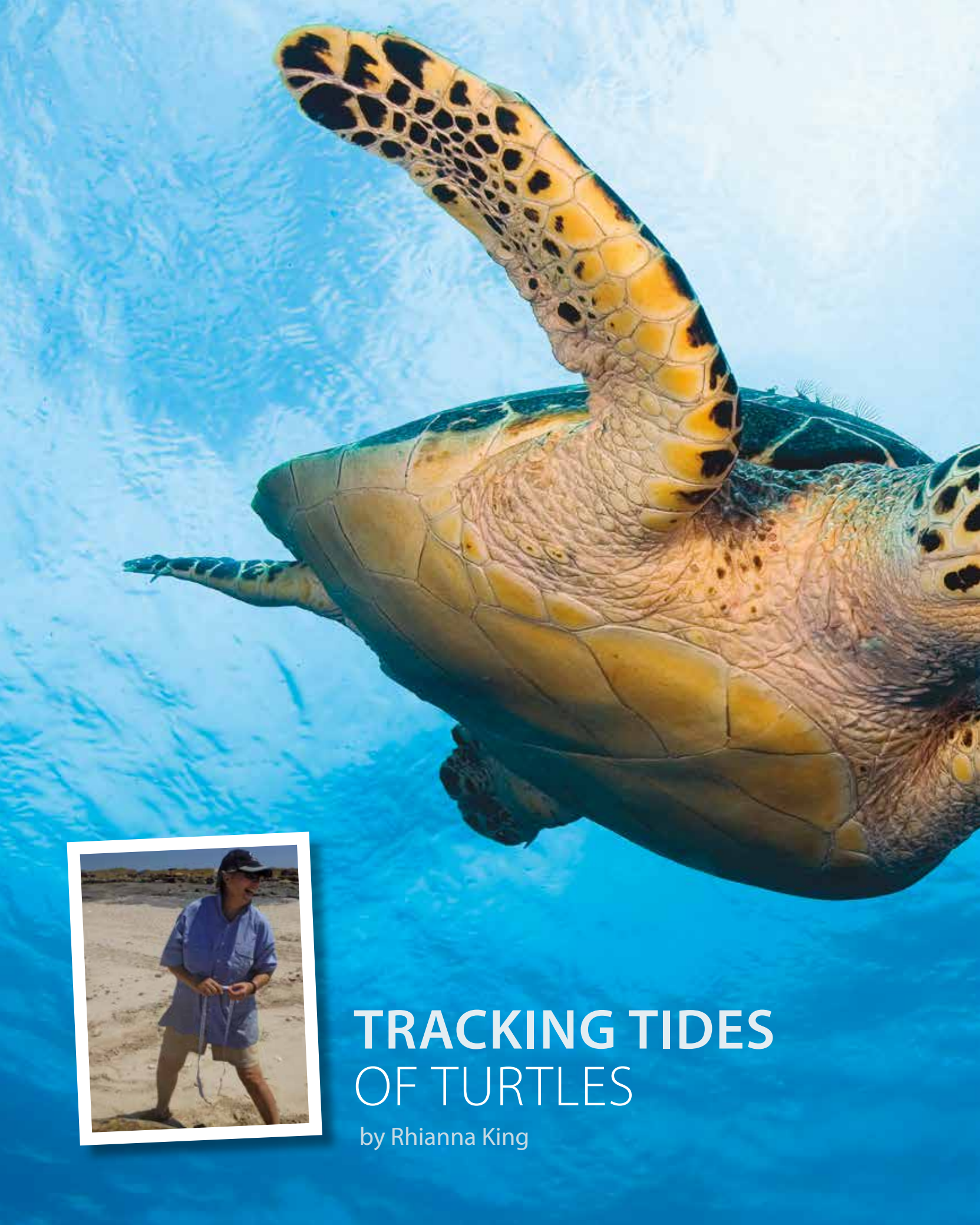

TRACKING TIDES OF TURTLES

by Rhianna King

Understanding the life cycles of long-lived animals can take decades, and often relies on the long-term commitment and dedication of agencies and individuals. An initiative to collect data on hawksbill turtles at Rosemary Island Nature Reserve in the Dampier Archipelago is part of the longest-running program of its kind in Western Australia and is an excellent example of what can be achieved when special people collaborate on remarkable projects.

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Main Hawksbill turtle.
Photo – Michael Patrick O'Neill/ OceanwideImages.com
Inset Anna measuring a hawksbill turtle on Rosemary Island.
Photo – Joanne King/Parks and Wildlife

Far left Anna with a nesting turtle on Rosemary Island in 1993.

