TURTLES IN TURMOIL

Every hour around three species become extinct due to the activities of man. Yet no group of animals is in more immediate danger than turtles. **Aaron Gekoski** crawls away from the world's turtle hot spots well and truly shell-shocked.

PHOTOGRAPHS AARON GEKOSKI | JESS WILLIAMS

An increasing number of threats is decimating populations of loggerhead turtles worldwide; **TECH SPEC:** Canon 40D, 12mm, ISO 100, f22, 1/200 with DS-160 Ikelite strobe.

turtles in turmoil

TURTLES ARE DEPICTED IN CHILDRENS' MOVIES TIME AND AGAIN WITH GREAT FONDNESS AND SUCCESS – THERE ARE THOSE CRIME-FIGHTING SEWER NINJAS: LEONARDO, DONATELLO, MICHELANGELO AND RAPHAEL; THE COOLEST FATHER-SON COMBINATION AROUND, CRUSH AND HIS ADORABLE SON SQUIRT; AND THEN THERE'S CECIL, ONE OF THE ONLY ANIMALS TO GET THE BETTER OF THAT COCKY WABBIT, BUGS BUNNY.

'Turtles make people smile,' says Dr Christina Castellano, in an attempt to explain our fascination with these unique reptiles. The pint-sized doctor is a self-confessed turtle nut that's been studying the animals for the past 15 years. She's hit the nail on the head; they take us to a happy place. Perhaps it's their slow and measured way of life and adorable toothless scowls scrawled on comically cranky faces.

Given their current predicament they can be forgiven for looking a little miserable; turtles don't have a lot to be positive about right now. They're hunted all over the world for a surprising variety of purposes: in Mexico their fat is a popular cosmetics ingredient, in Madagascar they're illegally exported by their shell-load for the exotic pet trade, in the East their body parts are ground up for traditional medicine and in Bangladesh a critically endangered species is sacrificed every year for a religious ceremony. Quite a lot of people like to eat them too. Fifth century Chinese text describes turtles as 'delicacies'; to this day, turtle soup is eaten all over Asia.

Turtles are experiencing unparalleled declines,' says Rick Hudson, president of the Turtle Survival Alliance (TSA) – a US-based conservation group. 'No other animal group is so desperately in need of our help.' Of the 328 known species over half are threatened with extinction. Marine turtles are in particular trouble: all seven species are listed as either 'endangered' or 'critically endangered' on the IUCN's Red List.

Until now, sea turtles have survived all that's been thrown at them, including the K–T boundary which wiped out the dinosaurs. Over millions of years they've been fine-tuned and tweaked by mother nature's marauding fingers. Their amazing anaerobic respiratory system even allows them to hold their breath for up to five hours at a time (Hanli had better start growing a shell). In fact, the more you dig, the more interesting our oceans' great survivors become. Turtles can smell more acutely than dogs, live to more than 80 years of age, survive without food for a year and migrate thousands of miles.

But perhaps their most remarkable attribute is a natal homing device, which guides them back to their birthplace in order to nest. The issue of why – and perhaps more pertinently how they do this – is a subject of much debate. One theory is that turtles can remember chemical signatures from specific regions. It's also thought they can detect the strength and angle of magnetic fields by using an inbuilt magnetic map. Maybe it's best we never know for certain; science has the ability to dampen the magic of nature.

Once a female has made her fairytale return 'home', she searches for a suitable stretch of sand to nest. Using her hind flippers she digs herself a body pit, exposing soft sand to deposit her eggs. After laying, she lovingly and delicately covers them with sand before making her way back to sea. She'll never see the nest again or watch her offspring hatch.

