – James Gee*

**Inset** Flatback turtle hatchlings.

*Photo – Jiri Lochman*

**Above** The tumultuous Pilbara weather

brought storms that made conditions difficult.

*Photo – James Gee*

threats. Some key projects include tracking adult females between nesting and foraging areas, defining the genetic stock boundaries, assessing the impact of light on hatchlings at sea, assessing fox impacts on eggs and hatchlings and understanding climate change impacts on incubation. The information collected at Thevenard Island will contribute to a broader understanding of the ecology and demography of Pilbara flatback turtles, which includes populations found off the Pilbara and south-west Kimberley coasts.

## GETTING DOWN TO BUSINESS

Probing for nests in February was one of the roles that volunteers and scientists carried out as part of the program. Thirty-five nests were identified on the November trip as the females were observed laying their eggs on the beach. The nests were marked with PVC poles so they could be revisited two months later, after any viable hatchlings would have emerged from the nest. James, Anna and others, journeyed back to the nests, dug up the contents and made observations about how many embryos had hatched, how many had made it out of the sand alive, and how many had not formed at all. Performing this role





was not for the squeamish, as opening the unhatched eggs and examining their contents – in varying states of putrid decomposition – was a smelly job indeed.

Of the 35 nests, they found that two thirds had a hatching success rate higher than 90 per cent (i.e. 90 per cent of the eggs laid had hatched), and only two nests had a very poor hatching rate with fewer than half of the eggs having hatched. The females had laid on average 50 eggs per clutch. Over the four-month nesting season, 187 turtles were observed and

identified on a one-kilometre-long stretch of the island. On average, flatbacks lay two to three clutches per season, which would be equivalent to a total of about 24,000 eggs on this stretch of the beach alone. Considering the island is only six kilometres long, that is a lot of eggs! It seems that Thevenard Island may be a good nursery for flatback turtles.

Volunteers performed a range of other tasks on the island, including making observations about the nesting turtles (such as their measurements), taking skin

**Above** PVC pipes were used to mark the turtles nests so they could be revisited.

*Photo – James Gee*

**Below** Flatback turtles use their front flippers to create a large depression.

*Photo – Jiri Lochman*

biopsies, fitting flipper tags and inserting a microchip under the turtles' skin. Both the flipper tags and the microchip will help identify a turtle, hopefully, for the rest of her life. The numbers of the flipper tags



### ***Word from the field***

*by Liz Grant, Parks and Wildlife communications officer*

“The beach is warmly cloaked in darkness, the bright array of stars overhead a canopy of magical pinpoints. Stretched out flat on the cool rough sand I am listening to the sound of a turtle carefully digging a nest chamber. The sandscape-flick sound stops. I wait, keenly listening, head turned away so I don’t suddenly get a face-full of sand should she send a front flipper-load sand-shower in my direction. There’s no sound but for an occasional groan-murmur. Carefully I switch on my headlamp and peer down into the pit the turtle has dug. In the red glow I can see the turtle’s tail and cloaca extending into the deep cylindrical egg chamber and the peristaltic migration of big round shapes. She is laying. The eggs are spurting out in two and threes, tumbling wetly on to the now glistening pile of beautiful white eggs. In the red bubble of light enclosed in the still dark night I have a sense of intimacy and feeling of joyful contentment at being so close to this wild creature with such an ancient heritage.”





and the microchips are carefully stored in Parks and Wildlife's turtle database.

Twelve turtles were also fitted with a satellite transmitter (which means they can be followed on [seaturtle.org](http://seaturtle.org)) to track their movements after they had nested. This data showed that between each clutch of eggs, the turtles spent time at sea swimming around the island or near Onslow on the mainland. But once they finished laying their last clutch, they took off and swam north toward their feeding grounds located all along the coast from Thevenard to Broome.

## FLATBACK TURTLES

The flatback turtle is the most common nesting turtle on Thevenard Island. It has an olive-gray shell that is flattened on top and has upturned edges. Flatback turtles can grow to one metre long and weigh up to 90 kilograms.

Each nesting season spans from about November to March in the Pilbara when flatback turtles usually lay two to three lots of eggs, with two to three weeks in between each lay. They can be discerning when selecting a spot on a beach to create

### *Did you know?*

Flatback turtles are listed as vulnerable under the *Western Australian Wildlife Conservation Act 1950*. Internationally they are considered 'data deficient', meaning that more research is required to determine their abundance and distribution.