Above left Anna's 'camp' on Rosemary Island consisted of an umbrella and sleeping bag.
Photos – Anna Vitenbergs

In 1958, Fred and Ella Macleod packed up their home in northern Scotland and, together with their three sons and daughter Anna, set sail for Australia. When they arrived, the family discovered that Broome, Western Australia – with its red dirt and scorching sun – was about as different from the rolling hills, lochs and isles of northern Scotland as you could get. But for Anna it was love at first sight.

A self-confessed tomboy, Anna describes her childhood in Broome, and then later in Wyndham and Point Samson as 'idyllic'. She fondly remembers spending her days fishing and exploring the area while lapping up the sunshine and fresh air. She developed a closeness with the children from a local Aboriginal community and two women, Mary and another lady whose name has been lost in the years, who took her under their wing and taught her about the native plants, animals and bush tucker.

A BURGEONING CONSERVATIONIST

Anna recalls the day she first came across a turtle, but it wasn't as you might expect – it was being cooked over the fire and was destined to provide a protein-rich meal for Mary and her family. She confesses that she tried some, but can't recall what it tasted like.

The next year, a Japanese pearl diver gave Anna two live hatchlings. She was unsuccessful in her bid to convince her parents to keep the turtles and they insisted she release them back into the ocean. No-one could have known it would be the first of probably thousands of turtle releases she would carry out over the next three decades.

Like so many girls of her generation, Anna's educational prospects were limited by the expectation that she would become a secretary, nurse or hairdresser. So, in 1965, at age 16, she left school after completing a secretarial course. It was in this year that she also met her childhood sweetheart, Rob Vitenbergs, who introduced her to Rosemary Island where he and his family travelled from Point Sampson for oyster picking and fishing. In later years, this pristine and magnificent environment became significant for reasons other than as a romantic setting for teenage courtship.

A LOVE AFFAIR

In the 1980s, Anna's love for the natural environment and her passion for conservation motivated her to start volunteering with the then Department of Conservation and Land Management. She took part in a number of projects, including bird banding and monitoring. Then, in 1989, the Pilbara Region Island reserves officer Greg Oliver – who knew of Anna's affinity with Rosemary Island – approached her for help with some turtle tagging work through the then Western Australian Marine Turtle Project. Despite feeling a little out of her depth, Anna accepted the offer and revelled in the opportunity to return to Rosemary Island, which we now know supports one of the largest hawksbill rookeries in the Indo-Pacific. It was here that she met Bob Prince, with whom she formed a close working partnership, based on an insatiable thirst for research and a profound love of turtles. Bob worked for the department from 1969 to 2014 and is a renowned sea turtle specialist (as well as having a keen interest in kangaroos and dugongs). Bob continues to volunteer his time with Parks and Wildlife and is an integral part of the department's turtle team. At the time of their meeting, Bob was building up the capacity of the Western Australian Marine Turtle Project and was looking to expand research into hawksbill turtles, which were known to occur on Rosemary Island.

For two years, Anna accompanied Greg and his team to the island to tag and monitor turtles until a shortage of funding threatened the longevity of the program.

It was suggested, since Anna was out on the boat anyway, that she carry out the monitoring on her own and feed the data back to Bob in Perth. So, with her own turtle tagging kit and complete access to the research library to supplement her

Above CALM's Greg Oliver was instrumental in engaging Anna in turtle monitoring. *Photo – Anna Vitenbergs*

research, she ventured out to the island whenever time and weather permitted to carry out work (much of it self-funded), in conditions that would impress Bear Grylls.

LOGISTICS

There's no doubt that Anna is made from 'tough stuff'. Crippling sea sickness, which she says can be brought on by standing on wet lawn, wasn't enough to dampen her love of the ocean or prevent her from making the hour-long trip from her then home in Dampier to Rosemary Island countless times. In the early days, Anna took gloves and a snorkel, instead of ice or an esky, and sourced crayfish and fish from the sea to eat. And, before radios and satellite phones were available, she had only a flare to use on the island if she got into trouble. Depending on how long she was staying on the island, Anna's husband would check in to see how she was going and helicopters that were en route to the iron ore ships would fly over to make sure she was okay, sometimes stopping in for a cuppa and some welcome company, often in exchange for a fresh crayfish.