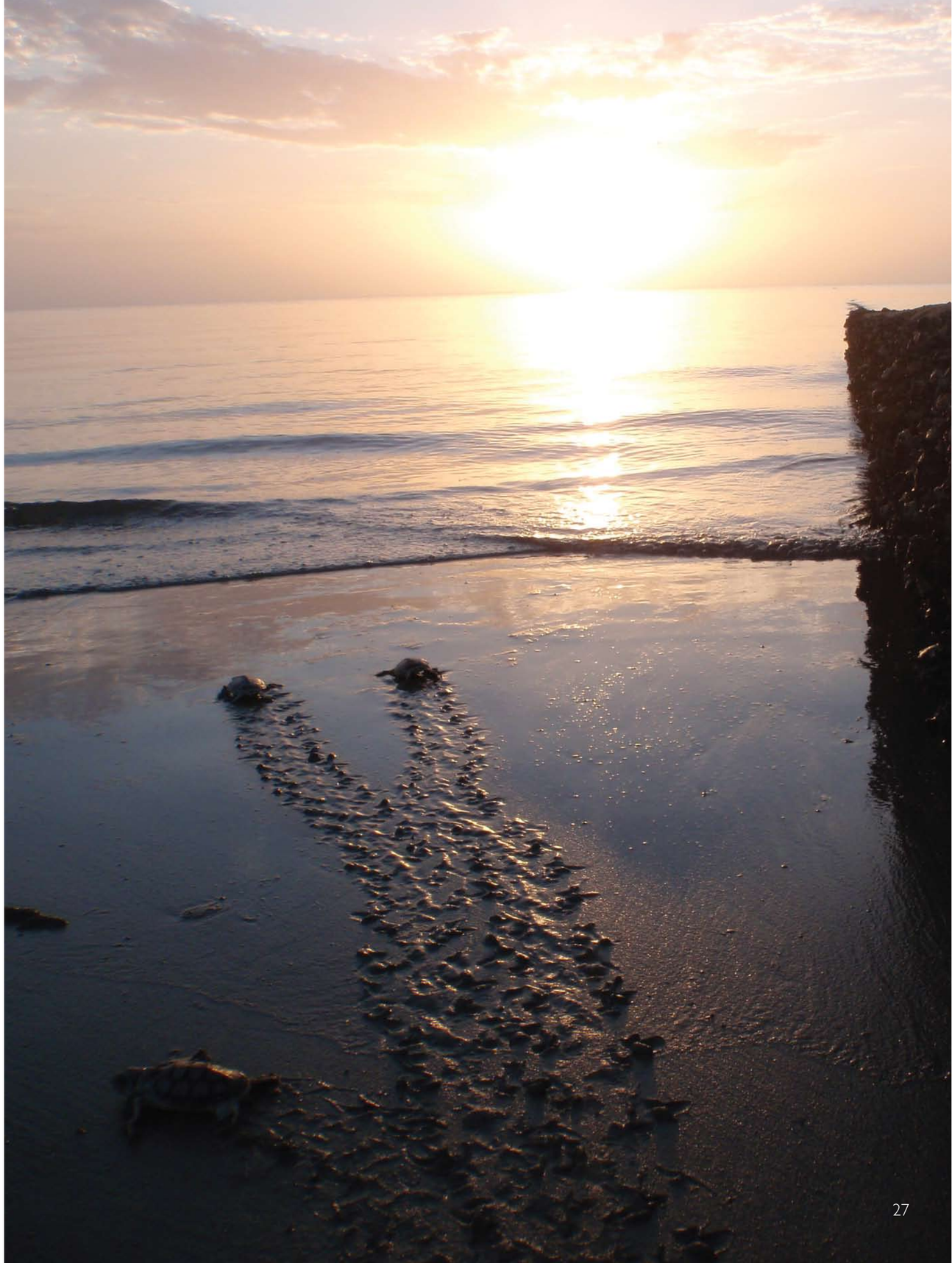
Around two months later the young emerge: now the struggle for survival really begins. The hatchlings have a limited window to make it to sea. During their short dash to the ocean they must avoid predators such as birds, cats, crabs and dogs. If they make it into the ocean, a variety of toothy hunters await, including dolphins and sharks. Hatchlings – the ultimate bite-sized treat – are so snacked upon that only around one in a 1 000 reach adulthood.

No one really knows what happens to those lucky, plucky survivors for the next decade or so. It's thought that they simply drift with the currents out in the open ocean. These are known as the 'lost years' amongst scientists, who are unsure of exactly what they get up to or where they go. What we do know is that at some point their amazing inbuilt compass kicks in, and the mysterious cycle repeats itself.

TURTLES IN OUR WATERS

Southern Africa is one of the world's sea turtle hot spots. Only two species aren't found here; the smallest and most endangered of all, the Kemp's ridley; and the flatback, which is only found off the coast of northern Australia.