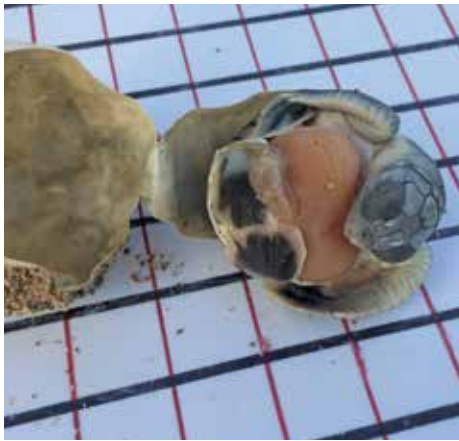
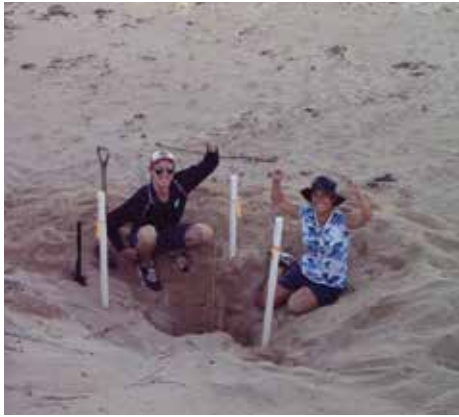
a nest and can visit the same beach over a number of nights before selecting a site. This is known as a 'false crawl'. On Thevenard Island, turtles were observed checking the beach up to five times before deciding where to lay their eggs.

Flatbacks lay about 50 to 60 eggs in a nest which they dig using their powerful flippers. In the first phase of building the nest, they use their front flippers to create a depression that is at least their own size. When they're in this phase, which can take 20 to 30 minutes, they flick large volumes of sand around them. Scientists and volunteers walk quietly along the beach at night, listening for this sound to

help them find nesting turtles without having to use flash lights and head torches, which can startle nesting turtles. They also look out for the tracks turtles leave on the sand when they're crawling up the beach.

The second phase, which can be quicker, is when the turtle uses her back flippers to build a chamber in which she will deposit the eggs. A distinctive 'silence, flick, silence, flick' sound pattern indicates to scientists and volunteers that the turtle may be ready to lay her clutch. The nest depths vary, but the chamber can be as deep as 75 centimetres. This process is remarkable as it is extremely difficult to dig a hole in the sand and be sure that it is not going to collapse in the middle of the laying process. When they're finished, the turtles seem to carefully check with one of their flippers that the chamber is round and smooth with solid walls.

Turtles are believed to enter a trance-like state while they're laying their eggs. Then, when they're finished, they cover over the nest with sand before returning to the sea. She will never know the fate of the hatchlings which emerge three to



four weeks after they are laid, as she does not return to the same nest. But the odds for these hatchlings are not great – it is thought the survival rate to adulthood is about one in 500 – making the need for conservation and protection of this species (and all other turtles) all the more important.

## GOING FORWARD

The results of the 2016–17 nesting season indicate that Thevenard Island is a suitable long-term monitoring site for the NWSFTCP. Probably about 200 turtles nest there every year and that makes Thevenard Island a medium-sized nesting site for this species in Western Australia. By monitoring this site every season for the next 20 to 30 years, we will get a precise insight of the size of the population nesting on this island and be able to tell whether it is increasing, decreasing or remaining stable, giving us an idea of how the wider stock of the North West Shelf is doing. It is important to have several index sites like Thevenard Island to make sure we understand how the North West Shelf flatback turtles are doing and to be able to

**Top left** James Gee and PhD student Erina Young locate a turtle nest.  
*Photo – Parks and Wildlife*

**Above left** Partially-formed flatback hatchlings.

**Above** Flatback turtle hatchlings battle against the odds for survival.

**Below right** GPS coordinates are recorded for each nest.

*Opposite page*  
Excavated eggs were counted and examined.  
*Photos – James Gee*

act quickly if there are signs of a decrease in the number of nesting females or the number of hatchlings produced.

A team of marine scientists and volunteers will head to Thevenard Island every year for several weeks between November and February to carry on marking the females, counting their tracks, marking the nests, and working to uncover some of their breeding secrets.



To hear more about the North West Shelf Flatback Turtle Conservation

Program

Scan this QR code or visit Parks and Wildlife's 'LANDSCOPE' playlist on YouTube.



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