Often alone, Anna would listen to 'talking books' for entertainment, but her penchant for spy stories and

About hawksbill turtles

Hawksbill turtles (*Eretmochelys imbricata*) have a beak like a parrot and thick overlapping scales on their shell, which ranges in length from 72 to 100cm with the average length being 86.5cm (based on 4300 observations of adults at Rosemary Island). The thick overlapping scales on the turtles' shell (carapace) are readily apparent on juveniles and younger adults but can become blurred with age and wear. The rear margins of the shell are clearly serrated and there is often a very large notch between scales at the rear midline of younger sub-adult and adult turtles which can be lost with wear and age. Base colouring of the carapace scales can range from a lighter almost honey-light brown colour to dark brown with black or brown fleckings. Some larger turtles may even appear dark brown–black. They range in body weight from 45 to 75kg.

They live near coral and rocky reefs in the warm tropical waters of the Indian and Pacific oceans and the central Atlantic. In Western Australia they nest from Ningaloo Marine Park northwards, with a major colony on Rosemary Island. Nesting may occur all year round but in WA it peaks between October and January. They may take 20 to 30 years to reach sexual maturity and there are commonly three to six years between breeding attempts. But, within a breeding season, a turtle may lay up to six clutches of between 40 and 185 eggs (with an average of 112). The sex of the hatchlings depends on the temperature in the nest.

Hawksbill turtles may travel up to 2400km from their breeding to their feeding grounds, where they feed on sponges, sea squirts, soft corals, shellfish, seagrasses and seaweeds.

After hatching, the baby turtles swim out to sea for several days. They then spend the next five to 10 years drifting around in surface waters at the mercy of ocean currents, feeding mainly on plankton. They are often found in huge rafts of drifting *Sargassum* – a type of brown seaweed – where they are probably best able to hide from potential predators. Once they reach carapace lengths of 30 or 40cm they settle in one particular area around coral or rocky reef.

The hawksbill turtle is a threatened species classed as vulnerable in WA, but its international status is critically endangered and tortoiseshell is still traded in some parts of the world.

How you can protect the hawksbill turtle

If you find a turtle with a tag, note the number and contact the Department of Parks and Wildlife. The information that is collected is used to better manage and protect WA's populations of hawksbill turtles as well as other jurisdictions such as Indonesia and Cocos Keeling Islands. If you find a dead turtle you should also advise Parks and Wildlife.

For more information, email turtles@dpaw.wa.gov.au, call the Wildcare Helpline on (08) 9474 9055 or visit the 'Marine Parks WA' website at www.dpaw.wa.gov.au.

Above and right Hawksbill turtles come to a number of beaches on Rosemary Island to lay eggs. *Photos – Adam Williams and Heather Barnes/Parks and Wildlife*

"... she ventured out to the island whenever time and weather permitted to carry out work (much of it self-funded), in conditions that would impress Bear Grylls."

Top Hawksbill turtle.
Photo – Matt Kleczkowski

Above Turtle 'T9236' was tagged in 1986 and sighted again by Anna's daughters in 1995.
Photo – Anna Vitenbergs

murder mysteries sometimes meant her imagination ran away with her at night and she got a bad case of the spooks. Anna says people often mistakenly think she enjoys working alone but, given the choice, she would have much preferred to share her experiences with others. When they could, Anna's daughters and husband would join her on the island and help with tagging and, as often happens when dedicated individuals get involved in field research, it became a family affair. Program founder and coordinator Bob Prince together with his two eldest daughters, joined her in January 1993, and long-term turtle volunteer Warren Richards and his family joined her numerous times between 1994 and 2001. However, over the years, she spent a lot of time perfecting being a 'lone worker'.

For the first 15 or so years, Anna's 'accommodation' on the island consisted of a sleeping bag sheltered by a beach umbrella, which proved useless in windy conditions. A shipping container was brought to the island later for shelter, which contained a kitchen and a storage area. This was generously provided by Woodside after Warren Richards, a company employee, convinced the organisation of the need for the facility for turtle monitoring. Anna says the structure was akin to Club Med in comparison to her sleeping bag and umbrella. Nowadays, the luxury has been stepped up even further thanks to a fridge and barbecue which make storing and cooking fresh food considerably easier.

ALL WORTH IT

The Rosemary Island turtle tagging program is part of the longest-running program of its kind in WA and Anna says one of the things that keeps her interested is seeing tagged turtles returning to nest year after year. Some she remembers from distinctive scars or other distinguishing features and seeing the 'old girls' coming back still gives her a buzz. She says it's fascinating to look on Parks and Wildlife's marine turtle database to see who's tagged the turtles and where. In the early days she copied her field data from her notebooks onto paper records, which Bob still has, and when computers were made available she entered records into databases which she sent to Bob on three-inch floppy disks.