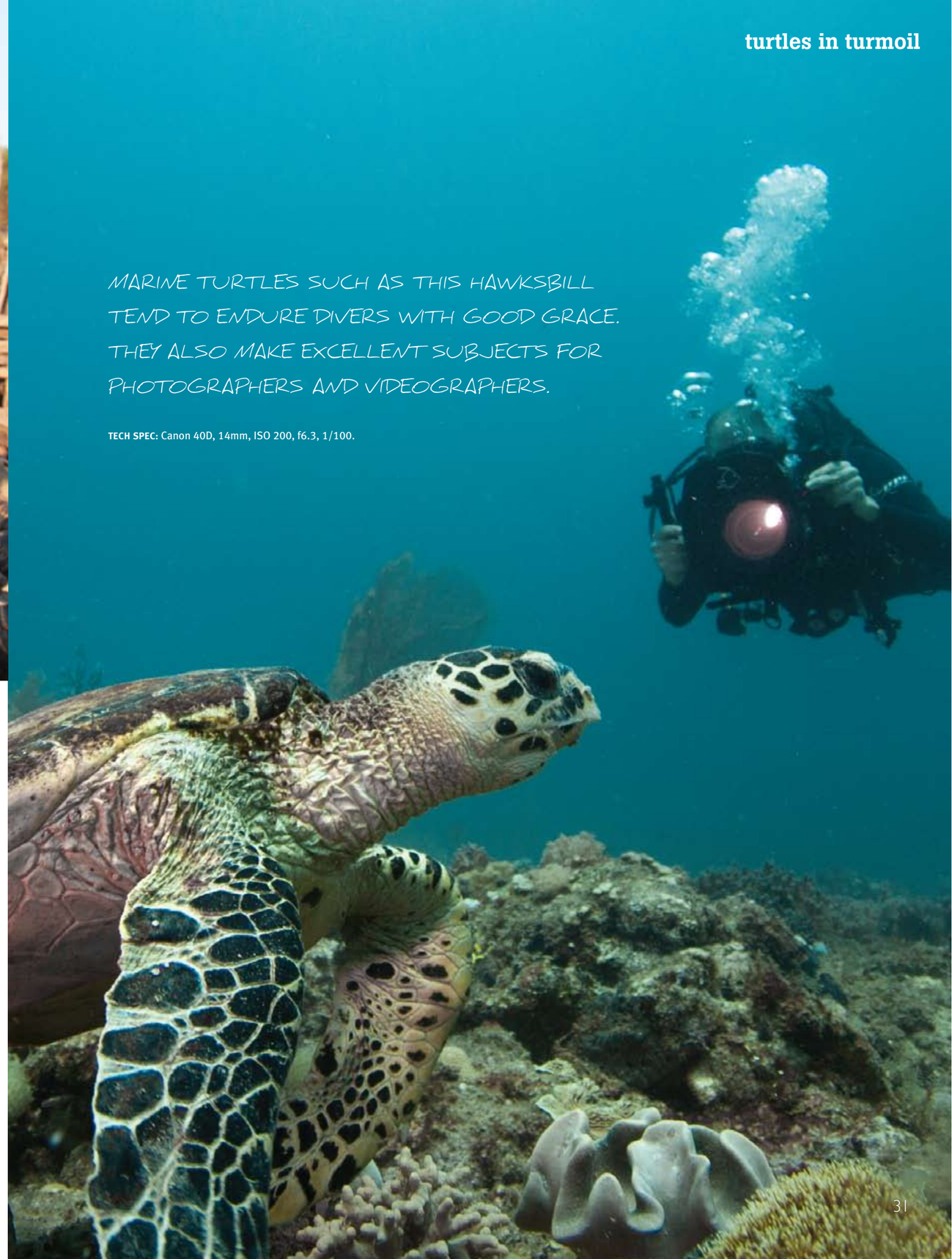
The most common is the loggerhead, which is recognisable by its large bonces. Females nest on the northern beaches of



RIGHT Three flatback turtle hatchlings heading out to the ocean for the first time at sunrise in NW western Australia; **TECH SPEC:** Olympus uT8000, 5mm, ISO 64, f3.5, 1/320.

THIS PAGE Hawksbill hatchlings in the ‘pipping’ stage, leaving their eggshells; **TECH SPEC:** Nikon Coolpix P500, 6mm, ISO 360, f3.7, 1/30.

RIGHT A green turtle hatchling newly emerged from its nest approximately 50 centimetres below the sand; **TECH SPEC:** Olympus uT8000, ISO 64, 7mm, f5, 1/800.



MARINE TURTLES SUCH AS THIS HAWKSBILL TEND TO ENDURE DIVERS WITH GOOD GRACE. THEY ALSO MAKE EXCELLENT SUBJECTS FOR PHOTOGRAPHERS AND VIDEOGRAPHERS.

TECH SPEC: Canon 40D, 14mm, ISO 200, f6.3, 1/100.

MADAGASCAR'S TORTOISE MAFIA

The land-based tortoise fares little better than its marine cousin. One of the greatest threats comes in the form of poaching for the exotic pet trade. Madagascar has nine endemic species of tortoise, over half of which are critically endangered. As populations decrease, their price rises exponentially: the rarer the animal, the higher its value. Most of the poached tortoises make their way to Hong Kong, the hub of the exotic pet trade. From here they're re-exported around the world, as collectors clamor to purchase the ultimate reptilian fashion accessory.

One species, the ploughshare, can fetch up to $40 000 on the black market. This demand has reduced their numbers to a few hundred. As most Malagasy live on less than $2 a day, the rewards for poaching are astronomical. This financial incentive has created a 'tortoise mafia' – groups of armed poachers who tear through villages, emptying them of tortoises. A recent battle between locals and poachers resulted in two deaths.

Madagascar's population has doubled over the past 20 years and is set to do so again in the next 15. This has placed tremendous strain on its natural resources, with only 10 percent of its original forest – the tortoises' natural habitat – remaining. Those remaining animals frequently find themselves in cooking pots. Whilst organisations such as the TSA have stepped up operations here, it's feared they face an uphill battle saving these unique jewels of nature.

KwaZulu-Natal (with an epicentre at Bhanga Nek), all the way into Mozambique. South Africa boasts one of the longest running loggerhead-monitoring programmes in the world.

The only other species to nest along South Africa's shores is the most enigmatic of all, the leatherback. If James Bond were a turtle, he'd be a leatherback – dressed in black, smooth, stealthful and beautiful. Everything about them is impressive – weighing up to a ton, they're the biggest marine turtle (not bad given they only munch jellyfish); they migrate the furthest distances; and they can dive up to 1 200 metres. They're also critically endangered, with only an estimated 34 000 nesting females remaining.

Whilst leatherbacks are giant marine travellers, hawksbills are mainly found on reef systems chowing their favourite dish: sponge. This 'delicious' diet makes their meat potentially deadly to eat. In Madagascar recently, 40 villagers died after eating a hawksbill turtle.

Commonly mistaken for hawksbills, green turtles are the only herbivores of the bunch. Although they don't nest in South Africa, there are breeding grounds in the Mozambique Channel. Greens are also the only species that come on shore to bask and are the most competent breath-holders.

Olive ridleys are the most abundant species, with large populations

ABOVE A tortoise poacher outside his dilapidated home in Madagascar. Dozens of shells litter a tip in his backyard; **TECH SPEC:** Canon 40D, 25mm, ISO 400, f6.3, 1/320.

EVERY YEAR MANY MILLIONS OF TURTLES ARE CAUGHT IN TRAWL NETS, SOME LARGE ENOUGH TO ENGULF A DOZEN JUMBO JETS.

found off the coast of West Africa. Yet due to their preference for warmer climes, they're only occasionally seen in southern African waters. Closely related to the Kemp's ridley, they get their name from the colour of their heart-shaped shell.

A GLOBAL CRISIS

Sea turtles face an overwhelming, mind-boggling number of threats. Of most immediate concern is bycatch, which is crippling populations worldwide. Every year many millions of turtles are caught in trawl nets, some large enough to engulf a dozen jumbo jets. In 2011, a reported 150 000 turtle were inadvertently killed in prawn trawl nets alone, though the figure's likely to be far higher. Whilst TEDs (turtle excluder devices) can reduce bycatch in prawn trawl nets by up to 97 percent, it's difficult to enforce compliance. Fishermen are reluctant to use them as they can reduce the net's effectiveness.