A particular highlight was in November–December 2002 when Anna captured three hawksbill turtles for Kellie Pendoley, who was doing her PhD at the time, and assisted in fitting platform terminal transmitters (PTT). These were the first turtles to be fitted with transmitters on Rosemary Island and included one that Anna had first tagged and released in 1993. The turtles were named 'Fran' – after Parks and Wildlife's Fran Stanley who was involved in the program between 1994 and 2006, 'Vicki' – after local botanist Vicki Long, and the one that had previously been seen was named 'Anna'. 'Anna' returned to Rosemary Island four years after she was tagged, and then again in 2010 with the old PTT attached

Right Murujuga Rangers assist with tagging and monitoring at Rosemary Island.

Far right The flipper tags are used to identify individual turtles and these tags may also be recognised and reported on by third-party observers to help build the distribution and demographic profile that we need to manage populations.
Photos – Anna Vitenbergs

– providing an amazing 17-year history. Another name-sake that was fitted with a PTT at Rosemary Island by Parks and Wildlife principal scientist Scott Whiting during the 2015 season was tracked to Broome – a poignant journey to Anna's one-time home.

But, of course, Anna's contribution to the knowledge of individual turtles is not limited to those that share her name. Detailed records held by Bob Prince show that Anna and Rob first tagged and released a turtle on 12 September 1991 that managed to go unnoticed by anyone until Joanna King and others found her again on 26 October 2015. Another two turtles Anna tagged and released on Rosemary Island in 1991, including one she found during a project to better understand the DNA of hawksbill turtles with Damien Broderick, have been seen from time to time during the past 25 years. There were also a number of 23-year records made in October 2015 that have early connections with Anna. Original field records show there have been 3500 female hawksbill turtles documented from Rosemary Island, and Anna has personally seen more than half of those at least.

Marine turtles are slow to mature and have long breeding histories. From this project we know that turtles that Anna tagged in those early years are still breeding now. For example turtle WA 20788/WA 20787 was first tagged by Anna when she was camping alone in 1993 at Rosemary Island. This turtle was nesting again in 2014 and was fitted with a transmitter. It has now travelled north to a foraging ground offshore from Port Hedland (www.seaturtle.org).

Anna's unrelenting and insatiable quest for information is propelled by her realisation that "the more you know, the more you realise you don't know". Long-term projects are particularly important in long-lived animals like turtles as they have a complex life cycle and trends in population numbers can only be detected over decades. Anna says we have a long way to go to uncover all the secrets of turtles.

However, she is already looking forward to returning to Rosemary Island for the next nesting season from October and vows to volunteer for as long as she's able to. But she's confident that the next generation of scientists, biologists and volunteers will continue the work and harness their passion and enthusiasm to research and monitor these precious and fascinating animals.

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Hawksbill turtle tagging project

The hawksbill turtle tagging project at Rosemary Island has been supported by many organisations over the years. In particular, support from the then Department of Conservation and Land Management and Australian National Parks and Wildlife Service, together with personal contributions from individuals such as Anna, were integral to the original Western Australian Marine Turtle Project. Previously, support was provided by Woodside. Currently the program is partly funded by Rio Tinto as part of a three-year agreement with Parks and Wildlife. The project aims to raise awareness about the importance of marine turtle conservation and provide crucial data on turtle populations in the area. In 2015, Parks and Wildlife staff and volunteers recorded 444 turtles over 14 nights from five beaches, including 134 turtles which had not previously been recorded. Tagging turtles is an invaluable way to identify individual animals and provides a way to record data about their mating, nesting and eating habits as well as to track individuals' life spans.

In recent years, the use of PTTs has enabled scientists and volunteers to get a greater profile of where hawksbill turtles live and feed than was possible with flipper tags. The PTTs reveal that none of the WA nesting tagged hawksbill turtles have left WA region waters, which is good news as they are afforded protection against being hunted for tortoiseshell under the Wildlife Conservation Act (see also 'A scaly tale' on page 16).

The project has been made possible by Parks and Wildlife staff and other partners, including Bob Prince, Fran Stanley, Greg Oliver, Marissa Speirs, Geoff Kregor, Joanne King and Rachael Marshall.

This year, the Murujuga Land and Sea Unit provided cultural training to the tagging program participants.