Along with the threat far out at sea, turtles are vulnerable to exploitation by coastal communities, who target them for their meat, shell, eggs and skin. Fishermen catch them in gill nets and on long lines, or blast them with dynamite. Once on land they're hunted by poachers. As the females start laying, they fall into an almost trance-like state, making them easy to slaughter. Their eggs too are seen as a valuable source of protein and despite a ban on the trade of tortoise shell, a black market remains. The beautiful shell of hawksbills is turned into combs, jewellery and souvenirs. Even the skin of the flippers is used for making leather goods and shoes. No one could claim that turtles aren't fully utilised.

Dune development, on the other hand, is destroying nesting zones. The bright lights of our homes and hotels disorientates hatchlings, who find their way to the ocean by heading to the brightest horizon. More development means more litter makes its way into the sea. To a turtle, a plastic bag looks a lot like a jellyfish, yet its ingestion can be deadly. And rising pollution leads to fungal infections and disease.

The bad news doesn't end there. Global warming is playing havoc with turtles' biology. The warmth of the sand determines the sex of sea turtles; rising temperatures means a disproportionate number of females. 'Preliminary evidence suggests that more and more nesting rookeries are reporting evidence of a strong female bias,' reports Jess Williams, turtle researcher at the Marine Megafauna Foundation in Tofo, Mozambique.

And then there's good old Asia (this is, after all, an article about endangered animals). Around 200 metric tons of shells are imported into Taiwan every year for traditional medicine. Powdered shell is used to treat anything from headaches and heart palpitations to kidney problems and, of course, impotence (perhaps a collective hard-on would be better achieved with 200 metric tons of Viagra?). And as shark stocks diminish and the long overdue backlash against eating shark fin soup gathers momentum, it's feared that turtle cartilage offers a viable alternative ingredient.

THE FUTURE

We could fill many issues of *DiveSite* discussing the threats that turtles face. We could, however, cram many more with ethical and scientific justifications to protect them. Turtles remain vital players in marine ecosystems: greens are sea grass lawnmowers, keeping it short, healthy and able to harbour life; hawksbills' penchant for sea sponges creates room for corals and macro-algae to colonise the reef; more leatherbacks means less of the ubiquitous (and frankly quite annoying) jellyfish; and turtle eggs are an important source of nutrients for dune vegetation. Eliminating key members of ecosystems can have disastrous trickle-down effects and repercussions for the future.

Yet their importance to the planet runs deeper than mere science. 'People often ask me why we need to protect turtles, or to quantify their importance to the planet. But to me this is a philosophical issue and a matter of ethics. We shouldn't have to put a monetary value on a species' life,' explains Dr Castellano, who seems to have a way with words.

Turtles have been on our planet for over 220 million years. Yet due to modern activities their survival hangs by the skin of their beaks. Rick Hudson is clear where the answers lie. 'Humans are the problem. They must therefore also be the answer.'

Jess Williams too believes that we hold the solutions. 'If we can collectively focus on reducing threats, conserving critical habitat, exchanging scientific data, increasing public awareness and participation, promoting regional cooperation, and seeking resources for implementation, the future seems quite bright,' she says. In addition, 'effective conservation strategies and enforcement of laws coupled with serious education and awareness campaigns' will be required to help improve the current status of sea turtles in southern Africa and beyond. We must educate that turtles are long-term assets rather than short-term snacks.

Perhaps what's ultimately needed is to control human population growth. As the world's population tops seven billion, we place ever-greater strain on diminishing resources. Our boats are too big, our hunting methods too efficient. There are more mouths to feed, and more land is required to house our families. There are simply too many of us. As a result thousands of species a year are engulfed by a blackness that will never see another ray of light.

Flagship species such as the black rhino, giant panda and Sumatran tiger dominate the precious column inches dedicated to animal conservation. Yet the black-faced honeycreeper, Madeiran large white butterfly, tecopa pupfish and Holdridge's toad are all animals that have slipped away with little more than a croak. Nine species of turtle have already disappeared in a similar manner. Without our concerted efforts, others will too. ■

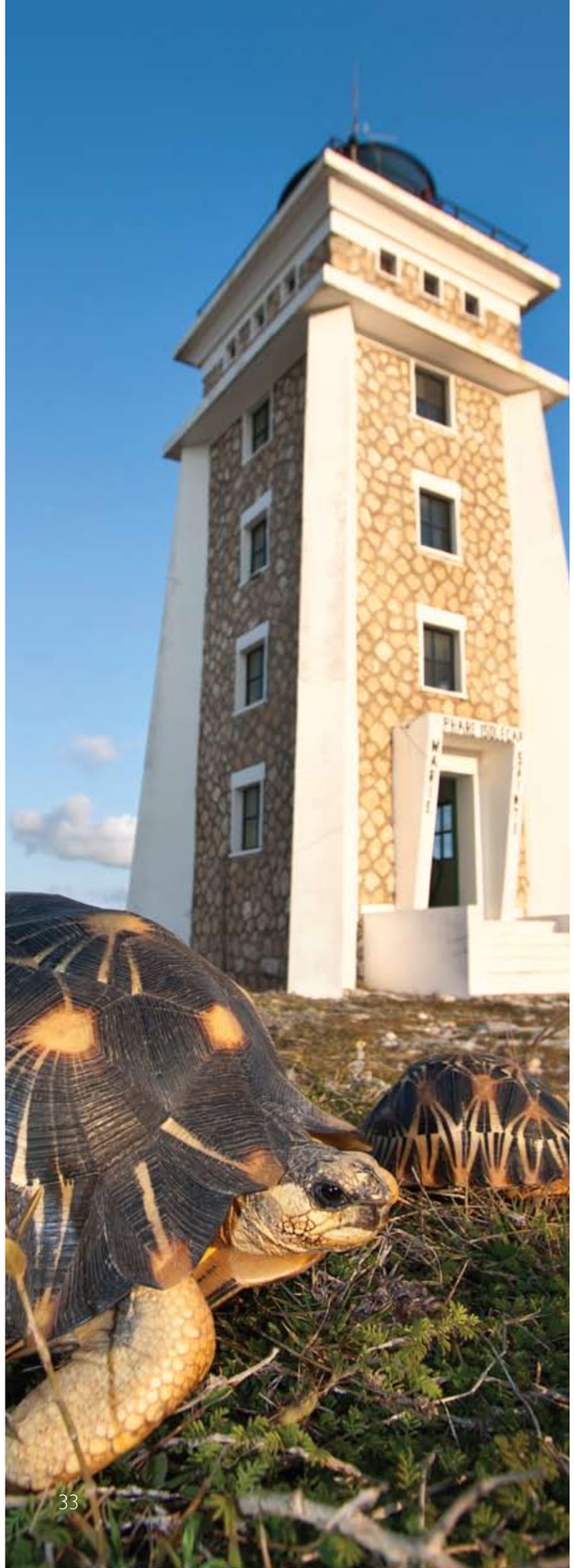
BANGLADESH'S TURTLE MARKETS

In Bangladesh huge numbers of turtles are eaten as part of religious celebrations every year. During the festival Kali Puja, up to 100 000 are consumed on a single day, including several species of marine turtle.

The way the animals are killed on Dhaka's markets angers conservationists. Their shells are opened up with crude blades; their bodies scooped out alive and hacked to pieces. The organs, meat and limbs are then sold, still writhing, to customers.

Once the market concludes, the shells are scraped of meat, cleaned and then dried. The dried shell is processed for fish and chicken feed and is sought after by the pharmaceutical industry to make the capsules that contain antibiotics and other drugs. The plastron, the section of shell that covers the bottom part of the turtle, is shipped to Southeast Asia where it's used in traditional medicine.

Although the illegal turtle trade supports up to 30 000 people in Dhaka, these markets are placing great strains on turtle populations and are pushing critically endangered species to the brink of extinction.



For more information on Aaron Gekoski's work, visit his website **www.aarongekoski.com**. To learn more about the TSA, go to **www.turtlesurvival.org/.**

LEFT Poached throughout Madagascar, Cap Sainte Marie is one of the last remaining strongholds for the radiated tortoise; **TECH SPEC:** Canon 40D, 10mm, ISO 200, f8, 1/500.